



## City of Phoenix

City of Phoenix, Floodplain Management, 200 W. Washington St., Phoenix, AZ 85003  
(602) 262-4960 (phone) (602) 262-7322 (fax)

December 27, 2011

### IN REPLY TO:

LOMC Clearinghouse  
6730 Santa Barbara Court  
Elkridge, MD 21075

Case No.: 09-09-1309R  
Community: City of Phoenix, Arizona  
Community No.: 040051  
Map Panel Nos.: 04013C2145H  
04013C2165H

Attn: LOMR Manager

Map Effective Date: September 30, 2005

RE: LETTER OF MAP REVISION (LOMR)  
SALT RIVER – SKY HARBOR INTERNATIONAL AIRPORT (SHIA)  
RUNWAY SAFETY AREA (RSA) Project, PHOENIX, AZ

Please find enclosed a Letter of Map Revision (LOMR) application for Salt River – Sky Harbor International Airport in Phoenix, Arizona. This application is in support of an approved Conditional Letter of map Revision (CLOMR), Case No. 09-09-1309R, dated December 31, 2009. The following items are included with this application.

#### Items:

1. A copy of the approved Conditional Letter of Map Revision (CLOMR), Case No. 09-09-1309R, dated December 31, 2009 (Attachment 1).
2. The City of Phoenix is in compliance with all requirements Paragraph 65.12(b). Please see Sec. 32B-3., Maps, of the Phoenix City Code (Attachment 2)
3. Overview & Concurrence Form (MT-2 Form 1), Section 2.
4. Riverine Hydrology & Hydraulics Form (MT-2 Form 2), Section 2.
5. Riverine Structures Form (MT-2 Form 3), Section 2.
6. This application is exempt from fees due to financial assistance received from the Federal Aviation Administration (FAA) for the RSA Project (Attachment 3)
7. As-Built Plans, Appendix E.
8. Officially adopted Operation and Maintenance Plan, Appendix F.
9. Public Notice in the Newspaper, Appendix B.
10. Annotated DFIRM Panels, Map Pocket.
11. Post Project Conditions Hydraulic Model results show that the hydraulic analyses along the Salt River ties into the effective hydraulic analysis within 0.5 foot at the upstream end of the revised reach.



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In addition, we are also including the following items as supporting documents to the application:

12. Floodway Data Table, Section 7.2.
13. Flood Profiles, Section 7.4.
14. Corrected Effective Model, Appendix C.1.
15. Post Project Conditions Model (As-Built), Appendix C.3
16. Topographic Work map, Map Pocket.

If you have any technical questions regarding this project, please contact Mr. Lloyd Vick, P.E., CFM, TY Lin International, phone number 480-968-8814, fax number 480-921-0002. If you have any other questions, please contact this office at 602-262-4960.

Sincerely,

Hasan Mushtaq, P.E., Ph.D., CFM  
Floodplain Manager

### Attachments:

1. Conditional Letter of Map Revision (CLOMR), Case No. 09-09-1309R, dated December 31, 2009
  2. Phoenix City Code, Chapter 32 – Floodplain
  3. Letter from Karen J. Apple, CM, Aviation Department, certifying funding received from the Federal Aviation Administration (FAA).
- C: Mr. Brian Cosson, CFM, Arizona Department of Water Resources  
Mr. Tim Murphy, P.E., CFM, Flood Control District of Maricopa County  
Mr. Lloyd Vick, P.E., CFM, TY Lin International  
Ms. Karen Apple, CM, Aviation Department, City of Phoenix



# Federal Emergency Management Agency

Washington, D.C. 20472

**December 31, 2009**

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

IN REPLY REFER TO:  
Case No.: 09-09-1309R

The Honorable Phil Gordon  
Mayor, City of Phoenix  
200 West Washington Street, 11th Floor  
Phoenix, AZ 85003

Community Name: City of Phoenix, AZ  
Community No.: 040051

104

Dear Mayor Gordon:

This responds to a request that the Department of Homeland Security's Federal Emergency Management Agency (FEMA) comment on the effects that a proposed project would have on the effective Flood Insurance Rate Map (FIRM) and Flood Insurance Study (FIS) report for Maricopa County, Arizona and Incorporated Areas (the effective FIRM and FIS report for your community), in accordance with Part 65 of the National Flood Insurance Program (NFIP) regulations. In a letter dated March 26, 2009, Ms. Karen J. Apple, C.M., City of Phoenix Aviation Department, requested that FEMA evaluate the effects that new hydraulic analysis, updated topographic information and the proposed runway extension at Sky Harbor Airport would have on the flood hazard information shown on the effective FIRM and FIS report. The proposed project will entail placement of fill, channelization, and construction of a cement stabilized alluvium embankment from approximately 5,200 feet upstream of I-10 to approximately 8,900 feet upstream along the north embankment of the Salt River. The proposed placement of fill and construction of the cement stabilized alluvium embankment will encroach riverward of an existing levee. The total area of revision, as a result of the new hydraulic analysis, topographic information and the proposed project, will extend from approximately 800 feet downstream of I-10 to approximately 2,800 feet upstream of Sky Harbor Highway. However, the total area of revision for your community will extend from approximately 800 feet downstream of I-10 to Hohokam Expressway.

Because this revision request also affects the City of Tempe, a separate CLOMR for that community was issued on the same date as this CLOMR

All data required to complete our review of this request for a Conditional Letter of Map Revision (CLOMR) were submitted with letters from Ms. Apple, and Mr. Dennis L. Richards, P.E., Pace Advanced Water Engineering.

We reviewed the submitted data and the data used to prepare the effective FIRM for your community and determined that the proposed project meets the minimum floodplain management criteria of the NFIP. The submitted existing conditions HEC-RAS hydraulic computer model, dated March 10, 2009, based on updated topographic information, was used as the base conditions model in our review of the proposed conditions model for this CLOMR request. We believe that, if the proposed project is constructed as shown on the submitted topographic work map entitled, "Sky Harbor Airport, Topographic Workmap," dated March 25, 2009, prepared by Pace Advanced Water Engineering, and the preliminary plan entitled "Phoenix Sky Harbor International Airport RW 25L, Safety Area Improvements, Sheets 1-4," dated June 2008, prepared by Huitt-Zollars, Inc., and the data listed below are received, a revision to the FIRM would be warranted.

As a result of the new hydraulic analysis and updated topographic information, the existing conditions Base (1-percent-annual-chance) Flood Elevations (BFEs) decreased and increased compared to the effective BFE for the Salt River. The maximum decrease in BFE, 2.5 feet, occurred approximately 6,000 feet upstream of I-10. The maximum increase in BFE, 0.2 foot, occurred just downstream of Hohokam Expressway.

As a result of the proposed project, the BFEs will decrease and increase compared to the existing conditions BFEs along the Salt River. The maximum decrease in BFE, 1 foot, will occur approximately 6,500 feet upstream of I-10. The maximum increase in BFE, 1.4 feet, will occur approximately 4,300 feet downstream of Sky Harbor Expressway.

As a result of the new hydraulic analysis, updated topographic information, and the proposed project, the BFEs will decrease and increase compared to the effective BFEs for the Salt River. The maximum decrease in BFEs, 2.8 feet, will occur approximately 6,000 feet upstream of I-10. The maximum increase in BFEs, 0.3 foot, will occur just downstream of Hohokam Expressway.

As a result of the new hydraulic analysis, updated topographic information, and the proposed project, the width of the Special Flood Hazard Area (SFHA), the area subject to inundation by the base flood, will decrease compared to the effective SFHA width for the Salt River. The maximum decrease in SFHA width, approximately 400 feet, will occur approximately 7,000 feet upstream of I-10.

As a result of the new hydraulic analysis, updated topographic information, and the proposed project, the width of the regulatory floodway will decrease compared to the effective floodway width for the Salt River. The maximum decrease in floodway width, approximately 400 feet, will occur approximately 7,000 feet upstream of I-10.

Upon completion of the project, your community may submit the data listed below and request that we make a final determination on revising the effective FIRM and FIS report.

- With this request, your community has complied with all requirements of Paragraph 65.12(a) of the NFIP regulations. Compliance with Paragraph 65.12(b) also is necessary before FEMA can issue a Letter of Map Revision when a community proposes to permit encroachments into the effective regulatory floodway that will cause increases in BFE in excess of those permitted under Paragraph 60.3(d)(3). Please provide evidence that your community has, prior to approval of the proposed encroachment, adopted floodplain management ordinances that incorporate the increased BFEs and revised floodway boundary delineations to reflect post-project conditions, as stated in Paragraph 65.12(b).
- Detailed application and certification forms must be used for requesting final revisions to the maps. Therefore, when the map revision request for the area covered by this letter is submitted, Form 1, entitled "Overview & Concurrence Form," must be included. (A copy of this form is enclosed.)
- The detailed application and certification forms listed below may be required if "as-built" conditions differ from the preliminary plans. If required, please submit new forms (copies of which are enclosed) or annotated copies of the previously submitted forms showing the revised information.

Form 2, entitled "Riverine Hydrology & Hydraulics Form"

Form 3, entitled "Riverine Structures Form"

Hydraulic analyses, for “as-built” conditions, of the base flood; the 10-percent, 2-percent, and 0.2-percent-annual-chance floods; and the regulatory floodway, together with a topographic work map showing the revised floodplain and floodway boundaries, must be submitted with Form 2.

- Effective January 13, 2010, FEMA revised the fee schedule for reviewing and processing requests for conditional and final modifications to published flood information and maps. In accordance with this schedule, the current fee for this map revision request is \$4,400 and must be received before we can begin processing the request. Please note, however, that the fee schedule is subject to change, and requesters are required to submit the fee in effect at the time of the submittal. Payment of this fee shall be made in the form of a check or money order, made payable in U.S. funds to the National Flood Insurance Program, or by credit card (Visa or MasterCard only). The payment, along with the revision application, must be forwarded to the following address:

LOMC Clearinghouse  
6730 Santa Barbara Court  
Elkridge, MD 21075

- “As-built” plans, certified by a registered professional engineer, of all proposed project elements
- An officially adopted maintenance and operation plan for the cement stabilized alluvium embankment. This plan, which may be in the form of a written statement from the community Chief Executive Officer, an ordinance, or other legislation, must describe the nature of the maintenance activities, the frequency with which they will be performed, and the title of the local community official who will be responsible for ensuring that the maintenance activities are accomplished.
- A copy of the public notice distributed by officials from your community stating their intent to revise the regulatory floodway, or a statement by officials from your community that all affected property owners and affected adjacent jurisdictions have been notified
- An annotated FIRM, at the scale of the effective FIRM, that shows the revised base floodplain and floodway boundary delineations shown on the submitted work map and how they tie into the base floodplain and floodway boundary delineations shown on the effective FIRM at the downstream and upstream ends of the revised reach
- Paragraph 65.6(a)(2) of the NFIP regulations states that to avoid discontinuities between revised and unrevised flood data, hydraulic analyses must have a logical transition between revised elevations of the base flood and those developed previously for areas not affected by the revision. The submitted proposed conditions hydraulic analyses along the Salt River did not tie into the effective hydraulic analysis within 0.5 foot at the upstream end of the revised reach. Please provide the post-project conditions analyses for the Salt River that tie into the effective hydraulic analysis within 0.5 foot, or within 0.0 foot, if practical.

After receiving appropriate documentation to show that the project has been completed, FEMA will initiate a revision to the FIRM and FIS report. Because the BFEs would change as a result of the project,

a 90-day appeal period would be initiated, during which community officials and interested persons may appeal the revised BFEs based on scientific or technical data.

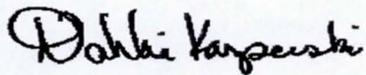
The basis of this CLOMR is, in whole or in part, a channel-modification project. NFIP regulations, as cited in Paragraph 60.3(b)(7), require that communities assure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your community's existing floodplain management regulations. Consequently, the ultimate responsibility for maintenance of the modified channel rests with your community.

This CLOMR is based on minimum floodplain management criteria established under the NFIP. Your community is responsible for approving all floodplain development and for ensuring all necessary permits required by Federal or State law have been received. State, county, and community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction in the SFHA. If the State, county, or community has adopted more restrictive or comprehensive floodplain management criteria, these take precedence over the minimum NFIP criteria.

If you have any questions regarding floodplain management regulations for your community or the NFIP in general, please contact the Consultation Coordination Officer (CCO) for your community. Information on the CCO for your community may be obtained by calling the Director, Mitigation Division of FEMA in Oakland, California, at (510) 627-7175.

If you have any questions regarding this CLOMR, please call our Map Assistance Center, toll free, at 1-877-FEMA MAP (1-877-336-2627).

Sincerely,



Dahlia Kasperski, P.E., CFM, Program Specialist  
Engineering Management Branch  
Mitigation Directorate

For: Kevin C. Long, Acting Chief  
Engineering Management Branch  
Mitigation Directorate

Enclosures

cc: (see attached list)

## List of Courtesy Copies – City of Phoenix, AZ

The Honorable Hugh Hallman  
Mayor, City of Tempe

Hasan Mushtaq, P.E., Ph.D., CFM  
Floodplain Manager  
City of Phoenix

Mr. Tim S. Phillips, P.E.  
Chief Engineer and General Manager  
Flood Control District of Maricopa County

Mr. Tim Murphy, P.E., CFM  
Floodplain Delineation Branch Manager  
Flood Control District of Maricopa County

Mr. Brian Cosson, CFM  
NFIP State Manager  
Arizona Department of Water Resources  
Flood Mitigation Section

Mr. Dennis L. Richards, P.E., D.WRE  
Pacific Advanced Civil Engineering, Inc.

Ms. Karen J. Apple, C.M.  
Project Manager

## Chapter 32B

### FLOODPLAINS\*

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\* **Cross References:** Engineering and Architectural Services Department, § 2-27; Development Advisory Board, § 2-164 et seq.; building regulations, ch. 9; subdivisions, ch. 32; grading and drainage, ch. 32A.

**State Law References:** Floodplain management, A.R.S. § 48-3601 et seq.; municipal floodplain management programs, A.R.S. § 48-3610.

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#### Article I. General

Sec. 32B-1. Implementation.  
Sec. 32B-2. Definitions.

#### Article II. Regulations

Sec. 32B-3. Maps.  
Sec. 32B-4. Classification of floodplains.  
Sec. 32B-5. Regulation.  
Sec. 32B-6. Interim elevations.  
Sec. 32B-7. Coordination in floodplain management.  
Sec. 32B-8. Non-prohibited construction.  
Sec. 32B-9. Reserved.  
Sec. 32B-9.1. Manufactured homes.  
Sec. 32B-9.2. Mechanical and utility equipment.  
Sec. 32B-9.3. Federal and State permits.  
Sec. 32B-9.4. Openings in enclosures below a structure's lowest floor.  
Sec. 32B-10. Sand and gravel operations.  
Sec. 32B-11. Variance provisions.  
Sec. 32B-12. Appeals.  
Sec. 32B-13. Structures in violation of regulations.  
Sec. 32B-14. Diversion of water flow.  
Sec. 32B-15. Violation as separate offense.  
Sec. 32B-16. Severability.  
Sec. 32B-17. Floodplain plan review fees.

### ARTICLE I.

#### GENERAL

#### Sec. 32B-1. Implementation.

To implement the regulation of the floodplain areas in the City of Phoenix, the City Council is designated as the Floodplain Board and the City Engineer is designated as the administrative agent for these regulations.  
(Ord. No. G-2027, § 2)

#### Sec. 32B-2. Definitions.

*Area of shallow flooding* means a designated zone in which the base flood depths range from one to three feet; a clearly defined channel does not exist; the path of flooding is unpredictable and indeterminate; and high velocity flow may be evident.

*Area of special flood hazard* means the land within a floodplain which is subject to inundation by the base flood.

*Base flood* means the flood having a one percent chance of being equalled or exceeded in any given year, i.e., the one-hundred-year flood.

*Development* means any manmade change to improved or unimproved real estate, including, but not limited to, buildings and other structures, utilities, pipelines, mining, dredging, filling, grading, paving, or excavation located within the area of special flood hazard.

*Dwelling unit* means any structure usable for residential purposes and which may be located in a single- or multiple-dwelling building, which includes working, sleeping, eating, cooking, recreation facilities, or a combination thereof, except a structure used only for storage purposes.

*Flood or floodwaters* means a temporary overflow of water on land not normally covered by water.

*Flood boundary and floodway maps (FBFM)* means the official map for the community on which the Federal Insurance Administration has delineated the area of special flood hazard and the selected floodway.

*Flood insurance rate maps (FIRM)* means the official maps on which the Federal Insurance Administration has delineated both the areas of special flood hazard and the risk premium insurance rates applicable to the community.

*Flood insurance study* means the official report provided by the Federal Insurance Administration that includes flood profiles, the flood boundary and floodway maps, and the water surface elevations of the base flood.

*Floodplain* means the relatively flat area adjoining the channel of a watercourse, or areas where drainage is or may be restricted by natural or manmade structures which may have been or may be covered partially or wholly by floodwater from a base flood.

*Floodplain Board or Board* means the City Council acting as the "Floodplain Board."

*Floodway fringe area* means that portion of the area of special flood hazard that is not included in the selected floodway.

*Lowest floor* means the lowest floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access or storage, in an area other than a basement area, is not considered a building's lowest floor, provided that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of this ordinance.

*Manufactured home* means a structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when connected to the required utilities. For floodplain management purposes the term "manufactured home" also includes park trailers, travel trailers, and other similar vehicles placed on a site for greater than one hundred eighty consecutive days. For insurance purposes the term "manufactured home" does not include park trailers, travel trailers, and other similar vehicles.

*Manufactured home park or subdivision* means a parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.

*Mean sea level* means, for purposes of the National Flood Insurance Program, the National Geodetic Vertical Datum (NGVD of 1929) or other datum, to which base flood elevations shown on a community's flood insurance rate map are referenced.

*Person* means any individual or his agent, firm, partnership, association, corporation, or any agent of the aforementioned groups, or a federal, State, County or municipal government agency or political subdivision thereof.

*Reasonable alteration or repair* means any modification or improvement to existing facilities in which the total cost does not exceed fifty percent of the real cash value assessed at the commencement of construction. A reasonable alteration, however, should not be construed to mean any improvement which would increase the flood hazard to that property or the properties of surrounding homes.

*Regulatory flood elevation* means the elevation which is one foot above the "base flood" elevation for a "watercourse" for which the "base flood" elevation has been determined and shall be as determined by the criteria developed by the City Engineer for all other watercourses.

*Selected floodway* means the limits, as determined by the City Engineer, where the permitted encroachment in the floodplain will allow passage of the one-hundred-year flood without increasing the flood heights more than one foot. Additional hydraulic criteria such as maximum flow velocities of five feet per second at the limits of the selected floodway, smooth transitions around developments, and equal conveyance removal from each side will be used in computing the lines of the selected floodway.

*Start of construction* includes substantial improvement, and means the date the

building permit was issued, provided the actual start of construction, repair, reconstruction, placement, or other improvement was within one hundred eighty days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the state of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure.

*Structure* means a walled and roofed building or "manufactured home" that may or may not be habitable, may or may not be constructed on a permanent foundation, and was manmade.

*Substantial improvement* means any repair, reconstruction or improvement of a structure, the cost of which equals or exceeds fifty percent of the market value of the structure either before the improvement or if the structure was damaged and is being restored, before the damage occurred. A substantial improvement will not be permitted nor should it be construed to mean any modification which will increase flood hazard risk.

*Violation* means the failure of a structure or other development to be fully compliant with the community's floodplain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required by this chapter is presumed to be in violation until such time as that documentation is provided.

*Watercourse* means any lake, river, creek, stream, wash, arroyo, channel, or other body of water having banks and bed through which waters flow at least periodically. The term may include specifically designated areas in which flood damage may occur. (Ord. No. G-2027, § 2; Ord. No. G-3092, § 2)

**Cross References:** Definitions and rules of construction generally, § 1-2.

## **ARTICLE II.**

### **REGULATIONS**

#### **Sec. 32B-3. Maps.**

The areas of special flood hazard and the selected floodway for designated floodplains are shown on the current maps labeled "FIRM" and "Floodway," or as they may subsequently be amended, on file with the City Engineer, which maps are incorporated herein by reference. The maps are consistent with the criteria established by

the Arizona Department of Water Resources and Federal Emergency Management Agency. New or additional engineering data may be considered for re-evaluation of floodplain and floodway delineations if circumstances indicate such action is in the public interest. Any such scientific or technical data will be submitted to the office of the City Engineer for review and conformance with established policy.  
(Ord. No. G-2027, § 2; Ord. No. G-2641, § 1; Ord. No. G-3092, § 3)

#### **Sec. 32B-4. Classification of floodplains.**

To encourage the safe and orderly development of floodplain land, the Board recognizes that the floodplains consist of two distinct areas: the floodway fringe area having lower water velocities and shallower depths of flow and, the selected floodway which contains greater flow depths and damaging velocities. The Board also recognizes that encroachment into the floodway fringe area will not substantially increase the flood hazard to adjoining properties. It is also recognized that development and construction within the selected floodway will require higher standards of engineering and construction than development within the floodway fringe area in order to insure that there is no substantial hazard to such development or construction and that it does not create a substantial hazard to other property within the floodplain.  
(Ord. No. G-2027, § 2)

#### **Sec. 32B-5. Regulation.**

In order to promote the public health, safety and general welfare, the Floodplain Board will enforce the following regulations:

1. No person may either obstruct, divert, or reduce the capacity within the area of special flood hazard by constructing any development or altering the width or course of said floodways except as provided in these regulations.
2. Construction and development may occur within the floodway fringe and the areas of shallow flooding provided that the City Engineer review and approve all such requests for building permits prior to issuance by the Building Official. The City Engineer will ascertain that the proposed construction will incorporate appropriate floodproofing measures to the "regulatory flood elevation," or that the "lowest floor" is above the "regulatory flood elevation." A "dwelling unit" shall be so constructed so as to place the "lowest floor" elevation of the "dwelling unit" above the "regulatory flood elevation." Appropriate floodproofing measures may include, but not be limited to: providing access during flood events, maintaining electrical, water, and sewer services, designing foundations and structures to withstand hydraulic loadings expected during the base flood and designing windows, doorways and other openings located below the level of the base flood to prevent the entrance of floodwaters. Any

applicant for a building permit has the burden of furnishing the Development Services Director satisfactory evidence to enable him to either determine that the applicant's property does not fall within the area of special flood hazard or that there is no substantial hazard, either to the proposed development or to the property.

3. Construction and development may be permitted within the selected floodway subject to review and approval by the City Engineer, on an individual permit basis; however, no development in the selected floodway will be allowed which will increase the water surface elevation of the base flood.
4. These regulations do not affect the existing use of property in the areas of special flood hazard or the right to the continuation of that use, nor do they affect the reasonable repair or alteration of property for the purpose for which such property was lawfully used on February 12, 1974.
5. Any substantial improvements to existing structures must conform to the requirements of this chapter.
6. New developments which provide on-site waste disposal systems must locate them outside the boundary of the base flood.
7. Within one hundred twenty days after completion of any flood control project, the areas of special flood hazard and the selected floodway in the area benefited by such works will be redefined.
8. Any new building or development located or maintained within the area of special flood hazard must have prior written authorization from the City Engineer, except as specified in 32B-8 and 32B-10 of these regulations.
9. The owner must have a registered professional engineer, or registered land surveyor, certify to the Development Services Director the actual elevation of the minimum finished floor of any new or substantially improved structure located within the area of special flood hazard. A record of these certifications shall be maintained with the Development Services Director. In addition, where a nonresidential structure is intended to be made watertight below the base flood level, a registered professional engineer or registered architect shall develop and/or review structural design, specifications, and plans for the construction, and shall certify that the design and methods of construction are in accordance with accepted standards of practice for meeting the applicable provisions of this section. A record of such certification which includes the specific elevation (in relation to mean sea level) to which such structures are floodproofed shall be maintained with the Development Services Director.

10. The City Engineer and the Development Services Director will obtain and maintain for public inspection, all records pertaining to the provisions of this ordinance.
11. No development shall increase the one-hundred-year twenty-four-hour peak or the one-hundred-year two-hour peak whichever is higher. Nor shall the time of the peak change or the total runoff exceed the pre-development total runoff.
12. In areas of special flood hazard without a selected floodway or its flood insurance rate map (FIRM) [or] flood insurance flood boundary and floodway maps (FBFM): No new flood boundary and floodway maps, construction, substantial improvements, or other development (including fill) shall be permitted unless it is demonstrated that the cumulative effect of the proposed developments, when combined with all other existing and proposed developments will not increase the water surface elevation of the base flood more than one foot at a point within the community.

(Ord. No. G-2027, § 2; Ord. No. G-3092, § 4; Ord. No. G-3313, § 1)

#### **Sec. 32B-6. Interim elevations.**

When base flood elevations and delineations are not available due to recent annexation or other causes, the City Engineer may obtain, review, and reasonably utilize any base flood elevation data available from a federal, State, County or other political subdivision for the purpose of securing a base flood determination, until such time as the Federal Emergency Management Agency has published the final FIRM (flood insurance rate maps) and FBFW (flood boundary and floodway maps).

(Ord. No. G-2027, § 2; Ord. No. G-3313, § 1)

#### **Sec. 32B-7. Coordination in floodplain management.**

The Floodplain Board may adopt other regulations which provide for coordination with all other interested and affected political subdivisions and State agencies and may enter into agreements for cooperative regulations, planning, designs, and construction. The Development Services Director shall advise the Flood Control District of Maricopa County and any other adjacent jurisdiction having responsibility for floodplain management, in writing, and provide a copy of any development plan of all applications for floodplain use permits or variances to develop land in a floodplain or floodway within one mile of the boundary between the City's area of jurisdiction and the area of jurisdiction of the District. The Development Services Director shall also advise the District and any adjacent jurisdiction having responsibility for floodplain management in writing and provide a copy of any development plan of any major development proposed within a floodplain or floodway which could affect floodplains, floodways or watercourses outside the City's area of jurisdiction. Written notice and a copy of the plan of development shall be sent to any adjacent jurisdiction no later than

three working days after having been received.  
(Ord. No. G-2027, § 2; Ord. No. G-3092, § 5; Ord. No. G-3313, § 1)

**Sec. 32B-8. Non-prohibited construction.**

Written authorization shall not be required nor shall the Floodplain Board prohibit:

1. The construction of bridges, culverts, dikes, and other structures necessary to the construction of public highways, roads, and streets intersecting or crossing a watercourse.
2. The construction of storage dams for watering livestock or wildlife structures on banks of a creek, stream, river, wash, arroyo or other watercourses to prevent erosion of or damage to adjoining land, or dams for the conservation of floodwaters as permitted by A.R.S. tit. 45, ch. 3.1 (A.R.S. § 45-801.01 et seq.).
3. Construction of tailing dams and waste disposal areas for use in connection with mining and metallurgical operations.

(Ord. No. G-2027, § 2)

**Sec. 32B-9. Reserved.**

**Editors Note:** Section 32B-9 was repealed; see Ord. No. G-3092, § 6.

**Sec. 32B-9.1. Manufactured homes.**

Any manufactured homes to be placed within the area of special flood hazard shall be installed using methods and practices which minimize flood damage. For the purposes of this requirement, manufactured homes must be elevated so that the bottom of the structural frame or the lowest point of any attached appliances, whichever is lower, is at or above the regulatory flood elevation and anchored to resist flotation, collapse, or lateral movement. Methods of anchoring may include, but are not limited to, use of over-the-top or frame ties to ground anchors. This requirement is in addition to applicable State requirements.

(Ord. No. G-3092, § 6)

**Sec. 32B-9.2. Mechanical and utility equipment.**

Electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

(Ord. No. G-3092, § 6)

**Sec. 32B-9.3. Federal and State permits.**

All development located within an area of special flood hazard shall obtain all permits required by State and federal law, specifically that required by section 404 of the Federal Water Pollution Control Amendments of 1972.

(Ord. No. G-3092, § 6)

**Sec. 32B-9.4. Openings in enclosures below a structure's lowest floor.**

For all new construction and substantial improvements, fully enclosed areas below the lowest floor that are subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or must meet or exceed the following minimum criteria:

A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided. The bottom of all openings shall be no higher than one foot above grade. Openings may be equipped with screens, louvers, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

(Ord. No. G-3092, § 6)

**Sec. 32B-10. Sand and gravel operations.**

Sand and gravel operations are allowed within the floodplain subject to the following conditions:

1. Within the selected floodway, sand and gravel operations may be conducted without permit provided that:
  - (a) The operations are restricted to [the] extraction of sand and gravel for commercial purposes; and
  - (b) Excavations are not so located nor of such depth as to present a hazard to other development, including, but not limited to, roads, bridges, culverts, and utilities.
2. No stockpiling, within the selected floodway, of material or tailings that may obstruct, divert, or retard the flow of floodwaters will be permitted except as reviewed and approved by the City Engineer, on an individual permit basis.
3. Stockpiling of sand and gravel products within the floodway fringe area may be done without permit provided that the operator furnishes the City Engineer satisfactory evidence that such stockpiling is within the floodway fringe area rather than in the selected floodway.

6. That the burden of proof in all matters heard by the City Engineer shall rest with the applicant. The granting of a variance is a matter of grace, resting on the discretion of the City Engineer, and a refusal is not a denial of a right, conditional or otherwise.

B. A variance will be issued for the reconstruction, rehabilitation, or restoration of all structures listed on the National or State Register of Historic Places or the State inventory of historic places, without regard to conflicting procedures and provisions set forth in this section.

(Ord. No. G-2027, § 2)

#### **Sec. 32B-12. Appeals.**

Appeals from decisions of the City Engineer in application of these regulations may be taken to the Development Advisory Board acting as the Floodplain Appeal Board. Any person aggrieved by a decision of the Floodplain Appeal Board may bring special action in a court of competent jurisdiction. The Floodplain Appeal Board, when reviewing an appeal from a decision of the City Engineer, shall follow the rules and standards set forth in this ordinance.

(Ord. No. G-2027, § 2; Ord. No. G-3313, § 1; Ord. No. G-4176, § 13, passed 5-19-1999, eff. 6-18-1999)

#### **Sec. 32B-13. Structures in violation of regulations.**

Except as provided in paragraphs 32B-8 and 32B-10, all new development located or maintained within any area of special flood hazard in violation of the regulations of this chapter and without written authorization from the Floodplain Board or the City Engineer as administrative agent of the Floodplain Board is hereby declared to be a public nuisance per se and may be abated, prevented or restrained by action of the City.

(Ord. No. G-2027, § 2)

#### **Sec. 32B-14. Diversion of water flow.**

A. It is unlawful for any person to divert, retard, or obstruct any watercourse in the City of Phoenix whenever such action creates a hazard to life or property without securing the written authorization required by the preceding regulations.

B. Any person violating the provisions of this section shall be guilty of a misdemeanor.

(Ord. No. G-2027, § 2)

#### **Sec. 32B-15. Violation as separate offense.**

Each day of violation of these regulations shall constitute a separate offense.

(Ord. No. G-2027, § 2)

**Sec. 32B-16. Severability.**

If any provision of this ordinance is held invalid, such invalidity shall not affect other provisions which can be given effect without the invalid provision, and to this end the provisions of this ordinance are declared to be severable.

(Ord. No. G-2027, § 2)

**Sec. 32B-17. Floodplain plan review fees.**

The Development Services Director shall collect the fees set forth in this section before providing floodplain plan review services:

FLOODPLAIN PLAN REVIEW  
FEE SCHEDULE  
Effective September 1, 1987

1. Generated through grading and drainage review:

\$240.00/plan sheet for office review.

\$170.00/plan sheet for third review and each thereafter.

\$240.00/plan sheet for revisions to approved plans.

\$125.00/plan sheet for updates to approved plans.

2. Generated through building safety check:

\$17.00/form, finished floor requirement. (Form 126-225D Rev.)

\$240.00/plan sheet for office review.

(Ord. No. G-2217, § 1; Ord. No. G-2226, § 2; Ord. No. G-2512, § 1; Ord. No. G-2629, § 1; Ord. No. G-2787, § 1; Ord. No. G-3011, § 1; Ord. No. G-3127, § 3)

**Cross References:** Development Services Department fee schedule, app. A.2.



## City of Phoenix

AVIATION DEPARTMENT  
PLANNING & ENVIRONMENTAL DIVISION

March 26, 2009

FEMA Depot  
3601 Eisenhower Avenue  
Alexandria, Virginia 22304

Re: Phoenix Sky Harbor International Airport - Runway Safety Area  
Improvements, Fee Exemption for Map Changes

Attention: LOMR Depot

The Runway Safety Area (RSA) project being proposed by the City of Phoenix Aviation Department includes extension of the north embankment of the Salt River, east of Interstate 10. The Federal Aviation Administration (FAA) has committed to provide Airport Improvement Program funds that will cover 75 percent of the estimated project costs.

The City of Phoenix requests a CLOMR fee exemption based on the amount of federal funding the FAA has committed to the proposed project in accordance with *44 CFR 72.5 (d) of the National Flood Insurance Program Regulations*.

If you require any additional information regarding our federal funding for this project, please contact me at 602-683-3786.

Sincerely,

Karen J. Apple, C.M.  
Project Manager

Enclosures

cc: Mr. Hasan Mushtaq – City of Phoenix  
Mr. Dennis Richards – Pace Advanced Water Engineering

**Salt River LOMR**

TYLin Project No : 221722.03

RE: Review Comments by: Hasan Mushtaq, Ph.D, P.E., CFM

Subject: Response to Review Comments

| Item # | Location   | Comment / Response / Revision   |
|--------|------------|---|
| 1      | Workmaps   | Renumber workmaps 1 of 1<br><b>Revised</b>  |
| 2      | Section 1  | Page 1-2; The levee certification is for the length of the old levees. Portions of the new levee has not been certified.<br><b>Text revised throughout report to acknowledge that new embankment is not certified.</b>  |
| 3      | Section 2  | MT-2 Form 1, Section C; This should be a no fee application. Karen has the paperwork.<br><b>Revised</b>   |
| 4      | Section 2  | MT-2 Form 3, Section E.11; add note indicating that O&M plan are included in Appendix F.<br><b>Revised</b>  |
| 5      | Section 2  | Page 2-3, MT-2 Additional Comments; Is it possible to look at the base flood hydrograph and determine the time/duration of flows.<br><b>Per conversation with Hasan, this comment was disregarded.</b>  |
| 6      | Section 2  | Page 2-4, MT-2 Additional Comments; Is the water retention area behind the new stretch of embankment?<br><b>No. The retention area is east/upstream of the new CSA embankment.</b>  |
| 7      | Section 5  | Page 5-3; in discussion of lower water surface elevation - add 'smaller conveyance area with a greater velocity.'<br><b>Revised</b>   |
| 8      | Section 5  | Page 5-3; in discussion of lower water surface elevation - add 'smaller conveyance area with<br><b>Revised</b>  |
| 9      | Section 5  | Table 5.5.3; Explain why there is a location (XS-216.52) without sufficient freeboard<br>This XS is located just upstream of the I-10 bridge where the banks are stationed to provide a vehicle access road under the bridge, however, the banks, terrace and abutments are fully protected with wire tied rock. The XS is misleading, there is no potential for breakout.<br><b>Revised text and added graphic of the XS and photos of both north and south banks.</b> |
| 10     | Section 7  | Flood Profile Maps; Is there a table which correlates river miles to XS numbers.<br><b>Table added in Section 7 before Flood Profile Maps</b>   |
| 11     | Appendix B | COT notification; signature missing<br><b>Revised</b>   |
| 12     | Appendix D | Freeboard Calculations; XSs 216.52, 216.49 and 216.42 please explain values below FEMA requirements<br><b>See Comment #9 - all XSs located at ADOT bridge</b>   |
| 13     | Appendix H | Appendix Cover; Fix typo<br><b>Revised</b>  |
| 14     | Maps       | Annotated FIRM Maps; why is the background green<br><b>The green background represents the 0.2% Annual Chance Flood Hazard - see legend.</b>  |

**Salt River LOMR**

TYLin Project No : 221722.03

RE: Review Comments by: Karen Apple, C.M.

Subject: Response to Review Comments

| Item # | Location  | Comment / Response / Revision   |
|--------|-----------|---|
| 15     | Report    | Do we need a sign-off by the City of Tempe?<br>No, there is nowhere on the MT-2 forms for sign-off by neighboring communities. Notification is sufficient |
| 16     | Section 1 | Page 1-1; first paragraph, add: construction also included repair to several damaged gabion sections<br>Revised   |
| 17     | Section 2 | MT-2 Form 1, Section D; replace Karen Apple with Danny Murphy<br>Revised  |
| 18     | Section 2 | MT-2 Form 3, Section E.1; add checkmark to box: reanalysis of an existing levee/floodwall system<br>Revised   |
| 19     | Secton 2  | MT-2 Form 3, Section E.7.d; add checkmark for <b>has</b> : reference Final Design Report and Geotech report<br>Revised                                    |
| 20     | Section 3 | Page 3-1; Change "Compact Disk" to "CD"<br>Revised Gobally  |
| 21     | Secton 4  | Page 4-1; revise text to include "FEMA allows and Project provides"<br>Revised  |
| 22     | Secton 5  | Page 5-6; In Table 5.5.3 - Shows a negative values for freeboard at RM 216.52<br>See response to Hasan's question: Item #9                                |
| 23     | Secton 5  | Section 5.7, Page 5-11; Last paragraph, revise to "soften" statement.<br>Revised  |

**Salt River LOMR**

TYLin Project No : 221722.03

RE: Review Comments by: Samuel Hanna, Ph.D., P.E., LEED AP

Subject: Response to Review Comments

| Item # | Location      | Comment / Response / Revision   |
|--------|---------------|---|
| 24     | Section 5.5.3 | Table 5.5.3, Page 5-7; What is the significance or effect of having a negative freeboard on the LOMR<br><i>See response to Hasan's question: Item #9</i>  |
| 25     | Section 6     | Page 6-1; What is the significance of having final design -(total scour) higher than the CLOMR - total scour in general<br><i>Intuitively, you would expect the scour for the conceptual CLOMR to be higher then for final design (higher factor of safety (FOS)); Per conversation with HA, the analysis is different for final deisgn and higher values can result (even with a smaller FOS).</i>   |
| 26     | Appendix H    | On page 1 of HA cover letter: The CSA is 8-ft thick not 8-inches. Also, please put the units of its setension into the river to 16-feet.<br><b>HA cover letter revised.</b>   |
| 27     | Appendix H    | On page 2 of HA cover letter: Figure 1 indicates that the height of the water surface is 28-ft above the river bed (44 ft-16 ft), while Figure 2 shows that the height of water surface is only 16-ft above river bed. I do not think that the river bed changes 12=ft from the north and south banks. Please check and revise.<br><br><i>Per conversation with HA - the river bottom does change significantly at the locaton of the cross section. The difference between depths at north and south bank are correct.</i> |

**Salt River LOMR**

TYLin Project No : 221722.03

RE: Review Comments by: Wendy Wonderly, P.E.

Subject: Response to Review Comments

| Item # | Location  | Comment / Response / Revision  |
|--------|-----------|--|
| 28     | Section 2 | Page 2-4; first paragraph - there are 5 upstream SRP dams , not 4.<br><b>Revised</b>   |
| 29     | Section 5 | Page 5-2; end of first paragraph - end the sentence with a "." not an "?"<br><b>Revised</b>  |
| 30     | Section 5 | Page 5-3; In Table 5.1.2, please add to the title "Water Surface Elevations"<br><b>Revised</b>   |
| 31     | Section 5 | Page 5-6; In Table 5.5.3 and also Appendix D - Shows some negative values for freeboard - are these pre-project? Needs a little more explanation as to why this is okay.<br><b>See response to Hasan's question: Item #9</b> |
| 32     | Report    | on tables in the text, please have headers carry over to subsequent pages<br><b>Revised</b>  |



CITY OF PHOENIX

## Salt River Letter of Map Revision



Prepared for:

**PHOENIX AVIATION DEPARTMENT**  
3400 East Sky Harbor Boulevard, Terminal 3  
Phoenix, Arizona 85034

December 2, 2011

Prepared by:

**TYLIN** INTERNATIONAL  
60 East Rio Salado Parkway, Suite 501  
Tempe, Arizona 85281



CITY OF PHOENIX

## Salt River Letter of Map Revision



Prepared for:

PHOENIX AVIATION DEPARTMENT  
3400 East Sky Harbor Boulevard, Terminal 3  
Phoenix, Arizona 85034

December 2, 2011

Prepared by:

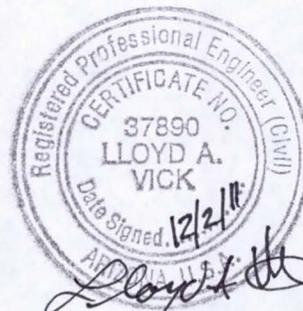
**TYLIN** INTERNATIONAL  
60 East Rio Salado Parkway, Suite 501  
Tempe, Arizona 85281





**TABLE OF CONTENTS**

|  |            |
|--|------------|
| <b>Section 1: Introduction</b>                                     | <b>1-1</b> |
| 1.1 Purpose of Report  | 1-1        |
| 1.2 Authority  | 1-1        |
| 1.3 Location of Project  | 1-1        |
| 1.4 Methodology  | 1-2        |
| 1.5 Acknowledgements   | 1-2        |
| 1.6 Study Results  | 1-2        |
| <b>Section 2: FEMA Forms</b>                                       | <b>2-1</b> |
| 2.1 Study Documentation Abstract for FEMA Submittals               | 2-1        |
| 2.2 FEMA Forms   | 2-2        |
| <b>Section 3: Survey and Mapping Information</b>                   | <b>3-1</b> |
| 3.1 Field Survey Information                                       | 3-1        |
| 3.2 Mapping  | 3-1        |
| <b>Section 4: Hydrology</b>  | <b>4-1</b> |
| <b>Section 5: Hydraulics</b>                                       | <b>5-1</b> |
| 5.1 Method Description   | 5-1        |
| 5.1.1 <i>Proposed Conditions vs. Post Project Conditions Model</i> | 5-1        |
| 5.1.2 <i>Post Project Conditions vs. Corrected Effective</i>       | 5-2        |
| 5.2 Work Study Maps  | 5-4        |
| 5.3 Parameter Estimation   | 5-4        |
| 5.4 Cross Section Description                                      | 5-5        |
| 5.5 Modeling Considerations  | 5-5        |
| 5.5.1 <i>Hydraulic Jump and Drop Analysis</i>                      | 5-5        |
| 5.5.2 <i>Bridges and Culverts</i>                                  | 5-5        |
| 5.5.3 <i>Levees and Dikes</i>                                      | 5-5        |
| 5.5.4 <i>Islands and Flow Splits</i>                               | 5-9        |
| 5.5.5 <i>Ineffective Flow Areas</i>                                | 5-9        |
| 5.5.6 <i>Supercritical Flow</i>                                    | 5-9        |
| 5.6 Floodway Modeling  | 5-9        |
| 5.7 Problems Encountered During the Study                          | 5-11       |
| 5.7.1 <i>Special Problems and Solutions</i>                        | 5-11       |
| 5.7.2 <i>Model Warning and Error Messages</i>                      | 5-11       |
| 5.8 Calibration  | 5-12       |
| 5.9 Final Results  | 5-12       |
| 5.9.1 <i>Hydraulic Analysis Results</i>                            | 5-12       |
| 5.9.2 <i>Verification of Results</i>                               | 5-14       |
| <b>Section 6: Scour and Sediment Transport</b>                     | <b>6-1</b> |
| 6.1 Scour  | 6-1        |
| 6.2 Sediment Transport   | 6-2        |
| <b>Section 7: Draft FIS Report Data</b>                            | <b>7-1</b> |
| 7.1 Summary of Discharges  | 7-1        |
| 7.2 Floodway Data  | 7-1        |
| 7.3 Annotated Flood Insurance Rate Maps                            | 7-3        |
| 7.4 Flood Profiles   | 7-3        |



Expires 9/30/14



**TABLE OF CONTENTS (CONTINUED)**

**FIGURES**

|              |  |     |
|--------------|--|-----|
| Figure 1.3   | Location Map                                       | 1-2 |
| Figure 5.1.2 | Post Project vs. Corrected Effective Flow Profiles | 5-4 |
| Figure 5.5.3 | Extend of Levees No. 41 and No. 42                 | 5-5 |

**TABLES**

|             |   |      |
|-------------|---|------|
| Table 4     | Peak Discharge Summary Table                          | 4-1  |
| Table 5.1.2 | Post Project vs. Corrected Effective                  | 5-2  |
| Table 5.5.2 | Salt River Bridge Data                                | 5-5  |
| Table 5.5.3 | Required vs. Available Freeboard along the Salt River | 5-6  |
| Table 5.6   | Post Project Floodway Summary                         | 5-8  |
| Table 5.9.1 | Hydraulic Summary                                     | 5-11 |
| Table 6.1   | Total Scour Depth                                     | 6-1  |
| Table 7.1   | Discharge Summary                                     | 7-1  |
| Table 7.2   | Salt River Floodway Data Table (NAVD 1988)            | 7-1  |

**LIST OF EXHIBITS**

|                                       | <u>Location</u> |
|---------------------------------------|-----------------|
| Topographic Workmap (1 of 2)          | Map Pocket      |
| Flood Hazard Workmap (2 of 2)         | Map Pocket      |
| Annotated FIRM Map (Panel 2145)       | Map Pocket      |
| Annotated FIRM Map (Panel 2165)       | Map Pocket      |
| Hydraulic Profiles (half-size, 11x17) | Section 7.4     |

**LIST OF APPENDICES**

- Appendix A: Acknowledgements & References
- Appendix B: General Documentation and Correspondence
- Appendix C: HEC-RAS Models
- Appendix C.1: Corrected Effective Model
- Appendix C.2: N-Value Adjustments
- Appendix C.3: Post Project Conditions Model (As-built)
- Appendix D: FEMA Freeboard Requirements
- Appendix E: Record Drawings
- Appendix F: Levee Operation and Maintenance Plan
- Appendix G: Erosion and Sediment Transport Analysis
- Appendix H: Embankment Slope Stability Analysis

**Enclosures**

**CD Containing:**

1. Previous Studies: CLOMR; Levee Certification; Design Report
2. HEC-RAS models
3. CADD & GIS files for Work Maps and Annotated FIRM Maps





**SECTION 1: INTRODUCTION**

In March of 2009, the City of Phoenix submitted a Conditional Letter of Map Revision (CLOMR) application based upon runway safety area improvements at Phoenix’s Sky Harbor International Airport. The improvements, which are the basis for the CLOMR, include an encroachment into the Salt River, namely the construction of a new Cement Stabilized Alluvium (CSA) embankment which projects out into the river. The project also included filling, on the landward side of the new embankment, to raise the grade to match adjacent existing grade; new excavation/grading in the river bottom to conserve flow area; the construction of a low flow notch in an existing grade control structure; the repair of several damaged gabion sections along the south bank; and the construction of new gabion baskets along the south bank to replace those disturbed during construction. On December 31, 2009 the City received an acceptance letter for the CLOMR (Case No. 09-09-1309R) from FEMA. Construction began in 2010 and was completed along with the preparation of record drawings on March 8, 2011.

**1.1 Purpose of Report**

The purpose of this report is to provide documentation of a re-delineated Zone AE floodplain for the Salt River. The new 100-year floodplain is delineated for approximately 3.0 stream miles beginning about 600-ft downstream of the Interstate I-10 bridge (Maricopa Freeway) to about 2500-feet upstream of the State Route SR-143 bridge (Hohokam Expressway).

**1.2 Authority**

The authority for this project is: City of Phoenix - Aviation Department  
3400 East Sky Harbor Boulevard  
Phoenix, Arizona 85034

**1.3 Location of Project**

This project reach is located within Maricopa County having limits of study about 3.0 miles in length. The project area includes part of the following: T1NR3E, Sections 13, 14, 23 and 24; T1NR4E, Sections 8, 17 and 18. This LOMR affects the area between River Miles 216.38 and 219.51 along the Salt River. The majority of the study area lies within the City of Phoenix, however, the eastern end of the project lies within the City of Tempe.

Figure 1.3 Location Map





#### 1.4 Methodology

During development of the 2009 CLOMR several HEC-RAS models were developed including the following: Duplicate Effective, Corrected Effective, Existing Conditions and Proposed Conditions. The Proposed Conditions model was modified and renamed Asbuilt (post project model) based upon the certified record drawings. This model was used twofold, 1) to compare the as-built conditions against the proposed conditions to prove that the final design and construction of the new embankment matches that of the conceptual design, within a reasonable tolerance, and; 2) a comparison between the post project and Corrected Effective models results in the creation of the revised floodplain based upon changes in the base flood elevations.

#### 1.5 Acknowledgements

- The FEMA approved CLOMR (2009) prepared by Pacific Advanced Civil Engineering, Inc. was the basis of design of the embankment improvements within the Salt River.
- The final plans (2010), final design report (2010) and record drawings (2011) were prepared by Dibble Engineering.
- A levee certification report for both the South (Levee ID 41) and North (Levee ID 42) levees was prepared by TYLIN International (2011).
- The hydrology for this study reach was prepared and published by the U.S. Army Corps of Engineers (1996).

#### 1.6 Study Results

The results of this study include the revision of about 3.0 miles of Zone “AE” floodplain from river station 219.51 to 216.38.





## SECTION 2: FEMA FORMS

### 2.1 Study Documentation Abstract for FEMA Submittals

#### 2.1.1 Date Study Accepted

To be filled in upon acceptance by FEMA

#### 2.1.2 Study Contractor

TYLIN International

60 East Rio Salado Parkway, Suite 501

Tempe, Arizona 85281

Tel: (480) 968-8814

Fax: (480) 921-0002

Contact: Lloyd A. Vick, P.E., CFM

TYLIN Project Number: 221722.03

#### 2.1.3 FEMA Technical Review Contractor

Michael Baker Jr., Inc.

3601 Eisenhower Avenue

Alexandria Virginia, 22304-6425

Tel: (703)960-8800

Fax: (703)960-9125

#### 2.1.4 FEMA Regional Reviewer

Michael Baker Jr., Inc.

Tel: (703)960-8800

#### 2.1.5 State NFIP Coordinator

Arizona Department of Water Resources

3550 North Central Avenue, 2nd Floor

Phoenix, Arizona 85012-2105

Tel: (602)771-8500

Contact: Brian Cosson

#### 2.1.6 Local Technical Reviewer

City of Phoenix

200 West Washington Street, 5<sup>th</sup> Floor

Phoenix, Arizona 85003

Tel: (602)262-4026

Contact: Hasan Mushtaq, P.E., PhD.

#### 2.1.7 Reach Description

Revisions to the existing FIRM maps can be found at the end of the LOMR application.



Salt River – The limits of the study reach lie partially within the cities of Tempe and Phoenix beginning about a half mile upstream of the SR-143 bridge and continuing downstream to about 600-feet downstream of the I-10 bridge. The Salt River is channelized through the study reach and the base flood is entirely contained within the channel banks.

#### 2.1.8 USGS Quad Sheets

##### 7.5 minute Series (Topographic)

Phoenix 1952 1982(revised)

Tempe 1952 1982(revised)

#### 2.1.9 Unique Conditions and Problems

No unique conditions or problems are presented.

#### 2.1.10 Coordination of Peak Discharges

The peak discharge of 169,000 cfs was identified in Section 7 - Study for Modified Roosevelt Dam, Arizona (Theodore Roosevelt Dam), prepared by U.S. Army Corps of Engineers, Los Angeles District in March of 1996.

## 2.2 FEMA Forms

See the forms on the following pages.

DEPARTMENT OF HOMELAND SECURITY  
 FEDERAL EMERGENCY MANAGEMENT AGENCY  
**OVERVIEW & CONCURRENCE FORM**

O.M.B. NO. 1660-0016  
 Expires February 28, 2014

**PAPERWORK BURDEN DISCLOSURE NOTICE**

Public reporting burden for this form is estimated to average 1 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless it displays a valid OMB control number. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington, VA 20958-3005, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

**PRIVACY ACT STATEMENT**

**AUTHORITY:** The National Flood Insurance Act of 1968, Public Law 90-448, as amended by the Flood Disaster Protection Act of 1973, Public Law 93-234.

**PRINCIPAL PURPOSE(S):** This information is being collected for the purpose of determining an applicant's eligibility to request changes to National Flood Insurance Program (NFIP) Flood Insurance Rate Maps (FIRM).

**ROUTINE USE(S):** The information on this form may be disclosed as generally permitted under 5 U.S.C § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/FEMA/NFIP/LOMA-1 National Flood Insurance Program (NFIP); Letter of Map Amendment (LOMA) February 15, 2006, 71 FR 7990.

**DISCLOSURE:** The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a (NFIP) Flood Insurance Rate Maps (FIRM).

**A. REQUESTED RESPONSE FROM DHS-FEMA**

This request is for a: (check one)

- CLOMR: A letter from DHS-FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60, 65 & 72).
- LOMR: A letter from DHS-FEMA officially revising the current NFIP map to show the changes to floodplains, regulatory floodway, or flood elevations. (See 44 CFR Ch. 1, Parts 60, 65 & 72).

**B. OVERVIEW**

1. The NFIP map panel(s) affected for all impacted communities is (are):

| Community No.        | Community Name                   | State    | Map No.          | Panel No.      | Effective Date       |
|----------------------|----------------------------------|----------|------------------|----------------|----------------------|
| Ex: 480301<br>480287 | City of Katy<br>Harris County    | TX<br>TX | 48473C<br>48201C | 0005D<br>0220G | 02/08/83<br>09/28/90 |
| 040051               | City of Phoenix, Maricopa County | AZ       | 04013C           | 2145H          | 09/30/2005           |
| 040051               | City of Phoenix, Maricopa County | AZ       | 04013C           | 2165H          | 09/30/2005           |

2. a. Flooding Source: Salt River  
 Riverine     Coastal     Shallow Flooding (e.g., Zones AO and AH)
- b. Types of Flooding:  Alluvial fan     Lakes     Other (Attach Description)

3. Project Name/Identifier: Salt River Letter of Map Revision - LOMR Application

4. FEMA Zone designations affected: AE, X (Choices A, AH, AO, A1-A30, A99, AE, AR, V, V1-V30, VE, B, C, D, X)

5. Basis for Request and Type of Revision: LOMR based upon As-built information (approved CLOMR)

a. The basis for this revision request is (check all that apply)

- Physical Change     
  Improved Methodology/Data     
  Regulatory Floodway Revision     
  Base Map Changes  
 Coastal Analysis     
  Hydraulic Analysis     
  Hydrologic Analysis     
  Corrections  
 Weir-Dam Changes     
  Levee Certification     
  Alluvial Fan Analysis     
  Natural Changes  
 New Topographic Data     
  Other (attach Description)

Note: A photograph and narrative description of the area of concern is not required, but is very helpful during review.

b. The area of revision encompasses the following structures (check all that apply)

- Structures:     
 Channelization     
 Levee/Floodwall     
 Bridge/Culvert  
 Dam     
 Fill     
 Other (Attach Description)

6.  Documentation of ESA compliance is submitted (required to initiate CLOMR review). Please refer to the instructions for more information

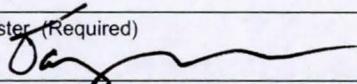
#### C. REVIEW FEE

Has the review fee for the appropriate request category been included?     
 Yes, Fee Amount: \$0  
 No, Attach Explanation (*see MT-2 Form Comments*)

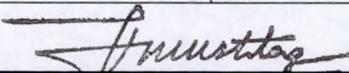
Please see the DHS-FEMA website at [http://fema.gov/plan/prevent/fhm/frm\\_fees.shtm](http://fema.gov/plan/prevent/fhm/frm_fees.shtm) for Fee Amounts and Exemptions.

#### D. SIGNATURE

All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States code, Section 1001.

|  |  |  |                  |
|--|--|--|------------------|
| Name<br>Danny W. Murphy, Airport Director  |  | Company<br>City of Phoenix Aviation Department |                  |
| Mailing Address<br>3400 East Sky Harbor Boulevard, Suite 300 (Terminal 3)<br>Phoenix, Arizona 85034-4405                 |  | Daytime Telephone No.<br>(602) 273-3316        | FAX No.          |
|  |  | EMAIL ADDRESS<br>danny.murphy@phoenix.gov      |                  |
| Signature of Requester (Required)<br> |  |  | Date<br>12/21/11 |

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of of Map Revision (LOMR) or conditional LOMR request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirement for when fill is placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a conditional LOMR, will be obtained. For conditional LOMR request, the applicant has documented Endangered Species Act (ESA) compliance to DHS/FEMA prior to DHS/FEMA's review of the Conditional LOMR application. For LOMR request, I acknowledge that compliance with sections 9 and 10 of the ESA has been achieved independently of DHS/FEMA's process. For actions authorized, funded, or being carried out by Federal or State agencies, documentation from the agency showing its compliance with Section 7(a)(2) of the ESA will be submitted. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44 CFR 65.2(c), and that we have available upon request by DHS/FEMA, all analyses and documentation used to make this determination.

|  |  |  |                  |
|--|--|--|------------------|
| Community Official's Name and Title<br>Hasan Mushtaq, Floodplain Manager   |  | Community Name<br>City of Phoenix - Street Transportation Department |                  |
| Mailing Address<br>200 West Washington Street, 5th Floor<br>Phoenix, Arizona 85003-1611  |  | Daytime Telephone No.<br>602-262-4026                                | FAX No.          |
|  |  | EMAIL ADDRESS<br>hasan.mushtaq@phoenix.gov                           |                  |
| Community Official's signature (required)<br> |  |  | Date<br>12-27-11 |

**CERTIFICATION BY REGISTRATION PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR**

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information data, hydrologic and hydraulic analysis, and any other supporting information as per NFIP regulations paragraph 65.2(b) and as described in the MT-2 Forms instruction. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

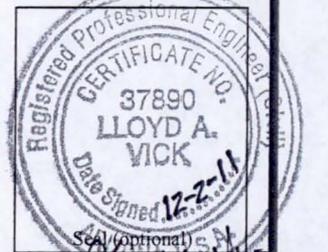
|   |  |                                |                               |
|---|--|--------------------------------|-------------------------------|
| Certifier's Name<br>Lloyd A. Vick, P.E. |  | License No.<br>Arizona (37890) | Expiration Date<br>09-30-2014 |
| Company Name<br>TYLIN International     |  | Telephone No.<br>480-968-8814  | Fax No.<br>480-921-0002       |
| Signature<br><i>Lloyd A. Vick</i>       | E-mail Address<br>lloyd.vick@tylin.com |                                | Date<br>12/2/2011             |

Ensure the forms that are appropriate to your revision request are included in your submittal.

**Form name and (Number)**

**Required if.....**

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Riverine Hydrology & Hydraulics Form (Form 2) | New or revised discharges or water-surface elevations   |
| <input checked="" type="checkbox"/> Riverine Structures Form (Form 3)             | Channel is modified, addition/revision of bridge/culverts, addition/revision of levee/floodwall, addition/revision of dam |
| <input type="checkbox"/> Coastal Analysis Form (Form 4)                           | New or revised coastal elevations   |
| <input type="checkbox"/> Coastal Structures Form (Form 5)                         | Addition/revision of coastal structure  |
| <input type="checkbox"/> Alluvial Fan Flooding Form (Form 6)                      | Flood control measures on alluvial fans   |



*Lloyd A. Vick*  
Expires 9/30/14

**PAPERWORK BURDEN DISCLOSURE NOTICE**

Public reporting burden for this form is estimated to average 3.5 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington VA 20958-3005, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

**PRIVACY ACT STATEMENT**

**AUTHORITY:** The National Flood Insurance Act of 1968, Public Law 90-448, as amended by the Flood Disaster Protection Act of 1973, Public Law 93-234.

**PRINCIPAL PURPOSE(S):** This information is being collected for the purpose of determining an applicant's eligibility to request changes to National Flood Insurance Program (NFIP) Flood Insurance Rate Maps (FIRM).

**ROUTINE USE(S):** The information on this form may be disclosed as generally permitted under 5 U.S.C § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/FEMA/NFIP/LOMA-1 National Flood Insurance Program (NFIP); Letter of Map Amendment (LOMA) February 15, 2006, 71 FR 7990.

**DISCLOSURE:** The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a NFIP Flood Insurance Rate Maps (FIRM).

Flooding Source: Salt River

Note: Fill out one form for each flooding source studied.

**A. HYDROLOGY**

1. Reason for New Hydrologic Analysis (check all that apply)

- Not revised (skip to section B)     No existing analysis     Improved data  
 Alternative methodology     Proposed Conditions (CLOMR)     Changed physical condition of watershed

2. Comparison of Representative 1%-Annual-Chance Discharges

| Location | Drainage Area (Sq. Mi.) | Effective FIS (cfs) | Revised (cfs) |
|----------|-------------------------|---------------------|---------------|
| _____    | _____                   | _____               | _____         |
| _____    | _____                   | _____               | _____         |
| _____    | _____                   | _____               | _____         |

3. Methodology for New Hydrologic Analysis (check all that apply)

- Statistical Analysis of Gage Records     Precipitation/runoff Model    Specify Model \_\_\_\_\_  
 Regional Regression Equations     Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters), and documentation to support the new analysis.

4. Review/Approval of Analysis.

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Is the hydrology for the revised flooding source(s) affected by sediment transport?     Yes     No

If Yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation for why sediment transport was not considered.

B. HYDRAULICS

1. Reach to be Revised

|                  | Description                         | Cross Section | Water-Surface Elevations (ft.) |                         |
|------------------|-------------------------------------|---------------|--------------------------------|-------------------------|
|                  |                                     |               | Effective                      | Proposed/Revised        |
| Downstream Limit | <u>just upstream of I-10 Bridge</u> | <u>216.52</u> | <u>1102.84 (NAVD88)</u>        | <u>1102.44 (NAVD88)</u> |
| Upstream Limit   | <u>just d/s of 44th St. Bridge</u>  | <u>218.96</u> | <u>1128.15 (NAVD88)</u>        | <u>1127.95 (NAVD88)</u> |

\* Proposed/Revised elevations must tie-into the Effective elevations within 0.5 foot at the downstream and upstream limits of revision.

2. Hydraulic Method/Model Used HEC-RAS Version 4.0

3. Pre-Submittal Review of Hydraulic Models

DHS/FEMA has developed two review programs, CHECK-2 and CHECK-RAS to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS.

4. Models Submitted

|  |                                    | <u>Natural Run</u> | <u>Floodway Run</u>                | <u>Datum</u> |
|--|------------------------------------|--------------------|------------------------------------|--------------|
| Duplicate Effective Model*               | File Name <u>see MT-2 Comments</u> | Plan Name _____    | File Name _____<br>Plan Name _____ | _____        |
| Corrective Effective Model*              | File Name <u>see MT-2 Comments</u> | Plan Name _____    | File Name _____<br>Plan Name _____ | _____        |
| Existing or Pre-Project Conditions Model | File Name <u>see MT-2 Comments</u> | Plan Name _____    | File Name _____<br>Plan Name _____ | _____        |
| Revised or Post-Project Conditions Model | File Name <u>see MT-2 Comments</u> | Plan Name _____    | File Name _____<br>Plan Name _____ | _____        |
| Other - (attach description)             | File Name _____                    | Plan Name _____    | File Name _____<br>Plan Name _____ | _____        |

\* For details, refer to the corresponding section of the instructions.

Digital Models Submitted? (Required)

C. MAPPING REQUIREMENTS

A **certified topographic map** must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1% - and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g. dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).

Digital Mapping (GIS/CADD) Data Submitted

Topographic Information A field survey conducted on July 29 and 30, 2008 as a part of the CLOMR.

Source map and digital terrain model compiled from aerial photography Date June-06 & April-07

Accuracy digital terrain model produced one-foot contours, accuracy +/- 0.5 feet.

Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach a **copy of the effective FIRM and/or FBFM**, at the same scale as the original, annotated to show the boundaries of the revised 1%-and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%-and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area on revision.

Annotated FIRM and/or FBFM (Required)

D. COMMON REGULATORY REQUIREMENTS\*

1. For LOMR/CLOMR Requests, do Base Flood Elevations (BFEs) Increase?  Yes  No

a. For CLOMR requests, if either of the following is true, please submit **evidence of compliance with Section 65.12 of the NFIP regulations**:

- The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot compared to pre-project conditions.
- The proposed project encroaches upon a SFHA with or without BFEs established and would result in increases above 1.00 foot compared to pre-project conditions.

b. Does this LOMR cause increase in the BFE and/or SFHA compared with the effective BFEs and/or SFHA?  Yes  No

If Yes, **please attach proof of property owner notification and acceptance (if available)**. Elements of and examples of property owner notifications can be found in the MT-2 Form Instructions.

2. Does the request involve the placement or proposed placement of fill?  Yes  No

If Yes, the community must be able to certify that the area to be removed from the special hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(A)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.

3. For LOMR requests, is the regulatory floodway being revised?  Yes  No

If Yes, attach evidence of regulatory floodway revision notification. As per paragraph 65.7(b)(1) of the NFIP regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being established. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 instructions.)

4. For CLOMR requests, please submit documentation to FEMA and the community to show that you have complied with Sections 9 and 10 of the Endangered Species Act (ESA).

For actions authorized, funded, or being carried out by Federal or State agencies, please submit documentation from the agency showing its compliance with Section 7(a)(2) of the ESA. Please see MT-2-Instructions for more detail.

\* Not inclusive of all applicable regulatory requirements. For details, see 44 CFR parts 60 and 65.

DEPARTMENT OF HOMELAND SECURITY  
FEDERAL EMERGENCY MANAGEMENT AGENCY  
**RIVERINE STRUCTURES FORM**

O.M.B. NO. 1660-0016  
Expires February 28, 2014

**PAPERWORK BURDEN DISCLOSURE NOTICE**

Public reporting burden for this form is estimated to average 7 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington, VA 20598-3005, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

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**AUTHORITY:** The National Flood Insurance Act of 1968, Public Law 90-448, as amended by the Flood Disaster Protection Act of 1973, Public Law 93-234.

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**DISCLOSURE:** The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a NFIP Flood Insurance Rate Maps (FIRM).

Flooding Source: Salt River

Note: Fill out one form for each flooding source studied.

**A. GENERAL**

Complete the appropriate section(s) for each Structure listed below:

- Channelization.....complete Section B
- Bridge/Culvert.....complete Section C
- Dam.....complete Section D
- Levee/Floodwall.....complete Section E
- Sediment Transport.....complete Section F (if required)

Description of Modeled Structure

1. Name of Structure: Cement Stabilized Alluvium (CSA) Levee

Type (check one):  Channelization     Bridge/Culvert     Levee/Floodwall     Dam

Location of Structure: CSA levee located along the north bank through a channelized section of the Salt River

Downstream Limit/Cross Section: 217.66

Upstream Limit/Cross Section: 218.14

2. Name of Structure: \_\_\_\_\_

Type (check one):  Channelization     Bridge/Culvert     Levee/Floodwall     Dam

Location of Structure: \_\_\_\_\_

Downstream Limit/Cross Section: \_\_\_\_\_

Upstream Limit/Cross Section: \_\_\_\_\_

3. Name of Structure: \_\_\_\_\_

Type (check one):  Channelization     Bridge/Culvert     Levee/Floodwall     Dam

Location of Structure: \_\_\_\_\_

Downstream Limit/Cross Section: \_\_\_\_\_

Upstream Limit/Cross Section: \_\_\_\_\_

**NOTE: FOR MORE STRUCTURES, ATTACH ADDITIONAL PAGES AS NEEDED.**

B. CHANNELIZATION

Flooding Source: Salt River

Name of Structure: Cement Stabilized Alluvium (CSA) levee

1. Hydraulic Considerations

The channel was designed to carry 169,000 (cfs) and/or the 100 -year flood.

The design elevation in the channel is based on (check one):

- Subcritical flow, Critical flow, Super critical flow, Energy grade line

If there is the potential for a hydraulic jump at the following locations, check all that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel.

- Inlet to channel, Outlet of channel, At Drop Structures, At Transitions

Other locations (specify):

2. Channel Design Plans

Attach the plans of the channelization certified by a registered professional engineer, as described in the instructions.

3. Accessory Structures

The Channelization includes (check one):

- Levees, Drop structures, Super elevated sections, Transitions in cross sectional geometry, Debris basin/design basin, Energy dissipater, Weir, Other (describe): Cement Stabilized Alluvium embankment (Section E attached)

4. Sediment Transport Considerations

Are the hydraulics of the channel affected by sediment transport? Yes No

If Yes, then fill out Section F (Sediment Transport). If No, then attach your explanation for why sediment transport was not considered.

C. BRIDGE/CULVERT

Flooding Source:

Name of Structure:

1. This revision reflects (check one):

- Bridge/culvert not modeled in the FIS, Modified bridge/culvert previously modeled in the FIS, New analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8):

If different hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

- Dimensions (height, width, span, radius, length), Distance Between Cross Sections, Shape (culverts only), Erosion Protection, Material, Low Chord Elevations - Upstream and Downstream, Beveling or Rounding, Top of Road Elevations - Upstream and Downstream, Wing Wall Angle, Structure Invert Elevations - Upstream and Downstream, Skew Angle, Stream Invert Elevation - Upstream and Downstream, Cross-Section Locations

4. Sediment Transport Considerations

Are the hydraulics of the structure affected by sediment transport? Yes No

If Yes, then fill out Section F (Sediment Transport) of Form 3. If no, then attach an explanation.

**D. DAM/BASIN**

Flooding Source: \_\_\_\_\_

Name of Structure: \_\_\_\_\_

1. This request is for (check one):  Existing dam/basin  New dam  Modification of existing dam/basin  
 2. The dam/basin was designed by (check one):  Federal agency  State agency  Private organization  Local government agency

Name of the agency or organization: \_\_\_\_\_

3. The dam was permitted as (check one):  Federal Dam  State Dam

Provide the permit or identification number (ID) for the dam and the appropriate permitting agency or organization

Permit or ID number \_\_\_\_\_ Permit Agency or Organization: \_\_\_\_\_

- Local Government Dam  Private Dam

Provide related drawings, specifications and supporting design information.

4. Does the project involve revised hydrology?  Yes  No

If Yes, complete the Riverine Hydrology & Hydraulics Form (Form 2)

Was the dam/basin designed using critical duration storm? (Must account for the maximum volume of runoff)

- Yes, provide supporting documents with your completed Form 2.  
 No, provide written explanation and justification for not using the critical duration storm.

5. Does the submittal include debris/sediment yield analysis?  Yes  No  
 If Yes, then fill out Section F (Sediment Transport). If No, then attach your explanation for why debris/sediment analysis was not considered?

6. Does the Base Flood Elevation behind the dam/basin or downstream of the dam/basin change?  Yes  No

If Yes, complete the Riverine Hydrology & Hydraulics Form (Form 2) and complete the table below.

| FREQUENCY (% annual chance) | Stillwater Elevation Behind the Dam/Basin |         |
|-----------------------------|---|---------|
|                             | FIS                                       | REVISED |
| 10-year (10%)               | _____                                     | _____   |
| 50-year (2%)                | _____                                     | _____   |
| 100-year (1%)               | _____                                     | _____   |
| 500-year (0.2%)             | _____                                     | _____   |
| Normal Pool Elevation       | _____                                     | _____   |

7. Please attach a copy of the formal Operation and Maintenance Plan.

**E. LEVEE/FLOODWALL**

**1. System Elements**

- a. This Levee/Floodwall analysis is based on (check one):  upgrading of an existing levee/floodwall system  a newly constructed levee/floodwall system  reanalysis of an existing levee/floodwall system

b. Levee elements and locations are (check one):

- earthen embankment, dike, berm, etc. Station \_\_\_\_\_ to \_\_\_\_\_  
 structural floodwall Station \_\_\_\_\_ to \_\_\_\_\_  
 other (describe): Cement Stabilized Alluvium embankment Station 218.14 to 217.66

- c. Structural Type (check one):  monolithic cast-in place reinforced concrete  reinforced concrete masonry block  sheet piling

other (describe): Cement Stabilized Alluvium, constructed in lifts

- d. Has the levee/floodwall system been certified by a Federal agency to provide protection from the base flood?  Yes  No

If Yes, by which agency? DHS-FEMA Region IX (August 26, 2011)

e. Attach certified drawings containing the following information (indicate drawing sheet numbers):

- |  |               |              |
|--|---------------|--------------|
| 1. Plan of the levee embankment and floodwall structures   | Sheet Numbers | <u>51-61</u> |
| 2. A profile of the levee/floodwall system showing the Base Flood Elevation (BFE), levee and/or wall crest and foundation, and closure locations for the total levee system. | Sheet Numbers | <u>51-61</u> |
| 3. A profile of the BFE, closure opening outlet and inlet invert elevations, type and size of opening, and kind of closure.  | Sheet Numbers | <u>51-61</u> |

4. A layout detail for the embankment protection measures.

Sheet Numbers 49-50

5. Location, layout, and size and shape of the levee embankment features, foundation treatment, floodwall structure, closure structures, and pump stations.

Sheet Numbers 49-50

2. Freeboard

a. The minimum freeboard provided above the BFE is:

The extent of the new CSA embankment is between Station 217.66 and 218.14. The minimum freeboard above the BFE is 5.00 feet, at Station 217.91.

Riverine

3.0 feet or more at the downstream end and throughout

Yes  No

3.5 feet or more at the upstream end

Yes  No

4.0 feet within 100 feet upstream of all structures and/or constrictions

Yes  No

Coastal

1.0 foot above the height of the one percent wave associated with the 1%-annual-chance stillwater surge elevation or maximum wave runup (whichever is greater)

Yes  No

2.0 feet above the 1%-annual-chance stillwater surge elevation

Yes  No

Please note, occasionally exceptions are made to the minimum freeboard requirement. If an exception is requested, attach documentation addressing paragraph 65.10(b)(1)(ii) of the NFIP Regulations.

If No is answered to any of the above, please attach an explanation.

b. Is there an indication from historical records that ice-jamming can affect the BFE?

Yes  No

If Yes, provide ice-jam analysis profile and evidence that the minimum freeboard discussed above still exists.

3. Closures

a. Opening through the levee system (check one):

exists

does not exist

If opening exists, list all closures:

| Channel Station          | Left or Right Bank | Opening Type          | Highest Elevation for Opening Invert | Type of Closure Device         |
|--------------------------|--------------------|-----------------------|--------------------------------------|--------------------------------|
| x-section Station 217.66 | Right Bank         | Storm Drain Pipes (2) | 1094.20                              | no closure devices - see notes |
|                          |                    |                       |                                      |                                |
|                          |                    |                       |                                      |                                |
|                          |                    |                       |                                      |                                |
|                          |                    |                       |                                      |                                |

(Extend table on an added sheet as needed and reference)

Note: Geotechnical and geologic data

In addition to the required detailed analysis reports, data obtained during field and laboratory investigations and used in the design analysis for the following system features should be submitted in a tabulated summary form. (Reference U.S. Army Corps of Engineers (USACE) EM-1110-2-1906 Form 2086.)

4. Embankment Protection

a. The maximum levee slope land side is: none (land side filled)

b. The maximum levee slope flood side is: 2:1

c. The range of velocities along the levee during the base flood is: 9.5 ft/sec (min.) to 16.7 ft/sec (max.)

**E. LEVEE/FLOODWALL (continued)**

d. Embankment material is protected by (describe what kind): Cement Stabilized Alluvium toed down below river invert per plans.

e. Riprap Design Parameters (check one):     Velocity                       Tractive stress  
 Attach references

| Reach              | Sideslope | Flow Depth | Velocity | Curve or Straight | Stone Riprap     |                 |           | Depth of Toedown |
|--------------------|-----------|------------|----------|-------------------|------------------|-----------------|-----------|------------------|
|                    |           |            |          |                   | D <sub>100</sub> | D <sub>50</sub> | Thickness |                  |
| Sta _____ to _____ |           |            |          |                   |                  |                 |           |                  |
| Sta _____ to _____ |           |            |          |                   |                  |                 |           |                  |
| Sta _____ to _____ |           |            |          |                   |                  |                 |           |                  |
| Sta _____ to _____ |           |            |          |                   |                  |                 |           |                  |
| Sta _____ to _____ |           |            |          |                   |                  |                 |           |                  |

(Extend table on an added sheet as needed and reference each entry)

f. Is a bedding/filter analysis and design attached?     Yes     No

g. Describe the analysis used for other kinds of protection used (include copies of the design analysis):

Digital copy of Final Design Report included with submittal. Record Drawings included with submittal.

Attach engineering analysis to support construction plans.

**5. Embankment and Foundation Stability**

a. Identify locations and describe the basis for selection of critical location for analysis:

North: typical section chosen of newly constructed 28' high, 2:1 CSA embankment; South: 22' high existing 2:1 earthen embankment with gabion mattresses protection. See Appendix G of LOMR application.

Overall height:    Sta.: 217.66 to 218.14 , height 28 ft.

Limiting foundation soil strength

Strength  $\phi$  = \_\_\_\_\_ degrees, c = \_\_\_\_\_ psf

Slope: SS = 2 (h) to 1 (v)

(Repeat as needed on an added sheet for additional locations)

b. Specify the embankment stability analysis methodology used (e.g., circular arc, sliding block, infinite slope, etc.):

STABL for Windows Version 2.0 which uses a variety of 2-dimensional methods including the Bishop Method, the Spencer Method, and the Janbu Method of Slices.

c. Summary of stability analysis results:    The slope stability analysis demonstrated adequate factor of safety values for different cases.

| Case | Loading Conditions            | Critical Safety Factor |                            | Criteria Min. |
|------|-------------------------------|------------------------|----------------------------|---------------|
| I    | End of construction           | North Bank (CSA): 1.55 | South Bank (Earthen): 3.42 | 1.3           |
| II   | Sudden drawdown               | North Bank (CSA): 2.74 | South Bank (Earthen): 2.67 | 1.0           |
| III  | Critical flood stage          | North Bank (CSA): 1.55 | South Bank (Earthen): 3.15 | 1.4           |
| IV   | Steady seepage at flood stage | North Bank (CSA): 1.55 | South Bank (Earthen): 3.15 | 1.4           |
| VI   | Earthquake (Case I)           | North Bank (CSA): 1.68 | South Bank (Earthen): 2.77 | 1.0           |

(Reference: USACE EM-1110-2-1913 Table 6-1)

**E. LEVEE/FLOODWALL (continued)**

**5. Embankment and Foundation Stability (continued)**

d. Was a seepage analysis for the embankment performed?  Yes  No

If Yes, describe methodology used: not needed. embankment material is Cement Stabilized Alluvium

e. Was a seepage analysis for the foundation performed?  Yes  No

f. Were uplift pressures at the embankment landside toe checked?  Yes  No

g. Were seepage exit gradients checked for piping potential?  Yes  No

h. The duration of the base flood hydrograph against the embankment is (See Notes) hours.

Attach engineering analysis to support construction plans.

**6. Floodwall and Foundation Stability**

a. Describe analysis submittal based on Code (check one):  UBC (1988)  Other (specify): \_\_\_\_\_

b. Stability analysis submitted provides for:  Overturning  Sliding If not, explain: \_\_\_\_\_

c. Loading included in the analysis were:  lateral earth @  $P_A =$  \_\_\_\_\_ psf;  $P_p =$  \_\_\_\_\_ psf

Surcharge-Slope @ \_\_\_\_\_,  surface \_\_\_\_\_ psf

Wind @  $P_w =$  \_\_\_\_\_ psf

Seepage (Uplift): \_\_\_\_\_  Earthquake @  $P_{eq} =$  \_\_\_\_\_ %g

1%-annual-chance significant wave height \_\_\_\_\_ ft.

1%-annual-chance significant wave period \_\_\_\_\_ sec.

d. Summary of Stability Analysis Results: Factors of Safety.

Itemize for each range in site layout dimension and loading condition limitation for each respective reach.

| Loading Condition           | Criteria (Min) |         | Sta      | To      | Sta      | To      |
|-----------------------------|----------------|---------|----------|---------|----------|---------|
|                             | Overturn       | Sliding | Overturn | Sliding | Overturn | Sliding |
| Dead & Wind                 | 1.5            | 1.5     |          |         |          |         |
| Dead & Soil                 | 1.5            | 1.5     |          |         |          |         |
| Dead, Soil, Flood, & Impact | 1.5            | 1.5     |          |         |          |         |
| Dead, Soil, & Seismic       | 1.3            | 1.3     |          |         |          |         |

(Ref: FEMA 114 Sept. 1986; USACE EM 1110-2-2502)  
Note: (Extend table on an added sheet as needed and reference)

e. Foundation bearing strength for each soil type:

| Bearing Pressure        | Sustained Load (psf) | Short Term Load (psf) |
|-------------------------|----------------------|-----------------------|
| Computed design maximum | 6000                 | 8000                  |
| Maximum allowable       |                      |                       |

f. Foundation scour protection  is,  is not provided. If provided, attach explanation and supporting documentation.

Attach engineering analysis to support construction plans.

**7. Settlement**

a. Has anticipated potential settlement been determined and incorporated into the specific construction elevations to maintain the established freeboard margin?  Yes  No

b. The computed range of settlement is 0 ft. to 0.125 ft.

**E. LEVEE/FLOODWALL (continued)**

7. Settlement (continued)

c. Settlement of the levee crest is determined to be primarily from:  Foundation consolidation  Embankment compression  
 Other (describe): \_\_\_\_\_

d. Differential settlement of floodwalls  has  has not been accommodated in the structural design and construction.  
 Attach engineering analysis to support construction plans. **See Final Design Report & Geotech Report on CD**

8. Interior Drainage

a. Specify size of each interior watershed:

Draining to pressure conduit: see Notes acres

Draining to ponding area: \_\_\_\_\_ acres

b. Relationships Established

Ponding elevation vs. storage  Yes  No

Ponding elevation vs. gravity flow  Yes  No

Differential head vs. gravity flow  Yes  No

c. The river flow duration curve is enclosed:  Yes  No

d. Specify the discharge capacity of the head pressure conduit: \_\_\_\_\_ cfs

e. Which flooding conditions were analyzed?

\* Gravity flow (Interior Watershed)  Yes  No

\* Common storm (River Watershed)  Yes  No

\* Historical ponding probability  Yes  No

\* Coastal wave overtopping  Yes  No

If No for any of the above, attach explanation.

f. Interior drainage has been analyzed based on joint probability of interior and exterior flooding and the capacities of pumping and outlet facilities to provide the established level of flood protection.  Yes  No If No, attach explanation

g. The rate of seepage through the levee system for the base flood is \_\_\_\_\_ cfs

h. The length of levee system used to drive this seepage rate in item g: \_\_\_\_\_ ft.

i. Will pumping plants be used for interior drainage?  Yes  No

If Yes, include the number of pumping plants: \_\_\_\_\_ For each pumping plant, list:

|  | Plant #1 | Plant #2 |
|--|----------|----------|
| The number of pumps                                      |          |          |
| The ponding storage capacity                             |          |          |
| The maximum pumping rate                                 |          |          |
| The maximum pumping head                                 |          |          |
| The pumping starting elevation                           |          |          |
| The pumping stopping elevation                           |          |          |
| Is the discharge facility protected?                     |          |          |
| Is there a flood warning plan?                           |          |          |
| How much time is available between warning and flooding? |          |          |

Will the operation be automatic?  Yes  No

E. LEVEE/FLOODWALL (continued)

8. Interior Drainage (continued)

If the pumps are electric, are there backup power sources?  Yes  No

(Reference: USACE EM-1110-2-3101, 3102, 3103, 3104 and 3105)

Include a copy of supporting documentation of data and analysis. Provide a map showing the flooded area and maximum ponding elevations for all interior watersheds that result in flooding.

9. Other Design Criteria

a. The following items have been addressed as stated:

Liquefaction  is  is not a problem

Hydrocompaction  is  is not a problem

Heave differential movement due to soils of high shrink/swell  is  is not a problem

b. For each of these problems, state the basic facts and corrective action taken:

Attach supporting documentation.

c. If the levee/floodwall is new or enlarged, will the structure adversely impact flood levels and/or flow velocities flood side of the structure?

Yes  No Attach supporting documentation.

d. Sediment Transport Considerations:

Was sediment transport considered?  Yes  No

If Yes, then fill out Section F (Sediment Transport). If No, then attach your explanation for why sediment transport was not considered.

10. Operational Plan and Criteria

a. Are the planned/installed works in full compliance with Part 65.10 of the NFIP regulations?  Yes  No

b. Does the operation plan incorporate all the provisions for closure devices as required in Paragraph 65.10(c)(1) of the NFIP regulations?

Yes  No

c. Does the operation plan incorporate all the provisions for interior drainage as required in Paragraph 65.10(c)(2) of the NFIP regulations?

Yes  No If the answer is No to any to the above, please attach supporting documentation.

11. Maintenance Plan

a. Are the planned/installed works in full compliance with Part 65.10 of the NFIP regulations?

Yes  No If No please attach supporting documentation.

12. Operations and Maintenance Plan

Please attach a copy of the formal Operations and Maintenance Plan for the levee/floodwall.

**CERTIFICATION OF THE LEVEE DOCUMENTATION**

This certification is to be signed and sealed by a licensed registered professional engineer authorized by law to certify elevation information data, hydrologic and hydraulic, and any other supporting information as per NFIP regulations paragraph 65.10(e) and as described in the MT-2 Forms Instructions. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statements may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Lloyd A. Vick

Arizona - 37890

Sep 30, 2014

\_\_\_\_\_  
Certifier's Name

\_\_\_\_\_  
License No.

\_\_\_\_\_  
Expiration Date

T.Y.Lin International

480.698.8814

480.921.0002

\_\_\_\_\_  
Company Name

\_\_\_\_\_  
Telephone No.

\_\_\_\_\_  
Fax No.

  
Signature

Dec 2, 2011

lloyd.vick@tylin.com

\_\_\_\_\_  
Date

\_\_\_\_\_  
E-Mail Address

**F. SEDIMENT TRANSPORT**

Flooding Source: Salt River

Name of Structure: Cement Stabilized Alluvium (CSA) levee

If there is any indication from historical records that sediment transport (including scour and deposition) can affect the Base Flood Elevation (BFE); and/or base on the stream morphology, vegetative cover, development of the watershed and bank conditions, there is a potential for debris and sediment transport (including scour and deposition) to affect the BFEs, then provide the following information along with the supporting documentation:

Sediment load associated with the base flood discharge: Volume (see notes) acre-feet

Debris load associated with the base flood discharge: Volume (see notes) acre-feet

Sediment transport rate (see notes) (percent concentration by volume)

Method used to estimate sediment transport: comparison of existing and post project conditions modeled using HEC-6T program

Most sediment transport formulas are intended for a range of hydraulic conditions and sediment sizes; attach a detailed explanation for using the selected method.

Method used to estimate scour and/or deposition: Grade Control: Schoklitsch Eqn.; General Scour: US BOR "Degradation and local scour"

Method used to revise hydraulic or hydrologic analysis (model) to account for sediment transport: HEC-6T program calcs bulked flow profiles

Please note that bulked flows are used to evaluate the performance of a structure during the base flood; however, FEMA does not map BFEs based on bulked flows.

If a sediment analysis has not been performed, an explanation as to why sediment transport (including scour and deposition) will not affect the BFEs or structures must be provided.



## **MT-2 Forms - Additional Information**

### **MT-2 Form 1, Section B.3 – Project Name/Identifier**

Salt River – Phoenix Sky Harbor International Airport Runway 7R/25L Runway Safety Area Improvement (AV08000048), Letter of Map Revision – LOMR Application.

### **MT-2 Form 1, Section B.5.a – Basis & Type of Revision Requested**

Prior to construction of the improvement project the Salt River levees were certified by FEMA. Portions of the new levee system have not been certified.

### **MT-2 Form 1, Section C – Review Fee**

This Letter of Map Revision application includes the same flood control elements as the preceding CLOMR application including construction of a levee, bank protection of both the north and south banks, and low flow channel construction. Because of these flood control activities and that the project is funded by the Federal Aviation Administration (FAA) and since the preceding CLOMR application fee was waived we are applying for a LOMR change request assuming that this application fee will be waived. Included in Appendix B is a copy of the waiver approval received for the CLOMR.

### **MT-2 Form 2, Section B.4 – Models Submitted**

The following models were submitted with the CLOMR and are included with the digital files:

1. Duplicate Effective: File: DupEff\_Salt.prj  
Plans: Method 1 FW (NGVD 1929) & NAVD 1988
2. Corrected Effective: File: Corr\_Effective\_SkyHarbor.prj  
Plans: NGVD 1929 & NAVD 1988
3. Existing Conditions: File: Existing\_SkyHarbor.prj  
Plan: Effective 1988 (datum)
4. Proposed Conditions: File: Proposed\_SkyHarbor.prj  
Plan: Proposed 1988 (datum)

The following model was prepared and submitted with this LOMR:

1. Post Project Conditions: File: Asbuilt\_SkyHarbor.prj  
Plan 1: Proposed 1988 datum: NAVD 1988  
Plan 2: Asbuilt 2011 datum: NAVD 1988

### **MT-2 Form 3, Section E.3 – Closure Devices**

Two pipes, one existing and one new storm drain discharge into the Salt River through the new CSA



embankment/levee at Station 217.66. These City storm drains extend across the airport and to the north for several miles. Closure devices are not necessary since the lowest grade (bank elevation: 1119.93), above the storm drain pipes, is well above the base flood elevation (BFE: 1110.56). There is no potential of flooding from backwater effects due to high flows in the Salt River (freeboard: 9.37 ft).

**MT-2 Form 3, Section E.5.d-h – Embankment and Foundation Stability**

The geotechnical report is included as a sub-report within the Final Design Report (found on the accompanying CD). On page 16 (Section 4.3) of the geotechnical report both Slope Stability and Seepage are discussed. The CSA embankment will have a compressive strength of 750 pounds per square inch (108,000 psf), therefore slope stability is not an issue. Also, determination of the uplift pressure at the CSA toe was not an issue as there will be no saturation within the embankment materials (CSA).

The Salt River is fed by a large upstream watershed (12,783 square miles). There are five dams/lakes located upstream of the Phoenix metropolitan area. The largest flood events occur with rainfall, snow melt and dam releases in the upper watershed so the duration of the base flood hydrograph could last for days or even weeks while lower frequency flows might last for several days.

**MT-2 Form 3, Section E.8 – Interior Drainage**

The new CSA embankment was constructed in an existing river bed which meets FEMA requirements for freeboard. The existing and post project ground, on the landward side, beyond the structure is higher than the Base Flood Elevation in the river.

On the North bank behind the existing (certified levee) there is one location with a storm water retention area and conduit outfalls into the channel at cross sections Station 218.50 and 218.54. These conduits are protected from backflow by flap gates on the outfall structures. This location is not within the limits of this RSA improvement project but would be affected by the change in the BFE, however, this interior drainage area has been addressed in the Levee Certification Report (2011) and is under review by DHS-FEMA Region IX. A digital copy of the Levee Certification Report is included with this submittal.

**MT-2 Form 3, Section E.9c – Other Design Criteria**

New HEC-RAS modeling modifying the Base Flood conditions is included in this LOMR application.

**MT-2 Form 3, Section F – Sediment Transport**

A sediment transport analysis was conducted in conjunction with the preparation of the Final Design Report. The Hydraulics and Scour Analysis Report is included as a sub-report within the Final Design Report contained in its entirety on the accompanying compact disk.

Both existing conditions and with-project models were prepared to study the relative impacts of the with-project conditions. The results of the comparison showed no significant impact due to the bank extensions and the typical average bed changes predicted under the with-project conditions are within 1.0



feet of the values computed under the existing conditions. Within the project reach the overall long term degradation was limited to 1.0 foot.





### SECTION 3: SURVEY AND MAPPING INFORMATION

Portions of the following information was taken from the FEMA approved 2009 CLOMR report prepared by Pacific Advanced Civil Engineering. This report can be found in its entirety on the accompanying CD.

#### 3.1 Field Survey Information

In preparation of the CLOMR a field survey was conducted by:

Woolpert, Inc.  
4050 East Cotton Center Boulevard, Building 3, Suite 39  
Phoenix, Arizona 85040

In preparation of the Final Design Plans/Record Drawings, prepared by Dibble Engineering, a field survey was conducted by:

The CK Group, Inc.  
16448 North 40<sup>th</sup> Street, Suite A  
Phoenix, Arizona 85032

In preparation of the Levee Certification Report, prepared by T.Y.Lin International, a field survey was conducted by:

RBF Consulting  
16605 North 28<sup>th</sup> Avenue, Suite 100  
Phoenix, Arizona 85053-7550

#### 3.2 Mapping

The Woolpert field survey was conducted in July, 2008. The site is located in the Arizona Central Zone and the topography and all elevations are in North American Vertical Datum (NAVD) 1988. FEMA's effective study results are shown in National Geodetic Vertical Datum (NGVD) 1929. The datum shift is NAVD minus 2.12 ft. = NGVD.

The map and digital terrain model were compiled from aerial photography dated June, 2006 and April, 2007. The mapping has a scale of one inch equals forty feet and the terrain model produces one-foot contours.





SECTION 4: HYDROLOGY

The FEMA regulatory 1% annual chance discharge for the Salt River at this study reach is 169,000 cfs, generated from a drainage area of 12,783 square miles (FEMA, 2005). No flow change locations are located within the study reach for either the existing or the proposed conditions HEC-RAS models.

The hydrology for the Salt River, between the Gila River and Roosevelt Dam, is tied to the recommended Water Control Plan as prepared by the U.S. Army Corps of Engineers in March of 1996 as a part of an overview of the Gila River Basin, Arizona. The specific report which identifies these flow is entitled Section 7 Study for Modified Roosevelt Dam, Arizona (Theodore Roosevelt Dam) – Hydrologic Evaluation of Water Control Plans – Salt River Project to Gila River at Gillespie Dam. The recommended Water Control Plan is identified as ‘P6OP2’. The report listed above identifies the following frequency and peak discharges:

Table 4 Peak Discharge Summary Table

| Location                   | Drainage Area<br>[square miles] | Return Period [years] |         |         |         |
|----------------------------|---------------------------------|-----------------------|---------|---------|---------|
|                            |                                 | 10                    | 50      | 100     | 500     |
|                            |                                 | Peak Discharge [cfs]  |         |         |         |
| Tempe's Mill Avenue Bridge | 12,783                          | 55,000                | 140,000 | 169,000 | 243,000 |





## SECTION 5: HYDRAULICS

For convenience of finding pertinent information, portions of the following sections were taken directly from the FEMA approved CLOMR report prepared by Pacific Advanced Civil Engineering. This referenced report can be found in its entirety on the accompanying compact disk.

### 5.1 Method Description

There are five models for the Salt River referenced within the CLOMR report including:

1. Effective Model: The effective model obtained from the FEMA library and reproduced to obtain the duplicate effective model.
2. Duplicate Effective Model: The duplicate effective model is a copy of the hydraulic analysis used in the effective FIS. The effective model was run in previous version of HEC-RAS prior to version 3.0 because it contains a zero distance between the upstream cross-sections and the face of the bridge.
3. Corrected Effective Model: The corrected effective model is the model that corrects any errors that occur in the duplicate effective model, such as the zero distance error when using the current version of HEC-RAS version 4.0.
4. Existing Conditions Model: This is a hydraulic model using updated topography to represent the current conditions of the study reach. The existing conditions model reflects any physical changes since the date of the effective model.
5. Proposed Conditions Model: This hydraulic model includes the proposed cement stabilized alluvium embankment along the north bank as well as includes proposed channel grading. This model was constructed using the most recent topography, in addition to the design plans for the proposed embankment.

With the addition of the project record drawings a sixth model was created;

6. Post Project Conditions Model: The proposed conditions model was modified to reflect as-built conditions of the new embankment and channel grading. In addition, the post project conditions model reflects recent changes to the topography, namely the as-built conditions of minor improvements to the south bank which raised the top of embankment between River Mile stations 218.14 and 218.47.

Verification of the first five models can be found in the CLOMR report contained on the accompanying CD. The hydraulic model for the Post Project Conditions is contained in the appendices of this report.

#### 5.1.1 Proposed Conditions vs. Post Project Conditions Models

A comparison was done between the proposed conditions model and the post project conditions model to ensure that the final design phase followed the conceptual design,



within the approved CLOMR, without significantly altering the flow conditions modeled in the proposed conditions. The topography was modified to include the improvements in the final design plans and then cross sections were cut within the limits of improvement. These post project cross sections were directly compared against sections from the proposed project and plotted for easy reference. The results of this comparison show that the Final Design Plans followed the intentions of the conceptual design found in the CLOMR report. These sections along with a comparison of base flood elevations can be found in Appendix C.

In the proposed conditions model the downstream starting conditions was established as a known starting water surface elevation of 1100.76 at river mile RM 216.38. RM 216.38 does not exist in the Corrected Effective model, however, this starting condition results in a similar calculated water surfaces elevation in the Proposed Conditions model (1100.93) when compared to the Corrected Effective model (1100.98) at the next upstream river mile (RM 216.42). This starting condition was maintained in the Post Project Conditions model.

The CLOMR report assumed that once the levees were certified no floodplains would exist outside the river banks, and therefore, the floodplain and floodway would be coincident. The Levee Certification Report (TYLIN 2011, included on the CD) has been approved by FEMA therefore the assumed conditions in the CLOMR report have become existing conditions. However, in the proposed conditions model (CLOMR) the starting conditions for the floodway set an encroached water surface set 1-foot higher than the floodplain which is not consistent with a coincident floodplain/floodway. Therefore, the starting condition for this LOMR application was adjusted to match the starting floodplain condition in the Post Project Conditions model. Note that the RSA improvements were not included in the Levee Certification report and therefore portions of the levee system, specifically the newly constructed sections, were accounted for in the floodplain modeling but are as yet uncertified.

#### 5.1.2 Post Project Conditions vs. Corrected Effective

The following table presents a comparison between the Post Project Conditions model and the Corrected Effective model. The two models were compared to identify any locations with increased impacts to the base flood elevation. As shown in the table below there is one location where the calculated water surface elevation increases by 0.13 feet at River Station 218.14. The table includes all cross sections between the upstream side of the I-10 bridge (RM 216.52) and the downstream side of the 44<sup>th</sup> Street bridge (RM 218.96)



Table 5.1.2 Post Project vs. Corrected Effective Water Surface Elevations

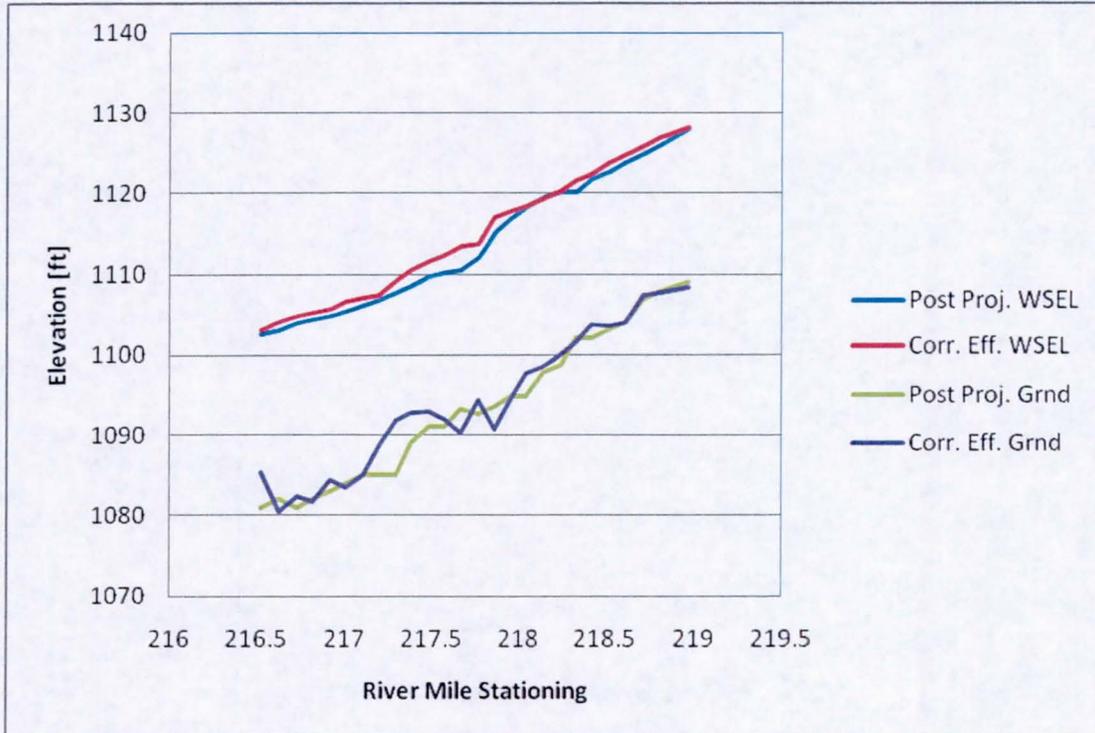
| River Mile Station | Post Project WSEL NAVD 1988 [ft] | Corrected Effective WSEL NAVD 1988 [ft] | Post Project minus Corrected [ft] |
|--------------------|----------------------------------|---|-----------------------------------|
| 218.96             | 1127.95                          | 1128.15                                 | (0.20)                            |
| 218.80             | 1125.93                          | 1126.89                                 | (0.96)                            |
| 218.71 AR          | 1124.82                          | 1125.75                                 | (0.93)                            |
| 218.61             | 1123.75                          | 1124.73                                 | (0.98)                            |
| 218.52             | 1122.70                          | 1123.71                                 | (1.01)                            |
| 218.42             | 1121.71                          | 1122.32                                 | (0.61)                            |
| 218.33             | 1120.19                          | 1121.61                                 | (1.42)                            |
| 218.24 AQ          | 1120.11                          | 1120.32                                 | (0.21)                            |
| 218.14             | 1119.51                          | 1119.38                                 | 0.13                              |
| 218.04             | 1118.28                          | 1118.40                                 | (0.12)                            |
| 217.95             | 1116.87                          | 1117.69                                 | (0.82)                            |
| 217.86             | 1115.14                          | 1116.95                                 | (1.81)                            |
| 217.76 AP          | 1112.07                          | 1113.85                                 | (1.78)                            |
| 217.66             | 1110.56                          | 1113.56                                 | (3.00)                            |
| 217.57             | 1110.19                          | 1112.45                                 | (2.26)                            |
| 217.48             | 1109.67                          | 1111.60                                 | (1.93)                            |
| 217.38             | 1108.65                          | 1110.55                                 | (1.90)                            |
| 217.29 AO          | 1107.75                          | 1109.29                                 | (1.54)                            |
| 217.19             | 1106.79                          | 1107.44                                 | (0.65)                            |
| 217.10             | 1106.26                          | 1107.18                                 | (0.92)                            |
| 217.00             | 1105.39                          | 1106.62                                 | (1.23)                            |
| 216.91             | 1104.84                          | 1105.74                                 | (0.90)                            |
| 216.81 AN          | 1104.40                          | 1105.25                                 | (0.85)                            |
| 216.72             | 1103.92                          | 1104.79                                 | (0.87)                            |
| 216.62             | 1102.95                          | 1104.00                                 | (1.05)                            |
| 216.52             | 1102.44                          | 1102.84                                 | (0.40)                            |

Note: (x.xx) denotes negative values

The minimum decreased water surface elevation occurs at river mile RM 218.04 with a decreased value of 0.12 ft. The maximum decreased water surface elevation occurs at RM 217.66 with a decreased value of 3.00 ft. A comparison of the Post Project and the Corrected Effective water surface profiles shows that the Post Project channel invert is typically lower which when combined with a smaller conveyance area and a greater velocity result in a generally lower base flood elevation as can be seen in the following figure.



Figure 5.1.2 Post Project vs. Corrected Effective Flow Profiles



## 5.2 Work Study Maps

The post project conditions study area is shown on the topographic work study map and was prepared at a scale of 1" = 500' scale and covers the Salt River from river mile RM 219.51 to RM 216.38. The full size map can be found in the map pocket and a half size map can be found at the end of this notebook.

## 5.3 Parameter Estimation

With one exception the parameter estimations remained the same from the approved CLOMR and are documented within that report.

### Roughness Coefficient

Approximately one and a half miles upstream, of the project reach, the City of Tempe has constructed the Tempe Town Lake behind an inflatable dam. A tailwater bypass system constantly delivers water to the downstream side of the constructed dam resulting in new vegetative growth in the river bottom. On the upstream side of the SR-143 bridge, at the upstream end of the project reach, a man-made constriction forces this tailwater into a low flow bypass channel. New vegetation has grown in the area around this constriction and extends some distance upstream. A review of n-values from both the Corrected Effective and Proposed Conditions models shows consistency which doesn't account for this new vegetative growth. After a field review, a new estimation of the n-value increases the roughness coefficient upstream of the SR-143 bridge from 0.035 to 0.039



between river miles RM 219.03 and RM 219.51. Documentation for the modified roughness coefficient is provided in Appendix C.2.

5.4 Cross Section Description

The Proposed Conditions model (CLOMR) for the Salt River had twenty-nine (29) cross-sections in common with the effective FIS. These cross-sections were updated for the newer topography. Twenty three new cross-sections were added within the study reach located between the existing FIS cross-sections.

To create the Post Project Conditions model modifications were made to the Proposed Conditions model. The as-built record drawings were used to modify the hydrologic cross-sections within the limits of construction/area of disturbance of the Salt River. Cross-sections revisions included the new CSA embankment along the north bank and the new grading within the Salt River channelization between river miles RM 217.53 and RM 218.33.

5.5 Modeling Considerations

5.5.1 Hydraulic Jump and Drop Analysis

There are no hydraulic jumps that exist in the post project conditions model. Froude numbers are well below 1.0 with the highest being 0.74 at river mile RM 217.76.

5.5.2 Bridges and Culverts

In the entire effective FIS HEC-RAS model of the Salt River, there are fourteen (14) bridges in the hydraulic analysis. The improvements within the project reach of the post project conditions model modify only a small portion of the overall FIS reach and did not affect any of the existing bridges. Information on the existing bridges bounding the project reach were included in the Proposed Conditions and Post Project Conditions model and is included on Table 5.2.

Table 5.5.2 Salt River Bridge Data

| River Mile | Description        | Minimum Deck Elev. [ft] | Maximum Soffit Elev. [ft] | Deck Thickness [ft] | Pier Data          |
|------------|--------------------|-------------------------|---------------------------|---------------------|--------------------|
| 216.51     | I-10 Bridge        | 1124.28                 | 1118.05                   | 7.1                 | 7 - 6.0 ft. piers  |
| 218.97     | 44th Street Bridge | 1147.92                 | 1146.55                   | 6.7                 | 8 - 6.5 ft. piers  |
| 219.02     | SR-143 Bridge      | 1146.22                 | 1142.20                   | 6.7                 | 8 - 5.66 ft. piers |

5.5.3 Levees and Dikes

The effective FIRM panel depicts levees through a large portion of the Salt River on both the north and south bank. In many locations the adjacent grade on the landward side of the embankment is higher than the base flood elevation. Section 3.2 within the Levee Certification Report (see digital files on CD) identifies and documents these non-levee conditions which significantly reduces the length of the effective levee on the north bank.



Figure 5.5.3a Extent of Levees No. 41 and No. 42



For riverine levees, FEMA requires a minimum of 3-feet of freeboard above the water surface level of the base flood. An additional one-foot of freeboard is required within one-hundred feet, on both sides, of a structure where the flow is constricted. An additional one-half foot above the minimum at the upstream end tapering down to not less than the minimum at the downstream end is also required.

Table 5.5.3 Required vs. Available Freeboard along the Salt River

| Cross Section<br>River Mile<br>Stationing | Post Project<br>Floodplain<br>(NAVD 1988) | FEMA<br>Required<br>Freeboard | Southbank<br>Freeboard | Northbank<br>Freeboard |
|---|---|-------------------------------|------------------------|------------------------|
|   | [ft]                                      | [ft]                          | [ft]                   | [ft]                   |
| 218.96                                    | 1127.95                                   | 4.50                          | 9.05                   | 9.05                   |
| 218.80                                    | 1125.93                                   | 3.50                          | 8.70                   | 9.14                   |
| 218.77                                    | 1125.42                                   | 3.49                          | 9.07                   | 9.36                   |
| 218.71 (AR)                               | 1124.82                                   | 3.48                          | 9.90                   | 9.18                   |
| 218.66                                    | 1124.33                                   | 3.47                          | 8.71                   | 9.67                   |
| 218.61                                    | 1123.75                                   | 3.46                          | 8.27                   | 10.25                  |
| 218.57                                    | 1123.21                                   | 3.45                          | 8.87                   | 9.79                   |
| 218.52                                    | 1122.70                                   | 3.44                          | 10.97                  | 9.30                   |
| 218.47                                    | 1122.38                                   | 3.42                          | 10.60                  | 9.62                   |
| 218.42                                    | 1121.71                                   | 3.41                          | 7.19                   | 9.29                   |
| 218.38                                    | 1121.27                                   | 3.40                          | 6.98                   | 8.73                   |
| 218.33                                    | 1120.19                                   | 3.39                          | 5.09                   | 9.81                   |
| 218.29                                    | 1120.21                                   | 3.38                          | 4.89                   | 7.79                   |
| 218.24 (AQ)                               | 1120.11                                   | 3.37                          | 4.89                   | 7.89                   |



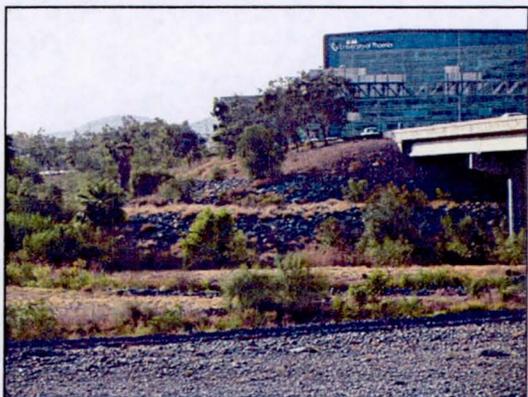
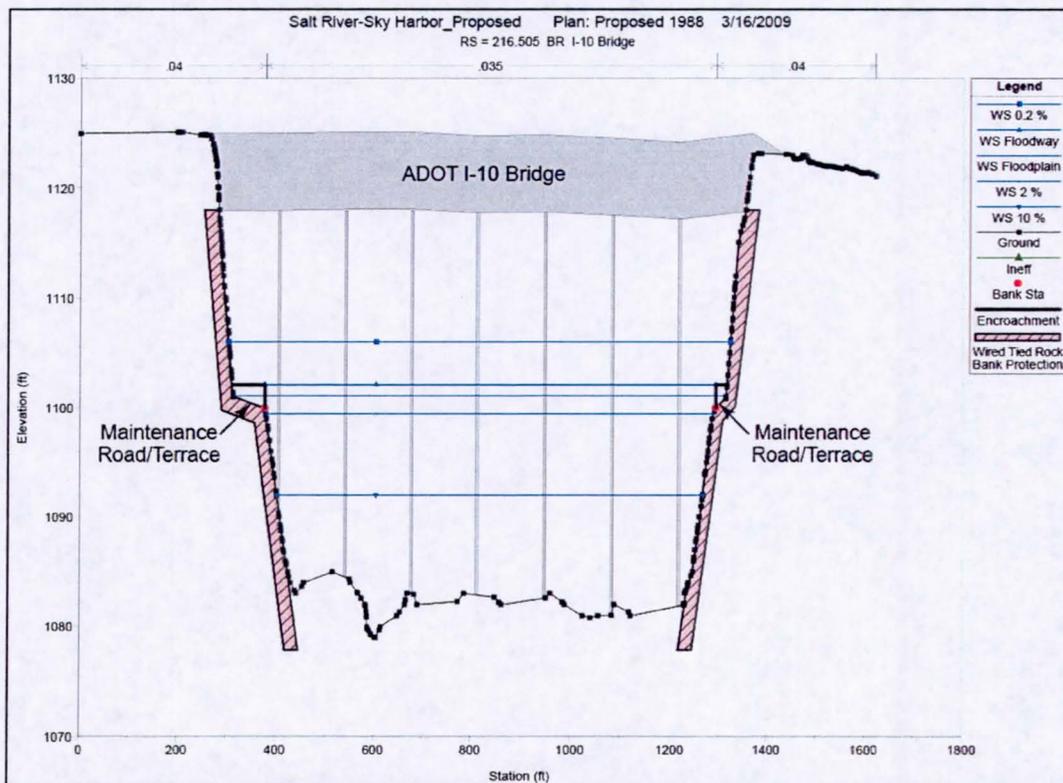
| Cross Section<br>River Mile<br>Stationing | Post Project<br>Floodplain<br>(NAVD 1988) | FEMA<br>Required<br>Freeboard | Southbank<br>Freeboard | Northbank<br>Freeboard |
|---|---|-------------------------------|------------------------|------------------------|
|   | [ft]                                      | [ft]                          | [ft]                   | [ft]                   |
| 218.19                                    | 1119.90                                   | 3.36                          | 5.10                   | 7.10                   |
| 218.14                                    | 1119.51                                   | 3.35                          | 5.13                   | 6.03                   |
| 218.09                                    | 1118.57                                   | 3.34                          | 5.43                   | 6.06                   |
| 218.04                                    | 1118.28                                   | 3.33                          | 4.72                   | 5.36                   |
| 218.00                                    | 1117.98                                   | 3.32                          | 6.02                   | 5.09                   |
| 217.95                                    | 1116.87                                   | 3.31                          | 6.13                   | 5.31                   |
| 217.91                                    | 1116.46                                   | 3.30                          | 6.54                   | 5.00                   |
| 217.86                                    | 1115.14                                   | 3.28                          | 7.86                   | 5.44                   |
| 217.81                                    | 1113.48                                   | 3.27                          | 8.52                   | 6.39                   |
| 217.76 (AP)                               | 1112.07                                   | 3.26                          | 9.34                   | 7.72                   |
| 217.71                                    | 1111.53                                   | 3.25                          | 10.85                  | 8.30                   |
| 217.66                                    | 1110.56                                   | 3.24                          | 11.44                  | 9.37                   |
| 217.62                                    | 1110.67                                   | 3.23                          | 10.33                  | 9.33                   |
| 217.57                                    | 1110.19                                   | 3.22                          | 9.69                   | 8.81                   |
| 217.53                                    | 1110.10                                   | 3.21                          | 8.39                   | 8.90                   |
| 217.48                                    | 1109.67                                   | 3.20                          | 8.46                   | 9.33                   |
| 217.43                                    | 1109.10                                   | 3.19                          | 7.92                   | 9.90                   |
| 217.38                                    | 1108.65                                   | 3.17                          | 8.66                   | 9.35                   |
| 217.34                                    | 1108.19                                   | 3.17                          | 9.77                   | 9.77                   |
| 217.29 (AO)                               | 1107.75                                   | 3.15                          | 9.68                   | 9.25                   |
| 217.24                                    | 1107.33                                   | 3.14                          | 8.95                   | 8.67                   |
| 217.19                                    | 1106.79                                   | 3.13                          | 9.67                   | 8.21                   |
| 217.15                                    | 1106.64                                   | 3.12                          | 9.79                   | 7.36                   |
| 217.10                                    | 1106.26                                   | 3.11                          | 10.25                  | 6.74                   |
| 217.05                                    | 1105.84                                   | 3.10                          | 11.07                  | 7.24                   |
| 217.00                                    | 1105.39                                   | 3.09                          | 11.18                  | 7.61                   |
| 216.96                                    | 1105.17                                   | 3.08                          | 9.97                   | 7.83                   |
| 216.91                                    | 1104.84                                   | 3.07                          | 10.18                  | 7.16                   |
| 216.86                                    | 1104.62                                   | 3.06                          | 9.65                   | 7.38                   |
| 216.81 (AN)                               | 1104.40                                   | 3.04                          | 9.38                   | 6.60                   |
| 216.77                                    | 1104.20                                   | 3.03                          | 6.81                   | 6.80                   |
| 216.72                                    | 1103.92                                   | 3.02                          | 7.49                   | 6.08                   |
| 216.67                                    | 1103.37                                   | 3.01                          | 8.15                   | 6.63                   |
| 216.62                                    | 1102.95                                   | 3.00                          | 7.21                   | 7.05                   |
| 216.52                                    | 1102.44                                   | 4.00                          | (2.44)                 | (0.34)                 |

Note: (X.XX) denotes negative values

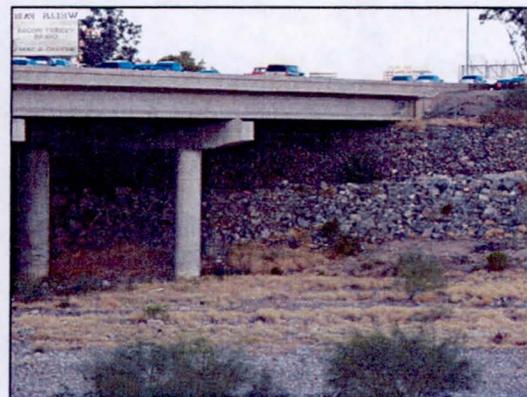


The previous table identifies available freeboard on both banks respectively and per FEMA regulations all sections meet the minimum required freeboard except at river mile RM 216.52 which is located at the upstream face of the I-10 bridge. The Arizona Department of Transportation (ADOT) bridge abutments are located behind the river banks which are terraced to include maintenance access roads on both sides. The hydraulic model establishes the bank stations at the terraces which are low relative to freeboard requirements, however, the banks are fully armored to protect the abutments all the up to the bridge soffit. The following figure depicts the upstream cross section demonstrating that flow cannot escape on either bank of the bridge approach.

Figure 5.5.3b Upstream side of ADOT I-10 Bridge



South Bank



North Bank



5.5.4 Islands and Flow Splits

The floodplain is contained within the banks of the Salt River without creating islands or split flows, therefore, no additional modeling was necessary.

5.5.5 Ineffective Flow Areas

Ineffective flow areas were not used as the bridge abutments for the three bridges located within the modeling area do not encroach into the channelized river.

5.5.6 Supercritical Flow

The model was run with a subcritical flow regime in HEC-RAS. The largest Froude number reported in the output was 0.74 at RM 217.76 while the majority of the values ranged between 0.38 and 0.61 which is indicative of subcritical flow.

5.6 Floodway Modeling

The floodway modeling for Effective, Duplicate Effective, Corrected Effective, Existing Conditions and Proposed Conditions models are provided in the CLOMR report.

The south and north bank levees (Levee ID Nos. 41 & 42) have been documented and FEMA certified, therefore, the base flood is contained within the banks of the Salt River channelization such that the floodplain and floodway will be coincident. The following table summarizes the floodway water surface profile for the Post Project Conditions model.

Table 5.6 Post Project Floodway Summary

| Cross Section<br>River Mile<br>Stationing | Width    | Flow<br>Area | Velocity | Elevation<br>Without<br>Floodway | Elevation<br>With<br>Floodway | Increase |
|---|----------|--------------|----------|----------------------------------|-------------------------------|----------|
|   | [ft]     | [ft]         | [ft/s]   | [ft]                             | [ft]                          | [ft]     |
| 218.96                                    | 1,101.63 | 16,552.82    | 10.21    | 1127.95                          | 1127.95                       | 0.00     |
| 218.80                                    | 997.78   | 14,536.47    | 11.63    | 1125.93                          | 1125.93                       | 0.00     |
| 218.77                                    | 1,007.70 | 14,598.01    | 11.58    | 1125.42                          | 1125.42                       | 0.00     |
| 218.71 (AR)                               | 995.45   | 14,391.55    | 11.74    | 1124.82                          | 1124.82                       | 0.00     |
| 218.66                                    | 993.72   | 14,599.04    | 11.58    | 1124.33                          | 1124.33                       | 0.00     |
| 218.61                                    | 1,000.97 | 14,525.07    | 11.64    | 1123.75                          | 1123.75                       | 0.00     |
| 218.57                                    | 1,005.72 | 14,552.43    | 11.61    | 1123.21                          | 1123.21                       | 0.00     |
| 218.52                                    | 1,005.71 | 14,628.68    | 11.55    | 1122.70                          | 1122.70                       | 0.00     |
| 218.47                                    | 1,007.03 | 15,301.40    | 11.04    | 1122.38                          | 1122.38                       | 0.00     |
| 218.42                                    | 1,015.18 | 14,787.61    | 11.43    | 1121.71                          | 1121.71                       | 0.00     |
| 218.38                                    | 1,039.07 | 15,118.82    | 11.18    | 1121.27                          | 1121.27                       | 0.00     |
| 218.33                                    | 1,051.35 | 13,622.28    | 12.41    | 1120.19                          | 1120.19                       | 0.00     |
| 218.29                                    | 1,042.19 | 16,163.76    | 10.46    | 1120.21                          | 1120.21                       | 0.00     |
| 218.24 (AQ)                               | 1,043.23 | 18,147.52    | 9.31     | 1120.11                          | 1120.11                       | 0.00     |



| Cross Section<br>River Mile<br>Stationing | Width    | Flow<br>Area | Velocity | Elevation<br>Without<br>Floodway | Elevation<br>With<br>Floodway | Increase |
|---|----------|--------------|----------|----------------------------------|-------------------------------|----------|
|   | [ft]     | [ft]         | [ft/s]   | [ft]                             | [ft]                          | [ft]     |
| 218.19                                    | 1,049.31 | 18,637.31    | 9.07     | 1119.90                          | 1119.90                       | 0.00     |
| 218.14                                    | 991.25   | 17,784.24    | 9.50     | 1119.51                          | 1119.51                       | 0.00     |
| 218.09                                    | 869.20   | 15,042.63    | 11.23    | 1118.57                          | 1118.57                       | 0.00     |
| 218.04                                    | 843.72   | 15,656.15    | 10.79    | 1118.28                          | 1118.28                       | 0.00     |
| 218.00                                    | 811.34   | 15,647.05    | 10.80    | 1117.98                          | 1117.98                       | 0.00     |
| 217.95                                    | 758.56   | 13,521.26    | 12.50    | 1116.87                          | 1116.87                       | 0.00     |
| 217.91                                    | 712.35   | 13,668.24    | 12.36    | 1116.46                          | 1116.46                       | 0.00     |
| 217.86                                    | 657.62   | 11,911.86    | 14.19    | 1115.14                          | 1115.14                       | 0.00     |
| 217.81                                    | 618.17   | 10,402.00    | 16.25    | 1113.48                          | 1113.48                       | 0.00     |
| 217.76 (AP)                               | 646.86   | 10,117.75    | 16.70    | 1112.07                          | 1112.07                       | 0.00     |
| 217.71                                    | 690.77   | 10,740.05    | 15.74    | 1111.53                          | 1111.53                       | 0.00     |
| 217.66                                    | 743.34   | 10,812.35    | 15.63    | 1110.56                          | 1110.56                       | 0.00     |
| 217.62                                    | 831.22   | 13,033.59    | 12.97    | 1110.67                          | 1110.67                       | 0.00     |
| 217.57                                    | 927.48   | 13,717.42    | 12.32    | 1110.19                          | 1110.19                       | 0.00     |
| 217.53                                    | 1,008.71 | 15,343.48    | 11.01    | 1110.10                          | 1110.10                       | 0.00     |
| 217.48                                    | 1,045.77 | 15,532.02    | 10.88    | 1109.67                          | 1109.67                       | 0.00     |
| 217.43                                    | 1,041.52 | 15,090.72    | 11.20    | 1109.10                          | 1109.10                       | 0.00     |
| 217.38                                    | 1,037.82 | 15,463.51    | 10.93    | 1108.65                          | 1108.65                       | 0.00     |
| 217.34                                    | 1,022.45 | 15,478.82    | 10.92    | 1108.19                          | 1108.19                       | 0.00     |
| 217.29 (AO)                               | 1,008.13 | 15,439.97    | 10.95    | 1107.75                          | 1107.75                       | 0.00     |
| 217.24                                    | 979.68   | 15,510.49    | 10.90    | 1107.33                          | 1107.33                       | 0.00     |
| 217.19                                    | 955.07   | 15,150.15    | 11.16    | 1106.79                          | 1106.79                       | 0.00     |
| 217.15                                    | 935.93   | 16,340.29    | 10.34    | 1106.64                          | 1106.64                       | 0.00     |
| 217.10                                    | 916.89   | 16,329.61    | 10.35    | 1106.26                          | 1106.26                       | 0.00     |
| 217.05                                    | 912.07   | 15,876.67    | 10.64    | 1105.84                          | 1105.84                       | 0.00     |
| 217.00                                    | 909.76   | 15,493.22    | 10.91    | 1105.39                          | 1105.39                       | 0.00     |
| 216.96                                    | 906.14   | 16,359.40    | 10.33    | 1105.17                          | 1105.17                       | 0.00     |
| 216.91                                    | 909.25   | 16,372.64    | 10.32    | 1104.84                          | 1104.84                       | 0.00     |
| 216.86                                    | 907.79   | 16,992.03    | 9.95     | 1104.62                          | 1104.62                       | 0.00     |
| 216.81 (AN)                               | 898.67   | 17,349.89    | 9.74     | 1104.40                          | 1104.40                       | 0.00     |
| 216.77                                    | 907.25   | 17,784.87    | 9.50     | 1104.20                          | 1104.20                       | 0.00     |
| 216.72                                    | 906.69   | 17,553.73    | 9.63     | 1103.92                          | 1103.92                       | 0.00     |
| 216.67                                    | 893.54   | 16,234.48    | 10.41    | 1103.37                          | 1103.37                       | 0.00     |
| 216.62                                    | 898.50   | 15,877.17    | 10.64    | 1102.95                          | 1102.95                       | 0.00     |
| 216.52                                    | 994.29   | 17,006.67    | 9.99     | 1102.44                          | 1102.44                       | 0.00     |



## 5.7 Problems Encountered During the Study

### 5.7.1 Special Problems and Solutions

There were no special problems encountered during the preparation of this report. A comparison of the Proposed Conditions and the Post Project Conditions models was conducted to ensure that the conceptual design in the approved CLOMR was the basis of the final design plans.

A second comparison was made between the Corrected Effective and the Post Project Conditions models because the Post Project conditions encroaches into a regulatory floodway and does cause an increase in the base flood elevations.

### 5.7.2 Model Warning and Error Messages

There were no error messages in the Post Project Conditions model, however, the following warning messages were provided in the model output.

- Station 218.96 – Floodplain. The energy loss was greater than 1.0 ft between the current and previous cross section. Due to the unique geometric shape of the bridge additional cross sections was not feasible.
- Station 218.33 – Floodplain. The velocity head has changed by more than 0.5 ft. The next downstream cross section is located approximately 220-feet away which is about 1/5 the width of the floodplain indicating additional cross sections are not necessary.
- Station 218.14 – Floodplain. The velocity head has changed by more than 0.5 ft. The next downstream cross section is located approximately 220-feet away which is about 1/5 the width of the floodplain indicating additional cross sections are not necessary. This station also coincides with the physical beginning of the embankment encroachment so a larger change in velocity head is expected.
- Station 218.00 – Floodplain. The velocity head has changed by more than 0.5 ft. The next downstream cross section is located approximately 265-feet away which is about 1/4 the width of the floodplain indicating additional cross sections are not necessary.
- Station 217.91 – Floodplain. The velocity head has changed by more than 0.5 ft. The next downstream cross section is located approximately 265-feet away which is about 1/3 the width of the floodplain indicating additional cross sections are not necessary.
- Station 217.86 – Floodplain. The velocity head has changed by more than 0.5 ft. The next downstream cross section is located approximately 265-feet away which is about 1/3 the width of the floodplain indicating additional cross sections are not necessary.
- Station 217.81 – Floodplain. The energy loss was greater than 1.0 ft. The next downstream cross section is located approximately 265-feet away which is about 1/3 the width of the floodplain indicating additional cross sections are not necessary.



- Station 217.76 – Floodplain. The energy loss was greater than 1.0 ft. The next downstream cross section is located approximately 265-feet away which is about 1/3 the width of the floodplain indicating additional cross sections are not necessary.
- Station 217.71 – Floodplain. The energy loss was greater than 1.0 ft. The next downstream cross section is located approximately 265-feet away which is about 1/3 the width of the floodplain indicating additional cross sections are not necessary.
- Station 217.66 – Floodplain. The velocity head has changed by more than 0.5 ft. The next downstream cross section is located approximately 265-feet away which is about 1/3 the width of the floodplain indicating additional cross sections are not necessary.
- Station 217.66 – Floodplain. The energy loss was greater than 1.0 ft. The next downstream cross section is located approximately 265-feet away which is about 1/3 the width of the floodplain indicating additional cross sections are not necessary.

### 5.8 Calibration

The approved CLOMR report prepared a Duplicate Effective model which was compared with the effective model resulting in calculated differences of less than 0.5 foot. This is within the acceptable range and therefore no additional calibration is necessary.

### 5.9 Final Results

#### 5.9.1 Hydraulic Analysis Results

The following table presents the results of the Post Project Conditions hydraulic model (without floodway encroachments) for the 1% annual chance (100-year) storm.

Table 5.9.1 Hydraulic Results

| Cross Section<br>River Mile<br>Stationing | 100-Year<br>Water Surface<br>Elevation | Critical<br>Water Surface<br>Elevation | Channel<br>Velocity | Top<br>Width | Channel<br>Froude No. |
|---|--|--|---------------------|--------------|-----------------------|
|   | [ft]                                   |  | [ft/s]              | [ft]         |                       |
| 218.96                                    | 1127.95                                | 1121.69                                | 10.21               | 1,101.63     | 0.46                  |
| 218.80                                    | 1125.93                                | 1120.90                                | 11.63               | 997.78       | 0.54                  |
| 218.77                                    | 1125.42                                | 1120.38                                | 11.58               | 1,007.70     | 0.54                  |
| 218.71 (AR)                               | 1124.82                                | 1119.84                                | 11.74               | 995.45       | 0.54                  |
| 218.66                                    | 1124.33                                | 1119.06                                | 11.58               | 993.72       | 0.53                  |
| 218.61                                    | 1123.75                                | 1118.53                                | 11.64               | 1,000.97     | 0.54                  |
| 218.57                                    | 1123.21                                | 1118.11                                | 11.61               | 1,005.72     | 0.54                  |
| 218.52                                    | 1122.70                                | 1117.53                                | 11.55               | 1,005.71     | 0.53                  |
| 218.47                                    | 1122.38                                | 1116.52                                | 11.04               | 1,007.03     | 0.50                  |
| 218.42                                    | 1121.71                                | 1116.49                                | 11.43               | 1,015.18     | 0.53                  |



| Cross Section<br>River Mile<br>Stationing | 100-Year<br>Water Surface<br>Elevation<br>[ft] | Critical<br>Water Surface<br>Elevation | Channel<br>Velocity<br>[ft/s] | Top<br>Width<br>[ft] | Channel<br>Froude No. |
|---|--|--|-------------------------------|----------------------|-----------------------|
| 218.38                                    | 1121.27  | 1115.92                                | 11.18                         | 1,039.07             | 0.52                  |
| 218.33                                    | 1120.19  | 1116.41                                | 12.41                         | 1,051.35             | 0.61                  |
| 218.29                                    | 1120.21  | 1113.82                                | 10.46                         | 1,042.19             | 0.47                  |
| 218.24 (AQ)                               | 1120.11  | 1111.82                                | 9.31                          | 1,043.23             | 0.39                  |
| 218.19                                    | 1119.90  | 1110.87                                | 9.07                          | 1,049.31             | 0.38                  |
| 218.14                                    | 1119.51  | 1110.95                                | 9.50                          | 991.25               | 0.40                  |
| 218.09                                    | 1118.57  | 1111.57                                | 11.23                         | 869.20               | 0.48                  |
| 218.04                                    | 1118.28  | 1110.19                                | 10.79                         | 843.72               | 0.44                  |
| 218.00                                    | 1117.98  | 1109.41                                | 10.80                         | 811.34               | 0.43                  |
| 217.95                                    | 1116.87  | 1110.12                                | 12.50                         | 758.56               | 0.52                  |
| 217.91                                    | 1116.46  | 1109.00                                | 12.36                         | 712.35               | 0.50                  |
| 217.86                                    | 1115.14  | 1109.49                                | 14.19                         | 657.62               | 0.59                  |
| 217.81                                    | 1113.48  | 1109.76                                | 16.25                         | 618.17               | 0.70                  |
| 217.76 (AP)                               | 1112.07  | 1109.19                                | 16.70                         | 646.86               | 0.74                  |
| 217.71                                    | 1111.53  | 1108.12                                | 15.74                         | 690.77               | 0.70                  |
| 217.66                                    | 1110.56  | 1107.65                                | 15.63                         | 743.34               | 0.72                  |
| 217.62                                    | 1110.67  | 1105.77                                | 12.97                         | 831.22               | 0.58                  |
| 217.57                                    | 1110.19  | 1105.43                                | 12.32                         | 927.48               | 0.56                  |
| 217.53                                    | 1110.10  | 1104.33                                | 11.01                         | 1,008.71             | 0.50                  |
| 217.48                                    | 1109.67  | 1104.03                                | 10.88                         | 1,045.77             | 0.50                  |
| 217.43                                    | 1109.10  | 1103.87                                | 11.20                         | 1,041.52             | 0.52                  |
| 217.38                                    | 1108.65  | 1102.99                                | 10.93                         | 1,037.82             | 0.50                  |
| 217.34                                    | 1108.19  | 1102.39                                | 10.92                         | 1,022.45             | 0.49                  |
| 217.29 (AO)                               | 1107.75  | 1101.80                                | 10.95                         | 1,008.13             | 0.49                  |
| 217.24                                    | 1107.33  | 1101.07                                | 10.90                         | 979.68               | 0.48                  |
| 217.19                                    | 1106.79  | 1100.70                                | 11.16                         | 955.07               | 0.49                  |
| 217.15                                    | 1106.64  | 1099.02                                | 10.34                         | 935.93               | 0.44                  |
| 217.10                                    | 1106.26  | 1098.37                                | 10.35                         | 916.89               | 0.43                  |
| 217.05                                    | 1105.84  | 1098.43                                | 10.64                         | 912.07               | 0.45                  |
| 217.00                                    | 1105.39  | 1098.39                                | 10.91                         | 909.76               | 0.47                  |
| 216.96                                    | 1105.17  | 1097.14                                | 10.33                         | 906.14               | 0.43                  |
| 216.91                                    | 1104.84  | 1096.78                                | 10.32                         | 909.25               | 0.43                  |
| 216.86                                    | 1104.62  | 1095.84                                | 9.95                          | 907.79               | 0.41                  |
| 216.81 (AN)                               | 1104.40  | 1095.03                                | 9.74                          | 898.67               | 0.39                  |
| 216.77                                    | 1104.20  | 1094.38                                | 9.50                          | 907.25               | 0.38                  |
| 216.72                                    | 1103.92  | 1094.40                                | 9.63                          | 906.69               | 0.39                  |



| Cross Section<br>River Mile<br>Stationing | 100-Year<br>Water Surface<br>Elevation<br>[ft] | Critical<br>Water Surface<br>Elevation | Channel<br>Velocity<br>[ft/s] | Top<br>Width<br>[ft] | Channel<br>Froude No. |
|---|--|--|-------------------------------|----------------------|-----------------------|
| 216.67                                    | 1103.37  | 1095.23                                | 10.41                         | 893.54               | 0.43                  |
| 216.62                                    | 1102.95  | 1095.27                                | 10.64                         | 898.50               | 0.45                  |
| 216.52                                    | 1102.44  | 1093.78                                | 9.99                          | 994.29               | 0.41                  |

### 5.9.2 Verification of Results

The HEC-RAS results of the Post Project Conditions Model are reasonable based upon the constructed improvements made to both the Salt River channel bottom and to the north bank.





**SECTION 6: SCOUR AND SEDIMENT TRANSPORT**

6.1 Scour

Total scour, as defined in the CLOMR, is a combination of the following scour components: 1) local scour; 2) general scour; 3) bed-form scour; 4) bend scour; 5) low-flow incisement; and 6) long-term degradation. Applying a 1.4 factor of safety results in the total estimated scour.

During Final Design a second scour analysis was prepared entitled the *Salt River Bank Extension RSA Improvements*. Within this study, scour calculations were performed to estimate 1) general scour; 2) bend scour; 3) anti-dune scour and 4) local scour. A factor of safety of 1.3 was applied to estimate total scour which was then used to provide toe-down depths along the new embankments between Stations 218.33 and 217.57. The following table reports the results of the Final Design calculations compare with those from the CLOMR study. There are several locations where the scour calculations for the CLOMR exceed that of the Final Design which can be attributed to a higher factor of safety which is appropriate for a conceptual design, but which through detailed analysis was reduced during Final Design. Complete calculations for both the CLOMR and Final Design are located on the CD.

Table 6.1 Total Scour Depth

| Cross Section Station | CLOMR Total Scour [ft] | Final Design (Total Scour) |                 |
|-----------------------|------------------------|----------------------------|-----------------|
|                       |                        | North Bank [ft]            | South Bank [ft] |
| 218.33                | 7.6                    | 11.62                      | 10.71           |
| 218.29                | 7.6                    | 11.70                      | 10.78           |
| 218.24                | 9.0                    | 11.82                      | 10.91           |
| 218.19                | 9.0                    | 11.88                      | 10.96           |
| 218.14                | 9.0                    | 11.89                      | 10.98           |
| 218.09                | 9.0                    | 11.86                      | 10.95           |
| 218.04                | 9.0                    | 11.95                      | 11.04           |
| 218.00                | 12.1                   | 12.07                      | 11.16           |
| 217.95                | 13.7                   | 11.95                      | 11.04           |
| 217.91                | 13.7                   | 12.04                      | 11.12           |
| 217.86                | 13.7                   | 11.95                      | 11.03           |
| 217.81                | 13.7                   | 11.81                      | 10.90           |
| 217.76 <sup>1</sup>   | 22.0                   | 15.76                      | 14.84           |
| 217.71                | 16.0                   | 22.75                      | 21.83           |
| 217.66                | 10.3                   | 11.69                      | 10.77           |
| 217.62                | 9.3                    | 11.66                      | 10.74           |
| 217.57                | 9.3                    | 11.64                      | 10.72           |

Notes: 1) Cross Section 217.76 is at the upstream side of the in-channel Grade Control Structure which was designed and constructed as a separate project extending 36-feet (per as-builts plans) below the river bed.  
 2) Cross Section 217.71 is downstream of Drop Structure



## 6.2 Sediment Transport

A sediment transport analysis was conducted as a part of the final design using the HEC-6T modeling program. Both existing conditions and with-project models were prepared to study the relative impacts of the with-project conditions. The results of the comparison showed no significant impact due to the bank extension and that the typical average bed changes predicted under the with-project conditions are within 1.0 foot of the values computed under the existing conditions. In addition, within the project reach, the overall long term degradation was limited to 1.0 foot. A full description of the methodology, calculations and results can be found within a sub-report located within the Final Design Report called Hydraulics and Scour Analysis Report.





**SECTION 7: DRAFT FIS REPORT DATA**

**7.1 Summary of Discharges**

The 100-year (1% annual chance) peak flow rate for the project reach is 169,000 cfs for both the Effective and Post Project Conditions. Additional discharge rates for other frequencies are shown in the table below.

Table 7.1 Discharge Summary

| Location                   | Drainage Area<br>[square miles] | Return Period [years] |         |         |         |
|----------------------------|---------------------------------|-----------------------|---------|---------|---------|
|                            |                                 | 10                    | 50      | 100     | 500     |
|                            |                                 | Peak Discharge [cfs]  |         |         |         |
| Tempe's Mill Avenue Bridge | 12,783                          | 55,000                | 140,000 | 169,000 | 243,000 |

**7.2 Floodway Data**

The Post Project Conditions floodway data is listed in the following table. The table also reports the base water surface elevations for both the floodplain and floodway, and the corresponding elevation increase.

Table 7.2 Salt River Floodway Data Table (NAVD 1988)

| Cross Section<br>River Mile<br>Stationing | Width    | Flow Area | Velocity | Elevation<br>Without<br>Floodway | Elevation<br>With<br>Floodway | Increase |
|---|----------|-----------|----------|----------------------------------|-------------------------------|----------|
|   | [ft]     | [ft]      | [ft/s]   | [ft]                             | [ft]                          | [ft]     |
| 218.96                                    | 1,101.63 | 16,552.82 | 10.21    | 1127.95                          | 1127.95                       | 0.00     |
| 218.80                                    | 997.78   | 14,536.47 | 11.63    | 1125.93                          | 1125.93                       | 0.00     |
| 218.77                                    | 1,007.70 | 14,598.01 | 11.58    | 1125.42                          | 1125.42                       | 0.00     |
| 218.71 (AR)                               | 995.45   | 14,391.55 | 11.74    | 1124.82                          | 1124.82                       | 0.00     |
| 218.66                                    | 993.72   | 14,599.04 | 11.58    | 1124.33                          | 1124.33                       | 0.00     |
| 218.61                                    | 1,000.97 | 14,525.07 | 11.64    | 1123.75                          | 1123.75                       | 0.00     |
| 218.57                                    | 1,005.72 | 14,552.43 | 11.61    | 1123.21                          | 1123.21                       | 0.00     |
| 218.52                                    | 1,005.71 | 14,628.68 | 11.55    | 1122.70                          | 1122.70                       | 0.00     |
| 218.47                                    | 1,007.03 | 15,301.40 | 11.04    | 1122.38                          | 1122.38                       | 0.00     |
| 218.42                                    | 1,015.18 | 14,787.61 | 11.43    | 1121.71                          | 1121.71                       | 0.00     |
| 218.38                                    | 1,039.07 | 15,118.82 | 11.18    | 1121.27                          | 1121.27                       | 0.00     |
| 218.33                                    | 1,051.35 | 13,622.28 | 12.41    | 1120.19                          | 1120.19                       | 0.00     |
| 218.29                                    | 1,042.19 | 16,163.76 | 10.46    | 1120.21                          | 1120.21                       | 0.00     |
| 218.24 (AQ)                               | 1,043.23 | 18,147.52 | 9.31     | 1120.11                          | 1120.11                       | 0.00     |
| 218.19                                    | 1,049.31 | 18,637.31 | 9.07     | 1119.90                          | 1119.90                       | 0.00     |
| 218.14                                    | 991.25   | 17,784.24 | 9.50     | 1119.51                          | 1119.51                       | 0.00     |
| 218.09                                    | 869.20   | 15,042.63 | 11.23    | 1118.57                          | 1118.57                       | 0.00     |



| Cross Section<br>River Mile<br>Stationing | Width    | Flow<br>Area | Velocity | Elevation<br>Without<br>Floodway | Elevation<br>With<br>Floodway | Increase |
|---|----------|--------------|----------|----------------------------------|-------------------------------|----------|
|   | [ft]     | [ft]         | [ft/s]   | [ft]                             | [ft]                          | [ft]     |
| 218.04                                    | 843.72   | 15,656.15    | 10.79    | 1118.28                          | 1118.28                       | 0.00     |
| 218.00                                    | 811.34   | 15,647.05    | 10.80    | 1117.98                          | 1117.98                       | 0.00     |
| 217.95                                    | 758.56   | 13,521.26    | 12.50    | 1116.87                          | 1116.87                       | 0.00     |
| 217.91                                    | 712.35   | 13,668.24    | 12.36    | 1116.46                          | 1116.46                       | 0.00     |
| 217.86                                    | 657.62   | 11,911.86    | 14.19    | 1115.14                          | 1115.14                       | 0.00     |
| 217.81                                    | 618.17   | 10,402.00    | 16.25    | 1113.48                          | 1113.48                       | 0.00     |
| 217.76 (AP)                               | 646.86   | 10,117.75    | 16.70    | 1112.07                          | 1112.07                       | 0.00     |
| 217.71                                    | 690.77   | 10,740.05    | 15.74    | 1111.53                          | 1111.53                       | 0.00     |
| 217.66                                    | 743.34   | 10,812.35    | 15.63    | 1110.56                          | 1110.56                       | 0.00     |
| 217.62                                    | 831.22   | 13,033.59    | 12.97    | 1110.67                          | 1110.67                       | 0.00     |
| 217.57                                    | 927.48   | 13,717.42    | 12.32    | 1110.19                          | 1110.19                       | 0.00     |
| 217.53                                    | 1,008.71 | 15,343.48    | 11.01    | 1110.10                          | 1110.10                       | 0.00     |
| 217.48                                    | 1,045.77 | 15,532.02    | 10.88    | 1109.67                          | 1109.67                       | 0.00     |
| 217.43                                    | 1,041.52 | 15,090.72    | 11.20    | 1109.10                          | 1109.10                       | 0.00     |
| 217.38                                    | 1,037.82 | 15,463.51    | 10.93    | 1108.65                          | 1108.65                       | 0.00     |
| 217.34                                    | 1,022.45 | 15,478.82    | 10.92    | 1108.19                          | 1108.19                       | 0.00     |
| 217.29 (AO)                               | 1,008.13 | 15,439.97    | 10.95    | 1107.75                          | 1107.75                       | 0.00     |
| 217.24                                    | 979.68   | 15,510.49    | 10.90    | 1107.33                          | 1107.33                       | 0.00     |
| 217.19                                    | 955.07   | 15,150.15    | 11.16    | 1106.79                          | 1106.79                       | 0.00     |
| 217.15                                    | 935.93   | 16,340.29    | 10.34    | 1106.64                          | 1106.64                       | 0.00     |
| 217.10                                    | 916.89   | 16,329.61    | 10.35    | 1106.26                          | 1106.26                       | 0.00     |
| 217.05                                    | 912.07   | 15,876.67    | 10.64    | 1105.84                          | 1105.84                       | 0.00     |
| 217.00                                    | 909.76   | 15,493.22    | 10.91    | 1105.39                          | 1105.39                       | 0.00     |
| 216.96                                    | 906.14   | 16,359.40    | 10.33    | 1105.17                          | 1105.17                       | 0.00     |
| 216.91                                    | 909.25   | 16,372.64    | 10.32    | 1104.84                          | 1104.84                       | 0.00     |
| 216.86                                    | 907.79   | 16,992.03    | 9.95     | 1104.62                          | 1104.62                       | 0.00     |
| 216.81 (AN)                               | 898.67   | 17,349.89    | 9.74     | 1104.40                          | 1104.40                       | 0.00     |
| 216.77                                    | 907.25   | 17,784.87    | 9.50     | 1104.20                          | 1104.20                       | 0.00     |
| 216.72                                    | 906.69   | 17,553.73    | 9.63     | 1103.92                          | 1103.92                       | 0.00     |
| 216.67                                    | 893.54   | 16,234.48    | 10.41    | 1103.37                          | 1103.37                       | 0.00     |
| 216.62                                    | 898.50   | 15,877.17    | 10.64    | 1102.95                          | 1102.95                       | 0.00     |
| 216.52                                    | 994.29   | 17,006.67    | 9.99     | 1102.44                          | 1102.44                       | 0.00     |

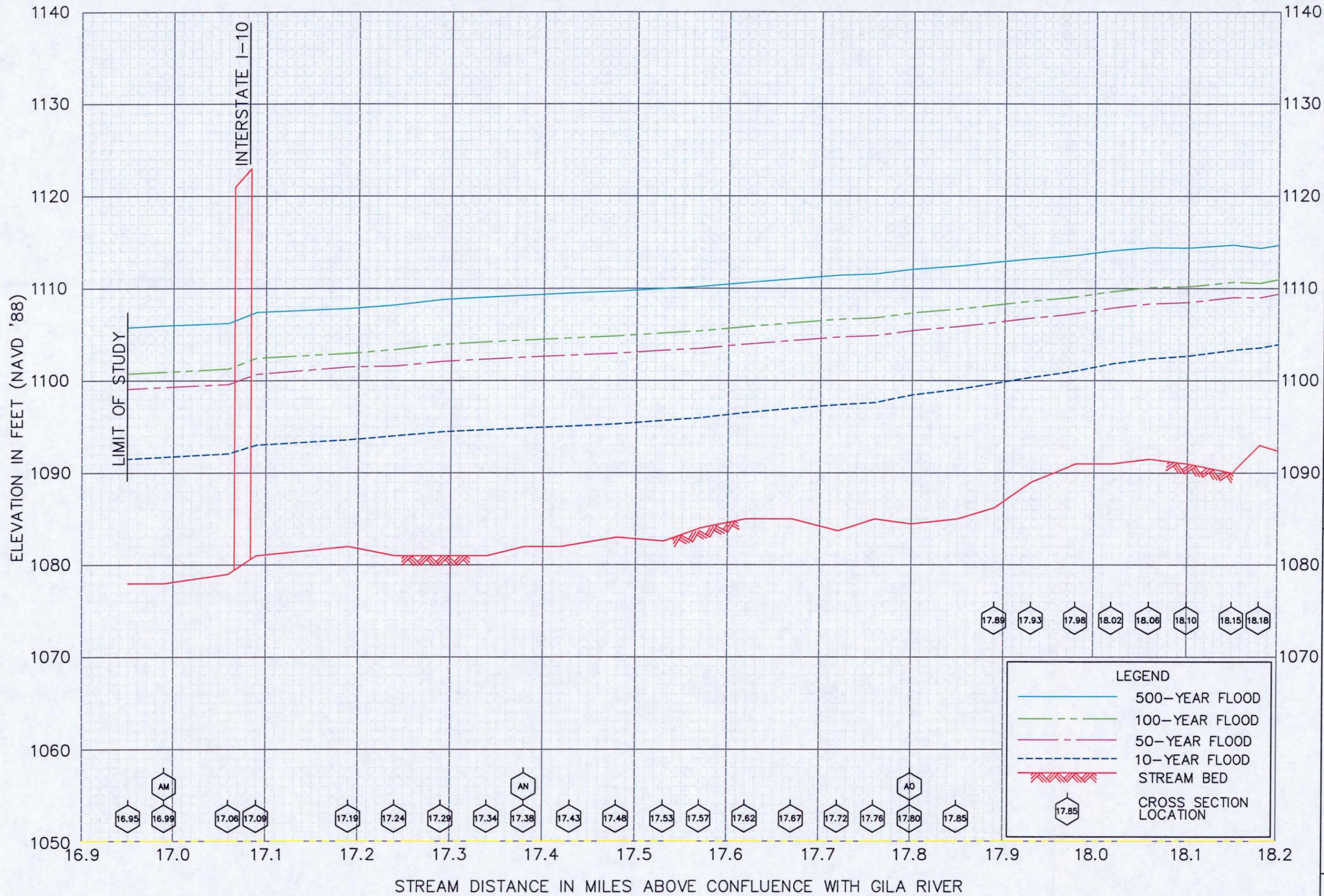


**7.3 Annotated Flood Insurance Rate Maps**

Annotated Flood Insurance Rate Maps prepared with this study can be found in map pockets following the Appendices.

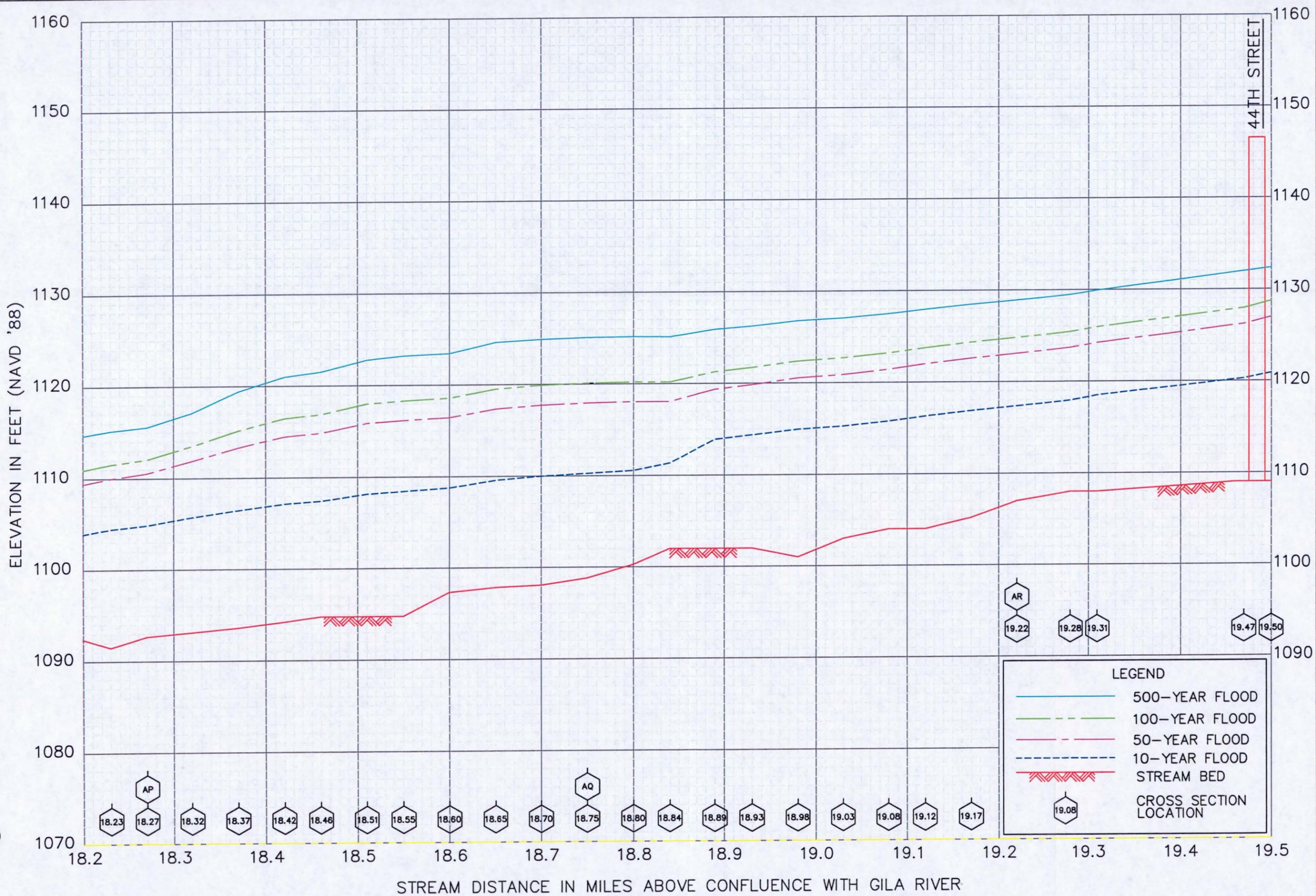
**7.4 Flood Profiles**

The flood profile maps are located at the end of this section.



**LEGEND**

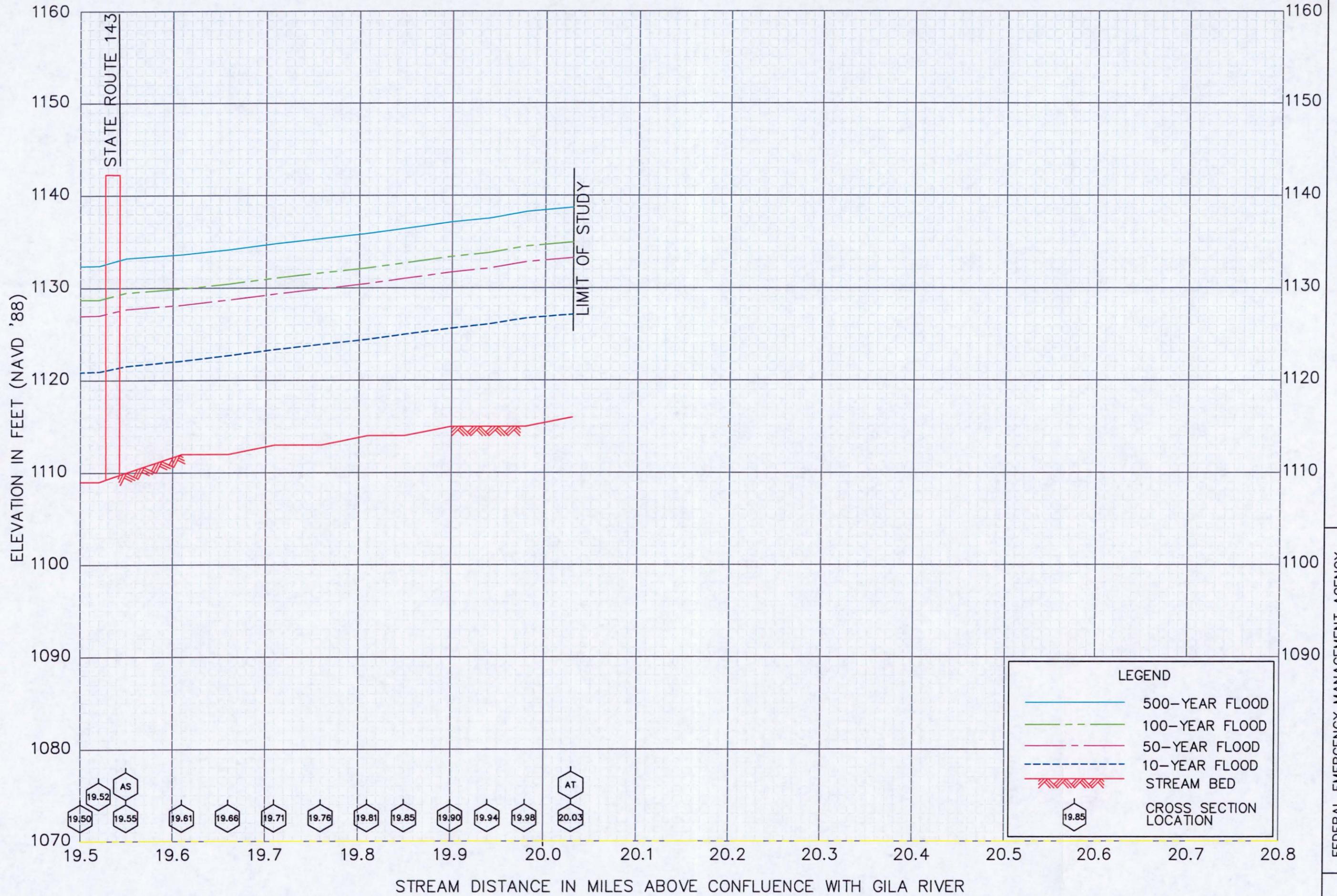
- 500-YEAR FLOOD
- - - 100-YEAR FLOOD
- · - · - 50-YEAR FLOOD
- - - - - 10-YEAR FLOOD
- ▩▩▩▩▩▩▩▩▩▩ STREAM BED
- 17.85 CROSS SECTION LOCATION



FLOOD PROFILES  
SALT RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY  
UNINCORPORATED MARICOPA COUNTY, ARIZONA  
MARICOPA COUNTY

02P



FLOOD PROFILES

SALT RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY  
UNINCORPORATED MARICOPA COUNTY, ARIZONA

MARICOPA COUNTY

Appendix A  
ACKNOWLEDGEMENTS & REFERENCES



## Appendix A: Acknowledgements and References

### Acknowledgements

1. Conditional Letter of Map Revision (CLOMR) Application. Salt River – Sky Harbor International Airport, Runway Safety Area Improvements. Pacific Advanced Civil Engineering, Inc. March 25, 2009.
2. Salt River Bank Extension – Runway 7R/25L RSA Improvements, Final Engineer's Report. Dibble Engineering. June 28, 2010.
  - 2.1 Salt River Bank Extension – Runway 7R/25L RSA Improvements, Geotechnical Exploration Report. Hoque & Associates. June 16, 2010.
  - 2.2 Salt River Bank Extension – Runway 7R/25L RSA Improvements, Drainage Report. Dibble Engineering. June, 2010. Revised April 14, 2011.
  - 2.3 Salt River Bank Extension – Runway 7R/25L RSA Improvements, Hydraulics and Scour Analysis Report. JE Fuller Hydrology and Geomorphology, Inc. June 23, 2010.
  - 2.4 Salt River Bank Extension – Runway 7R/25L RSA Improvements, Structural Calculations. Nabar Stanley Brown, Inc. June 27, 2010.
3. Salt River Bank Extension – Runway 7R/25L RSA Improvements. Dibble Engineering. Final Design Plans: June 24, 2010. Record Drawings: July 8, 2011.
4. Levee Certification Report. Salt River - Levee ID. No. 41 & 42. T.Y.Lin International. February 16, 2011.

### References

1. Drainage Design Manual for Maricopa County, Arizona. Volume I: Hydrology. Flood Control District of Maricopa County. November 18, 2009.
2. Drainage Design manual for Maricopa County, Arizona. Volume II: Hydraulics. Flood Control District of Maricopa County. January 28, 1996.
3. Mapping of Areas Protected by Levee Systems. Code of Federal Regulations, Title 44, Section 65.10 (44 CFR 65.10). Federal Emergency Management Agency.

Appendix B  
GENERAL DOCUMENTATION AND CORRESPONDENCE



## **Appendix B: General Documentation and Correspondence**

This appendix contains project correspondence. In addition, there is information regarding the City's Real Estate department's acquisition of property and right-of-way.

### Private Property Ownership/Notification

The Levee Certification project for the Salt River between the I-10 (Maricopa Freeway) and the SR-143 (Hohokam Expressway) bridges identified two parcels either within the river banks or along the existing levee/embankment which were owned by private individuals. These private owners were identified as:

1. Ewing Irrigation Products, Inc.
2. Southbank Property Owners Association

The City entered into negotiations with both private owners and has purchased the parcels within the river bottom which were previously owned by Southbank Property Owners Association. The City also received a conveyance deed from Ewing Irrigation Products, Inc. for permanent access to the levee/embankment adjacent to their property. With these acquisitions there are no longer any private properties located within the study reach.

Reference/PO # Karen Apple  
02

# Arizona Business Gazette

The business resource

PO BOX 194  
Phoenix, Arizona 85001-0194  
(602) 444-7315 FAX (602) 444-7364

**Salt River LOMR**  
The City of Phoenix Aviation Department is applying for a Letter of Map Revision (LOMR) from the Federal Emergency Management Agency (FEMA) to revise the 100-year floodplain to reflect the current conditions on Flood Insurance Rate Map (FIRM) map number 44013C, panels 2145 H and 2165 H. The FIRM revision is for the Salt River between the I-10 and SR-143 bridges and is the result of improvements to the Runway Safety Area at the Phoenix Sky Harbor International Airport which encroach into the Salt River on the north bank. The results of the floodplain study generally show a slight decrease in the base flood elevation (BFE) when compared to FEMA's effective FIRM. No private properties will be adversely affected. The floodplain study and resulting mapping will be used for floodplain management purposes.  
This announcement is intended to inform all interested persons about the floodplain study and associated LOMR. All questions regarding the LOMR and associated floodplain study should be directed to the attention of Lloyd A. Vick, P.E., CFM, T.Y.Lin International, 60 East Rio Salado Parkway, Suite 501, Tempe, AZ 85281, (480) 968-8814; or Karen J. Apple, Project Manager, City of Phoenix - Aviation Department, 3400 East Sky Harbor Boulevard, Suite 3300, Phoenix, AZ 85034-4405, (602) 683-3786.  
Pub: November 10, 2011

STATE OF ARIZONA } SS.  
COUNTY OF MARICOPA }

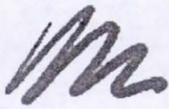
Manny Vargas, being first duly sworn, upon oath deposes and says: That he is the Legal Ad Rep of the Arizona Business Gazette, a newspaper of general circulation in the county of Maricopa, State of Arizona, published weekly at Phoenix, Arizona, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates indicated.

11/10/2011  
11/17/2011

Sworn to before me this  
17TH day of  
NOVEMBER 2011



*Manny Vargas*  
*Ondrea Sheppard*  
Notary Public



Hasan Mushtaq/STR/PHX  
01/05/2010 09:15 AM

To Karen Apple/AVN/PHX@PHXENT, Chris  
Andres/AVN/PHX@PHXENT  
cc Molly Monserud/AVN/PHX@PHXENT, Joseph  
Francis/AVN/PHX@PHXENT, drichards@pacewater.com  
bcc

Subject Fw: Case No. 09-09-1309R

History:  This message has been replied to and forwarded.

FYI.

— Forwarded by Hasan Mushtaq/STR/PHX on 01/05/2010 09:12 AM —



"Boudjemaa, Mounir"  
<Mounir.Boudjemaa@aecom.  
com>  
01/05/2010 08:34 AM

To Hasan Mushtaq/STR/PHX@PHXENT  
cc  
Subject RE: Case No. 09-09-1309R

Dear Hasan, you will not need to pay the fee. Your request has been approved by FEMA - Happy new year :-)

**From:** hasan.mushtaq@phoenix.gov [mailto:hasan.mushtaq@phoenix.gov]  
**Sent:** Tue 12/22/2009 10:16 AM  
**To:** Boudjemaa, Mounir  
**Subject:** Fw: Case No. 09-09-1309R

Dear Mounir:

My understanding is that the Runway Safety Area (RSA) project has many flood control elements to it. For example, Construction of a Levee, Bank Protection of north and south banks, Low Flow Channel construction, etc. Because of these flood control activities and since the project is funded by the Federal Aviation Administration (FAA) we have applied for a map change request, assuming that the application will receive a fee waiver.

Therefore, I am surprised at the request below for a fee in the amount of \$5,500.00 for the CLOMR. There have been several exchanges of correspondence since the start of the review process in March 2009, and the request for a fee was never made. Quick assembly of additional funds is always difficult, let alone an increased fee starting January 1, 2010.

Under the circumstances stated above, I would like to request a fee waiver for the Runway Safety Area (RSA) Project CLOMR application (FEMA Case No. 09-09-1309R). Please let me know your findings in this regard.

Sincerely,

Hasan Mushtaq, PE, PhD, CFM

When recorded, hold for:  
City of Phoenix  
Real Estate Division  
Acquisition Section  
251 W. Washington, 8<sup>th</sup> Floor  
Phoenix, AZ 85003

5500183N-5-1-1--  
ramirezp

ATTN: 15110204

5500183N

**WARRANTY DEED**

Exempt under A.R.S. 11-1134-A3

APN 122-24-005;  
121-39-002F; 122-03-001C

KNOW ALL MEN BY THESE PRESENTS:

That for the consideration of Ten and 00/100 Dollars (\$10.00) and other valuable considerations, **SOUTHBANK PROPERTY OWNERS ASSOCIATION**, an Arizona non-profit corporation, GRANTOR, does hereby grant, sell and convey to the City of Phoenix, a municipal corporation of the State of Arizona, GRANTEE, all right, title, and interest in that certain real property situated in Maricopa County, Arizona, described as follows:

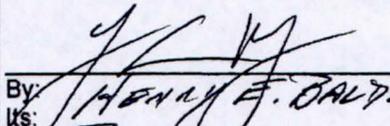
SEE EXHIBIT "A" ATTACHED HERETO AND MADE A PART HEREOF

And the GRANTOR does warrant the title against all persons whomsoever, subject to matters above set forth.

IN WITNESS WHEREOF, the **SOUTHBANK PROPERTY OWNERS ASSOCIATION**, an Arizona non-profit corporation, has caused its corporate name to be signed by the undersigned officers thereunto duly authorized.

Dated this 30<sup>TH</sup> day of JUNE, 20 11.

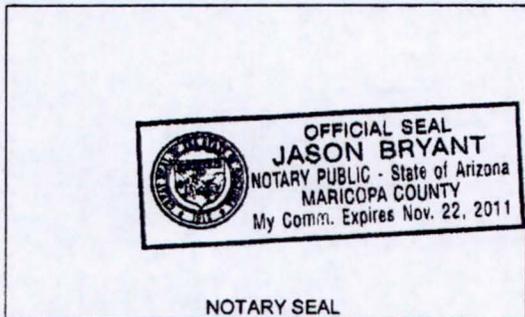
**SOUTHBANK PROPERTY OWNERS ASSOCIATION**, an Arizona non-profit corporation

By:   
Its: HENRY F. BALDENEGRO  
PRESIDENT

**ACKNOWLEDGMENT**

STATE OF Arizona )  
COUNTY OF Maricopa ) ss.

On this, the 30 day of June, 20 11, before me, the undersigned officer, personally appeared Henry Baldenegro who acknowledged themselves to be the President of **SOUTHBANK PROPERTY OWNERS ASSOCIATION**, an Arizona non-profit corporation, and that, as such officers respectively, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation, by themselves as such officers.



[Signature]  
NOTARY PUBLIC

My Commission Expires: Nov. 22, 2011

Escrow No. 15110204-015-JBA

**EXHIBIT "A" LEGAL DESCRIPTION**

PARCEL NO. 1:

That portion of Sections 13, 23 and 24, Township 1 North, Range 3 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona, described as follows:

COMMENCING at the most Western corner of Lot 7, SOUTHBANK, according to Book 306 of Maps, page 44, records of Maricopa County, Arizona, said point being on the West line of Parcel No. 1 described in Document No. 85-529688, and the Point of Beginning;

thence North 35 degrees 16 minutes 57 seconds West a distance of 21.03 feet to the most Western Northwest corner of said Parcel No. 1:

thence North 57 degrees 58 minutes 52 seconds East along a Northwest line of said Parcel No. 1 a distance of 550.14 feet;

Thence North 46 degrees 08 minutes 12 seconds West a distance of 106.04 feet;

thence North 57 degrees 58 minutes 52 seconds East a distance of 181.41 feet (record; 180.99 feet, measured) to the Northeast corner of said Parcel No. 1 and the West line of said Section 24;

thence North 02 degrees 35 minutes 07 seconds West a distance of 555.87 feet to the Northwest corner of said Section 24 and the Southwest corner of said Section 13;

thence South 88 degrees 32 minutes 43 seconds East along the South line of said Section 13 a distance of 941.56 feet to a point that lies North 88 degrees 32 minutes 43 seconds West a distance of 430.00 feet from the Southwest corner of the Southeast quarter of the Southwest quarter of said Section 13;

thence North 60 degrees 43 minutes 24 seconds East a distance of 488.85 feet to a point on the West line of the Southeast quarter of the Southwest quarter of said Section 13 that lies North 00 degrees 47 minutes 28 seconds West a distance of 250.00 feet from the Southwest corner of the Southeast quarter of the Southwest quarter of said Section 13;

thence North 00 degrees 47 minutes 28 seconds West along said West line a distance of 980.45 feet to a point that lies South 00 degrees 47 minutes 28 seconds East a distance of 104.85 feet from the Northwest corner of the Southeast quarter of the Southwest quarter of said Section 13;

thence North 59 degrees 01 minutes 14 seconds East distance of 199.44 feet to a point on the North line of the Southeast quarter of the Southwest quarter of said Section 13 that lies South 89 degrees 16 minutes 26 seconds East a distance of 172.45 feet from the Northwest corner of the Southeast quarter of the Southwest quarter of said Section 13;

thence South 89 degrees 16 minutes 28 seconds East along said North line a distance of 1170.36 feet to the Northeast corner of the Southeast quarter of the Southwest quarter of said Section 13;

thence South 01 degrees 59 minutes 13 seconds East along the North-South mid-section line of said Section 13 a distance of 511.90 feet to a point that lies North 01 degrees 59 minutes 13 seconds West a distance of 136.44 feet from the intersection of said mid-section line and the North line of said SOUTHBANK;

thence South 63 degrees 57 minutes 29 seconds West a distance of 1633.71 feet;

thence South 57 degrees 52 minutes 29 seconds West a distance of 1399.18 feet to a point on the East line of said Lot 7;

thence North 52 degrees 10 minutes 56 seconds West along said East line a distance of 9.17 feet to the most Northern corner of said Lot 7;

thence South 57 degrees 58 minutes 52 seconds East (record; South 57 degrees 59 minutes 11 seconds West, measured) along the Northwest line of said Lot 7 a distance of 659.64 feet to the POINT OF BEGINNING.

Except that portion described in Final Order of Condemnation recorded in Document No 2009-0049422 and described as follows:

A parcel of land located in the southwest quarter of Section 13, Township 1 North, Range 3 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona, also being a portion of Parcel No. 1 of Special Warranty Peed recorded October 26, 1994 in the office of the County Recorder of Maricopa County, Arizona in instrument number 94-0770351, said parcel being more particularly described as follows:

Commencing at the western-most corner of Lot 7 of Southbank, & subdivision according to the plat of record in the office of the County Recorder of Maricopa County, Arizona in Book 306 of Maps, page 44;

thence along the southwesterly and northwesterly boundaries of said Parcel No. 1 of instrument number 94-0770351, traversing the following courses and distances;

North 35 degrees 16 minutes 57 seconds West, 21.03 feet;

North 57 degrees 58 minutes 52 seconds East, 550.14 feet;

North 46 degrees 08 minutes 12 seconds West, 106.04 feet;

North 57 degrees 58 minutes 52 seconds East, 180.99 feet;

North 02 degrees 24 minutes 25 seconds West, 555.10 feet;

South 88 degrees 35 minutes 05 seconds East, 939.78 feet;

North 60 degrees 43 minutes 24 seconds East, 488.85 feet;

North 00 degrees 47 minutes 28 seconds West, 570.61 feet to the Point of Beginning:

thence continuing along the boundary of said Parcel No. 1, traversing the following courses and distances:

North 00 degrees 47 minutes 28 seconds West, 409.84 feet;

North 59 degrees 01 minutes 14 seconds East, 199.44 feet;

South 89 degrees 16 minutes 28 seconds East, 1170.36 feet;

South 01 degrees 59 minutes 13 seconds East, 242.74 feet;

thence leaving said boundary of Parcel No. 1, across said Parcel No. 1, South 89 degrees 31 minutes 28 seconds West, a distance of 289.96 feet to the beginning of a tangent curve, concave southeasterly and having a radius of 284.00 feet;

thence southwesterly along the arc of said curve, through a central angle of 08 degrees 05 minutes 46 seconds, a distance of 40.13 feet to a point of tangency;

thence tangent to said curve, South 81 degrees 25 minutes 43 seconds West, a distance of 726.76 feet to the beginning of a tangent curve, concave southeasterly and having a radius of 284.00 feet;

thence southwesterly along the arc of said curve, through a central angle of 19 degrees 56 minutes 54 seconds, a distance of 98.88 feet to a point of tangency;

thence tangent to said curve, South 61 degrees 28 minutes 49 seconds West, a distance of 230.10 feet to the Point of Beginning.

PARCEL NO. 2:

An Easement for ingress and egress as reserved in the Deed from Northland Land Company, of Arizona, Inc., a Minnesota corporation to Oasis Lake Club, Inc., an Arizona corporation, recorded in Document No 94-0770350.

MARICOPA COUNTY  
OFFICIAL PARCEL MAP  
STATE OF ARIZONA

PT. SECTION 13 T01N R03E

MAP NO. \* 851-13-03-00

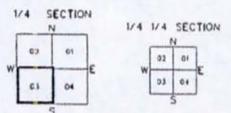
| SECTION | SECTION NUMBER | SECTION NUMBER | SECTION NUMBER |
|---------|----------------|----------------|----------------|
| 1       | 2              | 3              | 4              |



LOCATOR GRID

SECTION

|    |    |    |    |    |    |
|----|----|----|----|----|----|
| 06 | 05 | 04 | 03 | 02 | 01 |
| 07 | 08 | 09 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | 18 |
| 19 | 20 | 21 | 22 | 23 | 24 |
| 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 |



ASSESSOR BOOKS & MAPS WITHIN THIS AREA

BOOK: 121 MAP: 06  
 BOOK: 121 MAP: 07  
 BOOK: 121 MAP: 41  
 BOOK: 122 MAP: 03

SUBDIVISIONS

1TH STREET PROPERTIES REPLAT  
MCR 404-14, 1936 SUB  
 EASTBANK OJAYS REPLAT  
MCR 424-40, 1937 SUB  
 ALLRED 2 AT EASTBANK  
MCR 409-36, 1939 SUB



SCALE: 1" = 200'

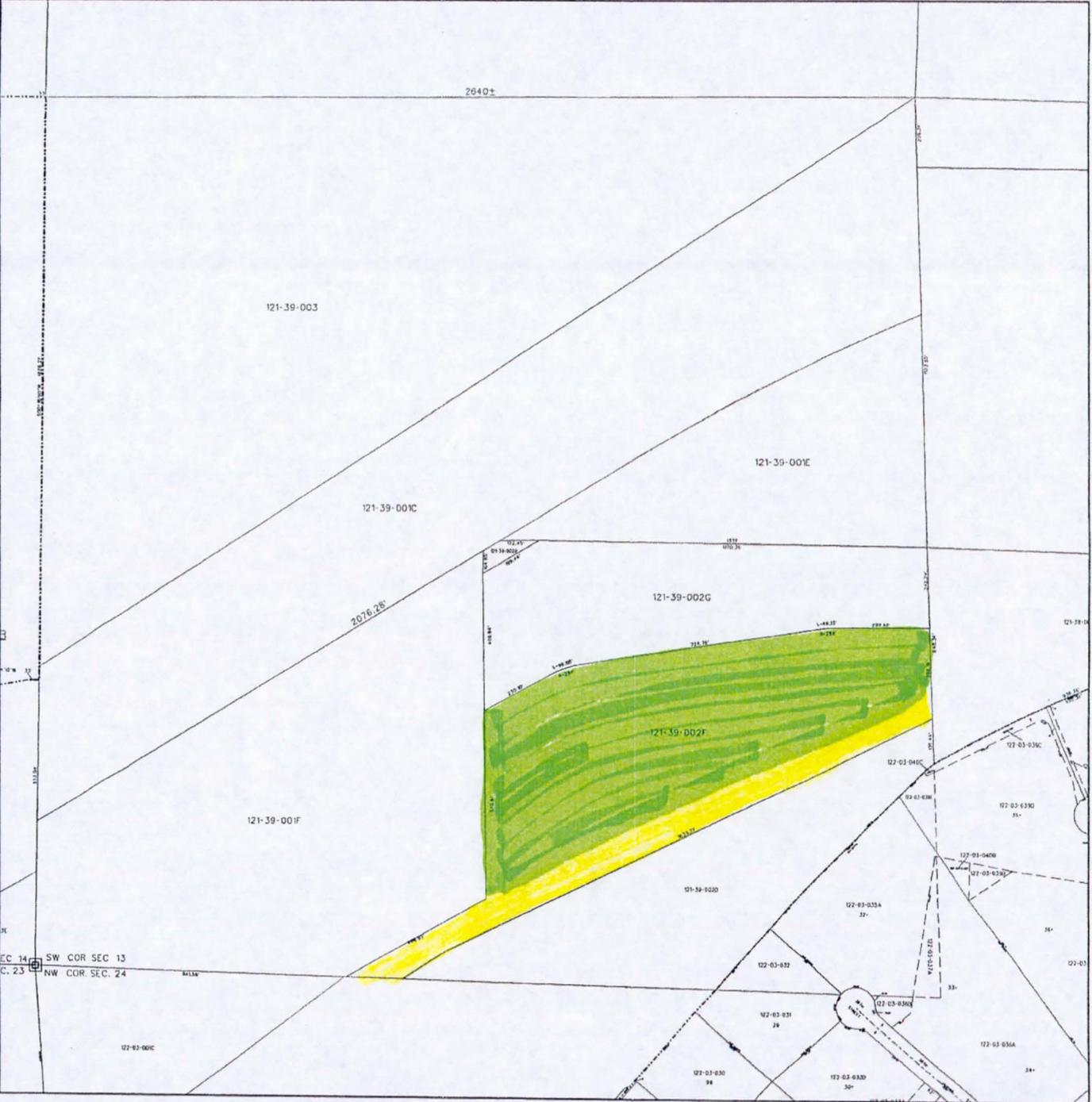
10-19-2009

MARICOPA COUNTY ASSESSOR'S OFFICE  
301 W. JEFFERSON ST.  
PHOENIX, AZ 85003  
www.maricopa.gov/assessor

- Legend:
- Subdivision Boundary Line
  - Subblock Boundary Corner
  - Street Centerline
  - Street Centerline Marker
  - Section Corner Marker
  - Indicates change in original boundary
  - Parcel Boundary Line
  - Parcel Split Line
  - Parcel Number
  - Parcel Boundary Type

REVISION INFORMATION IS LOCATED ON A SEPARATE DOCUMENT

Disclaimer - Indemnification  
 Maricopa County Assessor's Office and its agents, the Maricopa County Assessor, do not guarantee the accuracy of the data and information reported and hereby reported. Maricopa County Assessor's Office and its agents, the Maricopa County Assessor, do not warrant the accuracy of the data and information reported and hereby reported. The parcels on this map are for illustrative purposes only and are not intended to be used as a title document.



MARICOPA COUNTY  
OFFICIAL PARCEL MAP  
STATE OF ARIZONA

PT SECTION 24 T01N R03E

MAP ID - 851 - 24 - 02 - 02

MAP ID - 851 - 24 - 02 - 02

| 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 132 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 | 143 | 144 | 145 | 146 | 147 | 148 | 149 | 150 | 151 | 152 | 153 | 154 | 155 | 156 | 157 | 158 | 159 | 160 | 161 | 162 | 163 | 164 | 165 | 166 | 167 | 168 | 169 | 170 | 171 | 172 | 173 | 174 | 175 | 176 | 177 | 178 | 179 | 180 | 181 | 182 | 183 | 184 | 185 | 186 | 187 | 188 | 189 | 190 | 191 | 192 | 193 | 194 | 195 | 196 | 197 | 198 | 199 | 200 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 132 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 | 143 | 144 | 145 | 146 | 147 | 148 | 149 | 150 | 151 | 152 | 153 | 154 | 155 | 156 | 157 | 158 | 159 | 160 | 161 | 162 | 163 | 164 | 165 | 166 | 167 | 168 | 169 | 170 | 171 | 172 | 173 | 174 | 175 | 176 | 177 | 178 | 179 | 180 | 181 | 182 | 183 | 184 | 185 | 186 | 187 | 188 | 189 | 190 | 191 | 192 | 193 | 194 | 195 | 196 | 197 | 198 | 199 | 200 |

LOCATOR GRID

| SECTION | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99  | 100 |
|---------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|
| 1       | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |     |

ASSESSOR'S MAPS WITHIN THIS AREA

BOOK 121 MAP 41  
BOOK 122 MAP 03  
BOOK 122 MAP 24

SUBDIVISIONS

MADISON SQUARE OFFICE PARK  
MCR 947-82, 2009 SUB



SCALE: 1" = 100'

04-20-2008

MARICOPA COUNTY ASSESSOR'S OFFICE  
301 W. JEFFERSON ST.  
PHOENIX, AZ 85003  
www.maricopa.gov/assessor

LEGEND

- Subdivision Boundary Line
- Subdivision Survey Corner
- Street Centerline
- Street Centerline Width
- Section Corner Marker
- Section Boundary Line
- Parcel Boundary Line
- Parcel ID Line
- Parcel Number
- Parcel Boundary Turn
- Section Boundary Turn

Disclaimer - Indemnification  
Requester/owner subdivisions and parcels. All survey data does not guarantee the accuracy of the data and information presented and hereby released. Assessor's responsibility for the data and information presented is limited to the accuracy of the data and information presented. The assessor does not warrant the accuracy of the data and information presented and is not liable for any errors or omissions.

EC 14 SW COR SEC 13  
C. 23 NW COR SEC 24

122-03-001C

122-24-005

122-03-001B

122-03-006

122-03-001D

UNIT 1

03-087

RADYNE

122-03-086

SOUTH BANK RADYNE

TRACT A

MADISON SQUARE OFFICE PARK

02-03-008

02-03-009

02-03-010

02-03-011

02-03-012

02-03-013

02-03-014

02-03-015

02-03-016

02-03-017

02-03-018

02-03-019

October 24, 2011

City of Tempe  
31 East Fifth Street  
Tempe, Arizona 85281  
Attn: Andy Goh, P.E. (Floodplain Administrator)

Re: Notification of Letter of Map Revision for the Salt River SR 143 (Hohokam Expressway)  
to I-10 (Maricopa Freeway)

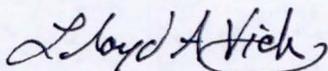
Dear Mr. Goh,

The City of Phoenix has contracted with T.Y.Lin International to prepare a Letter of Map Revision (LOMR) based upon an approved Conditional Letter of Map Revision (CLOMR) and improvement project at the Sky Harbor International Airport. The completed improvement project includes the design and construction of a levee extension, on the north side of the river, which encroaches into the Salt River. Additional components of the project included new grading of the river bed upstream and adjacent to the improvement project as well as bank and bank protection improvements along the south side of the river.

The project resulted in increases and decreases in the 1% annual chance water surface elevation for the Salt River with a maximum increase of 0.30 feet at the downstream side of the SR-143 bridge and a maximum decrease of 3.0 feet at the downstream end of the new levee improvements located approximately 1.2 miles upstream of the I-10 bridge.

This letter is to inform you of the increases in the 1% annual chance water surface elevations within the Salt River adjacent to your property at Sky Harbor International Airport. Our intent is to send the LOMR application on for FEMA review within a few weeks. If you have any questions please give me a call at 480.968.8814.

Sincerely,



Lloyd A. Vick, P.E., CFM  
Project Manager, Stormwater Group

Appendix C  
HEC-RAS MODELS

Appendix C.1  
CORRECTED EFFECTIVE MODEL

| Reach | River Sta | Profile | Q Total<br>(cfs) | Min Ch El<br>(ft) | W.S. Elev<br>(ft) | Crit W.S.<br>(ft) | E.G. Elev<br>(ft) | E.G. Slope<br>(ft/ft) | Vel Chnl<br>(ft/s) | Flow Area<br>(sq ft) | Top Width<br>(ft) | Froude # Chl |
|-------|-----------|---------|------------------|-------------------|-------------------|-------------------|-------------------|-----------------------|--------------------|----------------------|-------------------|--------------|
| 1     | 225.30    | PF#1    | 172000.00        | 1148.58           | 1179.47           | 1164.82           | 1179.88           | 0.000188              | 5.15               | 33422.66             | 1883.46           | 0.20         |
| 1     | 225.30    | PF#2    | 172000.00        | 1148.58           | 1179.47           | 1164.82           | 1179.88           | 0.000188              | 5.15               | 33422.66             | 1883.46           | 0.20         |
| 1     | 225.19    | PF#1    | 172000.00        | 1152.57           | 1178.78           | 1167.85           | 1179.67           | 0.000493              | 7.56               | 22739.53             | 1212.92           | 0.31         |
| 1     | 225.19    | PF#2    | 172000.00        | 1152.57           | 1178.78           | 1167.85           | 1179.67           | 0.000493              | 7.56               | 22739.53             | 1212.92           | 0.31         |
| 1     | 225.11    | PF#1    | 172000.00        | 1150.28           | 1178.83           | 1165.82           | 1179.42           | 0.000279              | 6.15               | 27955.07             | 1609.78           | 0.24         |
| 1     | 225.11    | PF#2    | 172000.00        | 1150.28           | 1178.83           | 1165.82           | 1179.42           | 0.000279              | 6.15               | 27955.07             | 1609.78           | 0.24         |
| 1     | 225       | PF#1    | 172000.00        | 1140.48           | 1178.98           | 1162.18           | 1179.22           | 0.000106              | 3.91               | 44039.72             | 2462.93           | 0.15         |
| 1     | 225       | PF#2    | 172000.00        | 1140.48           | 1178.98           | 1162.18           | 1179.22           | 0.000106              | 3.91               | 44039.72             | 2462.93           | 0.15         |
| 1     | 224.90    | PF#1    | 172000.00        | 1149.88           | 1178.71           | 1165.89           | 1179.12           | 0.000239              | 5.13               | 33545.73             | 3005.66           | 0.22         |
| 1     | 224.90    | PF#2    | 172000.00        | 1149.88           | 1178.71           | 1165.89           | 1179.12           | 0.000239              | 5.13               | 33545.73             | 3005.66           | 0.22         |
| 1     | 224.82    | PF#1    | 172000.00        | 1151.39           | 1178.67           | 1164.96           | 1178.99           | 0.000235              | 4.53               | 37947.40             | 2819.02           | 0.19         |
| 1     | 224.82    | PF#2    | 172000.00        | 1151.39           | 1178.67           | 1164.96           | 1178.99           | 0.000235              | 4.53               | 37947.40             | 2819.02           | 0.19         |
| 1     | 224.71    | PF#1    | 172000.00        | 1143.89           | 1178.67           | 1160.91           | 1178.86           | 0.000112              | 3.51               | 49037.55             | 3514.15           | 0.13         |
| 1     | 224.71    | PF#2    | 172000.00        | 1143.89           | 1178.67           | 1160.91           | 1178.86           | 0.000112              | 3.51               | 49037.55             | 3514.15           | 0.13         |
| 1     | 224.62    | PF#1    | 172000.00        | 1145.13           | 1178.58           | 1162.11           | 1178.80           | 0.000135              | 3.77               | 45606.50             | 3108.02           | 0.14         |
| 1     | 224.62    | PF#2    | 172000.00        | 1145.13           | 1178.58           | 1162.11           | 1178.80           | 0.000135              | 3.77               | 45606.50             | 3108.02           | 0.14         |
| 1     | 224.52    | PF#1    | 172000.00        | 1149.60           | 1178.51           | 1160.53           | 1178.73           | 0.000118              | 3.79               | 45384.80             | 3145.39           | 0.14         |
| 1     | 224.52    | PF#2    | 172000.00        | 1149.60           | 1178.51           | 1160.53           | 1178.73           | 0.000118              | 3.79               | 45384.80             | 3145.39           | 0.14         |
| 1     | 224.42    | PF#1    | 172000.00        | 1148.94           | 1178.36           | 1160.48           | 1178.66           | 0.000146              | 4.35               | 39500.05             | 2946.38           | 0.15         |
| 1     | 224.42    | PF#2    | 172000.00        | 1148.94           | 1178.36           | 1160.48           | 1178.66           | 0.000146              | 4.35               | 39500.05             | 2946.38           | 0.15         |
| 1     | 224.31    | PF#1    | 172000.00        | 1147.72           | 1177.92           | 1162.20           | 1178.51           | 0.000307              | 6.13               | 28045.73             | 2559.17           | 0.22         |
| 1     | 224.31    | PF#2    | 172000.00        | 1147.72           | 1177.92           | 1162.20           | 1178.51           | 0.000307              | 6.13               | 28045.73             | 2559.17           | 0.22         |
| 1     | 224.22    | PF#1    | 172000.00        | 1150.80           | 1177.77           | 1162.35           | 1178.36           | 0.000321              | 6.15               | 27964.68             | 1204.04           | 0.22         |
| 1     | 224.22    | PF#2    | 172000.00        | 1150.80           | 1177.77           | 1162.35           | 1178.36           | 0.000321              | 6.15               | 27964.68             | 1204.04           | 0.22         |
| 1     | 224.21    |         | Bridge           |                   |                   |                   |                   |                       |                    |                      |                   |              |
| 1     | 224.20    | PF#1    | 172000.00        | 1151.06           | 1177.48           |                   | 1178.22           | 0.000412              | 6.90               | 24936.19             | 1087.88           | 0.25         |
| 1     | 224.20    | PF#2    | 172000.00        | 1151.06           | 1177.48           |                   | 1178.22           | 0.000412              | 6.90               | 24936.19             | 1087.88           | 0.25         |
| 1     | 224.19    | PF#1    | 172000.00        | 1151.26           | 1177.43           | 1163.12           | 1178.18           | 0.000410              | 6.96               | 24729.48             | 1061.97           | 0.25         |
| 1     | 224.19    | PF#2    | 172000.00        | 1151.26           | 1177.43           | 1163.12           | 1178.18           | 0.000410              | 6.96               | 24729.48             | 1061.97           | 0.25         |
| 1     | 224.175   |         | Bridge           |                   |                   |                   |                   |                       |                    |                      |                   |              |
| 1     | 224.16    | PF#1    | 172000.00        | 1150.55           | 1177.33           |                   | 1178.06           | 0.000392              | 6.87               | 25043.49             | 1057.54           | 0.25         |
| 1     | 224.16    | PF#2    | 172000.00        | 1150.55           | 1177.33           |                   | 1178.06           | 0.000392              | 6.87               | 25043.49             | 1057.54           | 0.25         |
| 1     | 224.14    | PF#1    | 172000.00        | 1148.02           | 1177.32           | 1161.74           | 1178.01           | 0.000355              | 6.65               | 25869.23             | 1064.06           | 0.24         |
| 1     | 224.14    | PF#2    | 172000.00        | 1148.02           | 1177.32           | 1161.74           | 1178.01           | 0.000355              | 6.65               | 25869.23             | 1064.06           | 0.24         |
| 1     | 224.13    |         | Bridge           |                   |                   |                   |                   |                       |                    |                      |                   |              |
| 1     | 224.12    | PF#1    | 172000.00        | 1147.53           | 1177.32           |                   | 1177.87           | 0.000272              | 5.95               | 28900.35             | 1152.56           | 0.21         |
| 1     | 224.12    | PF#2    | 172000.00        | 1147.53           | 1177.32           |                   | 1177.87           | 0.000272              | 5.95               | 28900.35             | 1152.56           | 0.21         |
| 1     | 224.06    | PF#1    | 172000.00        | 1147.72           | 1176.71           | 1162.43           | 1177.70           | 0.000512              | 8.00               | 21513.37             | 1373.07           | 0.28         |
| 1     | 224.06    | PF#2    | 172000.00        | 1147.72           | 1176.71           | 1162.43           | 1177.70           | 0.000512              | 8.00               | 21513.37             | 1373.07           | 0.28         |
| 1     | 223.96    | PF#1    | 172000.00        | 1144.42           | 1176.66           | 1159.81           | 1177.46           | 0.000268              | 7.16               | 24011.43             | 1815.69           | 0.24         |
| 1     | 223.96    | PF#2    | 172000.00        | 1144.42           | 1176.66           | 1159.81           | 1177.46           | 0.000268              | 7.16               | 24011.43             | 1815.69           | 0.24         |
| 1     | 223.86    | PF#1    | 172000.00        | 1143.08           | 1176.23           | 1159.99           | 1177.25           | 0.000414              | 8.13               | 21156.52             | 1139.06           | 0.28         |
| 1     | 223.86    | PF#2    | 172000.00        | 1143.08           | 1176.23           | 1159.99           | 1177.25           | 0.000414              | 8.13               | 21156.52             | 1139.06           | 0.28         |
| 1     | 223.77    | PF#1    | 172000.00        | 1141.31           | 1175.64           | 1160.42           | 1176.97           | 0.000640              | 9.28               | 18529.95             | 1291.19           | 0.31         |
| 1     | 223.77    | PF#2    | 172000.00        | 1141.31           | 1175.64           | 1160.42           | 1176.97           | 0.000640              | 9.28               | 18529.95             | 1291.19           | 0.31         |
| 1     | 223.67    | PF#1    | 172000.00        | 1140.38           | 1174.63           | 1161.99           | 1176.46           | 0.001519              | 10.85              | 15846.05             | 946.36            | 0.38         |
| 1     | 223.67    | PF#2    | 172000.00        | 1140.38           | 1174.63           | 1161.99           | 1176.46           | 0.001519              | 10.85              | 15846.05             | 946.36            | 0.38         |
| 1     | 223.58    | PF#1    | 172000.00        | 1146.17           | 1172.82           | 1164.23           | 1175.43           | 0.002452              | 12.96              | 13274.15             | 990.08            | 0.49         |
| 1     | 223.58    | PF#2    | 172000.00        | 1146.17           | 1172.82           | 1164.23           | 1175.43           | 0.002452              | 12.96              | 13274.15             | 990.08            | 0.49         |
| 1     | 223.48    | PF#1    | 172000.00        | 1137.82           | 1172.36           | 1160.42           | 1174.25           | 0.001548              | 11.03              | 15600.01             | 932.68            | 0.39         |
| 1     | 223.48    | PF#2    | 172000.00        | 1137.82           | 1172.36           | 1160.42           | 1174.25           | 0.001548              | 11.03              | 15600.01             | 932.68            | 0.39         |

HEC-RAS Plan: CorrEff-1988 River: Salt Reach: 1 (Continued)

| Reach | River Sta | Profile | Q Total<br>(cfs) | Min Ch El<br>(ft) | W.S. Elev<br>(ft) | Crit W.S.<br>(ft) | E.G. Elev<br>(ft) | E.G. Slope<br>(ft/ft) | Vel Chnl<br>(ft/s) | Flow Area<br>(sq ft) | Top Width<br>(ft) | Froude # Chl |
|-------|-----------|---------|------------------|-------------------|-------------------|-------------------|-------------------|-----------------------|--------------------|----------------------|-------------------|--------------|
| 1     | 223.38    | PF#1    | 172000.00        | 1136.74           | 1171.94           | 1159.27           | 1173.43           | 0.001141              | 9.78               | 17587.78             | 1660.34           | 0.35         |
| 1     | 223.38    | PF#2    | 172000.00        | 1136.74           | 1171.94           | 1159.27           | 1173.43           | 0.001141              | 9.78               | 17587.78             | 1660.34           | 0.35         |
| 1     | 223.29    | PF#1    | 172000.00        | 1142.02           | 1171.46           | 1159.53           | 1172.86           | 0.001115              | 9.48               | 18139.39             | 2257.55           | 0.35         |
| 1     | 223.29    | PF#2    | 172000.00        | 1142.02           | 1171.46           | 1159.53           | 1172.86           | 0.001115              | 9.48               | 18139.39             | 2257.55           | 0.35         |
| 1     | 223.19    | PF#1    | 172000.00        | 1143.12           | 1171.41           | 1157.80           | 1172.27           | 0.000631              | 7.44               | 23102.99             | 2090.38           | 0.27         |
| 1     | 223.19    | PF#2    | 172000.00        | 1143.12           | 1171.41           | 1157.80           | 1172.27           | 0.000631              | 7.44               | 23102.99             | 2090.38           | 0.27         |
| 1     | 223.09    | PF#1    | 172000.00        | 1148.42           | 1169.13           | 1165.19           | 1171.51           | 0.002888              | 12.40              | 13873.47             | 1221.77           | 0.61         |
| 1     | 223.09    | PF#2    | 172000.00        | 1148.42           | 1169.13           | 1165.19           | 1171.51           | 0.002888              | 12.40              | 13873.47             | 1221.77           | 0.61         |
| 1     | 223.085   |         | Bridge           |                   |                   |                   |                   |                       |                    |                      |                   |              |
| 1     | 223.08    | PF#1    | 172000.00        | 1148.42           | 1165.17           | 1165.17           | 1170.03           | 0.008433              | 17.68              | 9726.08              | 1000.81           | 1.00         |
| 1     | 223.08    | PF#2    | 172000.00        | 1148.42           | 1165.17           | 1165.17           | 1170.03           | 0.008433              | 17.68              | 9726.08              | 1000.81           | 1.00         |
| 1     | 223.02    | PF#1    | 172000.00        | 1142.12           | 1165.67           | 1156.36           | 1166.89           | 0.000943              | 8.86               | 19419.72             | 1524.52           | 0.37         |
| 1     | 223.02    | PF#2    | 172000.00        | 1142.12           | 1165.67           | 1156.36           | 1166.89           | 0.000943              | 8.86               | 19419.72             | 1524.52           | 0.37         |
| 1     | 222.93    | PF#1    | 172000.00        | 1139.82           | 1165.17           | 1154.29           | 1166.44           | 0.000836              | 9.04               | 19036.99             | 2119.95           | 0.35         |
| 1     | 222.93    | PF#2    | 172000.00        | 1139.82           | 1165.17           | 1154.29           | 1166.44           | 0.000836              | 9.04               | 19036.99             | 2119.95           | 0.35         |
| 1     | 222.83    | PF#1    | 172000.00        | 1130.04           | 1165.02           | 1151.56           | 1166.01           | 0.000578              | 8.01               | 21475.98             | 2187.69           | 0.30         |
| 1     | 222.83    | PF#2    | 172000.00        | 1130.04           | 1165.02           | 1151.56           | 1166.01           | 0.000578              | 8.01               | 21475.98             | 2187.69           | 0.30         |
| 1     | 222.74    | PF#1    | 172000.00        | 1136.28           | 1164.71           | 1152.58           | 1165.71           | 0.000642              | 8.03               | 21416.29             | 2043.49           | 0.31         |
| 1     | 222.74    | PF#2    | 172000.00        | 1136.28           | 1164.71           | 1152.58           | 1165.71           | 0.000642              | 8.03               | 21416.29             | 2043.49           | 0.31         |
| 1     | 222.65    | PF#1    | 172000.00        | 1140.87           | 1164.35           | 1153.74           | 1165.38           | 0.000706              | 8.15               | 21093.26             | 2093.81           | 0.33         |
| 1     | 222.65    | PF#2    | 172000.00        | 1140.87           | 1164.35           | 1153.74           | 1165.38           | 0.000706              | 8.15               | 21093.26             | 2093.81           | 0.33         |
| 1     | 222.55    | PF#1    | 172000.00        | 1141.72           | 1164.22           | 1153.50           | 1165.03           | 0.000433              | 7.24               | 23762.41             | 1818.08           | 0.29         |
| 1     | 222.55    | PF#2    | 172000.00        | 1141.72           | 1164.22           | 1153.50           | 1165.03           | 0.000433              | 7.24               | 23762.41             | 1818.08           | 0.29         |
| 1     | 222.45    | PF#1    | 172000.00        | 1141.66           | 1164.05           | 1153.19           | 1164.79           | 0.000416              | 6.90               | 24916.89             | 1643.69           | 0.29         |
| 1     | 222.45    | PF#2    | 172000.00        | 1141.66           | 1164.05           | 1153.19           | 1164.79           | 0.000416              | 6.90               | 24916.89             | 1643.69           | 0.29         |
| 1     | 222.36    | PF#1    | 172000.00        | 1140.99           | 1163.41           | 1154.05           | 1164.51           | 0.000648              | 8.41               | 20462.33             | 1414.78           | 0.36         |
| 1     | 222.36    | PF#2    | 172000.00        | 1140.99           | 1163.41           | 1154.05           | 1164.51           | 0.000648              | 8.41               | 20462.33             | 1414.78           | 0.36         |
| 1     | 222.27    | PF#1    | 172000.00        | 1141.31           | 1162.76           | 1154.30           | 1164.13           | 0.000822              | 9.37               | 18355.76             | 1214.19           | 0.40         |
| 1     | 222.27    | PF#2    | 172000.00        | 1141.31           | 1162.76           | 1154.30           | 1164.13           | 0.000822              | 9.37               | 18355.76             | 1214.19           | 0.40         |
| 1     | 222.17    | PF#1    | 172000.00        | 1139.28           | 1162.32           | 1153.38           | 1163.73           | 0.000793              | 9.52               | 18073.77             | 1227.63           | 0.40         |
| 1     | 222.17    | PF#2    | 172000.00        | 1139.28           | 1162.32           | 1153.38           | 1163.73           | 0.000793              | 9.52               | 18073.77             | 1227.63           | 0.40         |
| 1     | 222.09    | PF#1    | 172000.00        | 1138.12           | 1162.26           | 1150.96           | 1163.39           | 0.000568              | 8.50               | 20236.65             | 1233.94           | 0.34         |
| 1     | 222.09    | PF#2    | 172000.00        | 1138.12           | 1162.26           | 1150.96           | 1163.39           | 0.000568              | 8.50               | 20236.65             | 1233.94           | 0.34         |
| 1     | 222.085   |         | Bridge           |                   |                   |                   |                   |                       |                    |                      |                   |              |
| 1     | 222.08    | PF#1    | 172000.00        | 1138.12           | 1162.05           | 1150.96           | 1163.20           | 0.000588              | 8.59               | 20015.19             | 1231.16           | 0.35         |
| 1     | 222.08    | PF#2    | 172000.00        | 1138.12           | 1162.05           | 1150.96           | 1163.20           | 0.000588              | 8.59               | 20015.19             | 1231.16           | 0.35         |
| 1     | 221.99    | PF#1    | 172000.00        | 1140.26           | 1161.11           | 1153.45           | 1162.80           | 0.001084              | 10.44              | 16482.55             | 1183.96           | 0.46         |
| 1     | 221.99    | PF#2    | 172000.00        | 1140.26           | 1161.11           | 1153.45           | 1162.80           | 0.001084              | 10.44              | 16482.55             | 1183.96           | 0.46         |
| 1     | 221.89    | PF#1    | 172000.00        | 1138.32           | 1160.19           | 1153.84           | 1162.16           | 0.001350              | 11.24              | 15302.29             | 1151.31           | 0.50         |
| 1     | 221.89    | PF#2    | 172000.00        | 1138.32           | 1160.19           | 1153.84           | 1162.16           | 0.001350              | 11.24              | 15302.29             | 1151.31           | 0.50         |
| 1     | 221.80    | PF#1    | 172000.00        | 1138.47           | 1159.48           | 1152.75           | 1161.50           | 0.001319              | 11.41              | 15078.67             | 1212.25           | 0.50         |
| 1     | 221.80    | PF#2    | 172000.00        | 1138.47           | 1159.48           | 1152.75           | 1161.50           | 0.001319              | 11.41              | 15078.67             | 1212.25           | 0.50         |
| 1     | 221.70    | PF#1    | 172000.00        | 1136.42           | 1158.83           | 1151.75           | 1160.82           | 0.001283              | 11.30              | 15219.41             | 1465.14           | 0.49         |
| 1     | 221.70    | PF#2    | 172000.00        | 1136.42           | 1158.83           | 1151.75           | 1160.82           | 0.001283              | 11.30              | 15219.41             | 1465.14           | 0.49         |
| 1     | 221.61    | PF#1    | 172000.00        | 1136.10           | 1157.80           | 1151.83           | 1160.09           | 0.001594              | 12.12              | 14186.94             | 1387.36           | 0.55         |
| 1     | 221.61    | PF#2    | 172000.00        | 1136.10           | 1157.80           | 1151.83           | 1160.09           | 0.001594              | 12.12              | 14186.94             | 1387.36           | 0.55         |
| 1     | 221.50    | PF#1    | 172000.00        | 1136.20           | 1156.72           | 1151.30           | 1159.12           | 0.001738              | 12.44              | 13828.11             | 1332.12           | 0.57         |
| 1     | 221.50    | PF#2    | 172000.00        | 1136.20           | 1156.72           | 1151.30           | 1159.12           | 0.001738              | 12.44              | 13828.11             | 1332.12           | 0.57         |
| 1     | 221.40    | PF#1    | 172000.00        | 1135.33           | 1155.81           | 1150.00           | 1158.09           | 0.002233              | 12.11              | 14199.93             | 1061.33           | 0.55         |
| 1     | 221.40    | PF#2    | 172000.00        | 1135.33           | 1155.81           | 1150.00           | 1158.09           | 0.002233              | 12.11              | 14199.93             | 1061.33           | 0.55         |

HEC-RAS Plan: CorrEff-1988 River: Salt Reach: 1 (Continued)

| Reach | River Sta | Profile | Q Total<br>(cfs) | Min Ch El<br>(ft) | W.S. Elev<br>(ft) | Crit W.S.<br>(ft) | E.G. Elev<br>(ft) | E.G. Slope<br>(ft/ft) | Vel Chnl<br>(ft/s) | Flow Area<br>(sq ft) | Top Width<br>(ft) | Froude # Chl |
|-------|-----------|---------|------------------|-------------------|-------------------|-------------------|-------------------|-----------------------|--------------------|----------------------|-------------------|--------------|
| 1     | 221.31    | PF#1    | 172000.00        | 1133.55           | 1154.45           | 1148.95           | 1156.91           | 0.002386              | 12.58              | 13675.83             | 1151.47           | 0.57         |
| 1     | 221.31    | PF#2    | 172000.00        | 1133.55           | 1154.45           | 1148.95           | 1156.91           | 0.002386              | 12.58              | 13675.83             | 1151.47           | 0.57         |
| 1     | 221.26    | PF#1    | 169000.00        | 1126.41           | 1154.85           | 1144.76           | 1156.19           | 0.000960              | 9.29               | 18186.91             | 1086.41           | 0.38         |
| 1     | 221.26    | PF#2    | 169000.00        | 1126.41           | 1154.85           | 1144.76           | 1156.19           | 0.000960              | 9.29               | 18186.91             | 1086.41           | 0.38         |
| 1     | 221.25    |         | Bridge           |                   |                   |                   |                   |                       |                    |                      |                   |              |
| 1     | 221.24    | PF#1    | 169000.00        | 1126.41           | 1154.52           | 1144.76           | 1155.91           | 0.001016              | 9.46               | 17867.07             | 1071.29           | 0.39         |
| 1     | 221.24    | PF#2    | 169000.00        | 1126.41           | 1154.52           | 1144.76           | 1155.91           | 0.001016              | 9.46               | 17867.07             | 1071.29           | 0.39         |
| 1     | 221.2     | PF#1    | 169000.00        | 1130.12           | 1154.30           | 1144.48           | 1155.71           | 0.001064              | 9.55               | 17703.85             | 1104.39           | 0.39         |
| 1     | 221.2     | PF#2    | 169000.00        | 1130.12           | 1154.30           | 1144.48           | 1155.71           | 0.001064              | 9.55               | 17703.85             | 1104.39           | 0.39         |
| 1     | 221.195   |         | Bridge           |                   |                   |                   |                   |                       |                    |                      |                   |              |
| 1     | 221.19    | PF#1    | 169000.00        | 1130.12           | 1153.93           | 1144.48           | 1155.41           | 0.001132              | 9.74               | 17348.56             | 1048.68           | 0.41         |
| 1     | 221.19    | PF#2    | 169000.00        | 1130.12           | 1153.93           | 1144.48           | 1155.41           | 0.001132              | 9.74               | 17348.56             | 1048.68           | 0.41         |
| 1     | 221.06    | PF#1    | 169000.00        | 1128.12           | 1153.20           | 1143.15           | 1154.69           | 0.001074              | 9.77               | 17291.38             | 1352.68           | 0.40         |
| 1     | 221.06    | PF#2    | 169000.00        | 1128.12           | 1153.20           | 1143.15           | 1154.69           | 0.001074              | 9.77               | 17291.38             | 1352.68           | 0.40         |
| 1     | 221.055   |         | Bridge           |                   |                   |                   |                   |                       |                    |                      |                   |              |
| 1     | 221.05    | PF#1    | 169000.00        | 1128.12           | 1152.96           | 1143.15           | 1154.48           | 0.001100              | 9.90               | 17069.98             | 1318.22           | 0.40         |
| 1     | 221.05    | PF#2    | 169000.00        | 1128.12           | 1152.96           | 1143.15           | 1154.48           | 0.001100              | 9.90               | 17069.98             | 1318.22           | 0.40         |
| 1     | 221.02    | PF#1    | 169000.00        | 1132.18           | 1152.48           | 1144.72           | 1154.25           | 0.001403              | 10.69              | 15806.15             | 1161.03           | 0.45         |
| 1     | 221.02    | PF#2    | 169000.00        | 1132.18           | 1152.48           | 1144.72           | 1154.25           | 0.001403              | 10.69              | 15806.15             | 1161.03           | 0.45         |
| 1     | 220.92    | PF#1    | 169000.00        | 1131.28           | 1151.51           | 1144.65           | 1153.46           | 0.001666              | 11.22              | 15057.50             | 1071.91           | 0.49         |
| 1     | 220.92    | PF#2    | 169000.00        | 1131.28           | 1151.51           | 1144.65           | 1153.46           | 0.001666              | 11.22              | 15057.50             | 1071.91           | 0.49         |
| 1     | 220.82    | PF#1    | 169000.00        | 1131.68           | 1150.65           | 1143.86           | 1152.59           | 0.001688              | 11.19              | 15099.36             | 1082.75           | 0.49         |
| 1     | 220.82    | PF#2    | 169000.00        | 1131.68           | 1150.65           | 1143.86           | 1152.59           | 0.001688              | 11.19              | 15099.36             | 1082.75           | 0.49         |
| 1     | 220.73    | PF#1    | 169000.00        | 1129.81           | 1149.71           | 1143.21           | 1151.74           | 0.001716              | 11.43              | 14781.34             | 1018.33           | 0.49         |
| 1     | 220.73    | PF#2    | 169000.00        | 1129.81           | 1149.71           | 1143.21           | 1151.74           | 0.001716              | 11.43              | 14781.34             | 1018.33           | 0.49         |
| 1     | 220.63    | PF#1    | 169000.00        | 1129.22           | 1148.86           | 1142.38           | 1150.87           | 0.001735              | 11.38              | 14855.51             | 981.88            | 0.49         |
| 1     | 220.63    | PF#2    | 169000.00        | 1129.22           | 1148.86           | 1142.38           | 1150.87           | 0.001735              | 11.38              | 14855.51             | 981.88            | 0.49         |
| 1     | 220.54    | PF#1    | 169000.00        | 1129.44           | 1147.96           | 1141.68           | 1149.99           | 0.001789              | 11.42              | 14796.15             | 1107.01           | 0.50         |
| 1     | 220.54    | PF#2    | 169000.00        | 1129.44           | 1147.96           | 1141.68           | 1149.99           | 0.001789              | 11.42              | 14796.15             | 1107.01           | 0.50         |
| 1     | 220.45    | PF#1    | 169000.00        | 1127.55           | 1147.09           | 1140.70           | 1149.11           | 0.001759              | 11.39              | 14836.93             | 1293.60           | 0.50         |
| 1     | 220.45    | PF#2    | 169000.00        | 1127.55           | 1147.09           | 1140.70           | 1149.11           | 0.001759              | 11.39              | 14836.93             | 1293.60           | 0.50         |
| 1     | 220.35    | PF#1    | 169000.00        | 1126.11           | 1146.36           | 1139.27           | 1148.23           | 0.001554              | 10.95              | 15436.48             | 1375.56           | 0.47         |
| 1     | 220.35    | PF#2    | 169000.00        | 1126.11           | 1146.36           | 1139.27           | 1148.23           | 0.001554              | 10.95              | 15436.48             | 1375.56           | 0.47         |
| 1     | 220.25    | PF#1    | 169000.00        | 1126.13           | 1145.26           | 1139.23           | 1147.35           | 0.001891              | 11.59              | 14575.96             | 1743.43           | 0.51         |
| 1     | 220.25    | PF#2    | 169000.00        | 1126.13           | 1145.26           | 1139.23           | 1147.35           | 0.001891              | 11.59              | 14575.96             | 1743.43           | 0.51         |
| 1     | 220.16    | PF#1    | 169000.00        | 1126.70           | 1143.86           | 1139.05           | 1146.26           | 0.002358              | 12.44              | 13590.45             | 1469.55           | 0.57         |
| 1     | 220.16    | PF#2    | 169000.00        | 1126.70           | 1143.86           | 1139.05           | 1146.26           | 0.002358              | 12.44              | 13590.45             | 1469.55           | 0.57         |
| 1     | 220.06    | PF#1    | 169000.00        | 1125.02           | 1142.84           | 1137.54           | 1145.11           | 0.002142              | 12.08              | 13991.42             | 909.53            | 0.54         |
| 1     | 220.06    | PF#2    | 169000.00        | 1125.02           | 1142.84           | 1137.54           | 1145.11           | 0.002142              | 12.08              | 13991.42             | 909.53            | 0.54         |
| 1     | 220.05    |         | Bridge           |                   |                   |                   |                   |                       |                    |                      |                   |              |
| 1     | 220.03    | PF#1    | 169000.00        | 1125.02           | 1141.86           | 1137.54           | 1144.44           | 0.002655              | 12.90              | 13098.31             | 906.62            | 0.60         |
| 1     | 220.03    | PF#2    | 169000.00        | 1125.02           | 1141.86           | 1137.54           | 1144.44           | 0.002655              | 12.90              | 13098.31             | 906.62            | 0.60         |
| 1     | 219.88    | PF#1    | 169000.00        | 1121.62           | 1139.57           | 1135.63           | 1142.23           | 0.002848              | 13.11              | 12892.65             | 2003.97           | 0.62         |
| 1     | 219.88    | PF#2    | 169000.00        | 1121.62           | 1139.57           | 1135.63           | 1142.23           | 0.002848              | 13.11              | 12892.65             | 2003.97           | 0.62         |
| 1     | 219.79    | PF#1    | 169000.00        | 1121.42           | 1138.08           | 1134.41           | 1140.81           | 0.003007              | 13.26              | 12747.96             | 2039.45           | 0.63         |
| 1     | 219.79    | PF#2    | 169000.00        | 1121.42           | 1138.08           | 1134.41           | 1140.81           | 0.003007              | 13.26              | 12747.96             | 2039.45           | 0.63         |
| 1     | 219.70    | PF#1    | 169000.00        | 1117.93           | 1136.76           | 1132.78           | 1139.34           | 0.002805              | 12.91              | 13092.49             | 2045.91           | 0.61         |
| 1     | 219.70    | PF#2    | 169000.00        | 1117.93           | 1136.76           | 1132.78           | 1139.34           | 0.002805              | 12.91              | 13092.49             | 2045.91           | 0.61         |
| 1     | 219.61    | PF#1    | 169000.00        | 1114.51           | 1135.98           | 1130.68           | 1138.05           | 0.002050              | 11.54              | 14650.81             | 2912.69           | 0.53         |
| 1     | 219.61    | PF#2    | 169000.00        | 1114.51           | 1135.98           | 1130.68           | 1138.05           | 0.002050              | 11.54              | 14650.81             | 2912.69           | 0.53         |

HEC-RAS Plan: CorrEff-1988 River: Salt Reach: 1 (Continued)

| Reach | River Sta | Profile | Q Total<br>(cfs) | Min Ch El<br>(ft) | W.S. Elev<br>(ft) | Crit W.S.<br>(ft) | E.G. Elev<br>(ft) | E.G. Slope<br>(ft/ft) | Vel Chnl<br>(ft/s) | Flow Area<br>(sq ft) | Top Width<br>(ft) | Froude # Chl |
|-------|-----------|---------|------------------|-------------------|-------------------|-------------------|-------------------|-----------------------|--------------------|----------------------|-------------------|--------------|
| 1     | 219.51    | PF#1    | 169000.00        | 1113.76           | 1135.05           | 1129.53           | 1137.02           | 0.001942              | 11.27              | 14994.09             | 1910.45           | 0.51         |
| 1     | 219.51    | PF#2    | 169000.00        | 1113.76           | 1135.05           | 1129.53           | 1137.02           | 0.001942              | 11.27              | 14994.09             | 1910.45           | 0.51         |
| 1     | 219.42    | PF#1    | 169000.00        | 1113.95           | 1134.12           | 1128.52           | 1136.06           | 0.001898              | 11.18              | 15122.13             | 2400.95           | 0.51         |
| 1     | 219.42    | PF#2    | 169000.00        | 1113.95           | 1134.12           | 1128.52           | 1136.06           | 0.001898              | 11.18              | 15122.13             | 2400.95           | 0.51         |
| 1     | 219.33    | PF#1    | 169000.00        | 1115.52           | 1133.22           | 1127.68           | 1135.16           | 0.001929              | 11.17              | 15131.65             | 2726.07           | 0.51         |
| 1     | 219.33    | PF#2    | 169000.00        | 1115.52           | 1133.22           | 1127.68           | 1135.16           | 0.001929              | 11.17              | 15131.65             | 2726.07           | 0.51         |
| 1     | 219.24    | PF#1    | 169000.00        | 1114.22           | 1132.28           | 1126.81           | 1134.24           | 0.001988              | 11.23              | 15051.63             | 2682.76           | 0.52         |
| 1     | 219.24    | PF#2    | 169000.00        | 1114.22           | 1132.28           | 1126.81           | 1134.24           | 0.001988              | 11.23              | 15051.63             | 2682.76           | 0.52         |
| 1     | 219.14    | PF#1    | 169000.00        | 1112.52           | 1131.32           | 1125.69           | 1133.23           | 0.001887              | 11.10              | 15230.14             | 2551.62           | 0.51         |
| 1     | 219.14    | PF#2    | 169000.00        | 1112.52           | 1131.32           | 1125.69           | 1133.23           | 0.001887              | 11.10              | 15230.14             | 2551.62           | 0.51         |
| 1     | 219.03    | PF#1    | 169000.00        | 1115.02           | 1129.92           | 1125.29           | 1132.07           | 0.002299              | 11.76              | 14369.97             | 1026.67           | 0.55         |
| 1     | 219.03    | PF#2    | 169000.00        | 1115.02           | 1129.92           | 1125.29           | 1132.07           | 0.002299              | 11.76              | 14369.97             | 1026.67           | 0.55         |
| 1     | 219.02    |         | Bridge           |                   |                   |                   |                   |                       |                    |                      |                   |              |
| 1     | 219.01    | PF#1    | 169000.00        | 1115.02           | 1128.48           | 1125.29           | 1131.15           | 0.003274              | 13.10              | 12896.89             | 1022.15           | 0.65         |
| 1     | 219.01    | PF#2    | 169000.00        | 1115.02           | 1128.48           | 1125.29           | 1131.15           | 0.003274              | 13.10              | 12896.89             | 1022.15           | 0.65         |
| 1     | 218.97    | PF#1    | 169000.00        | 1108.57           | 1128.86           | 1122.45           | 1130.62           | 0.001620              | 10.65              | 15870.35             | 1056.96           | 0.47         |
| 1     | 218.97    | PF#2    | 169000.00        | 1108.57           | 1128.86           | 1122.45           | 1130.62           | 0.001620              | 10.65              | 15870.35             | 1056.96           | 0.47         |
| 1     | 218.965   |         | Bridge           |                   |                   |                   |                   |                       |                    |                      |                   |              |
| 1     | 218.96    | PF#1    | 169000.00        | 1108.43           | 1128.15           | 1122.81           | 1130.14           | 0.002010              | 11.32              | 14931.15             | 1096.74           | 0.52         |
| 1     | 218.96    | PF#2    | 169000.00        | 1108.43           | 1128.15           | 1122.81           | 1130.14           | 0.002010              | 11.32              | 14931.15             | 1096.74           | 0.52         |
| 1     | 218.80    | PF#1    | 169000.00        | 1107.82           | 1126.89           | 1120.39           | 1128.62           | 0.001572              | 10.55              | 16025.08             | 2479.22           | 0.47         |
| 1     | 218.80    | PF#2    | 169000.00        | 1107.82           | 1126.89           | 1120.39           | 1128.62           | 0.001572              | 10.55              | 16025.08             | 2479.22           | 0.47         |
| 1     | 218.71    | PF#1    | 169000.00        | 1107.50           | 1125.75           | 1120.26           | 1127.75           | 0.001939              | 11.35              | 14891.77             | 3165.43           | 0.51         |
| 1     | 218.71    | PF#2    | 169000.00        | 1107.50           | 1125.75           | 1120.26           | 1127.75           | 0.001939              | 11.35              | 14891.77             | 3165.43           | 0.51         |
| 1     | 218.61    | PF#1    | 169000.00        | 1104.03           | 1124.73           | 1119.25           | 1126.75           | 0.001987              | 11.40              | 14827.74             | 3020.81           | 0.52         |
| 1     | 218.61    | PF#2    | 169000.00        | 1104.03           | 1124.73           | 1119.25           | 1126.75           | 0.001987              | 11.40              | 14827.74             | 3020.81           | 0.52         |
| 1     | 218.52    | PF#1    | 169000.00        | 1103.49           | 1123.71           | 1118.33           | 1125.74           | 0.002038              | 11.43              | 14789.68             | 2019.27           | 0.53         |
| 1     | 218.52    | PF#2    | 169000.00        | 1103.49           | 1123.71           | 1118.33           | 1125.74           | 0.002038              | 11.43              | 14789.68             | 2019.27           | 0.53         |
| 1     | 218.42    | PF#1    | 169000.00        | 1103.68           | 1122.32           | 1117.87           | 1124.60           | 0.002467              | 12.11              | 13956.58             | 1630.11           | 0.57         |
| 1     | 218.42    | PF#2    | 169000.00        | 1103.68           | 1122.32           | 1117.87           | 1124.60           | 0.002467              | 12.11              | 13956.58             | 1630.11           | 0.57         |
| 1     | 218.33    | PF#1    | 169000.00        | 1101.42           | 1121.61           | 1115.79           | 1123.42           | 0.001772              | 10.78              | 15675.25             | 1051.47           | 0.49         |
| 1     | 218.33    | PF#2    | 169000.00        | 1101.42           | 1121.61           | 1115.79           | 1123.42           | 0.001772              | 10.78              | 15675.25             | 1051.47           | 0.49         |
| 1     | 218.24    | PF#1    | 169000.00        | 1100.09           | 1120.32           | 1115.55           | 1122.42           | 0.002216              | 11.61              | 14553.05             | 1209.42           | 0.55         |
| 1     | 218.24    | PF#2    | 169000.00        | 1100.09           | 1120.32           | 1115.55           | 1122.42           | 0.002216              | 11.61              | 14553.05             | 1209.42           | 0.55         |
| 1     | 218.14    | PF#1    | 169000.00        | 1098.70           | 1119.38           | 1114.09           | 1121.33           | 0.001975              | 11.22              | 15057.21             | 1392.55           | 0.52         |
| 1     | 218.14    | PF#2    | 169000.00        | 1098.70           | 1119.38           | 1114.09           | 1121.33           | 0.001975              | 11.22              | 15057.21             | 1392.55           | 0.52         |
| 1     | 218.04    | PF#1    | 169000.00        | 1097.63           | 1118.40           | 1113.04           | 1120.33           | 0.001943              | 11.14              | 15166.22             | 1038.72           | 0.51         |
| 1     | 218.04    | PF#2    | 169000.00        | 1097.63           | 1118.40           | 1113.04           | 1120.33           | 0.001943              | 11.14              | 15166.22             | 1038.72           | 0.51         |
| 1     | 217.95    | PF#1    | 169000.00        | 1094.59           | 1117.69           | 1111.28           | 1119.37           | 0.001553              | 10.40              | 16247.95             | 1042.17           | 0.46         |
| 1     | 217.95    | PF#2    | 169000.00        | 1094.59           | 1117.69           | 1111.28           | 1119.37           | 0.001553              | 10.40              | 16247.95             | 1042.17           | 0.46         |
| 1     | 217.86    | PF#1    | 169000.00        | 1090.72           | 1116.95           | 1110.49           | 1118.61           | 0.001531              | 10.34              | 16338.86             | 1206.98           | 0.46         |
| 1     | 217.86    | PF#2    | 169000.00        | 1090.72           | 1116.95           | 1110.49           | 1118.61           | 0.001531              | 10.34              | 16338.86             | 1206.98           | 0.46         |
| 1     | 217.76    | PF#1    | 169000.00        | 1094.31           | 1113.85           |                   | 1117.27           | 0.003709              | 14.83              | 11392.71             | 823.79            | 0.70         |
| 1     | 217.76    | PF#2    | 169000.00        | 1094.31           | 1113.85           |                   | 1117.27           | 0.003709              | 14.83              | 11392.71             | 823.79            | 0.70         |
| 1     | 217.66    | PF#1    | 169000.00        | 1090.26           | 1113.56           | 1108.16           | 1115.53           | 0.001960              | 11.25              | 15025.17             | 1099.78           | 0.52         |
| 1     | 217.66    | PF#2    | 169000.00        | 1090.26           | 1113.56           | 1108.16           | 1115.53           | 0.001960              | 11.25              | 15025.17             | 1099.78           | 0.52         |
| 1     | 217.57    | PF#1    | 169000.00        | 1092.02           | 1112.45           | 1107.49           | 1114.48           | 0.002115              | 11.42              | 14803.02             | 1041.20           | 0.53         |
| 1     | 217.57    | PF#2    | 169000.00        | 1092.02           | 1112.45           | 1107.49           | 1114.48           | 0.002115              | 11.42              | 14803.02             | 1041.20           | 0.53         |
| 1     | 217.48    | PF#1    | 169000.00        | 1092.92           | 1111.60           | 1106.12           | 1113.48           | 0.001879              | 11.00              | 15368.59             | 1524.28           | 0.51         |
| 1     | 217.48    | PF#2    | 169000.00        | 1092.92           | 1111.60           | 1106.12           | 1113.48           | 0.001879              | 11.00              | 15368.59             | 1524.28           | 0.51         |
| 1     | 217.38    | PF#1    | 169000.00        | 1092.82           | 1110.55           | 1105.24           | 1112.50           | 0.001968              | 11.20              | 15093.85             | 1100.29           | 0.52         |

HEC-RAS Plan: CorrEff-1988 River: Salt Reach: 1 (Continued)

| Reach | River Sta | Profile | Q Total<br>(cfs) | Min Ch El<br>(ft) | W.S. Elev<br>(ft) | Crit W.S.<br>(ft) | E.G. Elev<br>(ft) | E.G. Slope<br>(ft/ft) | Vel Chnl<br>(ft/s) | Flow Area<br>(sq ft) | Top Width<br>(ft) | Froude # Chl |
|-------|-----------|---------|------------------|-------------------|-------------------|-------------------|-------------------|-----------------------|--------------------|----------------------|-------------------|--------------|
| 1     | 217.38    | PF#2    | 169000.00        | 1092.82           | 1110.55           | 1105.24           | 1112.50           | 0.001968              | 11.20              | 15093.85             | 1100.29           | 0.52         |
| 1     | 217.29    | PF#1    | 169000.00        | 1091.82           | 1109.29           | 1104.45           | 1111.45           | 0.002236              | 11.78              | 14340.42             | 1217.45           | 0.55         |
| 1     | 217.29    | PF#2    | 169000.00        | 1091.82           | 1109.29           | 1104.45           | 1111.45           | 0.002236              | 11.78              | 14340.42             | 1217.45           | 0.55         |
| 1     | 217.19    | PF#1    | 169000.00        | 1088.55           | 1107.44           | 1103.66           | 1110.09           | 0.002945              | 13.06              | 12942.85             | 1368.81           | 0.62         |
| 1     | 217.19    | PF#2    | 169000.00        | 1088.55           | 1107.44           | 1103.66           | 1110.09           | 0.002945              | 13.06              | 12942.85             | 1368.81           | 0.62         |
| 1     | 217.10    | PF#1    | 169000.00        | 1085.12           | 1107.18           | 1099.25           | 1108.85           | 0.001306              | 10.37              | 16300.07             | 1514.17           | 0.43         |
| 1     | 217.10    | PF#2    | 169000.00        | 1085.12           | 1107.18           | 1099.25           | 1108.85           | 0.001306              | 10.37              | 16300.07             | 1514.17           | 0.43         |
| 1     | 217.00    | PF#1    | 169000.00        | 1083.42           | 1106.62           | 1098.28           | 1108.23           | 0.001205              | 10.18              | 16607.83             | 1669.76           | 0.42         |
| 1     | 217.00    | PF#2    | 169000.00        | 1083.42           | 1106.62           | 1098.28           | 1108.23           | 0.001205              | 10.18              | 16607.83             | 1669.76           | 0.42         |
| 1     | 216.91    | PF#1    | 169000.00        | 1084.44           | 1105.74           | 1098.47           | 1107.54           | 0.001457              | 10.77              | 15692.78             | 1823.38           | 0.46         |
| 1     | 216.91    | PF#2    | 169000.00        | 1084.44           | 1105.74           | 1098.47           | 1107.54           | 0.001457              | 10.77              | 15692.78             | 1823.38           | 0.46         |
| 1     | 216.81    | PF#1    | 169000.00        | 1081.67           | 1105.25           | 1096.54           | 1106.82           | 0.001158              | 10.08              | 16768.70             | 1751.01           | 0.41         |
| 1     | 216.81    | PF#2    | 169000.00        | 1081.67           | 1105.25           | 1096.54           | 1106.82           | 0.001158              | 10.08              | 16768.70             | 1751.01           | 0.41         |
| 1     | 216.72    | PF#1    | 169000.00        | 1082.29           | 1104.79           | 1095.31           | 1106.25           | 0.001012              | 9.69               | 17444.24             | 899.78            | 0.39         |
| 1     | 216.72    | PF#2    | 169000.00        | 1082.29           | 1104.79           | 1095.31           | 1106.25           | 0.001012              | 9.69               | 17444.24             | 899.78            | 0.39         |
| 1     | 216.62    | PF#1    | 169000.00        | 1080.45           | 1104.00           | 1095.79           | 1105.63           | 0.001420              | 10.24              | 16498.00             | 1128.48           | 0.45         |
| 1     | 216.62    | PF#2    | 169000.00        | 1080.45           | 1104.00           | 1095.79           | 1105.63           | 0.001420              | 10.24              | 16498.00             | 1128.48           | 0.45         |
| 1     | 216.52    | PF#1    | 169000.00        | 1085.32           | 1102.87           | 1096.42           | 1104.79           | 0.001837              | 11.11              | 15204.69             | 1001.89           | 0.50         |
| 1     | 216.52    | PF#2    | 169000.00        | 1085.32           | 1102.87           | 1096.42           | 1104.79           | 0.001837              | 11.11              | 15204.69             | 1001.89           | 0.50         |
| 1     | 216.505   |         | Bridge           |                   |                   |                   |                   |                       |                    |                      |                   |              |
| 1     | 216.49    | PF#1    | 169000.00        | 1085.32           | 1101.52           | 1096.42           | 1103.83           | 0.002471              | 12.20              | 13853.79             | 992.02            | 0.58         |
| 1     | 216.49    | PF#2    | 169000.00        | 1085.32           | 1101.52           | 1096.42           | 1103.83           | 0.002471              | 12.20              | 13853.79             | 992.02            | 0.58         |
| 1     | 216.42    | PF#1    | 169000.00        | 1084.12           | 1100.98           | 1095.20           | 1103.05           | 0.001943              | 11.56              | 14613.77             | 1034.26           | 0.52         |
| 1     | 216.42    | PF#2    | 169000.00        | 1084.12           | 1100.98           | 1095.20           | 1103.05           | 0.001943              | 11.56              | 14613.77             | 1034.26           | 0.52         |
| 1     | 216.33    | PF#1    | 169000.00        | 1082.92           | 1100.48           | 1093.54           | 1102.11           | 0.001446              | 10.25              | 16490.19             | 1473.76           | 0.45         |
| 1     | 216.33    | PF#2    | 169000.00        | 1082.92           | 1100.48           | 1093.54           | 1102.11           | 0.001446              | 10.25              | 16490.19             | 1473.76           | 0.45         |
| 1     | 216.23    | PF#1    | 169000.00        | 1080.62           | 1100.11           | 1091.51           | 1101.40           | 0.001058              | 9.13               | 18502.61             | 1738.54           | 0.39         |
| 1     | 216.23    | PF#2    | 169000.00        | 1080.62           | 1100.11           | 1091.51           | 1101.40           | 0.001058              | 9.13               | 18502.61             | 1738.54           | 0.39         |
| 1     | 216.13    | PF#1    | 169000.00        | 1080.12           | 1099.66           | 1090.86           | 1100.85           | 0.000954              | 8.75               | 19304.38             | 2129.81           | 0.37         |
| 1     | 216.13    | PF#2    | 169000.00        | 1080.12           | 1099.66           | 1090.86           | 1100.85           | 0.000954              | 8.75               | 19304.38             | 2129.81           | 0.37         |
| 1     | 216.04    | PF#1    | 169000.00        | 1079.62           | 1099.05           | 1090.65           | 1100.34           | 0.001041              | 9.13               | 18516.63             | 1448.65           | 0.39         |
| 1     | 216.04    | PF#2    | 169000.00        | 1079.62           | 1099.05           | 1090.65           | 1100.34           | 0.001041              | 9.13               | 18516.63             | 1448.65           | 0.39         |
| 1     | 215.94    | PF#1    | 169000.00        | 1079.92           | 1095.82           | 1092.97           | 1099.20           | 0.004116              | 14.74              | 11462.69             | 984.02            | 0.73         |
| 1     | 215.94    | PF#2    | 169000.00        | 1079.92           | 1095.82           | 1092.97           | 1099.20           | 0.004116              | 14.74              | 11462.69             | 984.02            | 0.73         |
| 1     | 215.84    | PF#1    | 169000.00        | 1077.92           | 1093.84           | 1090.87           | 1097.06           | 0.003648              | 14.42              | 11721.58             | 870.82            | 0.69         |
| 1     | 215.84    | PF#2    | 169000.00        | 1077.92           | 1093.84           | 1090.87           | 1097.06           | 0.003648              | 14.42              | 11721.58             | 870.82            | 0.69         |
| 1     | 215.82    | PF#1    | 169000.00        | 1078.12           | 1093.96           | 1089.16           | 1096.49           | 0.002408              | 12.76              | 13249.64             | 860.86            | 0.57         |
| 1     | 215.82    | PF#2    | 169000.00        | 1078.12           | 1093.96           | 1089.16           | 1096.49           | 0.002408              | 12.76              | 13249.64             | 860.86            | 0.57         |
| 1     | 215.815   |         | Bridge           |                   |                   |                   |                   |                       |                    |                      |                   |              |
| 1     | 215.81    | PF#1    | 169000.00        | 1078.12           | 1092.93           | 1089.16           | 1095.83           | 0.003024              | 13.67              | 12363.78             | 860.84            | 0.64         |
| 1     | 215.81    | PF#2    | 169000.00        | 1078.12           | 1092.93           | 1089.16           | 1095.83           | 0.003024              | 13.67              | 12363.78             | 860.84            | 0.64         |
| 1     | 215.75    | PF#1    | 169000.00        | 1075.72           | 1090.57           | 1088.96           | 1094.68           | 0.005283              | 16.27              | 10385.48             | 854.81            | 0.82         |
| 1     | 215.75    | PF#2    | 169000.00        | 1075.72           | 1090.57           | 1088.96           | 1094.68           | 0.005283              | 16.27              | 10385.58             | 854.82            | 0.82         |
| 1     | 215.65    | PF#1    | 169000.00        | 1070.42           | 1090.40           | 1084.55           | 1092.58           | 0.001959              | 11.87              | 14233.05             | 890.00            | 0.52         |
| 1     | 215.65    | PF#2    | 169000.00        | 1070.42           | 1090.40           | 1084.55           | 1092.58           | 0.001959              | 11.87              | 14233.16             | 890.00            | 0.52         |
| 1     | 215.56    | PF#1    | 169000.00        | 1068.22           | 1090.11           | 1081.33           | 1091.67           | 0.001145              | 10.02              | 16860.06             | 907.88            | 0.41         |
| 1     | 215.56    | PF#2    | 169000.00        | 1068.22           | 1090.11           | 1081.33           | 1091.67           | 0.001145              | 10.02              | 16860.28             | 907.88            | 0.41         |
| 1     | 215.46    | PF#1    | 169000.00        | 1066.72           | 1089.73           | 1079.80           | 1091.10           | 0.000932              | 9.38               | 18010.01             | 916.86            | 0.37         |
| 1     | 215.46    | PF#2    | 169000.00        | 1066.72           | 1089.73           | 1079.80           | 1091.10           | 0.000932              | 9.38               | 18010.23             | 916.86            | 0.37         |
| 1     | 215.36    | PF#1    | 169000.00        | 1065.12           | 1089.46           | 1077.50           | 1090.61           | 0.000701              | 8.61               | 19624.38             | 3559.81           | 0.33         |
| 1     | 215.36    | PF#2    | 169000.00        | 1065.12           | 1089.46           | 1077.50           | 1090.61           | 0.000701              | 8.61               | 19624.72             | 3559.85           | 0.33         |

HEC-RAS Plan: CorEff-1988 River: Salt Reach: 1 (Continued)

| Reach | River Sta | Profile | Q Total<br>(cfs) | Min Ch El<br>(ft) | W.S. Elev<br>(ft) | Crit W.S.<br>(ft) | E.G. Elev<br>(ft) | E.G. Slope<br>(ft/ft) | Vel Chnl<br>(ft/s) | Flow Area<br>(sq ft) | Top Width<br>(ft) | Froude # Chl |
|-------|-----------|---------|------------------|-------------------|-------------------|-------------------|-------------------|-----------------------|--------------------|----------------------|-------------------|--------------|
| 1     | 215.27    | PF#1    | 169000.00        | 1065.62           | 1088.96           | 1078.17           | 1090.23           | 0.000846              | 9.02               | 18737.07             | 3991.57           | 0.36         |
| 1     | 215.27    | PF#2    | 169000.00        | 1065.62           | 1088.96           | 1078.17           | 1090.23           | 0.000846              | 9.02               | 18737.41             | 3991.66           | 0.36         |
| 1     | 215.18    | PF#1    | 169000.00        | 1064.32           | 1083.99           | 1081.57           | 1089.03           | 0.004582              | 18.01              | 9383.28              | 686.95            | 0.80         |
| 1     | 215.18    | PF#2    | 169000.00        | 1064.32           | 1084.00           | 1081.57           | 1089.03           | 0.004580              | 18.01              | 9384.15              | 686.99            | 0.80         |
| 1     | 215.09    | PF#1    | 169000.00        | 1063.82           | 1083.21           | 1078.51           | 1086.89           | 0.002894              | 15.38              | 10986.15             | 619.02            | 0.64         |
| 1     | 215.09    | PF#2    | 169000.00        | 1063.82           | 1083.22           | 1078.51           | 1086.89           | 0.002893              | 15.38              | 10987.36             | 619.03            | 0.64         |
| 1     | 214.99    | PF#1    | 169000.00        | 1063.42           | 1082.04           | 1077.72           | 1085.29           | 0.002926              | 14.48              | 11673.56             | 727.59            | 0.64         |
| 1     | 214.99    | PF#2    | 169000.00        | 1063.42           | 1082.04           | 1077.72           | 1085.29           | 0.002924              | 14.47              | 11675.61             | 727.60            | 0.64         |
| 1     | 214.9     | PF#1    | 169000.00        | 1063.32           | 1080.25           | 1077.08           | 1083.64           | 0.003588              | 14.78              | 11435.69             | 934.52            | 0.69         |
| 1     | 214.9     | PF#2    | 169000.00        | 1063.32           | 1080.26           | 1077.08           | 1083.65           | 0.003583              | 14.77              | 11441.13             | 934.68            | 0.69         |
| 1     | 214.79    | PF#1    | 169000.00        | 1059.72           | 1080.51           | 1072.85           | 1081.95           | 0.001221              | 9.62               | 17558.59             | 1056.42           | 0.42         |
| 1     | 214.79    | PF#2    | 169000.00        | 1059.72           | 1080.52           | 1072.85           | 1081.95           | 0.001219              | 9.62               | 17565.80             | 1056.46           | 0.42         |
| 1     | 214.785   |         | Bridge           |                   |                   |                   |                   |                       |                    |                      |                   |              |
| 1     | 214.78    | PF#1    | 169000.00        | 1060.92           | 1080.18           | 1072.86           | 1081.68           | 0.001306              | 9.83               | 17191.94             | 1054.44           | 0.43         |
| 1     | 214.78    | PF#2    | 169000.00        | 1060.92           | 1080.19           | 1072.86           | 1081.69           | 0.001304              | 9.83               | 17199.66             | 1054.49           | 0.43         |
| 1     | 214.71    | PF#1    | 169000.00        | 1057.22           | 1079.60           | 1071.44           | 1081.27           | 0.001272              | 10.38              | 16287.08             | 901.57            | 0.43         |
| 1     | 214.71    | PF#2    | 169000.00        | 1057.22           | 1079.60           | 1071.44           | 1081.27           | 0.001270              | 10.37              | 16294.35             | 901.62            | 0.43         |
| 1     | 214.61    | PF#1    | 169000.00        | 1052.52           | 1079.37           | 1066.42           | 1080.68           | 0.000723              | 9.21               | 18346.35             | 792.44            | 0.34         |
| 1     | 214.61    | PF#2    | 169000.00        | 1052.52           | 1079.37           | 1066.42           | 1080.69           | 0.000722              | 9.21               | 18352.93             | 792.49            | 0.34         |
| 1     | 214.52    | PF#1    | 169000.00        | 1050.12           | 1079.47           | 1062.78           | 1080.27           | 0.000391              | 7.19               | 23492.42             | 928.22            | 0.25         |
| 1     | 214.52    | PF#2    | 169000.00        | 1050.12           | 1079.48           | 1062.78           | 1080.28           | 0.000390              | 7.19               | 23500.01             | 928.27            | 0.25         |
| 1     | 214.42    | PF#1    | 169000.00        | 1050.32           | 1079.44           | 1061.53           | 1080.05           | 0.000288              | 6.27               | 26966.84             | 1193.48           | 0.22         |
| 1     | 214.42    | PF#2    | 169000.00        | 1050.32           | 1079.45           | 1061.53           | 1080.06           | 0.000287              | 6.26               | 26975.49             | 1193.83           | 0.22         |
| 1     | 214.33    | PF#1    | 169000.00        | 1050.62           | 1079.00           | 1062.57           | 1079.85           | 0.000413              | 7.40               | 22823.47             | 1266.44           | 0.26         |
| 1     | 214.33    | PF#2    | 169000.00        | 1050.62           | 1079.01           | 1062.57           | 1079.86           | 0.000413              | 7.40               | 22831.27             | 1270.57           | 0.26         |
| 1     | 214.23    | PF#1    | 169000.00        | 1050.82           | 1078.05           | 1065.00           | 1079.51           | 0.000784              | 9.71               | 17406.42             | 1126.00           | 0.35         |
| 1     | 214.23    | PF#2    | 169000.00        | 1050.82           | 1078.06           | 1065.00           | 1079.52           | 0.000783              | 9.71               | 17413.63             | 1128.34           | 0.35         |
| 1     | 214.14    | PF#1    | 169000.00        | 1050.82           | 1077.61           | 1064.82           | 1079.11           | 0.000805              | 9.84               | 17171.67             | 1257.06           | 0.36         |
| 1     | 214.14    | PF#2    | 169000.00        | 1050.82           | 1077.62           | 1064.82           | 1079.12           | 0.000804              | 9.84               | 17178.94             | 1292.04           | 0.36         |

HEC-RAS Version 4.0.0 March 2008  
 U.S. Army Corps of Engineers  
 Hydrologic Engineering Center  
 609 Second Street  
 Davis, California

```

X   X   XXXXXX   XXXX   XXXX   XX   XXXX
X   X   X       X   X   X   X   X   X
X   X   X       X   X   X   X   X   X
XXXXXXXX XXXX   X   XXX   XXXXXX   XXXX
X   X   X       X   X   X   X   X   X
X   X   X       X   X   X   X   X   X
X   X   XXXXXX   XXXX   X   X   X   X   XXXXXX
    
```

PROJECT DATA

Project Title: Salt River-Sky Harbor\_Corr. Effective  
 Project File : Corr\_Effective\_SkyHarbor.prj  
 Run Date and Time: 3/10/2009 10:21:44 PM

Project in English units

PLAN DATA

Plan Title: Corrected Effective 1988  
 Plan File : q:\221722.03 Salt River LOMR\Received\From PACE - CLOMR\Sky Harbor CLOMR  
 Disk\HEC-RAS\HEC-RAS\Corrected Effective\Corr\_Effective\_SkyHarbor.p01

Geometry Title: Corrected Effective 1988  
 Geometry File : q:\221722.03 Salt River LOMR\Received\From PACE - CLOMR\Sky Harbor CLOMR  
 Disk\HEC-RAS\HEC-RAS\Corrected Effective\Corr\_Effective\_SkyHarbor.g02

Flow Title : Corrected Effective 1988  
 Flow File : q:\221722.03 Salt River LOMR\Received\From PACE - CLOMR\Sky Harbor CLOMR  
 Disk\HEC-RAS\HEC-RAS\Corrected Effective\Corr\_Effective\_SkyHarbor.f01

Plan Summary Information:

Number of: Cross Sections = 134 Multiple Openings = 0  
 Culverts = 0 Inline Structures = 0  
 Bridges = 14 Lateral Structures = 0

Computational Information

Water surface calculation tolerance = 0.01  
 Critical depth calculation tolerance = 0.01  
 Maximum number of iterations = 20  
 Maximum difference tolerance = 0.3  
 Flow tolerance factor = 0.001

Computation Options

Critical depth computed only where necessary  
 Conveyance Calculation Method: At breaks in n values only  
 Friction Slope Method: Average Conveyance  
 Computational Flow Regime: Subcritical Flow

Encroachment Data

Equal Conveyance = True  
 Left Offset = 0  
 Right Offset = 0

| River = Salt River | Reach = Reach 4 | Method | Value1         | Value2  |
|--------------------|-----------------|--------|----------------|---------|
| RS Profile         |                 |        |                |         |
| 225.30 PF#2        |                 |        | 119248.15      | 20840   |
| 225.19 PF#2        |                 |        | 119367.98      | 20920   |
| 225.11 PF#2        |                 | 1      | 19340.4        | 21225   |
| 225 PF#2           |                 | 1      | 19351.9        | 21445   |
| 224.90 PF#2        |                 |        | 119459.96      | 21370   |
| 224.82 PF#2        |                 |        | 119456.8921492 | 72      |
| 224.71 PF#2        |                 |        | 119459.54      | 21720   |
| 224.62 PF#2        |                 |        | 119460.45      | 21600   |
| 224.52 PF#2        |                 |        | 119463.52      | 21370   |
| 224.42 PF#2        |                 |        | 119474.88      | 21065   |
| 224.31 PF#2        |                 |        | 119483.3320653 | 26      |
| 224.22 PF#2        |                 |        | 119346.9720551 | 01      |
| 224.20 PF#2        |                 |        | 119456.8820544 | 75      |
| 224.19 PF#2        |                 | 1      | 19466.220528   | 16      |
| 224.16 PF#2        |                 |        | 119479.8620537 | 39      |
| 224.14 PF#2        |                 | 1      | 19476.420540   | 46      |
| 224.12 PF#2        |                 |        | 119386.0220538 | 58      |
| 224.06 PF#2        |                 |        | 119506.0520384 | 04      |
| 223.96 PF#2        |                 |        | 119511.45      | 20406.1 |
| 223.86 PF#2        |                 | 1      | 19552.420396   | 33      |
| 223.77 PF#2        |                 |        | 119592.8820311 | 51      |

Corr\_Effective\_SkyHarbor.rep

|         |      |                   |
|---------|------|-------------------|
| 223.67  | PF#2 | 119562.2720245.13 |
| 223.58  | PF#2 | 119527.5820181.59 |
| 223.48  | PF#2 | 1 19492.120178.39 |
| 223.38  | PF#2 | 1 19481.120241.02 |
| 223.29  | PF#2 | 119501.2920338.45 |
| 223.19  | PF#2 | 119360.21 20415.2 |
| 223.09  | PF#2 | 119292.3820380.68 |
| 223.08  | PF#2 | 1 19332 20356     |
| 223.02  | PF#2 | 119353.6420446.33 |
| 222.93  | PF#2 | 119406.4520352.21 |
| 222.83  | PF#2 | 119479.7420443.15 |
| 222.74  | PF#2 | 1 19531.420569.49 |
| 222.65  | PF#2 | 119561.2520640.75 |
| 222.55  | PF#2 | 119524.46 20795   |
| 222.45  | PF#2 | 119472.8520860.86 |
| 222.36  | PF#2 | 119466.8820649.69 |
| 222.27  | PF#2 | 119515.3620592.59 |
| 222.17  | PF#2 | 119489.0420498.95 |
| 222.09  | PF#2 | 119483.2820524.52 |
| 222.08  | PF#2 | 119484.5320523.82 |
| 221.99  | PF#2 | 119415.5620427.89 |
| 221.89  | PF#2 | 119381.2820367.67 |
| 221.80  | PF#2 | 119421.7120357.17 |
| 221.70  | PF#2 | 119451.4920391.17 |
| 221.61  | PF#2 | 119473.0320399.17 |
| 221.50  | PF#2 | 119527.6120456.28 |
| 221.40  | PF#2 | 119511.7320460.74 |
| 221.31  | PF#2 | 119574.9820485.13 |
| 221.26  | PF#2 | 119495.66 20451.8 |
| 221.25  | PF#2 | 119499.6520449.81 |
| 221.24  | PF#2 | 119495.6620450.59 |
| 221.2   | PF#2 | 119419.2620391.86 |
| 221.195 | PF#2 | 119421.9220390.84 |
| 221.19  | PF#2 | 119421.9220390.84 |
| 221.06  | PF#2 | 119517.35 20439.3 |
| 221.055 | PF#2 | 119529.5620438.24 |
| 221.05  | PF#2 | 119529.5620438.24 |
| 221.02  | PF#2 | 1 19520.720420.89 |
| 220.92  | PF#2 | 119547.9120454.12 |
| 220.82  | PF#2 | 1 19510 20430.3   |
| 220.73  | PF#2 | 1 19535.620420.15 |
| 220.63  | PF#2 | 119531.1820437.64 |
| 220.54  | PF#2 | 119531.3720446.62 |
| 220.45  | PF#2 | 119539.67 20451.8 |
| 220.35  | PF#2 | 119544.1320460.75 |
| 220.25  | PF#2 | 119549.1220468.77 |
| 220.16  | PF#2 | 119561.2420473.91 |
| 220.06  | PF#2 | 119565.9120475.44 |
| 220.05  | PF#2 | 119567.0320474.05 |
| 220.03  | PF#2 | 119567.2120473.83 |
| 219.88  | PF#2 | 119562.9620481.47 |
| 219.79  | PF#2 | 119514.2320446.13 |
| 219.70  | PF#2 | 119566.9120512.06 |
| 219.61  | PF#2 | 119564.3220553.08 |
| 219.51  | PF#2 | 119541.3920547.55 |
| 219.42  | PF#2 | 119488.9720499.14 |
| 219.33  | PF#2 | 119430.3720455.23 |
| 219.24  | PF#2 | 119468.0920500.54 |
| 219.14  | PF#2 | 119481.8420505.11 |
| 219.03  | PF#2 | 119340.4520367.12 |
| 219.02  | PF#2 | 119342.5320364.42 |
| 219.01  | PF#2 | 119342.4120364.57 |
| 218.97  | PF#2 | 119490.0620499.87 |
| 218.96  | PF#2 | 119477.8720498.32 |
| 218.80  | PF#2 | 119492.0120503.75 |
| 218.71  | PF#2 | 119509.9120496.68 |
| 218.61  | PF#2 | 119503.37 20500.7 |
| 218.52  | PF#2 | 119500.4720508.59 |
| 218.42  | PF#2 | 119506.7820514.59 |
| 218.33  | PF#2 | 119490.0520541.51 |
| 218.24  | PF#2 | 119418.1620453.03 |
| 218.14  | PF#2 | 1 19389.520421.92 |
| 218.04  | PF#2 | 1 19390.120428.82 |
| 217.95  | PF#2 | 119437.7220479.88 |
| 217.86  | PF#2 | 119497.3920541.25 |
| 217.76  | PF#2 | 119555.6420379.43 |
| 217.66  | PF#2 | 1 19569.820590.64 |
| 217.57  | PF#2 | 119521.4220562.61 |
| 217.48  | PF#2 | 119436.3120482.29 |
| 217.38  | PF#2 | 119462.8520497.62 |
| 217.29  | PF#2 | 119510.5720509.97 |
| 217.19  | PF#2 | 119561.63 20511.8 |
| 217.10  | PF#2 | 119606.8320517.63 |
| 217.00  | PF#2 | 1 19611.820517.96 |
| 216.91  | PF#2 | 119604.2620510.01 |
| 216.81  | PF#2 | 119605.3820502.23 |
| 216.72  | PF#2 | 119595.7920495.56 |
| 216.62  | PF#2 | 1 19590.420649.84 |

|         |      |                   |
|---------|------|-------------------|
| 216.52  | PF#2 | 119518.7820520.66 |
| 216.49  | PF#2 | 1 19526.120518.11 |
| 216.42  | PF#2 | 1 19535.320482.14 |
| 216.33  | PF#2 | 119399.9120426.24 |
| 216.23  | PF#2 | 1 19329.520413.21 |
| 216.13  | PF#2 | 1 19324.320437.98 |
| 216.04  | PF#2 | 119397.8520467.69 |
| 215.94  | PF#2 | 119572.3520479.02 |
| 215.84  | PF#2 | 119571.9820442.79 |
| 215.82  | PF#2 | 119550.04 20410.9 |
| 215.81  | PF#2 | 119550.06 20410.9 |
| 215.75  | PF#2 | 1 19576.720431.51 |
| 215.65  | PF#2 | 119594.8420484.84 |
| 215.56  | PF#2 | 119587.3720495.25 |
| 215.46  | PF#2 | 119599.3720516.22 |
| 215.36  | PF#2 | 1 19618 20537     |
| 215.27  | PF#2 | 1 19610.6 20553.9 |
| 215.18  | PF#2 | 119683.2220277.12 |
| 215.09  | PF#2 | 1 19674.220293.22 |
| 214.99  | PF#2 | 119601.52 20329.1 |
| 214.9   | PF#2 | 119563.8820374.38 |
| 214.79  | PF#2 | 119461.7320518.14 |
| 214.785 | PF#2 | 119462.6420517.08 |
| 214.78  | PF#2 | 119462.6420517.08 |
| 214.71  | PF#2 | 119640.2920541.86 |
| 214.61  | PF#2 | 119685.1720477.61 |
| 214.52  | PF#2 | 119525.2620453.48 |
| 214.42  | PF#2 | 119382.0820423.77 |
| 214.33  | PF#2 | 119492.0720391.61 |
| 214.23  | PF#2 | 119614.3420352.34 |
| 214.14  | PF#2 | 119654.9820381.82 |

FLOW DATA

Flow Title: Corrected Effective 1988  
 Flow File : q:\221722.03 Salt River LOMR\Received\From PACE - CLOMR\Sky Harbor CLOMR  
 Disk\HEC-RAS\HEC-RAS\Corrected Effective\Corr\_Effective\_SkyHarbor.f01

Flow Data (cfs)

| River | Reach | RS     | PF#1   | PF#2   |
|-------|-------|--------|--------|--------|
| Salt  | 1     | 225.30 | 172000 | 172000 |
| Salt  | 1     | 221.26 | 169000 | 169000 |

Boundary Conditions

| River | Reach | Profile | Upstream | Downstream         |
|-------|-------|---------|----------|--------------------|
| Salt  | 1     | PF#1    |          | Known WS = 1077.61 |
| Salt  | 1     | PF#2    |          | Known WS = 1077.62 |

GEOMETRY DATA

Geometry Title: Corrected Effective 1988  
 Geometry File : q:\221722.03 Salt River LOMR\Received\From PACE - CLOMR\Sky Harbor CLOMR  
 Disk\HEC-RAS\HEC-RAS\Corrected Effective\Corr\_Effective\_SkyHarbor.g02

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 225.30

INPUT

Description:

Station Elevation Data num= 286

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev |
|----------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|
| 18656.12 | 1197.7218663.42 | 1197.6918672.03 | 1197.87 18676.3 | 1198.2918683.27 | 1198.13 |     |      |     |      |
| 18703.39 | 1197.9218757.43 | 1197.1518781.67 | 1196.3218804.38 | 1203.118820.95  | 1207.79 |     |      |     |      |
| 18832.59 | 1210.72 18836.9 | 1211.9418845.27 | 1215.2918852.34 | 1215.6218861.86 | 1215.75 |     |      |     |      |
| 18880.16 | 1222.8218940.43 | 1221.2518945.82 | 1221.2318953.79 | 1222.25 18964.6 | 1222.16 |     |      |     |      |
| 18974.55 | 1221.92 18986.3 | 1221.8419011.65 | 1220.7119023.79 | 1219.0719031.91 | 1218.49 |     |      |     |      |
| 19038.97 | 1217.5219052.96 | 1215.919073.75  | 1214.2719079.08 | 1213.8619095.13 | 1209.23 |     |      |     |      |
| 19101.83 | 1207.0219113.81 | 1203.67 19130.8 | 1197.7719149.88 | 1196.54 19164.8 | 1195.92 |     |      |     |      |
| 19180.48 | 1195.1219189.69 | 1193.8719193.44 | 1192.9719201.73 | 1189.6919204.43 | 1188.99 |     |      |     |      |
| 19210.6  | 1189.02 19237.8 | 1189.2119245.05 | 1182.2919248.36 | 1179.2819255.33 | 1179.36 |     |      |     |      |
| 19274.04 | 1167.1219279.59 | 1163.5819325.01 | 1161.9119329.35 | 1161.5719370.45 | 1161.5  |     |      |     |      |
| 19424.2  | 1161.2219472.89 | 1160.1519485.66 | 1159.8319494.61 | 1159.8119544.03 | 1159.8  |     |      |     |      |
| 19574.55 | 1159.4219593.81 | 1159.619650.86  | 1160.1619672.56 | 1160.61 19699.7 | 1179.77 |     |      |     |      |
| 19706.03 | 1184.4219712.21 | 1180.7519738.43 | 1164.9819795.66 | 1165.0819809.55 | 1164.88 |     |      |     |      |
| 19860.74 | 1162.6219895.95 | 1162.1319902.26 | 1162.7919924.07 | 1160.7219952.52 | 1159.24 |     |      |     |      |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |         |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|---------|
| 19967.07 | 1148.6220280.33 | 1148.5820304.77 | 1160.6320314.28 | 1159.94         | 20354.8 | 1159.81 |
| 20361.02 | 1159.4220378.28 | 1157.9420401.38 | 1158.420413.17  | 1158.6320434.63 |         | 1163.53 |
| 20442.52 | 1160.6220445.72 | 1160.7120462.04 | 1157.5220466.16 | 1157.2320495.23 |         | 1156.22 |
| 20502.96 | 1156.1220516.41 | 1155.3920519.75 | 1154.720524.44  | 1156.0120528.82 |         | 1156.77 |
| 20539.9  | 1156.42 20552.4 | 1157.3620576.11 | 1157.6720594.84 | 1158.1720604.66 |         | 1158.3  |
| 20616.02 | 1158.2220631.39 | 1158.1720635.68 | 1159.220645.34  | 1161.0220654.37 |         | 1161.9  |
| 20658.06 | 1162.8220662.61 | 1162.7320669.63 | 1161.0120689.76 | 1158.7920699.77 |         | 1157.79 |
| 20717.59 | 1156.7220728.65 | 1155.3420739.25 | 1155.220764.86  | 1155.1420778.44 |         | 1156.63 |
| 20792.48 | 1157.0220806.81 | 1157.15 20828.9 | 1163.6820831.68 | 1164.91 20840   |         | 1164.25 |
| 20846.84 | 1163.720862.03  | 1162.42 20866.7 | 1162.4920870.25 | 1163.5420876.73 |         | 1163.09 |
| 20885.4  | 1165.620897.39  | 1170.4220908.29 | 1174.5220914.68 | 1176.7720917.54 |         | 1175.71 |
| 20948.42 | 1172.1620972.63 | 1172.5220983.66 | 1180.0320989.99 | 1177.3720997.16 |         | 1176.24 |
| 21009.01 | 1182.9921029.49 | 1183.2221033.59 | 1183.1921041.93 | 1178.5921064.39 |         | 1166.38 |
| 21082.16 | 1158.24 21115.7 | 1156.7221126.06 | 1157.0321141.81 | 1157.7321186.91 |         | 1179.73 |
| 21205.92 | 1188.9121212.02 | 1188.4221228.18 | 1187.4321253.71 | 1188.5221258.31 |         | 1188.7  |
| 21267.89 | 1191.2721289.81 | 1196.6221321.59 | 1196.6821339.29 | 1196.6521395.96 |         | 1198.48 |
| 21410.26 | 1198.8421443.36 | 1199.8221502.43 | 1200.9721521.47 | 1201.1721555.25 |         | 1201.14 |
| 21577.28 | 1201.2121614.18 | 1200.7721628.13 | 1199.8721700.79 | 1198.5721701.74 |         | 1198.45 |
| 21718.64 | 1192.9921736.75 | 1192.5221749.65 | 1192.4921757.86 | 1192.1321762.05 |         | 1192.11 |
| 21797.57 | 1192.2221810.83 | 1191.8221824.03 | 1192.3721871.37 | 1192.3621891.33 |         | 1191.3  |
| 21909.17 | 1191.3421934.95 | 1192.5221967.16 | 1192.3821983.23 | 1192.6922000.65 |         | 1192.63 |
| 22040.28 | 1192.2622062.85 | 1192.0222082.04 | 1191.36 22095.5 | 1191.0622115.61 |         | 1191.42 |
| 22145.03 | 1191.4422185.08 | 1191.7222204.03 | 1192.2722240.58 | 1193.71 22246.9 |         | 1196.47 |
| 22267.82 | 1200.09 22276.1 | 1201.6222286.17 | 1203.0422299.43 | 1205.3922312.12 |         | 1206.84 |
| 22319.43 | 1205.7322328.42 | 1206.9222333.19 | 1204.44 22343.7 | 1201.9122348.26 |         | 1201.5  |
| 22356.95 | 1202.9722357.94 | 1203.92 22364.1 | 1206.0222386.38 | 1214.1422405.28 |         | 1219.86 |
| 22407.11 | 1220.5322414.32 | 1218.1222421.41 | 1217.22430.67   | 1217.37 22456.4 |         | 1217.44 |
| 22458.64 | 1215.9422465.73 | 1212.2222486.14 | 1201.0822488.98 | 119922500.28    |         | 1194.28 |
| 22514.32 | 1194.3522545.53 | 1194.8222560.08 | 1194.9522584.16 | 1195.222623.77  |         | 1195.92 |
| 22624.67 | 1196.4422642.46 | 1204.7222656.57 | 1203.51 22658.5 | 1203.4922672.15 |         | 1195.61 |
| 22704.1  | 1196.4522730.35 | 1197.0222751.26 | 1208.5322755.18 | 1207.5222771.59 |         | 1197.38 |
| 22773.39 | 1197.4122789.85 | 1195.8222796.54 | 1195.622814.94  | 1196.0522819.08 |         | 1195.76 |
| 22822.55 | 1195.8622833.06 | 1195.8222852.72 | 1196.1522869.59 | 1195.3922883.86 |         | 1195.47 |
| 22931.52 | 1196.6622960.85 | 1198.12 22963.9 | 1198.3422975.78 | 1203.1922992.33 |         | 1209.02 |
| 23024.19 | 1197.7523050.62 | 1197.0223057.82 | 1197.29 23086.4 | 1209.7123094.25 |         | 1209.83 |
| 23111.05 | 1208.7623117.04 | 1208.4223126.71 | 1208.3423135.89 | 1208.123147.99  |         | 1199.88 |
| 23157.12 | 1195.7123173.13 | 1195.8223192.65 | 1196.1123202.96 | 1196.4123218.55 |         | 1196.62 |
| 23262.18 | 1198.3823303.13 | 1198.8223311.83 | 1198.9123339.95 | 1198.8623371.64 |         | 1198.65 |
| 23386.39 | 1198.43 23417.8 | 1197.1223492.52 | 1196.3923506.95 | 1196.31 23525.6 |         | 1196.55 |
| 23546.65 | 1196.7123559.22 | 1196.5223580.28 | 1196.4823612.97 | 1196.4223651.29 |         | 1196.21 |
| 23696.03 | 1197.0323736.97 | 1197.6223764.24 | 1197.9223852.99 | 1196.1223865.83 |         | 1200.25 |
| 23868.9  | 1198.8523881.39 | 1193.72 23899.9 | 1192.95 23904.7 | 1192.9523926.75 |         | 1194.28 |
| 23936.82 | 1194.9423976.91 | 1195.9223990.23 | 1196.124108.29  | 1195.6624187.78 |         | 1197.23 |
| 24261.38 | 1196.68         |                 |                 |                 |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 18656.12 .02519193.44 .03 20840 .03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19193.44 20840 567.06 567.06 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 18656.1219193.44 1192.97 F  
 2084024261.38 1196.68 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 225.19

INPUT

Description:  
 Station Elevation Data num= 320

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev            | Sta     | Elev | Sta | Elev |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|------|-----|------|
| 18442.16 | 1195.22         | 18498.4         | 1195.4618541.82 | 1195.418593.41  | 1194.7318633.34 | 1195.33 |      |     |      |
| 18682.07 | 1195.6218732.94 | 1195.5318766.02 | 1195.3618812.02 | 1195.64 18862.1 | 1195.61         |         |      |     |      |
| 18913.6  | 1195.9218919.53 | 1195.818937.82  | 1195.7619000.95 | 1195.1419030.03 | 1195.19         |         |      |     |      |
| 19047.98 | 1195.5219062.78 | 1213.12 19071.2 | 1214.9919078.47 | 1215.1219126.95 | 1216.45         |         |      |     |      |
| 19152.97 | 1216.6219170.54 | 1216.72 19210.7 | 1216.3219230.39 | 1216.0419236.89 | 1214.53         |         |      |     |      |
| 19248.28 | 1214.2219271.42 | 1213.8719300.35 | 1201.9219307.22 | 1199.1319336.41 | 1189.69         |         |      |     |      |
| 19348.16 | 1189.8219351.63 | 1186.9319359.98 | 1179.5819366.78 | 1179.7219369.84 | 1177.32         |         |      |     |      |
| 19388.38 | 1162.3219409.76 | 1162.3719432.23 | 1162.4419440.84 | 1159.7819451.48 | 1159.55         |         |      |     |      |
| 19490.75 | 1158.4219539.88 | 1158.1419544.73 | 1161.6719567.81 | 1178.68 19572   | 1178.57         |         |      |     |      |
| 19574.19 | 1178.92 19576.8 | 1178.5419604.76 | 1171.6319640.33 | 1164.7219653.42 | 1163.4          |         |      |     |      |
| 19670.18 | 1161.9219688.19 | 1162.0419722.91 | 1160.5419732.24 | 1160.819753.88  | 1160.87         |         |      |     |      |
| 19767.98 | 1160.4219782.57 | 1159.2619818.26 | 1156.8619847.79 | 1156.2819857.32 | 1155.87         |         |      |     |      |
| 19894.01 | 1155.0219906.04 | 1154.6919931.57 | 1154.6519949.53 | 1153.9519971.94 | 1152.57         |         |      |     |      |
| 19978.44 | 1152.7219994.64 | 1153.8820056.04 | 1157.820058.62  | 1157.9420091.06 | 1159.13         |         |      |     |      |
| 20110.36 | 1159.9220120.23 | 1159.9320131.12 | 1159.6420167.82 | 1159.7420173.33 | 1159.02         |         |      |     |      |
| 20187.29 | 1157.6220191.52 | 1158.4820198.85 | 1158.55 20204.7 | 1159.3220217.42 | 1158.51         |         |      |     |      |
| 20228.2  | 1158.5220268.85 | 1158.0620287.24 | 1158.2520319.77 | 1158.3420334.81 | 1158.3          |         |      |     |      |
| 20343.19 | 1158.4220365.74 | 1158.2920384.95 | 1157.8820395.91 | 1157.7320405.47 | 1157.76         |         |      |     |      |
| 20415.03 | 1159.5220419.39 | 1160.2220429.97 | 1160.7820441.31 | 1163.3620447.23 | 1163.77         |         |      |     |      |
| 20458.39 | 1165.2220487.85 | 1182.5920501.77 | 1190.8420506.99 | 1191.0320518.99 | 1189.84         |         |      |     |      |
| 20528.65 | 1186.4220541.21 | 1180.2820555.22 | 1177.1420560.69 | 1174.7820568.11 | 1172.3          |         |      |     |      |
| 20571.63 | 1171.6220592.04 | 1168.5120597.94 | 1166.920618.37  | 1163.4120621.15 | 1163.21         |         |      |     |      |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 20635.16 | 1163.4220639.94 | 1164.720652.72  | 1171.5520670.54 | 1181.7 20672.1  | 1181.95 |
| 20680.15 | 1181.8220690.59 | 1183.6420694.27 | 1183.6920703.71 | 1184.6820710.84 | 1186.86 |
| 20718.69 | 1188.3220721.86 | 1188.2720723.94 | 1187.4120743.27 | 1178.9720746.33 | 1177.89 |
| 20754.28 | 1173.4220760.15 | 1170.6820763.22 | 1168.6420796.67 | 1165.5920808.47 | 1161.68 |
| 20820.55 | 1157.4220834.33 | 1155.4920848.12 | 1153.820867.09  | 1157.6920877.86 | 1157.82 |
| 20901.05 | 1168.22 20920   | 1177.4420937.48 | 1185.94 20940.5 | 1184.9520956.27 | 1180.39 |
| 20961.24 | 1180.6320968.38 | 1180.2220994.31 | 1181.1221002.92 | 1180.9221004.89 | 1180.92 |
| 21045.4  | 1182.8121061.72 | 1185.12 21096.3 | 1189.1421140.91 | 1195.0521152.05 | 1194.7  |
| 21163.18 | 1194.7921214.67 | 1194.7221225.58 | 1194.9121257.72 | 1194.921270.45  | 1194.57 |
| 21302.02 | 1194.6321332.98 | 1193.82 21373.6 | 1193.7821394.01 | 1194.0621419.47 | 1193.95 |
| 21437.6  | 1193.9621441.86 | 1193.8221490.15 | 1197.32 21497   | 1197.9321515.26 | 1200.14 |
| 21551.31 | 1205.01 21556.3 | 1205.6221598.95 | 1208.4321633.84 | 1213.9 21643.4  | 1214.78 |
| 21691.29 | 1217.59 21713.7 | 1219.4221739.76 | 1220.7121772.51 | 1222.5221783.25 | 1223.57 |
| 21799.95 | 1225.7521832.52 | 1227.7221909.45 | 1234.9421919.57 | 1235.3321962.14 | 1235.47 |
| 21964.67 | 1235.422002.04  | 1235.0222019.05 | 1235.0522029.56 | 1233.922032.08  | 1233.72 |
| 22037.48 | 1232.6322066.02 | 1227.3222094.83 | 1220.3622100.98 | 1219.5322115.51 | 1218.29 |
| 22137.41 | 1211.9 22154.4  | 1203.5222157.95 | 1201.5222162.53 | 1199.6222166.03 | 1198.86 |
| 22212.25 | 1191.95 22239.2 | 1190.9222244.23 | 1190.9422288.95 | 1192.1122297.41 | 1191.32 |
| 22313.32 | 1191.322327.49  | 1191.9222350.23 | 1191.4522361.77 | 1191.3822379.42 | 1195.03 |
| 22391.57 | 1195.6322396.73 | 1196.9222410.62 | 1199.3322425.43 | 1200.0322429.29 | 1200.65 |
| 22432.93 | 1199.6522443.58 | 1201.6222451.57 | 1201.1522455.42 | 1201.1822473.22 | 1214.64 |
| 22476.55 | 1214.6522496.88 | 1200.1222501.53 | 1201.3722503.85 | 1201.6422523.22 | 1215.8  |
| 22525.59 | 1215.722537.58  | 1208.4222543.57 | 1206.1722557.47 | 1201.77 22568.8 | 1200.97 |
| 22572.84 | 1200.5422579.69 | 1200.1222583.32 | 1199.6122588.65 | 1199.6322592.94 | 1200.33 |
| 22602.49 | 1200.922607.87  | 1200.8222614.04 | 1202.3622621.61 | 1203.0722630.78 | 1205.34 |
| 22634.06 | 1205.6622640.68 | 1204.4222642.35 | 1204.522649.48  | 1201.0622650.73 | 1201.24 |
| 22658.65 | 1198.822664.71  | 1198.7222685.84 | 1197.55 22695.5 | 1198.0822708.86 | 1197.25 |
| 22726.92 | 1197.0722736.01 | 1196.3222754.98 | 1195.8322772.69 | 1195.0922780.46 | 1195.61 |
| 22787.83 | 1194.3922799.58 | 1195.2222810.46 | 1195.6422815.04 | 1195.6822832.72 | 1196.68 |
| 22850.42 | 1196.222870.97  | 1196.4222881.72 | 1196.7522900.43 | 119722903.16    | 1197.6  |
| 22910.63 | 119722913.85    | 1197.0222931.05 | 1196.5322932.54 | 1196.6522972.62 | 1196.88 |
| 22982.58 | 1197.5123006.58 | 1210.0223011.56 | 1207.93 23023.3 | 1203.4723050.51 | 1212.56 |
| 23052.44 | 1213.1523052.64 | 1212.5223074.75 | 1202.5123080.77 | 1205.3523089.55 | 1210.62 |
| 23102.9  | 1204.2723107.01 | 1202.12 23114.2 | 1204.8623129.23 | 1210.9323133.57 | 1199.55 |
| 23135.24 | 1196.4723137.17 | 1195.42 23217.7 | 1195.2723229.48 | 1195.4623258.23 | 1195.68 |
| 23291.63 | 1196.1223315.02 | 1196.8223354.88 | 1198.6923399.57 | 1198.9423416.78 | 1198.99 |
| 23471.44 | 1199.11 23495.1 | 1197.9223512.11 | 1197.1823573.46 | 1196.1123584.62 | 1195.97 |
| 23590.05 | 1196.0323670.77 | 1196.4223736.38 | 1196.5723758.52 | 1196.3123826.46 | 1196.25 |
| 23843.66 | 1196.1923903.52 | 1197.0223930.99 | 1197.5123967.22 | 1197.58 23977.7 | 1197.37 |
| 24039.18 | 1196.6124042.47 | 1196.5224055.94 | 1201.4624066.38 | 1196.7324069.67 | 1195.51 |
| 24096.83 | 1196.3224141.95 | 1197.12 24186.3 | 1196.5 24221.5  | 1195.8324228.12 | 1195.81 |
| 24287.42 | 1196.4324295.61 | 1196.3224359.71 | 1195.3324405.43 | 1190.4424409.15 | 1190    |

|                      |           |           |
|----------------------|-----------|-----------|
| Manning's n Values   | num=      | 3         |
| Sta n Val Sta n Val  | Sta n Val | Sta n Val |
| 8442.16 .02519248.28 | .03 20920 | .031      |

|                            |                             |              |        |
|----------------------------|-----------------------------|--------------|--------|
| Bank Sta: Left Right       | Lengths: Left Channel Right | Coeff Contr. | Expan. |
| 19248.28 20920             | 439.53 439.53 439.53        | .1           | .3     |
| Ineffective Flow num=      | 2                           |              |        |
| Sta L Sta R Elev Permanent | F                           |              |        |
| 18442.1619248.28 1214.22   | F                           |              |        |
| 2092024409.15 1190         | F                           |              |        |
| Blocked Obstructions num=  | 1                           |              |        |
| Sta L Sta R Elev           |                             |              |        |
| 20450 20790 1187.12        |                             |              |        |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 225.11

INPUT

Description:

|  |   |
|--|---|
| Station Elevation Data num=              | 300                                     |
| Sta Elev Sta Elev Sta Elev Sta Elev      |   |
| 18566.59 1193.72 18610.7 1193.618663.82  | 1193.7918705.41 1193.5418756.46 1194.1  |
| 18812.22 1193.5218847.46 1193.7818885.07 | 1193.5718927.13 1194.0418995.17 1193.96 |
| 19011.45 1194.0219041.77 1193.72 19068.3 | 1193.5619085.11 1193.0219125.76 1192.37 |
| 19150.49 1211.9219151.87 1211.619169.96  | 1190.1219185.85 1198.119225.48 1212.12  |
| 19255.55 1211.92 19282.7 1211.4819312.95 | 1210.91 19326.6 1194.7919341.19 1177.92 |
| 19361.19 1163.2219363.98 1161.2719386.89 | 1160.2719396.05 1159.9419407.66 1159.88 |
| 19412.57 1159.7219429.78 1160.0619434.41 | 1159.3519447.76 1159.4219491.85 1159.57 |
| 19544.26 1159.5219553.18 1159.3819558.33 | 1161.1519566.29 1164.4819573.05 1164.04 |
| 19606.03 1162.1219636.59 1161.1319659.23 | 1160.2919711.01 1158.9519773.99 1157.82 |
| 19796.71 1157.6219848.14 1157.5319873.97 | 1157.29 19901.1 1157.3219943.04 1157.64 |
| 19990.89 1157.7220030.16 1157.2720056.95 | 1157.1920081.06 1156.9420121.14 1154.51 |
| 20134.84 1154.2220161.68 1153.7820179.08 | 1153.78 20192.6 1154.04 20240.3 1157.18 |
| 20257.89 1159.0220274.94 1160.4720288.46 | 1161.3320311.52 1161.7920320.12 1161.66 |
| 20332.63 1161.9220339.32 1161.8420343.45 | 1162.0920352.45 1160.6620360.92 1159.85 |
| 20363.87 1159.7220377.37 1165.7220387.57 | 1168.3820407.04 1174.8820411.11 1175.69 |
| 20418.12 1178.1220432.63 1175.5120441.71 | 1174.2220451.35 1173.8520462.41 1170.39 |
| 20474.44 1167.1220479.99 1165.4620494.67 | 1167.6320507.42 1165.9220509.04 1165.8  |
| 20519.46 1163.1220521.11 1162.5620531.81 | 1162.3120539.85 1162.0220553.16 1162.33 |
| 20562.91 1162.2220574.45 1161.3820594.42 | 1161.6120614.89 1162.12 20635.8 1162.34 |
| 20638.89 1162.2220645.11 1161.3420657.74 | 1160.1420665.54 1160.9320671.67 1161.25 |
| 20693.52 1160.62 20701.1 1161.9320704.46 | 1162.0620714.65 1162.0220727.36 1161.72 |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |                 |                 |         |         |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|---------|
| 20737.73 | 1162.0220763.09 | 1161.67         | 20771.7         | 1161.6520793.76 | 1161.3920805.35 | 1161.32         |         |         |
| 20818.43 | 1166.4220838.58 | 1171.7420843.06 | 1171.3520851.47 | 1171.2420858.31 | 1170.31         | 1170.31         |         |         |
| 20865.09 | 1169.6220875.47 | 1167.9120897.66 | 1167.8320900.84 | 1167.6920909.81 | 1167.94         | 1167.94         |         |         |
| 20923.73 | 1170.2220934.37 | 1167.9820956.06 | 1160.3620966.77 | 1156.3820971.44 | 1157.05         | 1157.05         |         |         |
| 20987.27 | 1156.4221007.09 | 1159.7321010.23 | 1158.7321015.65 | 1158.4921036.65 | 1156.46         | 1156.46         |         |         |
| 21061.12 | 1150.82         | 21111.4         | 1150.2821125.78 | 1150.3421169.04 | 1150.6221174.92 | 1150.59         |         |         |
| 21182.17 | 1151.82         | 21225           | 1157.8521226.38 | 1158.0521242.76 | 1157.9821247.47 | 1158.41         |         |         |
| 21265.38 | 1160.37         | 21313.2         | 1165.4221338.33 | 1164.38         | 21383.6         | 1161.75         | 21386.8 | 1161.67 |
| 21423.84 | 1165.2121470.82 | 1169.2221491.45 | 1179.4621500.71 | 1183.1721509.79 | 1183.35         | 1183.35         |         |         |
| 21519.8  | 1183.4421544.02 | 1187.2221551.05 | 1187.68         | 21554.7         | 1187.3821565.01 | 1193.01         |         |         |
| 21579.11 | 1197.7821583.64 | 1198.3221610.22 | 1198.3121617.79 | 1198.1821631.36 | 1200.61         | 1200.61         |         |         |
| 21635.85 | 1201.8721662.22 | 1204.1221669.32 | 1205.0921683.01 | 1207.5821705.64 | 1207.96         | 1207.96         |         |         |
| 21712.98 | 1208.9321745.97 | 1215.2221766.31 | 1217.7821791.82 | 1220.0821811.88 | 1222.58         | 1222.58         |         |         |
| 21842.68 | 1224.9521887.14 | 1228.2221894.02 | 1228.8821898.88 | 1228.9421936.68 | 1230.99         | 1230.99         |         |         |
| 21963.47 | 1230.89         | 21991.7         | 1229.1222035.02 | 1227.1322048.39 | 1226.8922073.49 | 1227.17         |         |         |
| 22082.06 | 1226.7822102.81 | 1226.22         | 22113.4         | 1226.322116.41  | 1226.18         | 22158.6         | 1228.8  |         |
| 22164.27 | 1227.822171.63  | 1225.8222199.91 | 1217.8522213.41 | 1214.2          | 22219.1         | 1212.25         |         |         |
| 22235.35 | 1205.8722253.06 | 1198.4222278.83 | 1190.8322298.21 | 1188.4322305.48 | 1190.07         | 1190.07         |         |         |
| 22308.26 | 1190.0122330.46 | 1190.1222344.24 | 1190.4922370.46 | 1190.6722385.97 | 1190.69         | 1190.69         |         |         |
| 22397.19 | 1190.4522423.47 | 1190.8222437.38 | 1189.9522451.51 | 1191.0122458.48 | 1191.04         | 1191.04         |         |         |
| 22468.23 | 1192.0622476.75 | 1192.2222500.63 | 1193.0922529.14 | 1201.1422535.59 | 1206.78         | 1206.78         |         |         |
| 22545.31 | 1209.1122550.35 | 1210.0222559.76 | 1210.6522565.58 | 1211.48         | 22571.9         | 1211.44         |         |         |
| 22584.45 | 1212.3222590.38 | 1212.4222601.06 | 1212.8522614.33 | 1211.6422624.86 | 1212.24         | 1212.24         |         |         |
| 22641.34 | 1212.3322656.42 | 1212.5222681.78 | 1211.61         | 22703.6         | 1211.2122731.09 | 1212.13         |         |         |
| 22752.38 | 1211.0322760.47 | 1207.92         | 22784.4         | 1195.9122809.53 | 1195.1222842.14 | 1195.83         |         |         |
| 22870.66 | 1196.0122882.01 | 1196.5222888.52 | 1196.4822904.97 | 1196.0122941.74 | 1194.08         | 1194.08         |         |         |
| 22953.19 | 1194.2222970.29 | 1194.9223010.31 | 1195.4523021.04 | 1202.9723021.85 | 1203.19         | 1203.19         |         |         |
| 23028.28 | 1202.5523057.24 | 1204.7223058.44 | 1204.5823069.08 | 1197.4323072.98 | 1196.31         | 1196.31         |         |         |
| 23084.92 | 1196.223106.84  | 1196.1223116.68 | 1196.3423147.56 | 1197.43         | 23149.6         | 1197.44         |         |         |
| 23166.82 | 1196.3423169.32 | 1196.32         | 23185.3         | 1202.3823204.48 | 1204.3723216.81 | 1205.58         |         |         |
| 23261.4  | 1194.6823263.63 | 1194.3223269.39 | 1195.7523276.68 | 1195.823291.16  | 1193.93         | 1193.93         |         |         |
| 23337.59 | 1194.6223345.45 | 1194.7223414.25 | 1195.96         | 23473.3         | 1197.7523496.23 | 1197.68         |         |         |
| 23537.98 | 1197.8423577.48 | 1198.0223628.11 | 1198.0623640.05 | 1197.3323668.97 | 1196.69         | 1196.69         |         |         |
| 23695.73 | 1195.8423700.18 | 1195.4223714.09 | 1195.5223744.88 | 1196.1623768.39 | 1196.44         | 1196.44         |         |         |
| 23787.71 | 1196.01         | 23845.7         | 1196.0223879.88 | 1195.64         | 23904           | 1195.6323942.37 | 1196.15 |         |
| 23981.49 | 1196.8424004.83 | 1196.8224118.32 | 1197.7724131.75 | 1197.8324207.49 | 1197.47         | 1197.47         |         |         |
| 24220.89 | 1202.9924231.41 | 1197.3224232.55 | 1196.8524253.47 | 1197.524284.12  | 1196.64         | 1196.64         |         |         |
| 24310.64 | 1196.0924341.07 | 1195.0224360.28 | 1194.524424.93  | 1194.9624429.37 | 1194.97         | 1194.97         |         |         |
| 24461.19 | 1189.6924507.41 | 1191.4224537.98 | 1192.4724540.69 | 1192.49         | 24582.5         | 1192.43         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 18566.59 .02519312.95 .03 21225 .03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19312.95 21225 577.62 577.62 577.62 .1 .3

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 18566.5919312.95 1210.91 F  
 21225 24582.5 1192.43 F

Blocked Obstructions num= 1  
 Sta L Sta R Elev  
 20400 20940 1187.12

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 225

INPUT Description:

Station Elevation Data num= 313

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|
| 18356.23 | 1191.8218380.05 | 1191.75         | 18440.6         | 1191.8518496.62 | 1192.1218533.26 | 1192.25         | 1192.25 |     |      |
| 18564.2  | 1191.9218590.47 | 1191.8618615.79 | 1191.6718668.43 | 1190.97         | 18690.7         | 1191.19         | 1191.19 |     |      |
| 18699.78 | 1191.1218734.99 | 1190.918775.01  | 1191.0718817.49 | 1190.5618844.13 | 1190.46         | 1190.46         | 1190.46 |     |      |
| 18891.82 | 1192.8218900.16 | 1192.9318957.36 | 1191.8918989.18 | 1186.2119022.88 | 1185.07         | 1185.07         | 1185.07 |     |      |
| 19031.34 | 1184.62         | 19038.2         | 1183.7819093.98 | 1182.319102.04  | 1182.06         | 19132.3         | 1181.75 |     |      |
| 19144.24 | 1181.52         | 19156.8         | 1181.4619207.28 | 1180.6819219.87 | 1177.0419234.34 | 1176.75         | 1176.75 |     |      |
| 19264.79 | 1178.52         | 19277.4         | 1184.16         | 19288.4         | 1188.9219292.62 | 1191.6419307.43 | 1203.4  |     |      |
| 19315.42 | 1195.5219322.87 | 1193.7519326.03 | 1192.5519331.32 | 1191.45         | 19341.3         | 1189.02         | 1189.02 |     |      |
| 19346.8  | 1183.6219355.62 | 1175.619361.34  | 1175.7419381.51 | 1162.5619386.18 | 1159.65         | 1159.65         | 1159.65 |     |      |
| 19435.57 | 1158.2219453.94 | 1158.1319490.23 | 1157.7319521.27 | 1157.1619580.28 | 1157.27         | 1157.27         | 1157.27 |     |      |
| 19604.19 | 1157.4219617.29 | 1157.619646.16  | 1157.5319664.82 | 1157.5419670.93 | 1164.11         | 1164.11         | 1164.11 |     |      |
| 19687.16 | 1180.3219707.23 | 1179.9219718.56 | 1179.8419727.45 | 1181.2519736.33 | 1176.42         | 1176.42         | 1176.42 |     |      |
| 19751.05 | 1169.5219756.93 | 1166.919772.33  | 1161.0819777.71 | 1159.07         | 19808.1         | 1156.06         | 1156.06 |     |      |
| 19847.62 | 1156.0219877.27 | 1155.8719923.98 | 1156.2219975.06 | 1156.7319997.52 | 1156.8          | 1156.8          | 1156.8  |     |      |
| 20045.61 | 1156.7220111.83 | 1156.34         | 20142.2         | 1155.87         | 20170.9         | 1155.2420174.02 | 1155.19 |     |      |
| 20208.08 | 1155.5220231.34 | 1156.0320287.82 | 1157.6920295.41 | 1158.2120331.24 | 1160.92         | 1160.92         | 1160.92 |     |      |
| 20351.53 | 1161.9220364.37 | 1162.6520391.97 | 1163.3820405.19 | 1163.3820433.18 | 1167.38         | 1167.38         | 1167.38 |     |      |
| 20440.45 | 1168.7220447.99 | 1169.6620457.93 | 1170.57         | 20476.7         | 1167.8220498.03 | 1163.75         | 1163.75 |     |      |
| 20514.21 | 1161.6220559.92 | 1161.320577.41  | 1161.3920584.03 | 1161.3620618.76 | 1161.05         | 1161.05         | 1161.05 |     |      |
| 20647.33 | 1161.3220670.99 | 1162.1320681.72 | 1163.4120689.19 | 1161.5120718.71 | 1154.22         | 1154.22         | 1154.22 |     |      |
| 20734.76 | 1150.2220742.26 | 1150.08         | 20769.3         | 1149.7420778.24 | 1148.56         | 1148.56         | 1148.56 |     |      |
| 20799.41 | 1148.8220802.57 | 1148.3820816.11 | 1146.2220821.96 | 1146.7220830.89 | 1146.5          | 1146.5          | 1146.5  |     |      |
| 20835.87 | 1146.8220848.81 | 1147.4320854.11 | 1146.9420859.41 | 1146.7720880.42 | 1147.5          | 1147.5          | 1147.5  |     |      |
| 20894.87 | 1147.5220899.18 | 1147.620913.05  | 1147.420923.72  | 1147.0820926.64 | 1146.04         | 1146.04         | 1146.04 |     |      |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 20951.59 | 1145.6220977.07 | 1145.8321029.14 | 1140.4821030.89 | 1140.4921052.36 | 1141.86 |
| 21059.95 | 1142.1221081.03 | 1143.7821100.29 | 1145.1921108.48 | 1148.3421118.12 | 1150.36 |
| 21152.5  | 1160.92 21156.6 | 1160.8221190.57 | 1164.0421199.27 | 1164.4921209.82 | 1164.52 |
| 21212.65 | 1164.7221229.92 | 1165.6221248.31 | 1165.8321271.06 | 1165.7721282.39 | 1165.24 |
| 21323.7  | 1163.02 21353.8 | 1162.6221393.04 | 1162.121429.57  | 1159.95 21445   | 1159.19 |
| 21461.1  | 1158.3921475.93 | 1157.9221487.94 | 1156.6321506.43 | 1156.52 21525.1 | 1156.74 |
| 1536.46  | 1157.8 21567.4  | 1161.0221609.68 | 1160.3221613.21 | 1158.4221625.39 | 1158.48 |
| 21638.91 | 1156.9421646.74 | 1154.0221656.38 | 1154.0221670.45 | 1160.0621671.45 | 1160.31 |
| 21687.54 | 1159.8321696.76 | 1159.7221703.26 | 1159.5621716.51 | 1158.3421737.59 | 1155.14 |
| 21744.12 | 1155.2621752.96 | 1154.8221760.16 | 1154.7121765.83 | 1154.8321792.82 | 1167.77 |
| 21796.37 | 1169.4921814.48 | 1184.3221823.07 | 1189.721831.15  | 1186.9221851.67 | 1186.56 |
| 21893.28 | 1186.3521898.67 | 1186.4221942.25 | 1187.0421949.93 | 1187.121982.18  | 1186.92 |
| 21988.24 | 1186.9822009.66 | 1186.92 22026.5 | 1187.1222057.16 | 1187.2322075.49 | 1187.56 |
| 22082.12 | 1187.5822099.18 | 1187.3222105.65 | 1187.3922112.49 | 1187.5822145.51 | 1187.45 |
| 22152.62 | 1187.4222190.06 | 1187.1222197.76 | 1186.8822203.71 | 1186.8422238.37 | 1187.21 |
| 22245.83 | 1186.9 22274.9  | 1186.6222298.83 | 1186.4222315.81 | 1186.0122343.74 | 1186.95 |
| 22347.97 | 1186.9322349.51 | 1186.6222355.15 | 1187.2122363.84 | 1189.6522382.53 | 1193.41 |
| 22384.23 | 1192.4222401.19 | 1190.5222402.52 | 1190.4622425.16 | 1187.0722456.19 | 1186.34 |
| 22458.9  | 1186.33 22483.2 | 1186.8222515.92 | 1187.922521.45  | 1187.9522531.16 | 1186.95 |
| 22546.02 | 1186.7522555.83 | 1188.3222566.97 | 1188.6222584.43 | 1188.6622590.63 | 1189.79 |
| 22613.68 | 1194.9422635.85 | 1199.0222642.53 | 1196.8422645.07 | 1195.2422660.85 | 1193.21 |
| 22686.43 | 1192.1122708.15 | 1192.2222720.08 | 1192.0822751.01 | 1190.1422781.73 | 1191.54 |
| 22809.61 | 1207.3822817.29 | 1211.2222825.25 | 1213.1422830.25 | 1213.5222842.72 | 1210.46 |
| 22873.47 | 1194.7822915.25 | 1193.2222952.41 | 1195.1222972.41 | 1194.923001.19  | 1194.72 |
| 23033.19 | 1194.823055.72  | 1194.2223081.23 | 1192.2823090.51 | 1192.5423112.45 | 1192.26 |
| 23123.94 | 1191.9723127.71 | 1192.3223131.15 | 1193.2123137.61 | 1192.31 23152.5 | 1186.83 |
| 23165.82 | 1185.3623173.11 | 1184.42 23183.4 | 1184.1723195.65 | 1182.6423206.72 | 1182.8  |
| 23208.84 | 1183.4423214.24 | 1185.9223222.83 | 1187.8623228.16 | 1189.8 23236.4  | 1190.43 |
| 23252.81 | 1193.6823277.08 | 1193.12 23281.4 | 1195.5623296.12 | 1186.5623483.38 | 1186.29 |
| 23492.79 | 1190.4523503.64 | 1195.6223514.95 | 1195.9623585.18 | 1195.4823633.83 | 1195.32 |
| 23657.62 | 1195.2723700.62 | 1194.8223729.82 | 1194.523762.84  | 1195.6323773.65 | 1195.83 |
| 23788.38 | 1195.4823860.15 | 1194.12 23878.2 | 1197.6723902.62 | 1198.5423908.57 | 1198.51 |
| 23909.48 | 1198.1923912.15 | 1198.5223942.78 | 1193.5623959.88 | 1187.78 23980.5 | 1187.84 |
| 23997.14 | 1187.4924015.84 | 1187.3224041.64 | 1187.1824059.56 | 1186.8524065.49 | 1187    |
| 24073.75 | 1186.9824082.02 | 1189.3224089.11 | 1192.424123.86  | 1192.7324126.79 | 1193.38 |
| 24137.01 | 1196.5624143.44 | 1195.4224156.07 | 1193.65 24161.8 | 1193.9824176.05 | 1194.06 |
| 24219.35 | 1194.9824247.96 | 1195.1224285.64 | 1194.7124311.13 | 1194.3424344.86 | 1193.59 |
| 24379.43 | 1189.6924508.93 | 1189.7224528.06 | 1195.3624555.74 | 1195.0624560.02 | 1195.1  |
| 24573.38 | 1193.4324575.01 | 1193.1224585.85 | 1193.13         |                 |         |

|                       |                 |      |
|-----------------------|-----------------|------|
| Manning's n Values    | num=            | 3    |
| Sta n Val Sta         | n Val Sta n Val |      |
| 18356.23 .02519307.43 | .03 21445       | .031 |

|                  |           |               |         |        |              |        |
|------------------|-----------|---------------|---------|--------|--------------|--------|
| Bank Sta: Left   | Right     | Lengths: Left | Channel | Right  | Coeff Contr. | Expan. |
| 19307.43         | 21445     | 526.43        | 526.43  | 526.43 | .1           | .3     |
| Ineffective Flow | num=      | 2             |         |        |              |        |
| Sta L Sta R Elev | Permanent |               |         |        |              |        |
| 18356.2319307.43 | 1203.4    | F             |         |        |              |        |
| 2144524585.85    | 1193.13   | F             |         |        |              |        |

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 224.90

INPUT  
 Description:

|                            |                        |                 |                 |         |
|----------------------------|------------------------|-----------------|-----------------|---------|
| Station Elevation Data     | num=                   | 347             |                 |         |
| Sta Elev Sta Elev Sta Elev | Elev Sta Elev Sta Elev |                 |                 |         |
| 18410.26 1191.22 18450.7   | 1190.84 18476          | 1190.9218566.98 | 1191.5818596.38 | 1191.28 |
| 18638.16 1190.7218655.45   | 1190.7118727.64        | 1190.9918771.75 | 1191.218831.93  | 1191.04 |
| 18844.92 1190.7218857.05   | 1190.9718881.45        | 1191.1618891.88 | 1185.8718908.88 | 1177.56 |
| 18935.91 1175.9218950.26   | 1175.7418985.81        | 1176.2819002.16 | 1176.6519020.29 | 1176.96 |
| 19045.32 1187.8219048.13   | 1188.9619071.41        | 1188.3919073.86 | 1187.2219098.72 | 1174.65 |
| 19121.51 1173.9219151.86   | 1173.1419200.76        | 1172.6919217.37 | 1172.0919274.07 | 1172.14 |
| 19335.21 1171.6219338.74   | 1173.5819343.84        | 1174.8319376.18 | 1178.25 19388.5 | 1171.54 |
| 19397.84 1174.2219428.13   | 1188.0619433.27        | 1188.5319445.78 | 1188.8419480.99 | 1163.7  |
| 19488.73 1158.1219493.24   | 1157.83 19499.7        | 115819507.92    | 1157.9619536.65 | 1157.46 |
| 19586.93 1156.32 19602.4   | 1161.0219605.56        | 1162.119624.77  | 1167.4519638.72 | 1171.41 |
| 19648.46 1174.3219651.96   | 1174.5219661.01        | 1174.7319670.28 | 1174.0819713.55 | 1163.69 |
| 19730.86 1162.2219741.25   | 1162.8519765.99        | 1163.59 19782.1 | 1165.6319786.66 | 1164.67 |
| 19803.69 1160.3219823.27   | 1164.0519829.18        | 1165.519835.55  | 1164.7919845.22 | 1164.51 |
| 19859.81 1165.8219866.06   | 1166.74 19888          | 1166.03 19901.4 | 1165.9319927.82 | 1169.74 |
| 19943.13 1171.9219969.08   | 1164.9619988.88        | 1158.86 20000.3 | 1156.5620013.69 | 1156.49 |
| 20038.97 1156.8220091.24   | 1155.8420122.42        | 1156.1520141.05 | 1156.09 20201.3 | 1155.02 |
| 20246.27 1154.3220294.42   | 1154.2820344.47        | 1154.87 20346.9 | 1154.9220402.98 | 1155.73 |
| 20410.52 1156.1220415.95   | 1156.2820428.84        | 1158.3620455.09 | 1159.0920469.43 | 1159.45 |
| 20521.43 1160.1220539.02   | 1160.1220563.19        | 1159.3720572.23 | 1159.320581.09  | 1160.52 |
| 20584.28 1159.5220586.55   | 1159.5820588.64        | 1160.33 20603.1 | 1165.2820610.74 | 1167.72 |
| 20632.42 1172.3220640.24   | 1173.6320650.49        | 1177.1420660.64 | 1177.3120680.34 | 1174.36 |
| 20693.35 1174.2220706.39   | 1174.5620721.88        | 1174.64 20752.5 | 1177.2720756.16 | 1176.26 |
| 20767.97 1171.22 20794.4   | 1157.0220815.76        | 1153.8320826.88 | 1152.5520843.01 | 1149.88 |
| 20867.14 1150.22 20870.4   | 1150.3320892.03        | 1155.1220901.23 | 1157.7620911.04 | 1157.23 |
| 20917.89 1156.3220930.94   | 1155.320932.63         | 1155.4320951.26 | 1159.3220952.39 | 1159.49 |
| 20962.07 1158.7220994.47   | 1158.8 21013.9         | 1159.1821020.04 | 1159.6721036.84 | 1159.17 |
| 21062.9 1159.5221078.63    | 1159.1721090.43        | 1158.5121101.82 | 1158.2121125.98 | 1159.1  |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|
| 21136.08 | 1160.02         | 21147.6         | 1160.4521172.86 | 1161.8921188.14 | 1161.6121219.11 | 1163.82 |
| 21225.82 | 1163.9221237.22 | 1163.4221269.36 | 1162.7621300.77 | 1162.3221317.67 | 1161.29         |         |
| 21339.13 | 1160.2221352.42 | 1160.1821362.07 | 1159.88 21370   | 1159.5821390.68 | 1158.8          |         |
| 21399.24 | 1158.3521404.48 | 1158.3221413.85 | 1158.47 21444   | 1159.4721454.85 | 1159.29         |         |
| 21480.39 | 1158.2621484.09 | 1158.3221487.57 | 115821533.73    | 1159.8821546.15 | 1160.41         |         |
| 21548.85 | 1160.0721556.43 | 1161.1221566.22 | 115821582.14    | 1160.3621585.51 | 1160.32         |         |
| 21591.12 | 1159.6421612.63 | 1159.4221622.96 | 1158.3221627.15 | 1161.7821647.72 | 1161.01         |         |
| 21666.74 | 1162.7521689.29 | 1162.8221701.78 | 1163.04 21728.6 | 1162.5821757.65 | 1161.4          |         |
| 21770.09 | 1160.6821781.82 | 1161.2221796.81 | 1162.121808.21  | 1162.2721818.87 | 1162.07         |         |
| 21827.31 | 1162.0521834.28 | 1161.8221855.98 | 1159.9621864.87 | 1159.6321875.21 | 1160.02         |         |
| 21888.72 | 1159.8421900.97 | 1159.4221912.66 | 1159.4421921.11 | 115921935.73    | 1159.33         |         |
| 21957.89 | 1159.2521961.71 | 1159.0221995.06 | 1159.2121998.87 | 1161.0322008.66 | 1165.33         |         |
| 22017.1  | 1169.4922028.39 | 1177.02 22045.8 | 1189.07 22051.1 | 1188.2822070.51 | 1188.05         |         |
| 22074.63 | 1186.2622087.66 | 1186.0222097.25 | 1186.1122107.25 | 1186.5822111.68 | 1188.04         |         |
| 22118.25 | 1188.6822122.86 | 1188.8222133.74 | 1190.5322152.74 | 1185.0422153.97 | 1184.85         |         |
| 22190.8  | 1185.0522204.61 | 1192.2222230.84 | 1206.8422238.15 | 1210.722253.26  | 1218.21         |         |
| 22258.66 | 1218.4522277.66 | 1217.52 22279.5 | 1218.1522289.47 | 1218.222306.73  | 1218.58         |         |
| 22318.61 | 1218.5222325.45 | 1218.2222333.02 | 1215.45 22340.1 | 1213.4722347.31 | 1210.28         |         |
| 22355.6  | 1209.1322381.25 | 1208.8222382.17 | 1209.522397.32  | 1209.7522422.69 | 1209.84         |         |
| 22431.12 | 1213.2222447.56 | 1220.4222470.07 | 1208.8622487.33 | 1201.7122524.46 | 1186.21         |         |
| 22532.57 | 1185.8822551.72 | 1186.1222561.13 | 1185.6622578.28 | 1187.0122588.52 | 1191.88         |         |
| 22613.19 | 1204.6822625.63 | 1209.9222635.06 | 1209.9722695.74 | 1211.5522704.02 | 1212.05         |         |
| 22708.2  | 1211.05 22720.4 | 1208.7222740.23 | 1211.5522748.21 | 1212.5322776.78 | 1209.36         |         |
| 22785.8  | 1207.6822795.42 | 1206.2222807.76 | 1204.8722814.53 | 1205.8222824.09 | 1206.09         |         |
| 22836.08 | 1204.6822840.38 | 1204.4222858.07 | 1205.522862.39  | 1205.522865.03  | 1204.11         |         |
| 22870.64 | 1205.1322878.82 | 1206.22 22892.4 | 1207.2422915.88 | 1208.3422919.02 | 1208.24         |         |
| 22922.93 | 1206.4922932.53 | 1201.3222944.71 | 1194.4322989.69 | 1193.22 23018.3 | 1192.15         |         |
| 23022.55 | 1192.2423036.36 | 1193.5223059.85 | 1195.3823069.22 | 1195.9723071.24 | 1195.51         |         |
| 23091.35 | 1185.9523096.33 | 1184.1223100.94 | 1183.823121.36  | 1181.6623127.57 | 1185.46         |         |
| 23143.41 | 1195.4823148.07 | 1192.4223154.03 | 1193.3323156.99 | 1192.6223177.01 | 1191.82         |         |
| 23204.22 | 1192.523216.04  | 1193.0223226.37 | 1192.8323244.24 | 1192.7323262.32 | 1192.2          |         |
| 23268.38 | 1192.1923293.33 | 1192.82 23301.9 | 1193.5723323.68 | 1194.2923337.82 | 1193.81         |         |
| 23349.97 | 1188.8623355.94 | 1186.3223370.93 | 1186.2923384.69 | 1191.9123388.48 | 1193.62         |         |
| 23426.01 | 1193.9223439.52 | 1193.7223450.57 | 1193.3123477.06 | 1192.4923491.59 | 1196.19         |         |
| 23497.14 | 1193.1723537.29 | 1193.0223573.51 | 1193.1523624.93 | 1193.5223634.96 | 1193.64         |         |
| 23677.87 | 1193.8423709.43 | 1193.3223720.78 | 1193.3823738.99 | 1193.6823763.39 | 1193.68         |         |
| 23776.33 | 1194.0923785.02 | 1193.8223792.58 | 118923793.85    | 1188.5523802.23 | 1188.63         |         |
| 23816.26 | 1189.21 23843.4 | 1188.8223851.62 | 1188.8323892.07 | 119023959.21    | 1193.09         |         |
| 23979.45 | 1194.3524039.11 | 1194.3224111.93 | 1193.37 24158.7 | 1193.6624187.18 | 1190.24         |         |
| 24191.35 | 1189.69 24272.5 | 1189.7224312.92 | 1189.6924330.77 | 1193.7324356.03 | 1193.75         |         |
| 24360.09 | 1193.5124371.38 | 1192.6224405.95 | 1192.3924412.33 | 1192.2624420.03 | 1192.34         |         |
| 24436.56 | 1192.9624455.72 | 1193.6224492.81 | 1194.6924511.07 | 1194.2124527.54 | 1193.34         |         |
| 24541.43 | 1193.8124595.14 | 1193.42         |                 |                 |                 |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 18410.26 .02519445.78 .03 21370 .031

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19445.78 21370 433.65 433.65 433.65 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 18410.2619445.78 1188.84 F  
 2137024595.14 1193.42 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 224.82

INPUT  
 Description:

|          |                 |                 |                 |                 |         |     |      |     |      |     |      |
|----------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|-----|------|
| Station  | Elevation       | Data            | num=            | 329             |         |     |      |     |      |     |      |
| Sta      | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev | Sta | Elev |
| 18468.66 | 1192.6218491.23 | 1193.2218548.52 | 1193.1918668.84 | 1193.2918703.73 | 1193.19 |     |      |     |      |     |      |
| 18762.31 | 1192.52 18770   | 1192.4518775.31 | 1189.7918799.29 | 1177.1918808.95 | 1176.55 |     |      |     |      |     |      |
| 18824.7  | 1176.7218870.09 | 1176.2718897.86 | 1175.5318919.25 | 1176.0318936.05 | 1176.48 |     |      |     |      |     |      |
| 18965.24 | 1188.8218984.82 | 1188.2619012.61 | 1175.619017.57  | 1173.1519032.33 | 1172.94 |     |      |     |      |     |      |
| 19113.32 | 1171.6219227.06 | 1171.419314.52  | 1171.0119327.02 | 1170.9819345.61 | 1171.33 |     |      |     |      |     |      |
| 19370.77 | 1172.3219376.92 | 1172.6219384.11 | 1173.9519403.07 | 1177.1419413.34 | 1182.09 |     |      |     |      |     |      |
| 19424.25 | 1187.52 19442   | 1187.9519450.84 | 1182.3119456.61 | 1178.8519467.12 | 1172.25 |     |      |     |      |     |      |
| 19473.77 | 1167.3219475.71 | 1165.5219487.79 | 1156.8119510.76 | 1156.8919554.15 | 1156.18 |     |      |     |      |     |      |
| 19568.85 | 1160.0219575.87 | 1162.19585.54   | 1165.5319608.64 | 1173.119614.23  | 1174.95 |     |      |     |      |     |      |
| 19629.85 | 1175.3219630.93 | 1174.7719644.57 | 1166.6919652.46 | 1160.8119662.28 | 1161.14 |     |      |     |      |     |      |
| 19670.63 | 1162.4219679.74 | 1163.5819692.52 | 1164.7919702.64 | 1166.2519706.24 | 1167.16 |     |      |     |      |     |      |
| 19709.94 | 1167.5219726.98 | 1160.5419731.84 | 1159.7519744.98 | 1159.1919756.63 | 1159.14 |     |      |     |      |     |      |
| 19780.81 | 1159.8219788.53 | 1159.4119796.49 | 1159.1519813.07 | 1160.3519813.98 | 1160.54 |     |      |     |      |     |      |
| 19823.68 | 1159.72 19838   | 1158.8819844.79 | 1157.9319854.83 | 1156.819874.16  | 1157.22 |     |      |     |      |     |      |
| 19880.65 | 1157.22 19889.7 | 1160.8119908.35 | 1167.4619918.34 | 1167.8419924.34 | 1167.9  |     |      |     |      |     |      |
| 19932.83 | 1166.9219968.19 | 1164.1819989.45 | 1162.3719996.08 | 1162.2120010.62 | 1161.06 |     |      |     |      |     |      |
| 20046.56 | 1163.7220073.77 | 1163.7720088.63 | 1163.9520107.79 | 1163.7220127.03 | 1163.24 |     |      |     |      |     |      |
| 20159.96 | 1163.5220174.57 | 1161.7920221.72 | 1155.9220310.74 | 1153.6220322.31 | 1153.22 |     |      |     |      |     |      |
| 20369.16 | 1153.2220393.13 | 1153.120398.26  | 1153.1720449.39 | 1153.520476.38  | 1153.72 |     |      |     |      |     |      |
| 20489.96 | 1154.1220558.18 | 1156.9220573.83 | 1157.2820594.32 | 1157.3520617.49 | 1157.4  |     |      |     |      |     |      |
| 20630.53 | 1157.5220663.46 | 1157.5320686.53 | 1157.1620699.38 | 1156.8720708.94 | 1157.01 |     |      |     |      |     |      |
| 20713.14 | 1156.8220741.09 | 1156.1220779.61 | 1156.2820788.02 | 1156.520811.75  | 1156.6  |     |      |     |      |     |      |
| 20824.48 | 1156.2220840.64 | 1155.6220853.16 | 1155.0420865.48 | 1154.1620891.25 | 1153.48 |     |      |     |      |     |      |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 20898.25 | 1155.3220901.46 | 1155.9320918.45 | 1159.9720932.61 | 1164.2420953.61 | 1160.76 |
| 20959.8  | 1159.3220968.36 | 115720972.57    | 1156.9921001.34 | 1156.4421007.32 | 1156.76 |
| 21013.58 | 1154.3221023.96 | 1152.5221029.02 | 1151.7521044.34 | 1151.73 21052.6 | 1151.39 |
| 21060.13 | 1154.92 21075   | 1160.4821081.91 | 1162.1621093.14 | 1163.7321107.82 | 1161.74 |
| 21115.54 | 1158.9221124.62 | 1155.4621149.99 | 1155.5221159.91 | 1155.4621179.99 | 1158.64 |
| 21208.17 | 1160.5221211.61 | 1159.9721220.38 | 1157.6521224.45 | 1157.2221234.12 | 1159.66 |
| 21236.06 | 1159.7221246.71 | 1160.6921249.75 | 1160.6421258.88 | 1162.2921264.32 | 1163.45 |
| 21285.45 | 1165.92 21288.4 | 1166.09 21299.1 | 1168.01 21303.2 | 1169.3721311.55 | 1167.13 |
| 21319.32 | 1165.2221332.47 | 1163.6721339.36 | 1163.721347.31  | 1164.2321355.61 | 1164.13 |
| 21363.33 | 1164.5221381.26 | 1166.2321401.23 | 1168.48 21407.1 | 1168.9521433.73 | 1171.95 |
| 21435.24 | 1172.5221441.75 | 1172.9621463.58 | 1175.6421475.79 | 1176.7721496.43 | 1179.09 |
| 21520    | 1183.01 21529.7 | 1184.6221533.41 | 1185.3621552.03 | 1183.321556.88  | 1182.2  |
| 21562.32 | 1182.2521608.18 | 1181.2221641.44 | 1180.7121655.19 | 1180.4621671.39 | 1182.8  |
| 21673.3  | 1182.3221700.72 | 1174.3221710.51 | 1172.4121719.97 | 1171.7 21733.3  | 1167.75 |
| 21743.08 | 1165.8521758.09 | 1162.0221766.89 | 1160.3 21773.6  | 1160.7321775.39 | 1160.52 |
| 21785.53 | 1163.1321800.07 | 1162.8221812.34 | 1162.67 21824.9 | 1162.0921830.63 | 1163.46 |
| 21861.22 | 1174.4621875.18 | 1180.6221881.04 | 1182.7521891.61 | 1181.1321900.35 | 1179.96 |
| 21908.25 | 1179.5521918.64 | 1179.2221934.84 | 1179.2221939.41 | 1179.4721946.81 | 1179.4  |
| 21962.12 | 1179.6121972.75 | 1179.1221976.82 | 1180.8321992.77 | 1186.7321996.24 | 1188.08 |
| 22007.37 | 1191.4322015.71 | 1193.2222024.98 | 1194.65 22030.2 | 1185.6922031.57 | 1186.4  |
| 22050.48 | 1197.9322055.69 | 1199.0222072.22 | 1200.3222086.62 | 1198.922091.69  | 1198.93 |
| 22107.1  | 1197.4822111.15 | 1196.8222133.91 | 1194.0722135.36 | 1193.6922157.28 | 1191.09 |
| 22163.45 | 1190.122178.17  | 1187.5222193.04 | 1184.0922201.48 | 1184.0122206.38 | 1183.82 |
| 22283.74 | 1183.2922250.19 | 1182.6222263.12 | 1182.5322270.24 | 1182.7922288.24 | 1183.12 |
| 22296.07 | 1180.2722305.22 | 1179.9222311.58 | 1179.97 22325.9 | 1182.7622340.07 | 1183.3  |
| 22360.49 | 1183.7822389.89 | 1184.5222397.51 | 1184.9322435.83 | 1186.2922448.82 | 1186.34 |
| 22463.16 | 1186.3122475.18 | 1185.9222484.78 | 1185.9222504.01 | 1185.6422533.83 | 1186.2  |
| 22557.61 | 1187.122589.24  | 1188.5222593.65 | 1188.5922648.82 | 1186.6922652.46 | 1186.6  |
| 22699.66 | 1187.1822704.02 | 1187.2222761.06 | 1187.0822791.67 | 1187.6422793.04 | 1187.02 |
| 22815.24 | 1190.6722824.17 | 1192.9222839.18 | 1188.2722865.68 | 1180.5422869.29 | 1180.7  |
| 22883.4  | 1179.6722901.09 | 1180.3222913.47 | 1186.9322949.46 | 1186.6722952.52 | 1184.91 |
| 22960.9  | 1179.7422980.99 | 1178.9222986.44 | 1181.5623009.71 | 1192.0723017.58 | 1191.89 |
| 23042.15 | 1190.98 23058.2 | 1191.0223076.43 | 1191.2123112.59 | 1192.0323119.69 | 1192.03 |
| 23151.39 | 1191.3423166.65 | 1192.2223192.67 | 1191.5623200.75 | 1191.37 23216.8 | 1191.4  |
| 23223.58 | 1191.7423239.13 | 1193.0223241.12 | 1193.0423256.72 | 1187.7923266.95 | 1183.87 |
| 23282.03 | 1179.3923296.47 | 1178.4223304.63 | 1178.0623313.34 | 1176.7323322.49 | 1173.84 |
| 23328.7  | 1175.0323344.04 | 1177.7223349.46 | 1180.6323374.58 | 1186.723376.26  | 1187.88 |
| 23381.3  | 1189.7123399.56 | 1196.8223421.49 | 1195.6723442.79 | 1194.7723460.71 | 1192.43 |
| 23487.98 | 1192.6523533.74 | 1193.0223539.16 | 1192.7423575.12 | 1191.9323592.67 | 1191.95 |
| 23615.36 | 1192.0923655.28 | 1191.5223683.97 | 1191.6123706.74 | 1191.6923751.48 | 1192.55 |
| 23776.73 | 1193.3623779.71 | 1193.3223784.82 | 1192.6223801.81 | 1194.4823805.89 | 1194.62 |
| 23819.96 | 1194.8223861.06 | 1194.1223875.71 | 1193.9623900.03 | 1193.8423930.47 | 1189.69 |
| 24082.99 | 1189.6924094.49 | 1191.6224101.67 | 1193.5124110.66 | 1193.58         |         |

|                    |       |       |       |
|--------------------|-------|-------|-------|
| Manning's n Values |       | num=  | 3     |
| Sta                | n Val | Sta   | n Val |
| 18468.66           | .05   | 19442 | .035  |
|                    |       | 21520 | .05   |

|                  |         |         |           |        |         |        |       |        |        |
|------------------|---------|---------|-----------|--------|---------|--------|-------|--------|--------|
| Bank Sta:        | Left    | Right   | Lengths:  | Left   | Channel | Right  | Coeff | Contr. | Expan. |
|                  | 19442   | 21520   |           | 599.67 | 599.67  | 599.67 | .1    |        | .3     |
| Ineffective Flow | num=    |         | 2         |        |         |        |       |        |        |
| Sta L            | Sta R   | Elev    | Permanent |        |         |        |       |        |        |
| 18468.66         | 19442   | 1187.95 | F         |        |         |        |       |        |        |
| 2152024110.66    | 1193.58 |         | F         |        |         |        |       |        |        |

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 224.71

INPUT

Description:

|          |                 |                 |                 |                 |         |     |      |     |      |
|----------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|
| Station  | Elevation       | Data            | num=            | 277             |         |     |      |     |      |
| Sta      | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev |
| 18464    | 1177.0218560.25 | 1177.0518564.92 | 1176.9618576.94 | 1182.7318583.28 | 1185.61 |     |      |     |      |
| 18595.74 | 1191.4218610.56 | 1191.5418616.36 | 1190.418628.59  | 1187.7218636.54 | 1187.66 |     |      |     |      |
| 18647.7  | 1187.72 18748   | 1188.1918757.28 | 1188.64 18797.1 | 1190.7518851.54 | 1190.12 |     |      |     |      |
| 18883.82 | 1190.2218888.02 | 1189.66 18907.5 | 1188.3218924.77 | 1177.4518937.32 | 1171.36 |     |      |     |      |
| 18957.69 | 1169.6218972.07 | 1168.9619014.03 | 1167.3819037.23 | 1168.1919079.19 | 1168.99 |     |      |     |      |
| 19124.33 | 1168.12 19133.5 | 1168.1219179.79 | 1173.6219180.79 | 1173.7619196.04 | 1172.6  |     |      |     |      |
| 19244.39 | 1174.1219264.65 | 1174.5119294.94 | 1175.86 19314.2 | 1175.9919340.55 | 1175.12 |     |      |     |      |
| 19361.41 | 1174.4219391.52 | 1175.2319409.22 | 1177.1419421.18 | 1182.86 19431.2 | 1187.56 |     |      |     |      |
| 19446.49 | 1187.5219455.44 | 1181.4119491.82 | 1157.0819542.07 | 1156.0719546.61 | 1156.76 |     |      |     |      |
| 19563.52 | 1162.0219609.02 | 1172.1519615.88 | 1173.37 19640.4 | 1178.3419656.48 | 1178.65 |     |      |     |      |
| 19669.1  | 1177.5219674.56 | 1180.2919689.02 | 1188.0519697.87 | 1184.08 19713.6 | 1177.21 |     |      |     |      |
| 19728.79 | 1167.1219731.37 | 1165.6419755.99 | 1150.8419999.55 | 1150.8420006.21 | 1151.59 |     |      |     |      |
| 20013.74 | 1152.2220021.53 | 1152.36 20029.8 | 1151.4420041.52 | 1150.65 20053.2 | 1150.1  |     |      |     |      |
| 20084.72 | 1147.4220105.72 | 1145.4320120.92 | 1144.4420131.89 | 1143.93 20154.6 | 1143.89 |     |      |     |      |
| 20168.4  | 1144.1220184.68 | 1145.5920193.33 | 1146.1720207.65 | 1147.2920215.48 | 1148.31 |     |      |     |      |
| 20219.08 | 1148.9220253.11 | 1155.7920262.44 | 1156.220277.52  | 1156.5620281.83 | 1156.47 |     |      |     |      |
| 20307.84 | 1159.0220320.31 | 1160.320332.28  | 1160.7820349.98 | 1163.0320358.71 | 1163.88 |     |      |     |      |
| 20370.25 | 1164.0220383.63 | 1163.6820395.83 | 1161.2 20422.8  | 1157.7320444.66 | 1155    |     |      |     |      |
| 20456.99 | 1155.2220466.15 | 1155.4820474.01 | 1155.220495.23  | 1156.7820496.87 | 1156.49 |     |      |     |      |
| 20509.17 | 1155.6220524.58 | 1154.6720533.32 | 1154.4520549.23 | 1154.4320578.73 | 1153.8  |     |      |     |      |
| 20587.03 | 1153.7220605.18 | 1153.8720609.45 | 1153.7920631.35 | 1153.4420638.11 | 1153.7  |     |      |     |      |
| 20655.54 | 1154.8220674.02 | 1155.5220682.97 | 1155.620696.32  | 1156.2820736.97 | 1155.7  |     |      |     |      |
| 20743.09 | 1155.9220750.84 | 1156.51 20781.4 | 1158.2220784.55 | 1160.2520786.73 | 1160.67 |     |      |     |      |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 20796.85 | 1160.1220803.01 | 1159.520818.77  | 1158.9120835.84 | 1160.3320861.54 | 1161    |
| 20884.65 | 1160.1220916.47 | 1160.1120925.95 | 1159.7420942.29 | 1159.5820954.43 | 1159.23 |
| 20956.33 | 1159.5220964.42 | 1159.8520972.92 | 1159.0820990.42 | 1159.4121004.19 | 1159.36 |
| 21018.32 | 1161.5221025.19 | 1157.86 21033.6 | 1154.721061.57  | 1153.36 21149.5 | 1153.43 |
| 21251.46 | 1153.7221273.01 | 1153.5321302.97 | 1154.3321344.07 | 1155.3421414.83 | 1155.68 |
| 21452.9  | 1156.3221489.37 | 1156.6121509.45 | 1157.0121553.77 | 1157.121606.68  | 1159.59 |
| 21615.63 | 1163.4221626.07 | 1167.1721634.05 | 1170.37 21642.7 | 1168.0421652.32 | 1165.87 |
| 21655.11 | 1165.4221670.14 | 1165.31 21690   | 1165.221709.36  | 1164.6 21720    | 1164.37 |
| 21744.81 | 1163.82 21771.2 | 1165.6221787.65 | 1167.0921868.56 | 1165.68 21934.9 | 1169.94 |
| 21971.79 | 1173.8822003.59 | 1175.4222007.38 | 1175.922013.25  | 1176.0522022.36 | 1176.59 |
| 22039.78 | 1176.4122066.19 | 1176.0222067.64 | 1176.1222078.56 | 1177.8122088.67 | 1177.68 |
| 22095.23 | 1177.4222101.34 | 1177.6222125.41 | 1178.94 22142.7 | 1179.6822154.25 | 1182.26 |
| 22160.92 | 1182.522169.46  | 1182.1222175.19 | 1181.95 22186.8 | 1180.8422192.54 | 1180.02 |
| 22203    | 1181.5322214.87 | 1180.8222220.75 | 1181.52 22227.3 | 1181.422236.47  | 1182.72 |
| 22242.02 | 1183.0622254.98 | 1181.6222262.54 | 1179.6322273.47 | 1179.53 22282.5 | 1179.68 |
| 22295.05 | 1178.7922297.34 | 1178.4222310.55 | 1178.99 22319.4 | 1178.5522329.08 | 1179.87 |
| 22345.94 | 1180.8822361.58 | 1181.0222375.38 | 1181.3122382.04 | 1181.5722390.52 | 1181.43 |
| 22394.13 | 1182.9522402.68 | 1183.2222421.42 | 1185.2222425.47 | 1188.7522428.87 | 1190.62 |
| 22435    | 1192.8822441.19 | 1195.6222444.95 | 1197.5422456.01 | 1201.1622473.79 | 1188.61 |
| 22479.65 | 1183.7822496.99 | 1183.8222518.17 | 1184.0322539.38 | 1184.4822547.85 | 1184.46 |
| 22567.6  | 1184.7522573.95 | 1185.2222607.44 | 1186.37 22619.7 | 1186.5322645.64 | 1186.96 |
| 22665.53 | 1186.61 22666.2 | 1186.6222686.76 | 1202.6222689.47 | 1203.222696.99  | 1206.36 |
| 22698.31 | 1205.5622706.42 | 1205.2222708.32 | 1205.4622719.85 | 1199.93 22728.3 | 1194.61 |
| 22739.29 | 1186.5622785.66 | 1184.6222788.75 | 1184.9522806.26 | 1186.0122815.79 | 1185.32 |
| 22832.27 | 1185.5622836.45 | 1185.5222846.73 | 1185.0922863.76 | 1184.9622882.04 | 1184.11 |
| 22907.43 | 1184.3622924.35 | 1182.0222934.16 | 1181.1322939.22 | 1180.58 22968.3 | 1176.07 |
| 22992.13 | 1175.4423022.21 | 1176.9223036.83 | 1175.623058.26  | 1173.9623073.67 | 1172.5  |
| 23087.08 | 1172.5123108.86 | 1171.82 23111   | 1171.4723140.54 | 1169.2223173.66 | 1166.61 |
| 23176.37 | 1166.5823183.59 | 1165.8223205.02 | 1163.7123213.59 | 1163.723218.55  | 1170.25 |
| 23268.77 | 1190.76 23277.4 | 1190.52 23394   | 1187.0323450.93 | 1185.4523458.46 | 1187.58 |
| 23478.08 | 1195.3423492.53 | 1192.6223503.09 | 1190.323504.75  | 1189.8123528.38 | 1189.64 |
| 23562.27 | 1187.6523630.27 | 1190.7223637.25 | 1190.87 23661.7 | 1191.66 23680.4 | 1191.95 |
| 23701.25 | 1191.8323747.57 | 1191.02         |                 |                 |         |

|                                  |      |   |
|----------------------------------|------|---|
| Manning's n Values               | num= | 3 |
| Sta n Val Sta n Val              |      |   |
| 18464 .05 19431.2 .035 21720 .05 |      |   |

|  |   |  |  |  |  |  |
|--|---|--|--|--|--|--|
| Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan. |   |  |  |  |  |  |
| 19431.2 21720 483.86 483.86 483.86 .1 .3                             |   |  |  |  |  |  |
| Ineffective Flow num=  | 2 |  |  |  |  |  |
| Sta L Sta R Elev Permanent   |   |  |  |  |  |  |
| 18464 19431.2 1188.05 F  |   |  |  |  |  |  |
| 2172023747.57 1191.02 F  |   |  |  |  |  |  |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 224.62

INPUT Description:

|  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|
| Station Elevation Data num= 219  |  |  |  |  |  |  |  |  |  |
| Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev                            |  |  |  |  |  |  |  |  |  |
| 18378.52 1187.9218404.35 1187.618468.51 1186.6618519.25 1186.1718597.14 1185.97  |  |  |  |  |  |  |  |  |  |
| 18625.03 1185.9218645.15 1186.1118674.94 1186.518726.36 1185.8718735.04 1185.53  |  |  |  |  |  |  |  |  |  |
| 18810.85 1182.8218818.74 1182.618822.11 1182.1818841.76 1176.3218866.52 1185.61  |  |  |  |  |  |  |  |  |  |
| 18879.93 1189.0218886.19 1189.2518896.94 1189.8218903.79 1188.9218935.34 1177.02 |  |  |  |  |  |  |  |  |  |
| 18952.59 1170.2218970.84 1168.6719016.04 1169.3219041.59 1170.66 19076.7 1170.62 |  |  |  |  |  |  |  |  |  |
| 19100.78 1170.5219112.49 1170.519170.92 1170.9419208.13 1173.1919217.46 1173.7   |  |  |  |  |  |  |  |  |  |
| 19228.76 1179.6219245.51 1188.4119247.74 1188.4619262.74 1188.2319281.57 1188.02 |  |  |  |  |  |  |  |  |  |
| 19291.06 1182.4219293.54 1180.6719296.84 1181.19 19306.6 1182.15 19309.4 1182.16 |  |  |  |  |  |  |  |  |  |
| 19324.17 1183.1219355.66 1175.5619361.36 1173.719380.53 1169.9319383.47 1169.26  |  |  |  |  |  |  |  |  |  |
| 19404.93 1175.4219415.91 1180.2919430.33 1187.5919437.83 1187.4219447.76 1187.35 |  |  |  |  |  |  |  |  |  |
| 19462.55 1177.1219482.14 1164.4719495.08 1155.4919501.85 1155.3619530.15 1155.69 |  |  |  |  |  |  |  |  |  |
| 19553.32 1155.9219569.11 1159.5319586.18 1161.3219600.46 1163.1919616.22 1163.3  |  |  |  |  |  |  |  |  |  |
| 19672.91 1163.9219686.04 1163.9419702.52 1163.7919764.44 1162.919818.05 1162.2   |  |  |  |  |  |  |  |  |  |
| 19833.36 1162.1219864.29 1162.5619900.89 1162.9419939.15 1165.319943.11 1165.43  |  |  |  |  |  |  |  |  |  |
| 19946.81 1164.9219964.63 1168.2819974.75 1167.6219982.08 1167.919989.55 1166.05  |  |  |  |  |  |  |  |  |  |
| 20004.4 1165.2220011.63 1164.8820038.32 1163.4820068.86 1147.3920074.04 1146.49  |  |  |  |  |  |  |  |  |  |
| 20083.55 1145.4220086.09 1145.2920100.72 1145.2920109.54 1146.4220114.57 1146.12 |  |  |  |  |  |  |  |  |  |
| 20132.41 1145.5220142.12 1145.6920180.96 1145.1320196.71 1146.3320215.45 1148.14 |  |  |  |  |  |  |  |  |  |
| 20244.38 1151.9220254.84 1151.9320274.37 1153.1820303.52 1153.1420372.27 1150.68 |  |  |  |  |  |  |  |  |  |
| 20373.8 1150.72 20407.9 1154.9120414.72 1155.5120426.65 1156.3220441.24 1157.65  |  |  |  |  |  |  |  |  |  |
| 20445.35 1157.4220455.62 1156.2920467.54 1155.6420504.49 1160.5420518.03 1162.53 |  |  |  |  |  |  |  |  |  |
| 20536.22 1162.02 20559.2 1161.5120573.96 1161.9820587.92 1161.3420613.78 1158.72 |  |  |  |  |  |  |  |  |  |
| 20623.68 1157.6220628.88 1157.1620639.74 1156.620648.95 1156.6420676.03 1153.47  |  |  |  |  |  |  |  |  |  |
| 20681.05 1152.4220685.65 1152.0620716.53 1150.4320718.26 1150.420761.57 1151.15  |  |  |  |  |  |  |  |  |  |
| 20778.13 1150.8220789.51 1150.8620845.64 1150.9520863.07 1151.3520874.13 1151.91 |  |  |  |  |  |  |  |  |  |
| 20877.77 1154.6220879.74 1155.620901.45 1160.2420917.91 1163.3120923.26 1162.16  |  |  |  |  |  |  |  |  |  |
| 20931.08 1160.7220971.99 1158.0421004.14 1158.0221029.13 1159.2521094.11 1160.21 |  |  |  |  |  |  |  |  |  |
| 21105.12 1159.82 21114.2 1160.35 21125.7 1160.2221138.44 1160.6921146.08 1163.02 |  |  |  |  |  |  |  |  |  |
| 21153.05 1163.7221156.33 1163.5121175.88 1162.4521194.36 1160.3121296.44 1158.07 |  |  |  |  |  |  |  |  |  |
| 21306.29 1158.0221368.24 1158.7421374.31 1158.3421388.29 1156.3721393.32 1156.13 |  |  |  |  |  |  |  |  |  |
| 21405.64 1155.7221421.92 1155.4821457.66 1153.4821469.29 1152.4521510.01 1151.3  |  |  |  |  |  |  |  |  |  |
| 21514.93 1151.3221522.43 1151.8921531.86 1152.8921542.55 1153.3 21561.6 1153.9   |  |  |  |  |  |  |  |  |  |
| 21585.4 1153.4221598.53 1153.17 21600 1153.221643.62 1154.1 21681.1 1154.35      |  |  |  |  |  |  |  |  |  |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|
| 21691.8  | 1154.6721736.93 | 1155.0221758.33 | 1155.26         | 21767.5         | 1155.5121783.92 | 1156.41 |
| 21795.39 | 1160.34         | 21819           | 1161.0221863.06 | 1177.0421879.57 | 1176.8221927.14 | 1175.31 |
| 21962.31 | 1175.3821966.92 | 1175.3221973.81 | 1176.7821995.83 | 1178.5622012.64 | 1177.52         |         |
| 22018    | 1177.5522032.54 | 1180.0222048.17 | 1182.2722055.24 | 1182.9122065.01 | 1181.11         |         |
| 22070.42 | 1179.7422073.56 | 1178.5222082.18 | 1177.0822092.26 | 1177.25         | 22123.7         | 1178.11 |
| 22133.35 | 1176.1322138.59 | 1174.7222151.32 | 1174.2822163.66 | 1173.7722173.36 | 1173.63         |         |
| 22188.26 | 1173.8222201.63 | 1173.4222228.57 | 1172.3522244.33 | 1181.1222264.95 | 1191.73         |         |
| 22279.95 | 1190.8222291.92 | 1191.1222311.27 | 1191.23         | 22345.6         | 1189.8322356.31 | 1189.6  |
| 22408.94 | 1190.5222415.73 | 1190.7222445.76 | 1190.4922488.37 | 1190.5822496.99 | 1191.1          |         |
| 22500.11 | 1191.0922527.12 | 1191.6222639.53 | 1191.6222671.17 | 1191.6722682.21 | 1191.5          |         |
| 22714.79 | 1191.7622773.11 | 1192.0222780.07 | 1192.0922793.79 | 1192.07         |                 |         |

Manning's n Values num= 3

|          |             |     |       |       |       |
|----------|-------------|-----|-------|-------|-------|
| Sta      | n Val       | Sta | n Val | Sta   | n Val |
| 18378.52 | .0519430.33 |     | .035  | 21600 | .05   |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

|          |       |        |        |        |    |    |
|----------|-------|--------|--------|--------|----|----|
| 19430.33 | 21600 | 529.95 | 529.95 | 529.95 | .1 | .3 |
|----------|-------|--------|--------|--------|----|----|

Ineffective Flow num= 2

|                  |         |      |           |
|------------------|---------|------|-----------|
| Sta L            | Sta R   | Elev | Permanent |
| 18378.5219430.33 | 1187.59 |      | F         |
| 2160022793.79    | 1192.07 |      | F         |

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 224.52

INPUT

Description:

Station Elevation Data num= 201

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|
| 18088.7  | 1186.6218094.05 | 1186.6618136.07 | 1187.3618204.45 | 1188.01         | 18218           | 1188.01         |         |     |      |
| 18231.78 | 1185.8218250.76 | 1185.6518339.83 | 1185.3818379.79 |                 | 118718401.55    | 1188.28         |         |     |      |
| 18428.54 | 1193.8218433.64 | 1194.9118445.55 | 1195.0918476.05 | 1194.7918484.38 |                 | 1194.63         |         |     |      |
| 18485.77 | 1192.82 18501.8 | 1192.1618512.61 | 1194.6718527.36 | 1194.8118530.87 |                 | 1194.48         |         |     |      |
| 18557.82 | 1193.8218586.99 | 1193.118641.01  | 1175.6718651.39 |                 | 1172.218670.01  | 1164.57         |         |     |      |
| 18673.96 | 1163.0218683.35 | 1163.5218814.59 | 1163.4718971.41 | 1163.7318995.12 |                 | 1163.5          |         |     |      |
| 19042.34 | 1163.5219046.67 | 1163.7719049.29 | 1162.8919053.55 | 1163.3419056.67 |                 | 1164.09         |         |     |      |
| 19101    | 1185.2219108.59 | 1188.9619123.87 | 1188.2819131.81 |                 | 1187.419169.23  | 1170.47         |         |     |      |
| 19186.57 | 1162.3219189.46 | 1162.6219198.48 | 1166.119244.71  | 1160.8619246.73 |                 | 1160.92         |         |     |      |
| 19249.58 | 1165.2219263.12 | 1173.5919281.03 | 1185.7219292.86 | 1186.7819321.49 |                 | 1190.3          |         |     |      |
| 19356.17 | 1174.0219369.03 | 1167.719370.86  | 1166.1719394.33 |                 | 1173.6619434.58 | 1186.55         |         |     |      |
| 19451.27 | 1186.7219482.81 | 1165.5819497.43 | 1155.9319507.25 | 1155.7419579.45 |                 | 1155.52         |         |     |      |
| 19583.14 | 1155.5219602.45 | 1155.9319641.76 | 1156.3319653.22 | 1156.11         | 19672.4         | 1156.22         |         |     |      |
| 19713.81 | 1156.9219723.27 | 1157.34         | 19748           | 1158.619764.85  |                 | 1158.7119809.25 | 1157.78 |     |      |
| 19862.99 | 1156.7219865.78 | 1156.7319891.59 | 1156.319963.95  | 1155.8819969.89 |                 | 1155.8          |         |     |      |
| 20030.43 | 1154.8220075.47 | 1154.0420086.28 | 1153.8420111.83 | 1153.8220116.37 |                 | 1153.97         |         |     |      |
| 20150.09 | 1153.5220152.59 | 1153.4820162.27 | 1153.720191.66  | 1154.4920213.73 |                 | 1154.92         |         |     |      |
| 20220.38 | 1155.2220233.22 | 1153.4720239.83 | 1153.2720317.34 | 1152.2120360.79 |                 | 1151.38         |         |     |      |
| 20364.78 | 1151.2220402.94 | 1151.4          | 20441.4         | 1151.6120464.67 | 1151.9720484.68 | 1151.71         |         |     |      |
| 20498.13 | 1151.4220502.32 | 1151.46         | 20513.4         | 1151.0720536.24 | 1152.1120538.83 | 1152.39         |         |     |      |
| 20542.7  | 1153.42 20547.2 | 1153.6720556.42 | 1152.4220562.09 | 1151.0620571.53 |                 | 1150.92         |         |     |      |
| 20598.82 | 1150.0220617.41 | 1149.9620624.67 | 1149.9420636.08 | 1149.6520688.72 |                 | 1149.79         |         |     |      |
| 20691.86 | 1149.9220736.77 | 1150.1420809.46 | 1151.7520855.42 | 1151.39         | 20898.4         | 1151.62         |         |     |      |
| 20935.16 | 1151.6220953.85 | 1150.9120989.41 | 1150.2721018.71 | 1149.6221022.84 |                 | 1149.6          |         |     |      |
| 21026.09 | 1151.52 21031.9 | 1154.6421036.04 | 1156.6121046.57 | 1157.0421053.64 |                 | 1157.7          |         |     |      |
| 21076.1  | 1157.5221084.82 | 1157.9521088.81 | 1157.821112.35  | 1158.2221123.26 |                 | 1158.92         |         |     |      |
| 21126.83 | 1159.4221147.62 | 1166.6721156.03 | 1169.6721161.19 | 1169.5521179.54 |                 | 1168.74         |         |     |      |
| 21181.54 | 1166.8221190.54 | 1165.3621204.66 | 1161.7621209.11 | 1162.4821237.67 |                 | 1154.68         |         |     |      |
| 21253.62 | 1155.52 21274.1 | 1153.8421288.71 | 1152.57 21295.3 | 1152.6721298.09 |                 | 1153.37         |         |     |      |
| 21308.67 | 1155.5221319.78 | 1157.5321321.51 | 1157.521324.95  | 1158.421339.65  |                 | 1160.96         |         |     |      |
| 21340.72 | 1160.9221346.72 | 1159.3221352.78 | 1159.13 21368.5 | 1158.12         | 21370           | 1158.03         |         |     |      |
| 21411.43 | 1155.5421419.91 | 1155.8221426.88 | 1155.9521463.75 | 1156.1421479.12 |                 | 1162.73         |         |     |      |
| 21493.32 | 1159.121503.83  | 1158.8221511.16 | 1158.92 21526.1 | 1160.1621530.36 |                 | 1160.29         |         |     |      |
| 21558.04 | 1160.8321568.37 | 1161.1221572.86 | 1163.221590.45  | 1170.0621620.14 |                 | 1170.07         |         |     |      |
| 21623.43 | 1170.0521625.68 | 1169.1221648.07 | 1161.12 21668.6 | 1161.5721682.24 |                 | 1162.53         |         |     |      |
| 21690.39 | 1162.921711.67  | 1164.3221724.12 | 1164.77 21755   | 1166.4721758.82 |                 | 1166.72         |         |     |      |
| 21777.24 | 1168.721796.76  | 1170.6221813.46 | 1171.28 21849   | 1170.8221858.44 |                 | 1170.7          |         |     |      |
| 21917.45 | 1171.56 21939.5 | 1172.2221958.25 | 1172.6221971.26 | 1178.1321991.56 |                 | 1184.49         |         |     |      |
| 22002.74 | 1188.2322025.09 | 1188.3222038.67 | 1188.522046.77  | 1188.5122067.33 |                 | 1188.86         |         |     |      |
| 22098.6  | 1189.122158.37  | 1189.8222216.75 | 1189.9722254.97 | 1190.0722329.24 |                 | 1190.44         |         |     |      |
| 22366.41 | 1190.66         |                 |                 |                 |                 |                 |         |     |      |

Manning's n Values num= 3

|         |             |     |       |       |       |
|---------|-------------|-----|-------|-------|-------|
| Sta     | n Val       | Sta | n Val | Sta   | n Val |
| 18088.7 | .0519451.27 |     | .035  | 21370 | .05   |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

|          |       |       |       |       |    |    |
|----------|-------|-------|-------|-------|----|----|
| 19451.27 | 21370 | 503.1 | 503.1 | 503.1 | .1 | .3 |
|----------|-------|-------|-------|-------|----|----|

Ineffective Flow num= 2

|                 |         |      |           |
|-----------------|---------|------|-----------|
| Sta L           | Sta R   | Elev | Permanent |
| 18088.719451.27 | 1186.72 |      | F         |
| 2137022366.41   | 1190.66 |      | F         |

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 224.42

INPUT

Description:

| Station Elevation Data num= 162 |                 |                 |                 |                 |         |     |      |     |      |     |      |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|-----|------|
| Sta                             | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev | Sta | Elev |
| 18043.55                        | 1185.6218058.12 | 1185.7318117.53 | 1185.2818160.31 | 1186.5618190.45 | 1187.73 |     |      |     |      |     |      |
| 18204.03                        | 1187.7218224.37 | 1184.2818271.71 | 1183.03 18282.6 | 1185.9618294.74 | 1191.56 |     |      |     |      |     |      |
| 18309.53                        | 1196.0218322.31 | 1194.9418342.86 | 1193.8818358.99 | 1193.3218360.57 | 1191.71 |     |      |     |      |     |      |
| 18370.45                        | 1191.1218377.65 | 1190.8818385.95 | 1193.9318395.35 | 1194.6118401.65 | 1194.89 |     |      |     |      |     |      |
| 18411.71                        | 1194.3218435.01 | 1193.1518460.48 | 1191.8318514.06 | 1172.218543.55  | 1163.7  |     |      |     |      |     |      |
| 18545.99                        | 1162.82 18551.8 | 1163.1618643.34 | 1163.1719222.97 | 1163.16 19226.6 | 1162.74 |     |      |     |      |     |      |
| 19240.66                        | 1163.4219247.55 | 1163.5919261.31 | 1164.5119264.15 | 1164.4919272.42 | 1165.72 |     |      |     |      |     |      |
| 19276.33                        | 1166.9219291.06 | 1172.1819293.26 | 1173.3419301.82 | 1178.3619320.57 | 1188.61 |     |      |     |      |     |      |
| 19327.53                        | 1189.1219334.78 | 1189.4819336.36 | 1189.0819358.72 | 1182.119377.48  | 1176.19 |     |      |     |      |     |      |
| 19383.76                        | 1174.12 19397.8 | 1174.2419411.52 | 1175.1419443.09 | 1186.819462.26  | 1186.93 |     |      |     |      |     |      |
| 19471.43                        | 1180.7219507.11 | 1156.3219527.34 | 1156.1119566.11 | 1156.3119585.43 | 1156.44 |     |      |     |      |     |      |
| 19628.3                         | 1156.1219650.21 | 1155.8719701.38 | 1155.819712.02  | 1155.75 19775.8 | 1155.64 |     |      |     |      |     |      |
| 19814.95                        | 1155.5219817.34 | 1155.3319869.39 | 1155.17 19909.7 | 1154.4419952.33 | 1153.94 |     |      |     |      |     |      |
| 19991.79                        | 1154.22 20021.5 | 1154.0520042.41 | 1153.7320056.38 | 1153.6320092.53 | 1153.48 |     |      |     |      |     |      |
| 20104.41                        | 1153.3220150.93 | 1153.1120191.15 | 1153.3120196.14 | 1153.3120216.46 | 1151.48 |     |      |     |      |     |      |
| 20226.63                        | 1150.8220233.55 | 1150.7720277.89 | 1150.6220309.76 | 1150.920321.25  | 1150.1  |     |      |     |      |     |      |
| 20333.22                        | 1149.6220346.56 | 1149.2420398.46 | 1155.0220476.81 | 114920487.22    | 1148.94 |     |      |     |      |     |      |
| 20535.02                        | 1149.3220546.05 | 1149.0920566.01 | 1150.1220597.82 | 1150.6520634.33 | 1151.12 |     |      |     |      |     |      |
| 20646.91                        | 1151.3220659.41 | 1151.6920715.31 | 1152.2120725.27 | 1152.1920752.76 | 1152.4  |     |      |     |      |     |      |
| 20771.42                        | 1152.92 20805.6 | 1153.5920826.19 | 1153.6220867.07 | 1154.220874.98  | 1153.73 |     |      |     |      |     |      |
| 20897.86                        | 1153.0220929.75 | 1153.2620942.37 | 1153.5120968.03 | 1154.1520974.67 | 1153.83 |     |      |     |      |     |      |
| 20985.96                        | 1154.32 20992.1 | 1154.3321019.11 | 1153.72 21049.7 | 1152.51 21065   | 1151.69 |     |      |     |      |     |      |
| 21065.88                        | 1151.6421082.61 | 1150.4221125.78 | 1150.5521127.95 | 1150.4121144.39 | 1148.2  |     |      |     |      |     |      |
| 21148.56                        | 1148.2421160.16 | 1147.0221171.69 | 1146.9121177.64 | 1148.3921188.78 | 1151.68 |     |      |     |      |     |      |
| 21195.8                         | 1153.8521219.79 | 1151.92 21234.5 | 1161.0821247.11 | 1161.5421276.39 | 1162.85 |     |      |     |      |     |      |
| 21291.12                        | 1163.4221306.11 | 1169.1221308.31 | 1170.221317.52  | 1172.4721339.41 | 1172.84 |     |      |     |      |     |      |
| 21360.4                         | 1171.521365.06  | 1171.0221396.53 | 1169.6721401.42 | 1169.621460.32  | 1169.18 |     |      |     |      |     |      |
| 21474.76                        | 1169.121510.63  | 1174.2221519.63 | 1175.6121540.19 | 1172.821545.19  | 1173.63 |     |      |     |      |     |      |
| 21572.22                        | 1179.4921576.08 | 1182.1221581.46 | 1185.0521594.26 | 1185.9721610.38 | 1186.81 |     |      |     |      |     |      |
| 21628.34                        | 1187.5921664.95 | 1187.3221683.62 | 1187.121715.53  | 1187.2921741.04 | 1187.53 |     |      |     |      |     |      |
| 21751.82                        | 1187.9221768.03 | 1188.12 21827.3 | 1188.1121902.85 | 1188.1921926.28 | 1188.46 |     |      |     |      |     |      |
| 21956.88                        | 1187.9621986.13 | 1188.02 22026.7 | 1188.1222107.52 | 1187.9822135.75 | 1188.03 |     |      |     |      |     |      |
| 22153.92                        | 1188.8322161.11 | 1188.92         |                 |                 |         |     |      |     |      |     |      |

Manning's n Values

| num= 3   |             |     |       |       |       |
|----------|-------------|-----|-------|-------|-------|
| Sta      | n Val       | Sta | n Val | Sta   | n Val |
| 18043.55 | .0519462.26 |     | .035  | 21065 | .05   |

| Bank Sta: | Left     | Right | Lengths: | Left Channel | Right | Coeff Contr. | Expan. |
|-----------|----------|-------|----------|--------------|-------|--------------|--------|
|           | 19462.26 | 21065 |          | 599.2        | 599.2 | .1           | .3     |

Ineffective Flow

| num= 2   |          |         |           |
|----------|----------|---------|-----------|
| Sta L    | Sta R    | Elev    | Permanent |
| 18043.55 | 19462.26 | 1186.93 | F         |
| 21065    | 22161.11 | 1188.92 | F         |

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 224.31

INPUT

Description:

| Station Elevation Data num= 182 |                 |                 |                 |                 |         |     |      |     |      |     |      |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|-----|------|
| Sta                             | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev | Sta | Elev |
| 18260.48                        | 1183.6218288.51 | 1187.9918301.05 | 1193.1818312.67 | 1192.5718315.96 | 1192.53 |     |      |     |      |     |      |
| 18345.81                        | 1191.4218352.98 | 1188.9418366.88 | 1189.24 18370.7 | 1189.0818378.38 | 1189.51 |     |      |     |      |     |      |
| 18388.21                        | 1190.2218398.63 | 1190.518415.14  | 1189.8618455.04 | 1188.2218473.39 | 1182.15 |     |      |     |      |     |      |
| 18493.79                        | 1172.2218502.03 | 1170.0118514.32 | 1167.1618523.98 | 1166.6918534.13 | 1166.44 |     |      |     |      |     |      |
| 18550.44                        | 1168.9218580.05 | 1172.218583.46  | 1172.4818621.47 | 1173.7318628.32 | 1173.94 |     |      |     |      |     |      |
| 18663.11                        | 1174.4218671.21 | 1174.64 18698.8 | 1174.7518734.87 | 1174.718738.21  | 1174.77 |     |      |     |      |     |      |
| 18764.61                        | 1174.4218768.81 | 1174.3118778.99 | 1174.2518791.18 | 1174.0118801.71 | 1173.69 |     |      |     |      |     |      |
| 18821.35                        | 1172.5218848.56 | 1171.58 18856.1 | 1171.3918869.55 | 1170.2418875.46 | 1169.89 |     |      |     |      |     |      |
| 18886.96                        | 1168.9218894.87 | 1167.8418911.57 | 1164.8718915.08 | 1163.918934.72  | 1164.57 |     |      |     |      |     |      |
| 18940.54                        | 1163.2218944.97 | 1163.1619143.71 | 1163.1619169.01 | 1162.7419208.75 | 1164.29 |     |      |     |      |     |      |
| 19240.66                        | 1164.7219264.51 | 1164.7819269.89 | 1165.2219289.29 | 1167.6519292.56 | 1167.94 |     |      |     |      |     |      |
| 19309.12                        | 1171.7219310.82 | 1172.1819318.34 | 1175.7819343.02 | 1188.3419348.81 | 1189.49 |     |      |     |      |     |      |
| 19360.06                        | 1190.3219395.94 | 1175.35 19430.5 | 1175.519441.56  | 1181.2419452.97 | 1187.43 |     |      |     |      |     |      |
| 19458.91                        | 1187.5219469.49 | 1187.42 19500.9 | 1165.8619514.21 | 1156.6219578.95 | 1156.83 |     |      |     |      |     |      |
| 19626.84                        | 1156.9219648.47 | 1156.3219736.43 | 1154.219774.46  | 1155.0219796.75 | 1155.41 |     |      |     |      |     |      |
| 19806.29                        | 1152.8219809.19 | 1151.7419829.29 | 1152.1719851.93 | 1152.3119861.38 | 1152.47 |     |      |     |      |     |      |
| 19904.57                        | 1152.7219923.12 | 1152.3719969.31 | 1151.1819996.54 | 1150.95 20020.2 | 1150.47 |     |      |     |      |     |      |
| 20043.8                         | 1150.1220086.59 | 1149.6620122.45 | 1149.4920155.61 | 1150.1420163.54 | 1153.28 |     |      |     |      |     |      |
| 20166.7                         | 1153.7220179.31 | 1152.21 20189   | 1151.6420205.26 | 1151.5820219.88 | 1151    |     |      |     |      |     |      |
| 20226.16                        | 1150.8220231.26 | 1150.5320257.45 | 1149.5320262.99 | 1149.9420266.41 | 1149.63 |     |      |     |      |     |      |
| 20283.34                        | 1148.9220288.42 | 1148.9420294.46 | 1148.3420302.98 | 1148.3420318.06 | 1147.82 |     |      |     |      |     |      |
| 20328.39                        | 1147.7220338.24 | 1147.8320354.04 | 1148.3920361.33 | 1149.6820362.49 | 1149.71 |     |      |     |      |     |      |
| 20369.34                        | 1151.0220375.09 | 1151.5520385.68 | 1153.9420389.24 | 1154.7420396.92 | 1154.21 |     |      |     |      |     |      |
| 20406.33                        | 1153.1220436.89 | 1154.3 20442.2  | 1155.2320450.74 | 1156.1720506.03 | 1156.15 |     |      |     |      |     |      |
| 20524.74                        | 1156.12 20559.5 | 1156.0520581.21 | 1155.95 20612   | 1156.820648.99  | 1175.47 |     |      |     |      |     |      |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|
| 20654.48 | 1178.62         | 20662.8         | 1182.4820665.32 | 1182.1720667.75 | 1182.6620670.16 | 1182.35 |
| 20682.02 | 1178.1220690.61 | 1175.45         | 20723.1         | 1160.8220732.06 | 1156.320757.62  | 1156.78 |
| 20787.67 | 1156.52         | 20867.1         | 1155.5520910.88 | 1156.5120925.21 | 1157.0820930.22 | 1157.55 |
| 20963.61 | 1161.9220990.94 | 1165.4820998.37 | 1166.5421025.84 | 1168.94         | 21043.9         | 1170.37 |
| 21060.39 | 1171.5221083.27 | 1174.21107.82   | 1174.4821115.16 | 1174.8621122.26 | 1175.07         |         |
| 21133.52 | 1175.82         | 21138.6         | 1175.9621148.22 | 1177.4221150.91 | 1178.2421159.45 | 1178.77 |
| 21181.39 | 1179.5221210.61 | 1178.7121224.95 | 1178.7821274.36 | 1178.7721278.34 | 1179.03         |         |
| 21285.5  | 1178.8221292.94 | 1176.521294.87  | 1176.8121302.18 | 1179.1521310.23 | 1178.05         |         |
| 21321.74 | 1177.5221381.62 | 1178.8921389.48 | 1179.0221439.94 | 1178.3421452.69 | 1186.89         |         |
| 21502.78 | 1186.4221555.17 | 1186.8821571.85 | 1187.0621576.97 | 1187.0521740.59 | 1187.89         |         |
| 21770.72 | 1187.1221786.13 | 1186.9921796.29 | 1187.5521814.78 | 1187.98         | 21828.5         | 1188.09 |
| 21858    | 1188.0221896.79 | 1187.87         |                 |                 |                 |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 18260.48 .0519458.91 .03520667.75 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19458.9120667.75 106 477.07 507 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 18260.4819458.91 1187.52 F  
 20667.7521896.79 1182.66 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 224.22

INPUT Description:

Station Elevation Data num= 64

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev            | Sta     | Elev | Sta | Elev |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|------|-----|------|
| 19306.77 | 1187.1219319.42 | 1187.0719339.82 | 1180.2419359.81 | 1173.33         | 19379.9         | 1166.18 |      |     |      |
| 19400.1  | 1158.7219407.09 | 1156.0619430.58 | 1156.119454.42  | 1156.0619478.39 | 1156.04         |         |      |     |      |
| 19499.01 | 1156.0219519.71 | 1155.8619540.48 | 1155.6919561.31 | 1155.5519582.19 | 1155.43         |         |      |     |      |
| 19603.12 | 1155.32         | 19627.6         | 1155.1819648.62 | 1154.9819669.67 | 1154.6219694.26 | 1154.19 |      |     |      |
| 19715.35 | 1153.6219736.45 | 1153.0319757.55 | 1152.519778.66  | 1152.1219799.75 | 1151.98         |         |      |     |      |
| 19820.82 | 1151.9219845.38 | 1151.8          | 19862.9         | 1151.5719883.89 | 1151.0119897.86 | 1150.8  |      |     |      |
| 19918.78 | 1150.8219939.65 | 1150.8919960.45 | 1150.9419984.65 | 1151.20005.31   | 1151.57         |         |      |     |      |
| 20025.9  | 1151.5220049.82 | 1151.3320073.61 | 1151.0720100.65 | 1150.9620124.16 | 1150.87         |         |      |     |      |
| 20147.53 | 1151.1220170.75 | 1151.4120187.23 | 1151.5120220.98 | 1151.5220270.26 | 1151.79         |         |      |     |      |
| 20312.26 | 1151.9220350.95 | 1152.4520366.52 | 1155.45         | 20398.1         | 1156.7320459.08 | 1154.96 |      |     |      |
| 20509.22 | 1157.3220526.73 | 1172.0920530.71 | 1174.9820547.19 | 1174.18         | 20560.8         | 1186.96 |      |     |      |
| 20565.55 | 1188.6220569.82 | 1189.34         | 20574.8         | 1190.5620590.92 | 1193.9920598.08 | 1194.93 |      |     |      |
| 20608.57 | 1195.8220654.24 | 1195.4820673.32 | 1195.420746.65  | 1194.84         |                 |         |      |     |      |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 19306.77 .0519306.77 .03520608.57 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19306.7720608.57 404 110 67 .1 .3

BRIDGE

RIVER: Salt  
 REACH: 1 RS: 224.21

INPUT Description:

Distance from Upstream XS = .1  
 Deck/Roadway width = 77  
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates num= 14

| Sta      | Hi Cord | Lo Cord         | Sta     | Hi Cord         | Lo Cord | Sta     | Hi Cord | Lo Cord |
|----------|---------|-----------------|---------|-----------------|---------|---------|---------|---------|
| 19323.35 | 1192.52 | 1185.1219503.35 | 1193.12 | 1185.1219503.35 | 1193.12 | 1185.12 |         |         |
| 19523.85 | 1193.72 | 1185.5219604.85 | 1194.92 | 1185.9219604.85 | 1194.92 | 1185.92 |         |         |
| 19693.85 | 1195.92 | 1186.9219788.85 | 1196.72 | 1187.7219913.85 | 1197.22 | 1188.22 |         |         |
| 20043.85 | 1197.52 | 1188.5220178.85 | 1197.52 | 1188.5220319.35 | 1197.42 | 1188.42 |         |         |
| 20459.35 | 1196.72 | 1187.7220643.35 | 1196.02 | 1187.02         |         |         |         |         |

Upstream Bridge Cross Section Data

Station Elevation Data num= 64

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev            | Sta     | Elev | Sta | Elev |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|------|-----|------|
| 19306.77 | 1187.1219319.42 | 1187.0719339.82 | 1180.2419359.81 | 1173.33         | 19379.9         | 1166.18 |      |     |      |
| 19400.1  | 1158.7219407.09 | 1156.0619430.58 | 1156.119454.42  | 1156.0619478.39 | 1156.04         |         |      |     |      |
| 19499.01 | 1156.0219519.71 | 1155.8619540.48 | 1155.6919561.31 | 1155.5519582.19 | 1155.43         |         |      |     |      |
| 19603.12 | 1155.32         | 19627.6         | 1155.1819648.62 | 1154.9819669.67 | 1154.6219694.26 | 1154.19 |      |     |      |
| 19715.35 | 1153.6219736.45 | 1153.0319757.55 | 1152.519778.66  | 1152.1219799.75 | 1151.98         |         |      |     |      |
| 19820.82 | 1151.9219845.38 | 1151.8          | 19862.9         | 1151.5719883.89 | 1151.0119897.86 | 1150.8  |      |     |      |
| 19918.78 | 1150.8219939.65 | 1150.8919960.45 | 1150.9419984.65 | 1151.20005.31   | 1151.57         |         |      |     |      |
| 20025.9  | 1151.5220049.82 | 1151.3320073.61 | 1151.0720100.65 | 1150.9620124.16 | 1150.87         |         |      |     |      |
| 20147.53 | 1151.1220170.75 | 1151.4120187.23 | 1151.5120220.98 | 1151.5220270.26 | 1151.79         |         |      |     |      |
| 20312.26 | 1151.9220350.95 | 1152.4520366.52 | 1155.45         | 20398.1         | 1156.7320459.08 | 1154.96 |      |     |      |

20509.22 1157.3220526.73 1172.0920530.71 1174.9820547.19 1174.18 20560.8 1186.96  
 20565.55 1188.6220569.82 1189.34 20574.8 1190.5620590.92 1193.9920598.08 1194.93  
 20608.57 1195.8220654.24 1195.4820673.32 1195.420746.65 1194.84

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 19306.77 .0519306.77 .03520608.57 .05

Bank Sta: Left Right Coeff Contr. Expan.  
 19306.7720608.57 .1 .3

Downstream Deck/Roadway Coordinates  
 num= 15  
 Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord  
 19294.2 1192.52 1185.12 19474.2 1193.12 1185.12 19474.2 1193.12 1185.12  
 19494.7 1193.72 1185.52 19575.7 1194.92 1185.92 19575.7 1194.92 1185.92  
 19664.7 1195.92 1186.92 19759.7 1196.72 1187.72 19884.7 1197.22 1188.22  
 20014.7 1197.52 1188.52 20149.7 1197.52 1188.52 20290.2 1197.42 1188.42  
 20430.2 1196.72 1187.72 20614.2 1196.02 1187.02 20614.2 1196.02 1196.02

Downstream Bridge Cross Section Data  
 Station Elevation Data num= 51  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 19445.11 1186.9219457.36 1177.0919470.77 1177.19480.38 1167.0519485.98 1161.11  
 19496.11 1160.5219519.75 1159.8519543.45 1159.5919567.19 1159.32 19585.5 1158.97  
 19594.94 1157.0219615.68 1153.5219639.88 1152.35 19662.5 1152.09 19682.4 1152.11  
 19702.3 1152.2219726.18 1151.9419746.07 1151.7819768.07 1151.6919783.14 1152.14  
 19805.66 1151.9219829.45 1151.7519853.19 1151.5319876.89 1151.2519892.65 1151.06  
 19916.25 1151.1219939.79 1151.1419951.53 1151.1720011.61 1151.320015.14 1151.43  
 20028.65 1151.32 20044.7 1151.3720087.99 1151.2620143.11 1151.26 20170.3 1151.43  
 20276.33 1151.4220304.88 1151.5520317.29 1151.7220322.34 1152.6920486.04 1159.36  
 20495.82 1159.0220504.08 1159.4420507.02 1161.9120526.44 1175.9620542.14 1174.97  
 20544.44 1177.1220552.57 1186.3620557.11 1187.9420587.76 1198.3820704.48 1196.91  
 20707.75 1196.92

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 19445.11 .0519445.11 .03520707.75 .05

Bank Sta: Left Right Coeff Contr. Expan.  
 19445.1120707.75 .1 .3

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .95  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 weir crest shape = Broad Crested

Number of Piers = 9

Pier Data  
 Pier Station Upstream= 19515 Downstream= 19515  
 Upstream num= 2  
 width Elev width Elev  
 9 1152.12 9 1191.12  
 Downstream num= 2  
 width Elev width Elev  
 9 1152.12 9 1191.12

Pier Data  
 Pier Station Upstream= 19595 Downstream= 19595  
 Upstream num= 2  
 width Elev width Elev  
 9 1152.12 9 1191.12  
 Downstream num= 2  
 width Elev width Elev  
 9 1152.12 9 1191.12

Pier Data  
 Pier Station Upstream= 19685 Downstream= 19685  
 Upstream num= 2  
 width Elev width Elev  
 9 1152.12 9 1191.12  
 Downstream num= 2  
 width Elev width Elev  
 9 1152.12 9 1191.12

Pier Data  
 Pier Station Upstream= 19780 Downstream= 19780  
 Upstream num= 2  
 width Elev width Elev  
 9 1152.12 9 1191.12  
 Downstream num= 2  
 width Elev width Elev  
 9 1152.12 9 1191.12

Pier Data  
 Pier Station Upstream= 19905 Downstream= 19905  
 Upstream num= 2  
 width Elev width Elev  
 9 1152.12 9 1191.12  
 Downstream num= 2  
 width Elev width Elev  
 9 1152.12 9 1191.12

Pier Data  
 Pier Station Upstream= 20035 Downstream= 20035  
 Upstream num= 2  
 width Elev width Elev  
 9 1152.12 9 1191.12  
 Downstream num= 2  
 width Elev width Elev  
 9 1152.12 9 1191.12

Pier Data  
 Pier Station Upstream= 20170 Downstream= 20170  
 Upstream num= 2  
 width Elev width Elev  
 9 1152.12 9 1191.12  
 Downstream num= 2  
 width Elev width Elev  
 9 1152.12 9 1191.12

Pier Data  
 Pier Station Upstream= 20310.5 Downstream= 20310.5  
 Upstream num= 2  
 width Elev width Elev  
 9 1152.12 9 1191.12  
 Downstream num= 2  
 width Elev width Elev  
 9 1152.12 9 1191.12

Pier Data  
 Pier Station Upstream= 20450 Downstream= 20450  
 Upstream num= 2  
 width Elev width Elev  
 9 1152.12 9 1191.12  
 Downstream num= 2  
 width Elev width Elev  
 9 1152.12 9 1191.12

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy  
 Selected Low Flow Methods = Highest Energy Answer

High Flow Method  
 Energy Only

Additional Bridge Parameters

- Add Friction component to Momentum
- Do not add Weight component to Momentum
- Class B flow critical depth computations use critical depth inside the bridge at the upstream end
- Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 224.20

INPUT

Description:

| Station  | Elevation | Data     | num=    | 51       | Sta     | Elev     | Sta     | Elev     | Sta     | Elev |
|----------|-----------|----------|---------|----------|---------|----------|---------|----------|---------|------|
| 19445.11 | 1186.92   | 19457.36 | 1177.09 | 19470.77 | 1177.19 | 19480.38 | 1167.05 | 19485.98 | 1161.11 |      |
| 19496.11 | 1160.52   | 19519.75 | 1159.85 | 19543.45 | 1159.59 | 19567.19 | 1159.32 | 19585.5  | 1158.97 |      |
| 19594.94 | 1157.02   | 19615.68 | 1153.52 | 19639.88 | 1152.35 | 19662.5  | 1152.09 | 19682.4  | 1152.11 |      |
| 19702.3  | 1152.22   | 19726.18 | 1151.94 | 19746.07 | 1151.78 | 19768.07 | 1151.69 | 19783.14 | 1152.14 |      |
| 19805.66 | 1151.92   | 19829.45 | 1151.75 | 19853.19 | 1151.53 | 19876.89 | 1151.25 | 19892.65 | 1151.06 |      |
| 19916.25 | 1151.12   | 19939.79 | 1151.14 | 19951.53 | 1151.17 | 20011.61 | 1151.32 | 20015.14 | 1151.43 |      |
| 20028.65 | 1151.32   | 20044.7  | 1151.37 | 20087.99 | 1151.26 | 20143.11 | 1151.26 | 20170.3  | 1151.43 |      |
| 20276.33 | 1151.42   | 20304.88 | 1151.55 | 20317.29 | 1151.72 | 20322.34 | 1152.69 | 20486.04 | 1159.36 |      |
| 20495.82 | 1159.02   | 20504.08 | 1159.44 | 20507.02 | 1161.91 | 20526.44 | 1175.96 | 20542.14 | 1174.97 |      |
| 20544.44 | 1177.12   | 20552.57 | 1186.36 | 20557.11 | 1187.94 | 20587.76 | 1198.38 | 20704.48 | 1196.91 |      |
| 20707.75 | 1196.92   |          |         |          |         |          |         |          |         |      |

| anning's | n   | Values   | num= | 3         |     |
|----------|-----|----------|------|-----------|-----|
| Sta      | n   | Val      | Sta  | n         | Val |
| 19445.11 | .05 | 19445.11 | .03  | 520707.75 | .05 |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

19445.1120707.75

208

.3

CROSS SECTION

RIVER: Salt  
REACH: 1

RS: 224.19

INPUT

Description:

| Station Elevation Data num= 35 |         |          |         |          |         |          |         |          |         |     |      |
|--------------------------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|-----|------|
| Sta                            | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta | Elev |
| 19454.96                       | 1186.52 | 19483.52 | 1163.42 | 19487.38 | 1159.28 | 19491.44 | 1159.02 | 19617.69 | 1158.79 |     |      |
| 19623.23                       | 1158.92 | 19624.53 | 1158.56 | 19686.6  | 1151.56 | 19760.55 | 1151.26 | 19778.52 | 1151.81 |     |      |
| 19796.09                       | 1151.72 | 19806.97 | 1151.91 | 19818.58 | 1151.75 | 19896.58 | 1151.85 | 19906.24 | 1151.83 |     |      |
| 19917.31                       | 1152.02 | 20011.67 | 1151.33 | 20038.97 | 1151.36 | 20050.97 | 1151.45 | 20070.28 | 1151.5  |     |      |
| 20165.08                       | 1151.52 | 20286.15 | 1151.48 | 20307.09 | 1151.53 | 20319.98 | 1151.82 | 20493.09 | 1158.99 |     |      |
| 20504.22                       | 1159.32 | 20509.34 | 1162.44 | 20526.6  | 1176.32 | 20530.81 | 1179.32 | 20542.55 | 1179.15 |     |      |
| 20568.26                       | 1192.42 | 20577.52 | 1198.07 | 20588.16 | 1200.46 | 20607.63 | 1200.28 | 20709.61 | 1199.56 |     |      |

| Manning's n Values num= 3 |       |          |       |          |       |
|---------------------------|-------|----------|-------|----------|-------|
| Sta                       | n Val | Sta      | n Val | Sta      | n Val |
| 19454.96                  | .05   | 19454.96 | .03   | 20709.61 | .05   |

| Bank Sta: | Left     | Right    | Lengths: | Left | Channel | Right | Coeff | Contr. | Expan. |
|-----------|----------|----------|----------|------|---------|-------|-------|--------|--------|
|           | 19454.96 | 20709.61 |          | 171  | 172.54  | 177   |       | .1     | .3     |

BRIDGE

RIVER: Salt  
REACH: 1

RS: 224.175

INPUT

Description:

Distance from Upstream XS = 75  
Deck/Roadway Width = 61  
Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

| num= 11  |         |         |          |         |         |          |         |         |      |     |    |      |    |      |
|----------|---------|---------|----------|---------|---------|----------|---------|---------|------|-----|----|------|----|------|
| Sta      | Hi      | Cord    | Lo       | Cord    | Sta     | Hi       | Cord    | Lo      | Cord | Sta | Hi | Cord | Lo | Cord |
| 19452.47 | 1211.52 | 1211.52 | 19452.47 | 1211.52 | 1198.52 | 19588.47 | 1210.22 | 1197.22 |      |     |    |      |    |      |
| 19728.47 | 1208.92 | 1195.92 | 19860.47 | 1207.62 | 1194.62 | 20008.47 | 1206.42 | 1193.42 |      |     |    |      |    |      |
| 20148.47 | 1205.12 | 1192.12 | 20288.47 | 1203.82 | 1190.82 | 20428.47 | 1202.62 | 1189.62 |      |     |    |      |    |      |
| 20568.47 | 1201.32 | 1188.32 | 20595.67 | 1200.46 | 1200.46 |          |         |         |      |     |    |      |    |      |

Upstream Bridge Cross Section Data

| Station Elevation Data num= 35 |         |          |         |          |         |          |         |          |         |     |      |
|--------------------------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|-----|------|
| Sta                            | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta | Elev |
| 19454.96                       | 1186.52 | 19483.52 | 1163.42 | 19487.38 | 1159.28 | 19491.44 | 1159.02 | 19617.69 | 1158.79 |     |      |
| 19623.23                       | 1158.92 | 19624.53 | 1158.56 | 19686.6  | 1151.56 | 19760.55 | 1151.26 | 19778.52 | 1151.81 |     |      |
| 19796.09                       | 1151.72 | 19806.97 | 1151.91 | 19818.58 | 1151.75 | 19896.58 | 1151.85 | 19906.24 | 1151.83 |     |      |
| 19917.31                       | 1152.02 | 20011.67 | 1151.33 | 20038.97 | 1151.36 | 20050.97 | 1151.45 | 20070.28 | 1151.5  |     |      |
| 20165.08                       | 1151.52 | 20286.15 | 1151.48 | 20307.09 | 1151.53 | 20319.98 | 1151.82 | 20493.09 | 1158.99 |     |      |
| 20504.22                       | 1159.32 | 20509.34 | 1162.44 | 20526.6  | 1176.32 | 20530.81 | 1179.32 | 20542.55 | 1179.15 |     |      |
| 20568.26                       | 1192.42 | 20577.52 | 1198.07 | 20588.16 | 1200.46 | 20607.63 | 1200.28 | 20709.61 | 1199.56 |     |      |

| Manning's n Values num= 3 |       |          |       |          |       |
|---------------------------|-------|----------|-------|----------|-------|
| Sta                       | n Val | Sta      | n Val | Sta      | n Val |
| 19454.96                  | .05   | 19454.96 | .03   | 20709.61 | .05   |

| Bank Sta: | Left     | Right    | Coeff | Contr. | Expan. |
|-----------|----------|----------|-------|--------|--------|
|           | 19454.96 | 20709.61 |       | .1     | .3     |

Downstream Deck/Roadway Coordinates

| num= 11  |         |         |          |         |         |          |         |         |      |     |    |      |    |      |
|----------|---------|---------|----------|---------|---------|----------|---------|---------|------|-----|----|------|----|------|
| Sta      | Hi      | Cord    | Lo       | Cord    | Sta     | Hi       | Cord    | Lo      | Cord | Sta | Hi | Cord | Lo | Cord |
| 19444.96 | 1211.52 | 1211.52 | 19444.96 | 1211.52 | 1198.52 | 19580.96 | 1210.22 | 1197.22 |      |     |    |      |    |      |
| 19720.96 | 1208.92 | 1195.92 | 19860.96 | 1207.62 | 1194.62 | 20000.96 | 1206.42 | 1193.42 |      |     |    |      |    |      |
| 20140.96 | 1205.12 | 1192.12 | 20280.96 | 1203.82 | 1190.82 | 20420.96 | 1202.62 | 1189.62 |      |     |    |      |    |      |
| 20560.96 | 1201.32 | 1188.32 | 20586.48 | 1200.33 | 1200.33 |          |         |         |      |     |    |      |    |      |

Downstream Bridge Cross Section Data

| Station Elevation Data num= 34 |         |          |         |          |         |          |         |          |         |     |      |
|--------------------------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|-----|------|
| Sta                            | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta | Elev |
| 19462.47                       | 1187.62 | 19469.8  | 1187.78 | 19470.97 | 1186.83 | 19497.84 | 1158.11 | 19525.98 | 1156.28 |     |      |
| 19530.01                       | 1156.32 | 19628.15 | 1158.01 | 19643.87 | 1158.21 | 19670.59 | 1151.57 | 19675.68 | 1151    |     |      |
| 19725.27                       | 1150.72 | 19728.27 | 1150.83 | 19792.34 | 1150.64 | 19832.02 | 1151.19 | 19874.4  | 1150.6  |     |      |
| 19892.65                       | 1150.62 | 19931.19 | 1150.55 | 19975.43 | 1151.39 | 19996.04 | 1151.23 | 20002    | 1151.24 |     |      |
| 20067.69                       | 1151.72 | 20173.33 | 1152.03 | 20192.58 | 1152.02 | 20327.4  | 1152.33 | 20410.35 | 1154.04 |     |      |
| 20443.52                       | 1155.42 | 20500.1  | 1156.84 | 20526.26 | 1173.05 | 20528.13 | 1174.28 | 20545.31 | 1179.94 |     |      |
| 20585.77                       | 1199.12 | 20593.99 | 1200.33 | 20639.84 | 1198.77 | 20712.47 | 1198.15 |          |         |     |      |

| Manning's n Values num= 3 |       |          |       |          |       |
|---------------------------|-------|----------|-------|----------|-------|
| Sta                       | n Val | Sta      | n Val | Sta      | n Val |
| 19462.47                  | .05   | 19462.47 | .03   | 20712.47 | .05   |

| Bank Sta: | Left     | Right    | Coeff | Contr. | Expan. |
|-----------|----------|----------|-------|--------|--------|
|           | 19462.47 | 20712.47 |       | .1     | .3     |

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .95  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Piers = 7

Pier Data  
 Pier Station Upstream= 19590 Downstream= 19590  
 Upstream num= 2  
 width Elev width Elev  
 4 1152.12 4 1198.12  
 Downstream num= 2  
 width Elev width Elev  
 4 1152.12 4 1198.12

Pier Data  
 Pier Station Upstream= 19730 Downstream= 19730  
 Upstream num= 2  
 width Elev width Elev  
 4 1152.12 4 1197.12  
 Downstream num= 2  
 width Elev width Elev  
 4 1152.12 4 1197.12

Pier Data  
 Pier Station Upstream= 19870 Downstream= 19870  
 Upstream num= 2  
 width Elev width Elev  
 4 1152.12 4 1197.12  
 Downstream num= 2  
 width Elev width Elev  
 4 1152.12 4 1197.12

Pier Data  
 Pier Station Upstream= 20010 Downstream= 20010  
 Upstream num= 2  
 width Elev width Elev  
 4 1152.12 4 1194.12  
 Downstream num= 2  
 width Elev width Elev  
 4 1152.12 4 1194.12

Pier Data  
 Pier Station Upstream= 20150 Downstream= 20150  
 Upstream num= 2  
 width Elev width Elev  
 4 1152.12 4 1194.12  
 Downstream num= 2  
 width Elev width Elev  
 4 1152.12 4 1194.12

Pier Data  
 Pier Station Upstream= 20290 Downstream= 20290  
 Upstream num= 2  
 width Elev width Elev  
 4 1152.12 4 1194.12  
 Downstream num= 2  
 width Elev width Elev  
 4 1152.12 4 1194.12

Pier Data  
 Pier Station Upstream= 20430 Downstream= 20430  
 Upstream num= 2  
 width Elev width Elev  
 4 1152.12 4 1192.12  
 Downstream num= 2  
 width Elev width Elev  
 4 1152.12 4 1192.12

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Energy Only

Additional Bridge Parameters

Add Friction component to Momentum

Do not add weight component to Momentum

Class B flow critical depth computations use critical depth

inside the bridge at the upstream end  
 Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 224.16

INPUT

Description:

| Station Elevation Data num= 34 |         |          |         |          |         |          |         |          |         |
|--------------------------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| Sta                            | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    |
| 19462.47                       | 1187.62 | 19469.8  | 1187.78 | 19470.97 | 1186.83 | 19497.84 | 1158.11 | 19525.98 | 1156.28 |
| 19530.01                       | 1156.32 | 19628.15 | 1158.01 | 19643.87 | 1158.21 | 19670.59 | 1151.57 | 19675.68 | 1151    |
| 19725.27                       | 1150.72 | 19728.27 | 1150.83 | 19792.34 | 1150.64 | 19832.02 | 1151.19 | 19874.4  | 1150.6  |
| 19892.65                       | 1150.62 | 19931.19 | 1150.55 | 19975.43 | 1151.39 | 19996.04 | 1151.23 | 20002    | 1151.24 |
| 20067.69                       | 1151.72 | 20173.33 | 1152.03 | 20192.58 | 1152.02 | 20327.4  | 1152.33 | 20410.35 | 1154.04 |
| 20443.52                       | 1155.42 | 20500.1  | 1156.84 | 20526.26 | 1173.05 | 20528.13 | 1174.28 | 20545.31 | 1179.94 |
| 20585.77                       | 1199.12 | 20593.99 | 1200.33 | 20639.84 | 1198.77 | 20712.47 | 1198.15 |          |         |

| Manning's n Values num= 3 |       |          |       |          |       |
|---------------------------|-------|----------|-------|----------|-------|
| Sta                       | n Val | Sta      | n Val | Sta      | n Val |
| 19462.47                  | .05   | 19462.47 | .03   | 20712.47 | .05   |

| Bank | Sta: Left | Right    | Lengths: Left | Channel | Right | Coeff | Contr. | Expan. |
|------|-----------|----------|---------------|---------|-------|-------|--------|--------|
|      | 19462.47  | 20712.47 | 143           | 110     | 83    | .1    |        | .3     |

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 224.14

INPUT

Description:

| Station Elevation Data num= 45 |         |          |         |          |         |          |         |          |         |
|--------------------------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| Sta                            | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    |
| 19459.38                       | 1186.42 | 19465.68 | 1186.77 | 19492.45 | 1163.18 | 19501.14 | 1155.99 | 19528.15 | 1155.25 |
| 19553.94                       | 1155.92 | 19572.95 | 1156.35 | 19596.91 | 1156.54 | 19636.97 | 1156.86 | 19650.11 | 1157.13 |
| 19674.08                       | 1151.22 | 19693.35 | 1150.14 | 19723.32 | 1150.19 | 19756.48 | 1150.14 | 19761.35 | 1150.28 |
| 19767.39                       | 1150.02 | 19780.71 | 1149.81 | 19806.34 | 1151.27 | 19837.03 | 1152.23 | 19847.77 | 1152.29 |
| 19872.55                       | 1151.72 | 19907.37 | 1151.61 | 19941.64 | 1150.19 | 19965.67 | 1149.42 | 20043    | 1148.02 |
| 20045.27                       | 1148.02 | 20095.82 | 1149.64 | 20130.45 | 1150.57 | 20186.83 | 1151.14 | 20227.38 | 1149.9  |
| 20233.86                       | 1149.52 | 20251.42 | 1149.61 | 20319.37 | 1151.42 | 20347.59 | 1153.64 | 20414.65 | 1154.8  |
| 20471.19                       | 1155.62 | 20498.3  | 1156.26 | 20528.1  | 1175.44 | 20537.21 | 1174.74 | 20541.83 | 1178.41 |
| 20559.39                       | 1186.42 | 20602.79 | 1205.17 | 20607.89 | 1207.82 | 20610.22 | 1207.14 | 20665.75 | 1205.89 |

| Manning's n Values num= 3 |       |          |       |          |       |
|---------------------------|-------|----------|-------|----------|-------|
| Sta                       | n Val | Sta      | n Val | Sta      | n Val |
| 19459.38                  | .05   | 19459.38 | .03   | 20665.75 | .05   |

| Bank | Sta: Left | Right    | Lengths: Left | Channel | Right | Coeff | Contr. | Expan. |
|------|-----------|----------|---------------|---------|-------|-------|--------|--------|
|      | 19459.38  | 20665.75 | 312           | 86      | 56    | .1    |        | .3     |

BRIDGE

RIVER: Salt  
 REACH: 1 RS: 224.13

INPUT

Description:

Distance from Upstream XS = .1  
 Deck/Roadway Width = 85.8  
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

| num= 13  |         |         |          |         |         |          |         |         |      |
|----------|---------|---------|----------|---------|---------|----------|---------|---------|------|
| Sta      | Hi      | Cord    | Lo       | Cord    | Sta     | Hi       | Cord    | Lo      | Cord |
| 19401.14 | 1225.62 | 1213.12 | 19441.14 | 1226.12 | 1213.32 | 19466.14 | 1226.42 | 1213.42 |      |
| 19466.14 | 1226.42 | 1213.42 | 19556.64 | 1227.42 | 1214.42 | 19666.64 | 1227.52 | 1214.52 |      |
| 19796.64 | 1226.52 | 1213.52 | 19921.64 | 1224.72 | 1211.72 | 20056.64 | 1221.92 | 1208.92 |      |
| 20211.64 | 1218.52 | 1205.52 | 20317.14 | 1215.02 | 1202.02 | 20452.14 | 1211.72 | 1198.72 |      |
| 20601.14 | 1208.32 | 1195.32 |          |         |         |          |         |         |      |

Upstream Bridge Cross Section Data

| Station Elevation Data num= 45 |         |          |         |          |         |          |         |          |         |
|--------------------------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| Sta                            | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    |
| 19459.38                       | 1186.42 | 19465.68 | 1186.77 | 19492.45 | 1163.18 | 19501.14 | 1155.99 | 19528.15 | 1155.25 |
| 19553.94                       | 1155.92 | 19572.95 | 1156.35 | 19596.91 | 1156.54 | 19636.97 | 1156.86 | 19650.11 | 1157.13 |
| 19674.08                       | 1151.22 | 19693.35 | 1150.14 | 19723.32 | 1150.19 | 19756.48 | 1150.14 | 19761.35 | 1150.28 |
| 19767.39                       | 1150.02 | 19780.71 | 1149.81 | 19806.34 | 1151.27 | 19837.03 | 1152.23 | 19847.77 | 1152.29 |
| 19872.55                       | 1151.72 | 19907.37 | 1151.61 | 19941.64 | 1150.19 | 19965.67 | 1149.42 | 20043    | 1148.02 |
| 20045.27                       | 1148.02 | 20095.82 | 1149.64 | 20130.45 | 1150.57 | 20186.83 | 1151.14 | 20227.38 | 1149.9  |
| 20233.86                       | 1149.52 | 20251.42 | 1149.61 | 20319.37 | 1151.42 | 20347.59 | 1153.64 | 20414.65 | 1154.8  |
| 20471.19                       | 1155.62 | 20498.3  | 1156.26 | 20528.1  | 1175.44 | 20537.21 | 1174.74 | 20541.83 | 1178.41 |
| 20559.39                       | 1186.42 | 20602.79 | 1205.17 | 20607.89 | 1207.82 | 20610.22 | 1207.14 | 20665.75 | 1205.89 |

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
19459.38 .0519459.38 .03520665.75 .05

Bank Sta: Left Right Coeff Contr. Expan.
19459.3820665.75 .1 .3

Downstream Deck/Roadway Coordinates

num= 14
Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord
19385.75 1225.52 1212.9219425.75 1225.62 1213.1219465.75 1226.12 1213.32
19490.75 1226.42 1213.4219490.75 1226.42 1213.4219581.25 1227.42 1214.42
19691.25 1227.52 1214.5219821.25 1226.52 1213.5219946.25 1224.72 1211.72
20081.25 1221.92 1208.9220236.25 1218.52 1205.5220341.75 1215.02 1202.02
20476.75 1211.72 1198.7220625.75 1208.32 1195.32

Downstream Bridge Cross Section Data

Station Elevation Data num= 53
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
19369.76 1186.3219371.43 1186.4219388.01 1176.08 19406.3 1164.4819420.85 1155.13
19443 1155.2219456.81 1155.1419479.86 1154.7619493.71 1154.5919512.21 1154.62
19535.36 1154.9219553.91 1155.1619577.12 1154.9119589.45 1154.9319599.62 1152.48
19605.85 1155.2219622.93 1155.2619642.23 1153.0719656.19 1151.319679.46 1150.9
19698.07 1150.5219721.33 1150.0119744.57 1149.3419763.15 1149.0619786.35 1148.94
19810.52 1148.8219828.03 1148.9219851.13 1148.8519874.18 1148.7819897.18 1148.64
19920.11 1148.52 19944.7 1148.2219961.23 1148.1719978.74 1148.12 20065 1147.53
20131.27 1147.7220165.43 1148.6920181.92 1148.8920200.65 1148.3720287.16 1149.77
20310.4 1150.4220366.05 1154.7420390.37 1155.1320494.49 1156.4720512.13 1167.94
20524.3 1176.2220534.14 1175.9120536.49 1175.71 20548.4 1184.920591.46 1203.83
20596.63 1205.92 20650.4 1206.8120658.52 1206.65

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
19369.76 .0519369.76 .03520658.52 .05

Bank Sta: Left Right Coeff Contr. Expan.
19369.7620658.52 .1 .3

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .95
Elevation at which weir flow begins =
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Piers = 9

Pier Data
Pier Station Upstream= 19480 Downstream= 19480
Upstream num= 2
width Elev width Elev
9 1152.12 9 1215.12
Downstream num= 2
width Elev width Elev
9 1152.12 9 1215.12

Pier Data
Pier Station Upstream= 19575 Downstream= 19575
Upstream num= 2
width Elev width Elev
9 1152.12 9 1215.12
Downstream num= 2
width Elev width Elev
9 1152.12 9 1215.12

Pier Data
Pier Station Upstream= 19685 Downstream= 19685
Upstream num= 2
width Elev width Elev
9 1152.12 9 1215.12
Downstream num= 2
width Elev width Elev
9 1152.12 9 1215.12

Pier Data
Pier Station Upstream= 19815 Downstream= 19815
Upstream num= 2
width Elev width Elev
9 1152.12 9 1215.12
Downstream num= 2
width Elev width Elev
9 1152.12 9 1215.12

Pier Data
Pier Station Upstream= 19940 Downstream= 19940
Upstream num= 2
width Elev width Elev

9 1152.12 9 1212.12  
 Downstream num= 2  
 Width Elev Width Elev  
 9 1152.12 9 1212.12

Pier Data  
 Pier Station Upstream= 20075 Downstream= 20075  
 Upstream num= 2  
 Width Elev Width Elev  
 9 1152.12 9 1210.12  
 Downstream num= 2  
 Width Elev Width Elev  
 9 1152.12 9 1210.12

Pier Data  
 Pier Station Upstream= 20230 Downstream= 20230  
 Upstream num= 2  
 Width Elev Width Elev  
 9 1152.12 9 1206.12  
 Downstream num= 2  
 Width Elev Width Elev  
 9 1152.12 9 1206.12

Pier Data  
 Pier Station Upstream= 20335 Downstream= 20335  
 Upstream num= 2  
 Width Elev Width Elev  
 9 1152.12 9 1202.12  
 Downstream num= 2  
 Width Elev Width Elev  
 9 1152.12 9 1202.12

Pier Data  
 Pier Station Upstream= 20470 Downstream= 20470  
 Upstream num= 2  
 Width Elev Width Elev  
 9 1152.12 9 1202.12  
 Downstream num= 2  
 Width Elev Width Elev  
 9 1152.12 9 1202.12

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy  
 Selected Low Flow Methods = Highest Energy Answer

High Flow Method  
 Energy Only

Additional Bridge Parameters

Add Friction component to Momentum  
 Do not add Weight component to Momentum  
 Class B flow critical depth computations use critical depth  
 inside the bridge at the upstream end  
 Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 224.12

INPUT  
 Description:

| Station Elevation Data |                 | num= 53         |                 | Sta Elev        |                 | Sta Elev |      | Sta Elev |      |
|------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------|------|----------|------|
| Sta                    | Elev            | Sta             | Elev            | Sta             | Elev            | Sta      | Elev | Sta      | Elev |
| 19369.76               | 1186.3219371.43 | 1186.4219388.01 | 1176.08         | 19406.3         | 1164.4819420.85 | 1155.13  |      |          |      |
| 19443                  | 1155.2219456.81 | 1155.1419479.86 | 1154.7619493.71 | 1154.5919512.21 | 1154.62         |          |      |          |      |
| 19535.36               | 1154.9219553.91 | 1155.1619577.12 | 1154.9119589.45 | 1154.9319599.62 | 1152.48         |          |      |          |      |
| 19605.85               | 1155.2219622.93 | 1155.2619642.23 | 1153.0719656.19 | 1151.319679.46  | 1150.9          |          |      |          |      |
| 19698.07               | 1150.5219721.33 | 1150.0119744.57 | 1149.3419763.15 | 1149.0619786.35 | 1148.94         |          |      |          |      |
| 19810.52               | 1148.8219828.03 | 1148.9219851.13 | 1148.8519874.18 | 1148.7819897.18 | 1148.64         |          |      |          |      |
| 19920.11               | 1148.52 19944.7 | 1148.2219961.23 | 1148.1719978.74 | 1148.12 20065   | 1147.53         |          |      |          |      |
| 20131.27               | 1147.7220165.43 | 1148.6920181.92 | 1148.8920200.65 | 1148.3720287.16 | 1149.77         |          |      |          |      |
| 20310.4                | 1150.4220366.05 | 1154.7420390.37 | 1155.1320494.49 | 1156.4720512.13 | 1167.94         |          |      |          |      |
| 20524.3                | 1176.2220534.14 | 1175.9120536.49 | 1175.71 20548.4 | 1184.920591.46  | 1203.83         |          |      |          |      |
| 20596.63               | 1205.92 20650.4 | 1206.8120658.52 | 1206.65         |                 |                 |          |      |          |      |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 19369.76 .0519369.76 .03520658.52 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19369.7620658.52 54 337 429 .1 .3

CROSS SECTION

RIVER: Salt  
REACH: 1

RS: 224.06

INPUT  
Description:

| Station Elevation Data |                 | num= 220        |                 | Sta Elev        |         | Sta Elev |      | Sta Elev |      | Sta Elev |      |
|------------------------|-----------------|-----------------|-----------------|-----------------|---------|----------|------|----------|------|----------|------|
| Sta                    | Elev            | Sta             | Elev            | Sta             | Elev    | Sta      | Elev | Sta      | Elev | Sta      | Elev |
| 17003.84               | 1179.7217013.07 | 1180.3417016.06 | 1180.2817034.66 | 1181.1417123.66 | 1182.09 |          |      |          |      |          |      |
| 17144.07               | 1181.7217155.38 | 1169.0217162.84 | 1159.6117172.03 | 1158.5617173.48 | 1158.51 |          |      |          |      |          |      |
| 17183.34               | 1146.6217184.69 | 1146.57 17194.9 | 1151.1117202.37 | 1155.217204.24  | 1159.02 |          |      |          |      |          |      |
| 17217.74               | 1160.3217234.66 | 1162.1517239.02 | 1162.9817252.79 | 1175.6717260.85 | 1179.27 |          |      |          |      |          |      |
| 17276.64               | 1184.82 17282.3 | 1184.8317306.98 | 1185.0217309.82 | 1185 17318.4    | 1181.75 |          |      |          |      |          |      |
| 17338.05               | 1182.9217366.31 | 1184.4817380.12 | 1184.4617385.13 | 1184.6217420.22 | 1184.64 |          |      |          |      |          |      |
| 17451.32               | 1184.3217507.92 | 1184.2317537.23 | 1184.2317591.97 | 1184.117637.72  | 1184.1  |          |      |          |      |          |      |
| 17693.32               | 1185.0217705.59 | 1185.0217736.82 | 1184.7617758.68 | 1184.7717801.52 | 1184.52 |          |      |          |      |          |      |
| 17831.63               | 1184.5217850.97 | 1184.517909.75  | 1183.4117929.83 | 1182.9818002.12 | 1182.72 |          |      |          |      |          |      |
| 18039.13               | 1182.3218055.07 | 1182.3818079.91 | 1182.58 18092   | 1182.7118102.85 | 1182.92 |          |      |          |      |          |      |
| 18112.84               | 1184.9218130.05 | 1183.5718137.45 | 1184.3318138.56 | 1184.1818165.85 | 1184.86 |          |      |          |      |          |      |
| 18171.9                | 1184.22 18181.2 | 1183.918194.57  | 1183.918225.83  | 1184.2518230.33 | 1184.38 |          |      |          |      |          |      |
| 18252.9                | 1195.7218266.15 | 1199.5418274.76 | 1194.9618280.31 | 1194.2118293.74 | 1199.4  |          |      |          |      |          |      |
| 18303.53               | 1194.1218309.55 | 1191.9118322.28 | 1186.2218332.24 | 1188.77 18340.5 | 1195.04 |          |      |          |      |          |      |
| 18344.09               | 1192.2218359.18 | 1193.418377.55  | 1208.0118383.23 | 1207.3518388.46 | 1209.17 |          |      |          |      |          |      |
| 18394.99               | 1206.9218415.59 | 1205.2118423.63 | 1204.4218432.77 | 1206.718433.96  | 1205.76 |          |      |          |      |          |      |
| 18445.5                | 1198.0218457.41 | 1189.4218462.31 | 1185.38 18485.1 | 1184.61 18507.5 | 1195.31 |          |      |          |      |          |      |
| 18525.17               | 1197.4218537.48 | 1197.7118548.89 | 1188.2918557.12 | 1187.6418573.46 | 1186.79 |          |      |          |      |          |      |
| 18576.86               | 1185.7218582.63 | 1184.5418595.61 | 1184.2918647.54 | 1183.8718675.35 | 1183.4  |          |      |          |      |          |      |
| 18739.74               | 1182.6218789.97 | 1183.4318819.97 | 1188.6518838.88 | 1189.4718893.02 | 1191.2  |          |      |          |      |          |      |
| 18917.81               | 1191.0218934.77 | 1190.62 18952.9 | 1190.3318968.14 | 1190.0118979.66 | 1189.27 |          |      |          |      |          |      |
| 19017.37               | 1203.7219033.52 | 1207.9719047.37 | 1208.3619051.79 | 1208.2719110.81 | 1208.41 |          |      |          |      |          |      |
| 19119.87               | 1208.82 19125.7 | 1208.8719160.77 | 1192.1219171.87 | 1185.5719176.03 | 1183.29 |          |      |          |      |          |      |
| 19183.79               | 1180.6219198.04 | 1180.6519216.49 | 1180.49 19223.1 | 1180.2419238.22 | 1180.09 |          |      |          |      |          |      |
| 19250.3                | 1179.8219271.13 | 1179.119273.96  | 1178.919309.85  | 1181.1619340.46 | 1180.3  |          |      |          |      |          |      |
| 19387.13               | 1180.6219410.86 | 1180.91 19449.2 | 1181.8119455.36 | 1182.1519495.71 | 1186.33 |          |      |          |      |          |      |
| 19502.23               | 1180.5219527.54 | 1155.2719576.04 | 1154.919642.97  | 1154.6219657.16 | 1154.62 |          |      |          |      |          |      |
| 19666.35               | 1153.3219700.36 | 1148.7219719.22 | 1149.57 19757.1 | 1149.8919766.98 | 1150    |          |      |          |      |          |      |
| 19814.43               | 1150.2219816.86 | 1150.3419851.37 | 1150.3519858.69 | 1150.2119926.33 | 1150.27 |          |      |          |      |          |      |
| 19965.39               | 1150.4219995.18 | 1149.6520002.72 | 1149.6620044.52 | 1148.9120077.23 | 1148.07 |          |      |          |      |          |      |
| 20136.56               | 1147.7220146.09 | 1148.0420164.95 | 1148.3820177.31 | 1150.1320192.77 | 1153.38 |          |      |          |      |          |      |
| 20196.53               | 1154.1220218.06 | 1153.8620240.17 | 1153.4920268.47 | 1153.7220313.93 | 1154.57 |          |      |          |      |          |      |
| 20352.05               | 1154.7220355.97 | 1154.8620359.68 | 1157.9120394.93 | 1185.1120408.99 | 1185.59 |          |      |          |      |          |      |
| 20426.1                | 1179.4220439.74 | 1174.5320463.71 | 1173.3220466.41 | 1173.4420483.19 | 1173.15 |          |      |          |      |          |      |
| 20488.65               | 1173.1220525.36 | 1173.3820534.74 | 1173.3520542.39 | 1173.6720550.95 | 1173.86 |          |      |          |      |          |      |
| 20576.87               | 1174.1220580.84 | 1174.5120597.13 | 1175.5520612.26 | 1175.920670.68  | 1176.53 |          |      |          |      |          |      |
| 20682.75               | 1176.2220693.03 | 1176.1620701.44 | 1176.4320711.79 | 1176.4720720.14 | 1176.91 |          |      |          |      |          |      |
| 20746.14               | 1176.7220766.04 | 1176.9220781.52 | 1176.0820796.58 | 1176.4820808.59 | 1176.14 |          |      |          |      |          |      |
| 20833.3                | 1175.9220836.98 | 1175.7620864.99 | 1175.5420873.93 | 1176.4520876.66 | 1176.87 |          |      |          |      |          |      |
| 20893.77               | 1181.22 20898   | 1182.6120905.84 | 1182.5520924.38 | 1183.7620945.93 | 1184.67 |          |      |          |      |          |      |
| 20952.36               | 1184.8220977.21 | 1184.8921016.96 | 1184.1321048.39 | 1183.421143.31  | 1183.31 |          |      |          |      |          |      |
| 21162.41               | 1183.3221273.72 | 1183.38 21307.4 | 1183.42 21428.5 | 1184.1121478.93 | 1184.33 |          |      |          |      |          |      |
| 21532.62               | 1184.3221585.14 | 1184.09 21606.3 | 1184.1321621.25 | 1184.4221691.57 | 1185.7  |          |      |          |      |          |      |
| 21753.76               | 1186.2221765.95 | 1186.4621776.85 | 1186.521836.32  | 1187.0221887.13 | 1187.3  |          |      |          |      |          |      |

| Manning's n Values |             | num= 3       |       | Sta n Val |       | Sta n Val |       |
|--------------------|-------------|--------------|-------|-----------|-------|-----------|-------|
| Sta                | n Val       | Sta          | n Val | Sta       | n Val | Sta       | n Val |
| 17003.84           | .0519495.71 | .03520408.99 | .05   |           |       |           |       |

| Bank Sta: Left   | Right    | Lengths: Left | Channel | Right     | Coeff Contr. | Expan. |
|------------------|----------|---------------|---------|-----------|--------------|--------|
| 19495.71         | 20408.99 | 526           | 528     | 522       | .1           | .3     |
| Ineffective Flow |          | num= 2        |         | Permanent |              |        |
| Sta L            | Sta R    | Elev          |         |           |              |        |
| 17003.84         | 19495.71 | 1186.33       | F       |           |              |        |
| 20408.99         | 21887.13 | 1185.59       | F       |           |              |        |

CROSS SECTION

RIVER: Salt  
REACH: 1

RS: 223.96

INPUT  
Description:

| Station Elevation Data |                 | num= 191        |                 | Sta Elev        |         | Sta Elev |      | Sta Elev |      | Sta Elev |      |
|------------------------|-----------------|-----------------|-----------------|-----------------|---------|----------|------|----------|------|----------|------|
| Sta                    | Elev            | Sta             | Elev            | Sta             | Elev    | Sta      | Elev | Sta      | Elev | Sta      | Elev |
| 17290.78               | 1180.0217320.83 | 1180.54 17361.7 | 1181.6717380.27 | 1181.8417386.87 | 1182.04 |          |      |          |      |          |      |
| 17404.95               | 1182.12 17471.5 | 1182.3417480.78 | 1182.2417492.53 | 1178.9717496.14 | 1177.26 |          |      |          |      |          |      |
| 17502.92               | 1177.6217507.96 | 1177.2817543.83 | 1174.0117560.62 | 1173.3417575.12 | 1173.14 |          |      |          |      |          |      |
| 17671.74               | 1170.7217680.17 | 1170.7117713.05 | 1170.1417786.45 | 1169.6317798.93 | 1169.39 |          |      |          |      |          |      |
| 17807.77               | 1169.32 17861.7 | 1170.8617897.59 | 1169.56 17914   | 1169.7717938.98 | 1169.73 |          |      |          |      |          |      |
| 17998.35               | 1170.2218023.16 | 1169.9918069.41 | 1169.9718098.72 | 1169.618120.53  | 1169.99 |          |      |          |      |          |      |
| 18165.36               | 1170.6218187.87 | 1169.8818203.76 | 1169.9518229.49 | 1170.8418253.05 | 1181.6  |          |      |          |      |          |      |
| 18258.86               | 1184.1218269.05 | 1183.6918295.91 | 1182.7618319.74 | 1182.7918349.66 | 1183.89 |          |      |          |      |          |      |
| 18351.15               | 1184.0218375.11 | 1184.1818385.22 | 1183.8518410.31 | 1183.9718450.73 | 1183.89 |          |      |          |      |          |      |
| 18464.05               | 1182.8218468.09 | 1183.3718477.99 | 1183.818495.56  | 1184.4118499.89 | 1184.79 |          |      |          |      |          |      |
| 18508.06               | 1184.9218532.64 | 1184.9618549.68 | 1184.79 18559.9 | 1184.4518571.25 | 1182.94 |          |      |          |      |          |      |
| 18579.22               | 1178.2218585.62 | 1181.3418587.54 | 1182.9218588.93 | 1183.2318610.18 | 1194.15 |          |      |          |      |          |      |
| 18617.78               | 1199.2218626.93 | 1202.7918631.39 | 1202.1118638.83 | 1199.3218666.77 | 1185.62 |          |      |          |      |          |      |
| 18676.38               | 1183.52 18718.9 | 1183.8918731.97 | 1184.0118763.09 | 1184.0718776.07 | 1187.86 |          |      |          |      |          |      |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 18789.71 | 1190.4218807.57 | 1186.3818812.37 | 1185.4418837.29 | 1185.23 18870.5 | 1185.27 |
| 18875.61 | 1185.5218896.52 | 1185.5618904.39 | 1185.3618913.84 | 1185.418934.54  | 1184.51 |
| 18976.3  | 1182.8218985.12 | 1182.6519009.01 | 1182.5119064.88 | 1181.0519075.85 | 1180.66 |
| 19130.89 | 1180.6219138.47 | 1182.8919168.01 | 1192.69 19190.2 | 1193.619196.43  | 1193.7  |
| 19242.3  | 1194.92 19260.3 | 1194.5219269.65 | 1194.8519280.12 | 1194.5919311.73 | 1193.29 |
| 19313.7  | 1193.6219318.54 | 1193.5419324.95 | 1191.9 19331.8  | 1189.4119338.26 | 1189.9  |
| 19347.2  | 1186.5219355.81 | 1182.5519369.44 | 1182.28 19394.5 | 1181.9519402.58 | 1181.78 |
| 19415.83 | 1181.9219502.56 | 1186.1919532.64 | 1153.9419564.13 | 1153.8619590.64 | 1153.86 |
| 19601.3  | 1154.1219627.85 | 1153.79 19669.9 | 1153.7219680.29 | 1154.0519695.62 | 1149.95 |
| 19713.19 | 1146.2219718.69 | 1145.19733.23   | 1145.03 19781.3 | 1144.4219793.79 | 1144.69 |
| 19834.64 | 1145.0219860.64 | 1145.4219894.35 | 1146.1519910.24 | 1146.3919927.36 | 1145.8  |
| 19983.64 | 1145.1220008.49 | 1144.6820010.74 | 1144.7920053.57 | 1145.35 20071.3 | 1145.33 |
| 20092.99 | 1145.4220135.07 | 1146.5720150.98 | 1146.9220176.07 | 1148.6520180.63 | 1148.82 |
| 20204.61 | 1149.02 20227.3 | 1154.1320256.68 | 1154.5620266.01 | 1154.4620304.78 | 1153.28 |
| 20322.65 | 1153.7220365.32 | 1153.3420375.82 | 1153.5820413.44 | 1182.2520415.97 | 1184.22 |
| 20428.34 | 1184.5220446.79 | 1179.3820459.16 | 1175.6420472.94 | 1174.22 20479.4 | 1174.31 |
| 20479.58 | 1173.5220486.84 | 1173.5420513.93 | 1173.0520518.25 | 1173.1320540.35 | 1174.31 |
| 20564.84 | 1173.3220569.69 | 1173.1620584.83 | 1171.7520630.89 | 1172.2920631.43 | 1172.36 |
| 20652.15 | 1177.3220685.65 | 1177.53 20700.1 | 1177.5920709.49 | 1177.7120722.72 | 1181.02 |
| 20752.73 | 1180.3220764.21 | 1180.1920778.08 | 1180.8720785.94 | 1180.9720793.11 | 1181.33 |
| 20804.58 | 1181.3220827.54 | 1180.9120853.71 | 1181.0420865.07 | 1181.1620889.56 | 1180.8  |
| 20922.25 | 1181.0220934.34 | 1180.9320976.72 | 1185.1521090.21 | 1184.5221129.92 | 1184.57 |
| 21285.66 | 1184.6221367.62 | 1184.4621496.27 | 1184.8721584.34 | 1185.1321687.67 | 1185.62 |
| 21789.4  | 1185.7221885.23 | 1186.4921939.98 | 1187.4121986.39 | 1187.9622072.68 | 1188.3  |
| 22118.62 | 1188.62         |                 |                 |                 |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 17290.78 .0519502.56 .0320428.34 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19502.5620428.34 523 547.79 537 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 17290.7819502.56 1186.19 F  
 20428.3422118.62 1184.52 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 223.86

INPUT  
 Description: Blocked obstructions coded in to model pairs for Red Mountain Freeway

|                                 |                 |                 |                 |                 |         |     |      |     |      |     |      |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|-----|------|
| Station Elevation Data num= 168 |                 |                 |                 |                 |         |     |      |     |      |     |      |
| Sta                             | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev | Sta | Elev |
| 17367.19                        | 1179.1217370.88 | 1179.2917379.66 | 1179.3817380.26 | 1179.0517410.61 | 1179.06 |     |      |     |      |     |      |
| 17449.52                        | 1180.1217478.55 | 1180.4717533.86 | 1179.1217544.45 | 1179.2817593.39 | 1180.45 |     |      |     |      |     |      |
| 17606.33                        | 1180.52 17636.5 | 1180.9417673.07 | 1181.3517758.25 | 1182.04 17768.1 | 1182.36 |     |      |     |      |     |      |
| 17777.85                        | 1182.3217837.63 | 1181.217882.72  | 1182.0417888.26 | 1181.8517897.27 | 1181.92 |     |      |     |      |     |      |
| 17911.38                        | 1182.2217934.46 | 1181.9217943.61 | 1181.2717990.72 | 1179.1818017.23 | 1179.87 |     |      |     |      |     |      |
| 18051.11                        | 1180.9218067.92 | 1181.7318088.59 | 1181.7718095.98 | 1181.718161.69  | 1182.32 |     |      |     |      |     |      |
| 18180.05                        | 1182.6218194.78 | 1182.0118230.18 | 1180.7818289.57 | 1181.6918309.08 | 1181.95 |     |      |     |      |     |      |
| 18360.12                        | 1183.3218376.67 | 1183.918438.88  | 1184.34 18484.2 | 1184.3618509.57 | 1184.24 |     |      |     |      |     |      |
| 18540.25                        | 1184.2218562.71 | 1184.3218573.58 | 1187.5518588.83 | 1189.6218604.17 | 1189.08 |     |      |     |      |     |      |
| 18625.08                        | 1191.1218627.36 | 1191.4118645.25 | 1191.0818657.63 | 1193.0318678.64 | 1195.25 |     |      |     |      |     |      |
| 18684.66                        | 1195.2218705.26 | 1192.3618715.77 | 1191.6218735.31 | 1184.9618762.16 | 1184.86 |     |      |     |      |     |      |
| 18777.17                        | 1185.0218795.48 | 1185.18810.22   | 1185.1218865.29 | 1185.3318887.58 | 1185.96 |     |      |     |      |     |      |
| 18890.48                        | 1186.1218921.18 | 1186.8818930.16 | 1186.9618951.29 | 1187.0118974.91 | 1186.79 |     |      |     |      |     |      |
| 18985.39                        | 1185.9219013.14 | 1185.4719050.86 | 1186.119086.23  | 1186.4219095.21 | 1186.85 |     |      |     |      |     |      |
| 19101.07                        | 1187.4219118.67 | 1187.4619141.05 | 1188.1319150.82 | 1187.9519166.16 | 1187.8  |     |      |     |      |     |      |
| 19180.1                         | 1189.7219190.98 | 1192.1419212.52 | 1188.0719218.02 | 1186.5319228.49 | 1186.04 |     |      |     |      |     |      |
| 19243.85                        | 1186.4219248.72 | 1186.3419292.18 | 1184.9219299.64 | 1185.19338.09   | 1186.1  |     |      |     |      |     |      |
| 19354.54                        | 1179.1219371.78 | 1182.8619380.11 | 1182.1119383.68 | 1179.719387.45  | 1184.36 |     |      |     |      |     |      |
| 19409.6                         | 1188.3219420.76 | 1189.9719430.15 | 1190.3119440.89 | 1192.2719468.54 | 1191.9  |     |      |     |      |     |      |
| 19482.11                        | 1188.9219546.16 | 1177.3519697.12 | 1150.16 19722.4 | 1147.719795.69  | 1146.53 |     |      |     |      |     |      |
| 19806.6                         | 1146.6219856.27 | 1145.6819878.51 | 1145.3919932.14 | 1144.4219968.62 | 1144.24 |     |      |     |      |     |      |
| 20004.61                        | 1143.4220047.17 | 1143.0820068.21 | 1144.3620091.45 | 1146.5820112.69 | 1147.54 |     |      |     |      |     |      |
| 20132.42                        | 1148.0220167.92 | 1147.0120193.16 | 1147.320216.62  | 1150.9620220.22 | 1151.62 |     |      |     |      |     |      |
| 20251.22                        | 1152.0220277.92 | 1152.0120301.76 | 1151.8620352.98 | 1152.17 20366.1 | 1152.2  |     |      |     |      |     |      |
| 20389.64                        | 1170.8220403.14 | 1181.7320404.29 | 1181.9520418.22 | 1182.5720437.42 | 1178.06 |     |      |     |      |     |      |
| 20469.85                        | 1171.0220491.48 | 1171.0920538.34 | 1172.2520588.95 | 1173.1620612.23 | 1173.16 |     |      |     |      |     |      |
| 20640.07                        | 1174.5220670.81 | 1173.9420709.86 | 1174.320727.45  | 1174.3320735.22 | 1175.36 |     |      |     |      |     |      |
| 20744.18                        | 1175.9220764.63 | 1176.1320815.04 | 1177.6920828.27 | 1178.1920877.21 | 1180.39 |     |      |     |      |     |      |
| 20885.03                        | 1180.6220920.53 | 1181.2220950.61 | 1181.8121007.41 | 1182.0521032.37 | 1183.09 |     |      |     |      |     |      |
| 21039.44                        | 1183.3221062.37 | 1183.3521124.51 | 1183.5321172.99 | 1183.721242.53  | 1183.73 |     |      |     |      |     |      |
| 21320.88                        | 1183.5221380.01 | 1183.5321435.05 | 1183.1721488.03 | 1183.1921551.13 | 1183.56 |     |      |     |      |     |      |
| 21624.86                        | 1184.1221682.95 | 1184.1121796.03 | 1184.1621847.81 | 1184.321903.19  | 1184.3  |     |      |     |      |     |      |
| 22039.48                        | 1184.5222068.95 | 1184.78 22088.9 | 1184.8322176.35 | 1186.0922266.59 | 1186.04 |     |      |     |      |     |      |
| 22275.54                        | 1186.2222289.11 | 1186.13 22348   | 1186.76         |                 |         |     |      |     |      |     |      |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 17367.19 .0519482.11 .0320418.22 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

19482.1120418.22 485 483.1 485 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 17367.1919482.11 1188.92 F  
 20418.22 22348 1182.57 F  
 Blocked Obstructions num= 5  
 Sta L Sta R Elev Sta L Sta R Elev Sta L Sta R Elev  
 19475.6 19484.5 1198.92 19535.1 19544 1198.92 19585 19594 1198.42  
 19645.1 19654 1198.42 19680.1 19688.9 1198.42

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 223.77

INPUT  
Description: Blocked obstructions coded in to model peirs for Red Mountain

Freeway  
 Station Elevation Data num= 117  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 17399.57 1177.0217400.26 1177.0117435.65 1179.7417438.58 1179.8417464.97 1184.41  
 17490.82 1189.6217507.23 1192.9517538.98 1191.8517572.47 1191.0617652.84 1192.5  
 17717.62 1192.9217732.88 1193.0917756.25 1193.5317849.87 1195.3317925.57 1196.69  
 17935.49 1196.8217956.61 1196.8818028.33 1196.918146.61 1198.1218167.92 1198.4  
 18265.88 1199.4218328.16 1200.2618391.93 1200.8618436.63 1200.9918530.47 1200.28  
 18546.24 1200.4218609.96 1199.4518614.79 1199.3518649.62 1199.3218678.23 1198.09  
 18755.94 1192.7218764.14 1192.0218779.31 1191.5718847.58 1189.9918973.11 1188.68  
 19074.07 1188.6219128.87 1188.5119173.38 1188.4919195.67 1188.6719256.18 1188.95  
 19310.08 1188.3219366.29 1187.5619430.72 1187.2719460.08 1175.1319515.79 1151.41  
 19531.09 1160.82 19571 1183.9719574.43 1183.3419580.27 1182.5719585.57 1182.71  
 19611.28 1157.8219616.75 1152.4819722.66 1148.2719842.35 1143.1919875.23 1142.72  
 19909.34 1142.1219911.41 1142.2419923.54 1141.9419962.82 1141.3119985.84 1141.56  
 20010.64 1143.2220066.56 1145.3620078.64 1145.4220088.48 1145.9220108.47 1151.13  
 20113.16 1152.1220144.65 1151.91 20155 1151.9220187.85 1152.1520221.92 1152.3  
 20279.82 1152.6220317.65 1180.120330.93 1180.59 20338.8 1178.3220354.89 1173.26  
 20385.37 1173.3220434.76 1173.1220469.72 1173.0620485.35 1172.8620529.34 1172.17  
 20538 1172.1220550.96 1172.3920575.01 1172.7820584.76 1173.1620607.11 1173.53  
 20617.58 1173.5220654.99 1171.36 20670 1172.3720700.03 1174.5320706.85 1175.14  
 20752.86 1175.3220757.87 1175.0620768.86 1174.9820817.61 1174.9920869.09 1175.82  
 20877.24 1175.9220911.96 1176.1220941.92 1176.1420951.19 1176.2421012.53 1179.59  
 21038.57 1182.1221090.31 1181.87 21114.2 1181.8821128.06 1181.79 21293.1 1181.38  
 21306.94 1181.4221471.68 1181.8821748.77 1181.8521778.35 1181.8221842.42 1182.04  
 21980.15 1183.0222038.55 1183.0222203.83 1183.8322238.25 1185.1222249.58 1185.3  
 22288.32 1185.72 22295.7 1185.72

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 17399.57 .05 19571 .0320330.93 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1957120330.93 500 500 500 .1 .3

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 17399.57 19571 1183.97 F  
 20330.93 22295.7 1180.59 F  
 Blocked Obstructions num= 5  
 Sta L Sta R Elev Sta L Sta R Elev Sta L Sta R Elev  
 19620.6 19629.5 1183.42 19668.1 19667 1183.42 19716 19725 1183.42  
 19741.1 19750 1183.42 19776.1 19784.9 1183.42

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 223.67

INPUT  
Description: Blocked obstructions coded in to model peirs for Red Mountain

Freeway  
 Station Elevation Data num= 143  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 17393.92 1176.3217397.09 1176.4217410.06 1176.2817421.92 1175.86 17422.7 1176.14  
 17432.28 1176.8217474.71 1178.0417490.58 1178.317543.03 1179.6317545.63 1179.93  
 17545.69 1179.0217584.93 1179.7817602.38 1180.0917620.23 1179.8217703.92 1179.88  
 17729.11 1180.32 17762.6 1180.46 17826.6 1181.01 17885.7 1181.217969.34 1181.89  
 18026.5 1182.4218099.63 1182.6418162.88 1182.6418214.49 1183.1318259.08 1183.41  
 18289.38 1183.2218339.18 1183.2518385.53 1183.4418410.31 1183.4918440.81 1183.7  
 18472.92 1184.1218477.29 1185.7318502.05 1193.4318518.32 1193.818621.65 1193  
 18625.47 1193.0218754.67 1193.2918765.45 1193.2518771.58 1193.45 18783.9 1193.7  
 18793.14 1191.1218803.45 1188.8118832.52 1187.0918883.33 1186.7518920.46 1185.72  
 18931.67 1185.3218944.35 1185.4618964.16 1185.3318984.37 1184.7818996.56 1184.75  
 19027.2 1184.8219051.04 1185.0919091.19 1184.5319109.06 1184.7919141.05 1184.69  
 9144.53 1184.6219149.05 1185.5319186.37 1192.2119193.74 1192.0919217.02 1191.36  
 9230.49 1191.62 19247.4 1191.119282.55 1191.1519295.49 1192.7119303.51 1190.57  
 19325.2 1188.4219329.83 1188.26 19338.3 1190.7919368.01 1191.1819373.02 1191.31  
 19414.93 1189.4219452.26 1189.2 19454.3 1189.1319461.55 1186.6319496.26 1171.54  
 19512.14 1177.2219522.15 1179.2819543.81 1178.9319556.81 1178.4619582.32 1160.53

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|
| 19592.31 | 1153.3219664.56 | 1150.45         | 19675.2         | 1150.5519734.04 | 1150.519799.85  | 1148.03 |
| 19955.27 | 1141.8219975.38 | 1140.7419983.51 | 1140.3819991.27 | 1140.53         | 20043.6         | 1141.66 |
| 20069.12 | 1150.2220070.93 | 1150.9620074.45 | 1150.920121.96  | 1150.4120138.27 |                 | 1150.86 |
| 20150.06 | 1151.0220182.62 | 1151.6820204.53 | 1152.0220230.48 | 1174.3420242.25 |                 | 1173.03 |
| 20251.62 | 1178.2220257.81 | 1178.8520264.06 | 1179.9420278.16 | 1174.3420293.04 |                 | 1168.32 |
| 20295.38 | 1168.4220345.27 | 1168.5520411.91 | 1169.320425.61  | 1170.1220439.72 |                 | 1171.09 |
| 20456.21 | 1171.2220480.02 | 1171.8220494.61 | 1172.520578.71  | 1174.8820588.37 |                 | 1175.14 |
| 20677.11 | 1176.9220709.86 | 1177.56         | 20740.1         | 1177.2620762.37 | 1177.0820829.95 | 1176.4  |
| 20889.57 | 1176.22         | 20927.7         | 1175.920957.98  | 1176.2421027.95 | 1176.7121045.88 | 1176.91 |
| 21052.26 | 1178.3221064.54 | 1180.3821129.54 | 1179.8421152.28 | 1179.7421179.46 |                 | 1179.76 |
| 21247.92 | 1180.1221376.63 | 1181.1121411.97 | 1181.1121452.36 | 1181.1721620.08 |                 | 1181.17 |
| 21722.16 | 1181.3221805.32 | 1180.9921922.37 | 1181.6121977.74 | 1181.8322095.91 |                 | 1181.66 |
| 22121.69 | 1181.8222231.49 | 1183.6422249.15 | 1183.92         |                 |                 |         |

Manning's n Values num= 3

| Sta      | n Val       | Sta          | n Val | Sta | n Val |
|----------|-------------|--------------|-------|-----|-------|
| 17393.92 | .0519522.15 | .03520264.06 |       | .05 |       |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

|          |          |        |        |        |    |    |
|----------|----------|--------|--------|--------|----|----|
| 19522.15 | 20264.06 | 500.21 | 500.21 | 500.21 | .1 | .3 |
|----------|----------|--------|--------|--------|----|----|

Ineffective Flow num= 2

| Sta L    | Sta R    | Elev    | Permanent |
|----------|----------|---------|-----------|
| 17393.92 | 19522.15 | 1179.28 | F         |
| 20264.06 | 22249.15 | 1179.94 | F         |

Blocked Obstructions num= 5

| Sta L   | Sta R | Elev    | Sta L   | Sta R   | Elev    | Sta L | Sta R | Elev    |
|---------|-------|---------|---------|---------|---------|-------|-------|---------|
| 19753.1 | 19762 | 1182.42 | 19803.1 | 19812   | 1182.42 | 19843 | 19852 | 1182.42 |
| 19893.1 | 19902 | 1182.42 | 19948.1 | 19956.9 | 1182.42 |       |       |         |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 223.58

INPUT

Description: Blocked obstructions coded in to model pairs for Red Mountain Freeway

Station Elevation Data num= 149

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev            | Sta     | Elev    | Sta | Elev |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|---------|-----|------|
| 17435.18 | 1176.6217453.68 | 1175.8517463.54 | 1175.9517467.25 | 1176.2917508.23 | 1178.8          |         |         |     |      |
| 17517.29 | 1178.6217527.22 | 1179.0417541.86 | 1178.8917713.93 | 1179.517735.32  | 1179.2          |         |         |     |      |
| 17772.95 | 1179.7217832.38 | 1179.717851.84  | 1179.9417940.15 | 1178.617947.86  | 1178.93         |         |         |     |      |
| 17956.22 | 1178.5217977.35 | 1178.5118024.24 | 1177.3318056.96 | 1177.2818085.37 | 1178.06         |         |         |     |      |
| 18088.44 | 1178.4218106.99 | 1180.3718120.64 | 1180.618127.34  | 1180.8218148.87 | 1179.93         |         |         |     |      |
| 18214.7  | 1178.0218233.87 | 1179.5118239.56 | 1179.99         | 18240.9         | 1180.69         | 18259.9 | 1183.58 |     |      |
| 18271.36 | 1186.3218275.71 | 1186.27         | 18299.2         | 1184.9218329.27 | 1185.3818340.62 | 1185.63 |         |     |      |
| 18349.34 | 1185.7218414.51 | 1185.7818450.13 | 1185.7118458.45 | 1185.8718499.99 | 1185.94         |         |         |     |      |
| 18522.14 | 1186.2218564.33 | 1186.3718584.51 | 1186.1618598.11 | 1186.0918611.54 | 1185.91         |         |         |     |      |
| 18635.76 | 1185.7218651.95 | 1185.518674.54  | 1185.6218699.29 | 1185.6518708.13 | 1185.59         |         |         |     |      |
| 18776.04 | 1185.92         | 18804.8         | 1192.1818810.25 | 1192.1218820.23 | 1190.2218837.76 | 1185.6  |         |     |      |
| 18849.24 | 1183.4218867.43 | 1177.5318875.28 | 1177.48         | 18923.3         | 1177.519009.81  | 1177.49 |         |     |      |
| 19020.86 | 1177.5219041.04 | 1177.3319124.57 | 1176.6619168.28 | 1175.5219207.61 | 1174.61         |         |         |     |      |
| 19225.97 | 1174.7219265.32 | 1174.66         | 19288.2         | 1174.219302.41  | 1179.8119329.79 | 1189.87 |         |     |      |
| 19384.27 | 1189.6219393.47 | 1189.59         | 19456.3         | 1189.3219479.09 | 1178.6319488.35 | 1173.9  |         |     |      |
| 19492.22 | 1175.1219502.01 | 1179.0319522.19 | 1176.9219523.67 | 1175.7419553.21 | 1153.7          |         |         |     |      |
| 19560.44 | 1153.3219605.69 | 1152.3719634.94 | 1152.0519664.77 | 1152.4719695.83 | 1153.28         |         |         |     |      |
| 19704.22 | 1150.5219718.29 | 1146.4619731.09 | 1146.4319758.64 | 1146.1719830.68 | 1147.42         |         |         |     |      |
| 19907.88 | 1148.6219982.52 | 1149.6220019.67 | 1148.9820049.19 | 1150.1920073.47 | 1149.34         |         |         |     |      |
| 20089.26 | 1150.1220151.23 | 1153.1620183.52 | 1174.0720186.51 | 1176.12         | 20196.9         | 1178.14 |         |     |      |
| 20210.58 | 1172.7220219.04 | 1168.5920238.67 | 1163.7820241.79 | 1162.6120242.59 | 1162.67         |         |         |     |      |
| 20248.49 | 1160.4220277.49 | 1162.8320280.55 | 1163.1420299.09 | 1165.4120322.39 | 1168.59         |         |         |     |      |
| 20329.43 | 1168.8220389.83 | 1169.2520390.91 | 1169.2420443.51 | 1171.41         | 20467.7         | 1168.74 |         |     |      |
| 20506.97 | 1169.2220537.88 | 1171.0220555.63 | 1172.0420577.37 | 1172.6320628.48 | 1173.34         |         |         |     |      |
| 20692.86 | 1174.1220704.62 | 1174.3920767.29 | 1177.9920792.93 | 1178.3720819.27 | 1177.54         |         |         |     |      |
| 20846.13 | 1176.52         | 20873.5         | 1175.620960.44  | 1176.2120991.54 | 1176.3721004.17 | 1176.77 |         |     |      |
| 21018.88 | 1177.02         | 21056.8         | 1178.2921071.73 | 1178.721079.62  | 1178.9921089.15 | 1178.96 |         |     |      |
| 21216.99 | 1179.4221439.52 | 1179.58         | 21606.1         | 1179.6421625.18 | 1179.7421746.06 | 1180.08 |         |     |      |
| 21798.19 | 1180.1221823.85 | 1179.9621958.38 | 1179.9721969.01 | 1180.0622028.24 | 1180.18         |         |         |     |      |
| 22089.21 | 1182.9222096.49 | 1183.0222148.85 | 1183.8122151.43 | 1183.8          |                 |         |         |     |      |

Manning's n Values num= 3

| Sta      | n Val       | Sta  | n Val   |
|----------|-------------|------|---------|
| 17435.18 | .0519502.01 | .035 | 20196.9 |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

|          |         |     |       |     |    |    |
|----------|---------|-----|-------|-----|----|----|
| 19502.01 | 20196.9 | 490 | 501.3 | 510 | .1 | .3 |
|----------|---------|-----|-------|-----|----|----|

Ineffective Flow num= 2

| Sta L    | Sta R    | Elev    | Permanent |
|----------|----------|---------|-----------|
| 17435.18 | 19502.01 | 1179.03 | F         |
| 20196.92 | 2151.43  | 1178.14 | F         |

Blocked Obstructions num= 5

| Sta L   | Sta R | Elev    | Sta L   | Sta R   | Elev    | Sta L | Sta R | Elev    |
|---------|-------|---------|---------|---------|---------|-------|-------|---------|
| 19806.1 | 19815 | 1181.02 | 19856.1 | 19865   | 1181.02 | 19893 | 19902 | 1181.02 |
| 19943.1 | 19952 | 1181.02 | 19998.1 | 20006.9 | 1181.02 |       |       |         |

CROSS SECTION

RIVER: Salt  
REACH: 1

RS: 223.48

INPUT

Description: Blocked obstructions coded in to model peirs for Red Mountain Freeway

| Station Elevation Data |                 | num= 141        |                 | Sta Elev        |                 | Sta Elev        |         | Sta Elev |      | Sta Elev |      |
|------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|----------|------|----------|------|
| Sta                    | Elev            | Sta             | Elev            | Sta             | Elev            | Sta             | Elev    | Sta      | Elev | Sta      | Elev |
| 17468.86               | 1175.8217485.33 | 1176.0617486.96 | 1175.9717507.81 | 1177.12         | 17516.7         | 1177.46         |         |          |      |          |      |
| 17525.57               | 1178.1217551.45 | 1177.0417584.51 | 1177.517592.65  | 1176.9717604.44 | 1176.64         |                 |         |          |      |          |      |
| 17618.53               | 1176.1217652.51 | 1175.0517687.42 | 1175.5217698.97 | 1175.1817728.44 | 1175.53         |                 |         |          |      |          |      |
| 17800.52               | 1177.2217862.46 | 1178.3317911.24 | 1178.7117948.63 | 1178.4617982.99 | 1178.74         |                 |         |          |      |          |      |
| 17997.88               | 1178.4218008.97 | 1177.6318030.49 | 1182.27         | 18061.8         | 1182.27         | 18172.19        | 1183.11 |          |      |          |      |
| 18175.23               | 1183.1218258.52 | 1182.8118268.75 | 1182.7318273.73 | 1182.8118382.17 | 1182.96         |                 |         |          |      |          |      |
| 18393.04               | 1182.9218485.78 | 1183.0718503.24 | 1183.0718598.18 | 1182.7218684.56 | 1183.59         |                 |         |          |      |          |      |
| 18746.96               | 1184.0218762.99 | 1183.3918788.87 | 1182.4718795.74 | 1182.0418797.68 | 1182.08         |                 |         |          |      |          |      |
| 18820.89               | 1182.1218832.43 | 1181.34         | 18858.5         | 1180.4218864.04 | 1180.3518955.78 | 1179.7          |         |          |      |          |      |
| 18966.64               | 1179.6219038.35 | 1178.8419132.86 | 1179.6119135.49 | 1179.619205.03  | 1178.57         |                 |         |          |      |          |      |
| 19253.95               | 1179.62         | 19271.4         | 1180.3219284.61 | 1179.44         | 19304.1         | 1178.7519310.74 | 1178.68 |          |      |          |      |
| 19315.32               | 1178.8219332.95 | 1179.0719353.73 | 1179.6219405.75 | 1177.8219424.88 | 1177.2          |                 |         |          |      |          |      |
| 19452.58               | 1175.8219456.54 | 1175.719476.03  | 1176.4919480.82 | 1176.6119489.74 | 1172.78         |                 |         |          |      |          |      |
| 19502.46               | 1170.5219503.91 | 1170.1519506.02 | 1168.819533.24  | 1150.67         | 19572.3         | 1150.81         |         |          |      |          |      |
| 19598.3                | 1150.6219621.24 | 1150.73         | 19656.3         | 1151.0319664.93 | 1148.2219676.86 | 1144.7          |         |          |      |          |      |
| 19706.28               | 1144.4219720.85 | 1144.11         | 19764.5         | 1144.9819776.65 | 1145.2519797.04 | 1138.33         |         |          |      |          |      |
| 19802.89               | 1137.8219830.38 | 1139.4719993.78 | 1147.9620044.25 | 1148.8420093.25 | 1148.28         |                 |         |          |      |          |      |
| 20100.36               | 1148.6220151.25 | 1150.34         | 20179.7         | 1173.4220189.71 | 1175.0220199.48 | 1168.54         |         |          |      |          |      |
| 20211.56               | 1162.9220223.63 | 1163.0920242.43 | 1165.0220248.79 | 1165.920261.76  | 1166.57         |                 |         |          |      |          |      |
| 20302.27               | 1168.5220307.51 | 1169.6620322.47 | 1169.8720348.96 | 1170.5620362.51 | 1171.34         |                 |         |          |      |          |      |
| 20387.23               | 1172.02         | 20413.1         | 1172.7120486.02 | 1173.2920526.99 | 1173.6920572.38 | 1173.65         |         |          |      |          |      |
| 20639.45               | 1171.9220676.82 | 1172.0320696.25 | 1172.6720713.38 | 1172.6620778.73 | 1173.67         |                 |         |          |      |          |      |
| 20799.79               | 1173.22         | 20813.8         | 1173.120850.58  | 1172.2420863.64 | 1172.6420883.97 | 1172.54         |         |          |      |          |      |
| 20933.04               | 1172.5220952.93 | 1172.4420964.22 | 1172.06         | 20980           | 1174.9421002.71 | 1177.48         |         |          |      |          |      |
| 21048.56               | 1176.8221066.64 | 1176.5221092.34 | 1176.7621145.45 | 1177.8421207.02 | 1178.01         |                 |         |          |      |          |      |
| 21264.12               | 1177.7221293.11 | 1177.6921416.28 | 1177.2621437.16 | 1177.25         | 21556.1         | 1177.7          |         |          |      |          |      |
| 21702.94               | 1177.9221838.59 | 1178.3821851.05 | 1178.4221941.47 | 1178.921974.26  | 1178.47         |                 |         |          |      |          |      |
| 21988.51               | 1178.4222017.24 | 1180.5322039.31 | 1182.2522064.99 | 1182.2622104.44 | 1182.47         |                 |         |          |      |          |      |
| 22184.55               | 1182.52         |                 |                 |                 |                 |                 |         |          |      |          |      |

| Manning's n Values |             | num= 3       |       | Sta n Val |       | Sta n Val |       |
|--------------------|-------------|--------------|-------|-----------|-------|-----------|-------|
| Sta                | n Val       | Sta          | n Val | Sta       | n Val | Sta       | n Val |
| 17468.86           | .0519480.82 | .03520189.71 | .05   |           |       |           |       |

| Bank Sta:            | Left     | Right    | Lengths: | Left             | Channel | Right            | Coeff | Contr. | Expan.  |
|----------------------|----------|----------|----------|------------------|---------|------------------|-------|--------|---------|
|                      | 19480.82 | 20189.71 |          | 450              | 527.75  | 610              | .1    | .3     |         |
| Ineffective Flow     |          | num= 2   |          | Sta L Sta R Elev |         | Permanent        |       |        |         |
|                      | 17468.86 | 19480.82 | 1176.61  | F                |         |                  |       |        |         |
|                      | 20189.71 | 22184.55 | 1175.02  | F                |         |                  |       |        |         |
| Blocked Obstructions |          | num= 5   |          | Sta L Sta R Elev |         | Sta L Sta R Elev |       |        |         |
|                      | 19883.1  | 19892    | 1180.02  | 19933.1          | 19942   | 1180.02          | 19971 | 19980  | 1180.02 |
|                      | 20021.1  | 20030    | 1180.02  | 20074.1          | 20081.9 | 1180.02          |       |        |         |

CROSS SECTION

RIVER: Salt  
REACH: 1

RS: 223.38

INPUT

Description: Blocked obstructions coded in to model peirs for Red Mountain Freeway

| Station Elevation Data |                 | num= 145        |                 | Sta Elev        |                 | Sta Elev        |        | Sta Elev |      | Sta Elev |      |
|------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|--------|----------|------|----------|------|
| Sta                    | Elev            | Sta             | Elev            | Sta             | Elev            | Sta             | Elev   | Sta      | Elev | Sta      | Elev |
| 17443.57               | 1174.8217469.17 | 1174.7717472.12 | 1174.6917502.47 | 1176.1617503.12 | 1176.25         |                 |        |          |      |          |      |
| 17515.36               | 1176.1217539.87 | 1175.8817549.87 | 1176.33         | 17554           | 1176.0717618.72 | 1176.13         |        |          |      |          |      |
| 17667.28               | 1175.9217678.01 | 1175.3517705.16 | 1175.3117792.34 | 1175.6317869.86 | 1176.41         |                 |        |          |      |          |      |
| 17905.98               | 1176.3217975.22 | 1176.9818026.22 | 1177.9318052.96 | 1178.3318094.37 | 1178.45         |                 |        |          |      |          |      |
| 18140.28               | 1178.7218174.98 | 1179.0318249.51 | 1179.4718290.05 | 1179.8618334.57 | 1179.54         |                 |        |          |      |          |      |
| 18384.6                | 1179.3218451.79 | 1179.5218489.18 | 1179.4818507.52 | 1179.6318595.28 | 1179.94         |                 |        |          |      |          |      |
| 18630.29               | 1180.1218686.48 | 1179.53         | 18736.6         | 1179.2818815.25 | 1180.5318821.78 | 1180.93         |        |          |      |          |      |
| 18828.68               | 1181.1218833.71 | 1180.8418836.97 | 1179.1318853.49 | 1180.4818859.34 | 1180.06         |                 |        |          |      |          |      |
| 18869.82               | 1179.6218883.07 | 1178.6218891.04 | 1178.4318959.53 | 1177.3518969.54 | 1177.46         |                 |        |          |      |          |      |
| 19000.16               | 1177.9219099.13 | 1177.8919110.15 | 1177.9219328.17 | 1179.1519332.99 | 1179.08         |                 |        |          |      |          |      |
| 19344.26               | 1178.62         | 19360.1         | 1178.8219388.96 | 1179.32         | 19427.5         | 1178.8219461.98 | 1177.2 |          |      |          |      |
| 19468.83               | 1175.3219477.87 | 1174.3919507.02 | 1152.3419510.76 | 1149.6319528.88 | 1149.42         |                 |        |          |      |          |      |
| 19562.92               | 1149.1219579.13 | 1148.92         | 19604           | 1148.9119654.35 | 1149.2619661.36 | 1148.23         |        |          |      |          |      |
| 19677.61               | 1146.1219708.18 | 1147.8319722.83 | 1148.43         | 19748.8         | 1147.5519774.66 | 1147.66         |        |          |      |          |      |
| 19779.91               | 1145.4219802.56 | 1136.7419814.17 | 1137.8319818.14 | 1137.3619827.96 | 1140.92         |                 |        |          |      |          |      |
| 19843.94               | 1139.5219848.21 | 1139.6119890.58 | 1141.4419974.33 | 1142.1120062.58 | 1148.91         |                 |        |          |      |          |      |
| 20110.3                | 1148.5220162.59 | 1151.19         | 20209.4         | 1151.7520217.02 | 1151.8820220.23 | 1154.42         |        |          |      |          |      |
| 20241.46               | 1172.3220255.78 | 1173.2320267.63 | 1165.16         | 20279.2         | 1166.220311.28  | 1170.08         |        |          |      |          |      |
| 0322.04                | 1170.4220344.18 | 1172.920351.65  | 1173.5620384.79 | 1173.8420387.03 | 1173.91         |                 |        |          |      |          |      |
| 0428.23                | 1172.9220433.41 | 1173.1420476.89 | 1175.3620488.72 | 1175.5720503.14 | 1174.98         |                 |        |          |      |          |      |
| 20506.24               | 1174.62         | 20515.5         | 1174.5220542.85 | 1173.3920581.77 | 1171.6220602.73 | 1171.49         |        |          |      |          |      |
| 20638.01               | 1170.7220666.54 | 1170.3720690.86 | 1169.8920705.46 | 1169.8820739.16 | 1169.47         |                 |        |          |      |          |      |
| 20759.97               | 1169.4220777.72 | 1169.3920800.77 | 1169.3520818.95 | 1169.0820824.36 | 1169.3          |                 |        |          |      |          |      |

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|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 20843.58 | 1169.4220867.25 | 1169.2220909.37 | 1168.7920925.09 | 1168.5420948.23 | 1168.35 |
| 21016.51 | 1167.7221034.09 | 1167.8621053.29 | 1168.1521132.01 | 1168.1421201.52 | 1167.66 |
| 21219.24 | 1166.8221229.57 | 1166.6421301.52 | 1169.2421303.14 | 1169.32 21347.7 | 1174.43 |
| 21351.52 | 1174.3221397.58 | 1172.3421426.37 | 1172.2521486.04 | 1172.0221582.73 | 1171.94 |
| 21632.95 | 1171.9221652.23 | 1172.0221726.81 | 1171.821746.38  | 1174.921752.68  | 1174.92 |
| 21794.34 | 1176.7221860.56 | 1177.5421905.08 | 1177.9621960.01 | 1178.17 21979.3 | 1178.73 |

Manning's n Values num= 3

| Sta      | n Val       | Sta          | n Val |
|----------|-------------|--------------|-------|
| 17443.57 | .0519388.96 | .03520255.78 | .05   |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

|          |          |        |        |        |    |    |
|----------|----------|--------|--------|--------|----|----|
| 19388.96 | 20255.78 | 480.81 | 480.81 | 480.81 | .1 | .3 |
|----------|----------|--------|--------|--------|----|----|

Ineffective Flow num= 2

| Sta L    | Sta R    | Elev    | Permanent |
|----------|----------|---------|-----------|
| 17443.57 | 19388.96 | 1179.32 | F         |
| 20255.78 | 21979.3  | 1177.12 | F         |

Blocked Obstructions num= 5

| Sta L   | Sta R   | Elev    | Sta L   | Sta R   | Elev    | Sta L | Sta R | Elev    |
|---------|---------|---------|---------|---------|---------|-------|-------|---------|
| 19973.6 | 19780.5 | 1178.82 | 19826.1 | 19835   | 1178.82 | 19876 | 19885 | 1178.82 |
| 19918   | 19927   | 1178.82 | 19963.1 | 19971.9 | 1178.82 |       |       |         |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 223.29

INPUT

Description: Blocked obstructions coded in to model pairs for Red Mountain

Freeway num= 158

| Station  | Elevation       | Data            | num=            | 158             |         |     |      |     |      |
|----------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|
| Sta      | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev |
| 17523.28 | 1173.6217532.04 | 1173.8617570.98 | 1176.1517586.45 | 1176.6517601.92 | 1176.15 |     |      |     |      |
| 17621.04 | 1174.8217657.59 | 1174.8517666.52 | 1174.517718.53  | 1174.6517857.57 | 1173.71 |     |      |     |      |
| 17875.54 | 1173.7217943.75 | 1172.9318052.73 | 1172.3218093.27 | 1172.1518123.63 | 1172.5  |     |      |     |      |
| 18177.13 | 1172.2218196.72 | 1172.3218226.42 | 1172.2418258.72 | 1171.7618261.75 | 1171.86 |     |      |     |      |
| 18310.58 | 1171.0218320.26 | 1170.1618343.64 | 1170.4318370.64 | 1170.2118423.69 | 1170.67 |     |      |     |      |
| 18437.48 | 1170.9218479.02 | 1171.4818503.96 | 1171.9318511.25 | 1171.9718550.64 | 1172.46 |     |      |     |      |
| 18589.58 | 1172.2218614.87 | 1172.3 18676.6  | 1172.4818688.14 | 1172.3718752.22 | 1172.73 |     |      |     |      |
| 18789.11 | 1172.7218874.93 | 1172.58 18925.8 | 1172.418940.63  | 1172.4618949.12 | 1172.58 |     |      |     |      |
| 18987.3  | 1174.4218999.12 | 1174.7419016.09 | 1175.5119038.27 | 1168.5819052.06 | 1167.34 |     |      |     |      |
| 19076.24 | 1165.5219080.55 | 1164.8219095.35 | 1164.5519129.46 | 1165.2719147.44 | 1165.71 |     |      |     |      |
| 19179.41 | 1165.7219261.31 | 1166.0219273.46 | 1165.8119338.09 | 1165.7819350.24 | 1165.5  |     |      |     |      |
| 19395.52 | 1165.2219425.94 | 1165.1419441.51 | 1163.419447.31  | 1165.1219477.37 | 1173.72 |     |      |     |      |
| 19497.4  | 1174.5219507.93 | 1166.2519528.09 | 1150.9519568.15 | 1150.419591.39  | 1150.11 |     |      |     |      |
| 19667.15 | 1150.1219672.73 | 1150.1919706.82 | 1142.8519728.93 | 1142.7619735.54 | 1142.82 |     |      |     |      |
| 19744.68 | 1143.1219777.17 | 1144.4719803.56 | 1147.0819821.96 | 1149.04 19849.3 | 1145.04 |     |      |     |      |
| 19865.29 | 1142.0219870.05 | 1142.3319880.78 | 1142.1519896.74 | 1142.1219911.18 | 1143.41 |     |      |     |      |
| 19931.76 | 1145.6219933.34 | 1145.4819972.81 | 1144.6120118.81 | 114920172.68    | 1150.71 |     |      |     |      |
| 20209.36 | 1151.0220241.49 | 1150.6120271.36 | 1150.3420284.31 | 1150.8620307.48 | 1151.98 |     |      |     |      |
| 20320.29 | 1159.9220341.89 | 1173.65 20351.2 | 1174.6220353.34 | 1174.4420379.75 | 1173.48 |     |      |     |      |
| 20382.89 | 1173.6220409.35 | 1173.9220416.05 | 1174.6720423.83 | 1174.5520442.01 | 1172.58 |     |      |     |      |
| 20460.02 | 1172.6220478.55 | 1172.39 20520.6 | 1171.7420548.31 | 1171.74 20549.7 | 1171.21 |     |      |     |      |
| 20562.52 | 1173.0220582.01 | 1174.20585.81   | 1173.4620601.09 | 1173.95 20631   | 1170.37 |     |      |     |      |
| 20637.44 | 1170.2220669.02 | 1168.7820684.23 | 1168.3620725.61 | 1167.8620759.01 | 1167.81 |     |      |     |      |
| 20789.16 | 1167.9220808.47 | 1167.9420844.88 | 1168.7220872.96 | 1168.6220965.66 | 1168.9  |     |      |     |      |
| 21027.3  | 1168.8221076.07 | 1168.6521110.08 | 1168.1521152.18 | 1168.2 21209.5  | 1168.4  |     |      |     |      |
| 21239.51 | 1168.4221296.16 | 1168.7321300.44 | 1168.4821319.68 | 1168.3621367.52 | 1168.65 |     |      |     |      |
| 21398.73 | 1169.8221420.45 | 1170.421437.21  | 1172.6521446.59 | 1174.0321469.74 | 1172.77 |     |      |     |      |
| 21504.06 | 1170.5221516.67 | 1171.9421549.22 | 1171.8421605.44 | 1172.1521625.62 | 1172.45 |     |      |     |      |
| 21665.96 | 1172.8221685.93 | 1172.9821724.02 | 1173.0421739.49 | 1173.3521772.55 | 1173.36 |     |      |     |      |
| 21787.21 | 1173.62 21818.2 | 1173.5121856.22 | 1173.6821897.66 | 1173.8421913.09 | 1173.87 |     |      |     |      |
| 21918.05 | 1174.2221942.88 | 1175.7721952.02 | 1176.9321992.43 | 1175.9222007.99 | 1179.74 |     |      |     |      |
| 22011.51 | 1181.2222013.78 | 1181.2622096.38 | 1180.43         |                 |         |     |      |     |      |

Manning's n Values num= 3

| Sta      | n Val       | Sta          | n Val |
|----------|-------------|--------------|-------|
| 17523.28 | .05 19497.4 | .035 20351.2 | .05   |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

|         |         |        |        |        |    |    |
|---------|---------|--------|--------|--------|----|----|
| 19497.4 | 20351.2 | 521.09 | 521.09 | 521.09 | .1 | .3 |
|---------|---------|--------|--------|--------|----|----|

Ineffective Flow num= 2

| Sta L    | Sta R   | Elev    | Permanent |
|----------|---------|---------|-----------|
| 17523.28 | 19497.4 | 1174.52 | F         |
| 20351.22 | 2096.38 | 1174.62 | F         |

Blocked Obstructions num= 5

| Sta L   | Sta R   | Elev    | Sta L   | Sta R   | Elev    | Sta L | Sta R | Elev    |
|---------|---------|---------|---------|---------|---------|-------|-------|---------|
| 19964.6 | 19973.5 | 1183.62 | 20013.1 | 20022   | 1183.62 | 20063 | 20072 | 1183.62 |
| 20098   | 20107   | 1183.62 | 20148.1 | 20156.9 | 1183.62 |       |       |         |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 223.19

INPUT

Description: Blocked obstructions coded in to model peirs for Red Mountain

| Freeway                |                 |                 |                 |                 |         |     |      |     |      |     |      |
|------------------------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|-----|------|
| Station Elevation Data |                 | num= 158        |                 |                 |         |     |      |     |      |     |      |
| Sta                    | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev | Sta | Elev |
| 17650.34               | 1173.3217678.35 | 1174.0217691.98 | 1174.4617707.45 | 1173.9617713.66 | 1174.03 |     |      |     |      |     |      |
| 17790.76               | 1174.4217838.48 | 1174.4517873.53 | 1174.5417925.49 | 1174.5317971.31 | 1174.62 |     |      |     |      |     |      |
| 18059.48               | 1174.3218075.56 | 1175.6318080.64 | 1175.6318128.67 | 1175.0818134.91 | 1175.1  |     |      |     |      |     |      |
| 18215.85               | 1174.9218294.94 | 1175.2218303.18 | 1175.3818329.44 | 1176.18353.75   | 1175.92 |     |      |     |      |     |      |
| 18377.46               | 1175.42 18405.2 | 1175.8318414.83 | 1175.8818420.25 | 1176.1318431.51 | 1176.14 |     |      |     |      |     |      |
| 18444.78               | 1173.4218452.13 | 1172.4218503.94 | 1170.6118522.49 | 1170.3218575.75 | 1170.52 |     |      |     |      |     |      |
| 18632.59               | 1170.8218694.01 | 1171.0718713.69 | 1171.1118726.85 | 1171.2318760.16 | 1171.42 |     |      |     |      |     |      |
| 18793.28               | 1171.8218846.02 | 1172.1618894.04 | 1172.5618923.36 | 1172.6918954.76 | 1171.86 |     |      |     |      |     |      |
| 18960.47               | 1171.8219015.35 | 1171.7719018.92 | 1171.73 19029   | 1173.5719065.48 | 1173.17 |     |      |     |      |     |      |
| 19073.4                | 1173.32 19085.4 | 1172.7319121.97 | 1171.23 19140.2 | 1171.4819145.86 | 1171.46 |     |      |     |      |     |      |
| 19178.28               | 1169.62 19203.7 | 1165.719232.02  | 1165.6919250.52 | 1165.2319298.61 | 1165.58 |     |      |     |      |     |      |
| 19308.15               | 1165.7219316.43 | 1167.93 19339.2 | 1174.3919354.78 | 1175.1919384.55 | 1154.48 |     |      |     |      |     |      |
| 19388.62               | 1151.3219396.89 | 1151.09 19486.2 | 1149.3119607.18 | 1148.1619616.58 | 1148.05 |     |      |     |      |     |      |
| 19631.39               | 1148.3219667.04 | 1148.6919678.55 | 1147.3319705.63 | 1144.51 19751.3 | 1143.44 |     |      |     |      |     |      |
| 19773.84               | 1143.1219795.59 | 1143.4619903.14 | 1145.3420007.95 | 1145.9620019.39 | 1146.18 |     |      |     |      |     |      |
| 20029.14               | 1146.1220094.38 | 1146.2120097.06 | 1146.1920256.51 | 1151.1120296.71 | 1152.42 |     |      |     |      |     |      |
| 20338.31               | 1152.4220347.97 | 1152.6320383.86 | 1153.1320406.21 | 1165.5120422.16 | 1175.98 |     |      |     |      |     |      |
| 20430.26               | 1175.1220438.71 | 1174.4220443.62 | 1176.6820464.89 | 1182.4720488.39 | 1185.81 |     |      |     |      |     |      |
| 20496.39               | 1182.52 20506.6 | 1180.8720518.46 | 1178.8220528.16 | 1174.8920541.08 | 1169.77 |     |      |     |      |     |      |
| 20562.49               | 1169.3220563.76 | 1169.3120598.64 | 1168.86 20616.4 | 1169.29 20627.7 | 1168.93 |     |      |     |      |     |      |
| 20642.95               | 1168.6220684.77 | 1167.7520697.36 | 1167.4320698.87 | 1167.39 20715.6 | 1168.38 |     |      |     |      |     |      |
| 20721.19               | 1168.8220727.36 | 1167.8620745.23 | 1165.5720757.39 | 1166.6820768.47 | 1166.72 |     |      |     |      |     |      |
| 20777.52               | 1167.0220788.42 | 1169.9620798.49 | 1173.4320812.18 | 1173.220825.51  | 1173.35 |     |      |     |      |     |      |
| 20831.24               | 1173.6220854.43 | 1173.5220895.41 | 1173.6920911.32 | 1173.6920964.26 | 1173.5  |     |      |     |      |     |      |
| 21040.47               | 1173.4221055.81 | 1173.3721087.67 | 1172.0921124.64 | 1171.7921133.61 | 1170.78 |     |      |     |      |     |      |
| 21152.32               | 1167.9221213.88 | 1169.6921261.65 | 1169.4821281.84 | 1169.7221345.28 | 1169.63 |     |      |     |      |     |      |
| 21367.09               | 1169.7221416.35 | 1170.5821430.18 | 1170.621465.15  | 1171.01 21486   | 1171.79 |     |      |     |      |     |      |
| 21504.91               | 1172.2221550.81 | 1173.6121599.49 | 1173.6221634.24 | 1173.5921644.23 | 1172.22 |     |      |     |      |     |      |
| 21654.66               | 1175.2221661.33 | 1177.2221703.61 | 1176.0521722.08 | 1175.0121758.01 | 1175.26 |     |      |     |      |     |      |
| 21774.57               | 1175.1221822.57 | 1175.5621855.85 | 1175.6421902.62 | 1176.1321936.99 | 1176.12 |     |      |     |      |     |      |
| 21965.18               | 1176.3222013.15 | 1176.4722076.41 | 1176.922111.19  | 1177.1722215.69 | 1177.37 |     |      |     |      |     |      |
| 22285.39               | 1177.5222321.58 | 1177.75 22379.5 | 1178.13         |                 |         |     |      |     |      |     |      |

| Manning's n Values |             |     |              |     |       |
|--------------------|-------------|-----|--------------|-----|-------|
| Sta                | n Val       | Sta | n Val        | Sta | n Val |
| 17650.34           | .0519354.78 |     | .03520443.62 |     | .05   |

| Bank Sta: | Left     | Right    | Lengths: | Left Channel | Right | Coeff Contr. | Expan. |
|-----------|----------|----------|----------|--------------|-------|--------------|--------|
|           | 19354.78 | 20443.62 |          | 620 514.62   | 430   | .1           | .3     |

| Ineffective Flow |          |         |           | num= 2 |  |
|------------------|----------|---------|-----------|--------|--|
| Sta L            | Sta R    | Elev    | Permanent |        |  |
| 17650.34         | 19354.78 | 1175.19 | F         |        |  |
| 20443.62         | 22379.5  | 1176.68 | F         |        |  |

| Blocked Obstructions |         |         |         |         |         |       |       |         |
|----------------------|---------|---------|---------|---------|---------|-------|-------|---------|
| num= 5               |         |         | Sta L   | Sta R   | Elev    | Sta L | Sta R | Elev    |
| 20060.6              | 20069.5 | 1192.62 | 20113.1 | 20122   | 1192.62 | 20163 | 20172 | 1192.62 |
| 20198                | 20207   | 1192.62 | 20248.1 | 20256.9 | 1192.62 |       |       |         |

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 223.09

INPUT  
 Description: Upstream face of McClintock bridge

| Station Elevation Data |                 |                 |                 |                 |         |     |      |     |      |     |      |
|------------------------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|-----|------|
| num= 40                |                 |                 |                 |                 |         |     |      |     |      |     |      |
| Sta                    | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev | Sta | Elev |
| 18410                  | 1168.4218957.34 | 1173.9219060.89 | 1174.1219241.27 | 1182.8219241.37 | 1174.12 |     |      |     |      |     |      |
| 19241.46               | 1174.1219348.67 | 1163.6219354.58 | 1163.6219408.63 | 1151.6219465.04 | 1150.12 |     |      |     |      |     |      |
| 19470.96               | 1150.1219527.96 | 1167.8219581.41 | 1157.2219587.33 | 1157.2219651.04 | 1148.42 |     |      |     |      |     |      |
| 19697.78               | 1153.62 19703.7 | 1153.62 19767.7 | 1154.0219814.15 | 1154.1219820.07 | 1154.12 |     |      |     |      |     |      |
| 19929.73               | 1154.1219936.44 | 1154.1220000.94 | 1154.1220046.89 | 1154.1220052.81 | 1154.12 |     |      |     |      |     |      |
| 20111.49               | 1154.1220163.27 | 1155.2220169.18 | 1155.2220226.78 | 1158.5220279.64 | 1158.32 |     |      |     |      |     |      |
| 20285.56               | 1158.3220306.86 | 1158.5220363.17 | 1166.2220394.43 | 1171.4220394.53 | 1175.94 |     |      |     |      |     |      |
| 20394.63               | 1182.8220648.67 | 1176.1220914.95 | 1168.5221053.02 | 1170.5221565.84 | 1172.32 |     |      |     |      |     |      |

| Manning's n Values |             |     |              |     |       |
|--------------------|-------------|-----|--------------|-----|-------|
| Sta                | n Val       | Sta | n Val        | Sta | n Val |
| 18410              | .0519241.37 |     | .03520394.53 |     | .05   |

| Bank Sta: | Left     | Right    | Lengths: | Left Channel  | Right  | Coeff Contr. | Expan. |
|-----------|----------|----------|----------|---------------|--------|--------------|--------|
|           | 19241.37 | 20394.53 |          | 139.09 139.09 | 139.09 | .1           | .3     |

| Ineffective Flow |          |         |           | num= 2 |  |
|------------------|----------|---------|-----------|--------|--|
| Sta L            | Sta R    | Elev    | Permanent |        |  |
| 18410            | 19241.37 | 1174.12 | F         |        |  |
| 0394.53          | 21565.84 | 1175.94 | F         |        |  |

BRIDGE

RIVER: Salt  
 REACH: 1 RS: 223.085

INPUT

Description: McClintock Drive  
 Distance from Upstream XS = 27.8  
 Deck/Roadway width = 83.5  
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates  
 num= 21

| Sta      | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord |
|----------|---------|---------|----------|---------|---------|----------|---------|---------|
| 18410    | 1168.42 | 1168.42 | 18957.34 | 1173.92 | 1173.92 | 19060.89 | 1174.12 | 1174.12 |
| 19060.89 | 1174.12 | 1174.12 | 19241.27 | 1182.82 | 1182.82 | 19241.27 | 1182.82 | 1174.12 |
| 19348.67 | 1185.17 | 1178.27 | 19465.04 | 1186.91 | 1180.01 | 19581.41 | 1188.28 | 1181.38 |
| 19697.78 | 1189.08 | 1182.18 | 19814.15 | 1189.22 | 1182.32 | 19930.52 | 1189.15 | 1182.25 |
| 20046.89 | 1188.27 | 1181.37 | 20163.27 | 1186.96 | 1180.06 | 20279.64 | 1185.1  | 1178.2  |
| 20394.43 | 1182.82 | 1175.94 | 20394.63 | 1182.82 | 1182.82 | 20648.67 | 1176.12 | 1176.12 |
| 20914.95 | 1168.52 | 1168.52 | 21053.02 | 1170.52 | 1170.52 | 21565.84 | 1172.32 | 1172.32 |

Upstream Bridge Cross Section Data

Station Elevation Data num= 40

| Sta      | Elev    |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| 18410    | 1168.42 | 18957.34 | 1173.92 | 19060.89 | 1174.12 | 19241.27 | 1182.82 | 19241.37 | 1174.12 |
| 19241.46 | 1174.12 | 19348.67 | 1163.62 | 19354.58 | 1163.62 | 19408.63 | 1151.62 | 19465.04 | 1150.12 |
| 19470.96 | 1150.12 | 19527.96 | 1167.82 | 19581.41 | 1157.22 | 19587.33 | 1157.22 | 19651.04 | 1148.42 |
| 19697.78 | 1153.62 | 19703.7  | 1153.62 | 19767.7  | 1154.02 | 19814.15 | 1154.12 | 19820.07 | 1154.12 |
| 19929.73 | 1154.12 | 19936.44 | 1154.12 | 20000.94 | 1154.12 | 20046.89 | 1154.12 | 20052.81 | 1154.12 |
| 20111.49 | 1154.12 | 20163.27 | 1155.22 | 20169.18 | 1155.22 | 20226.78 | 1158.52 | 20279.64 | 1158.32 |
| 20285.56 | 1158.32 | 20306.86 | 1158.52 | 20363.17 | 1166.22 | 20394.43 | 1171.42 | 20394.53 | 1175.94 |
| 20394.63 | 1182.82 | 20648.67 | 1176.12 | 20914.95 | 1168.52 | 21053.02 | 1170.52 | 21565.84 | 1172.32 |

Manning's n Values

num= 3

| Sta   | n Val | Sta      | n Val | Sta      | n Val |
|-------|-------|----------|-------|----------|-------|
| 18410 | .05   | 19241.37 | .035  | 20394.53 | .05   |

Bank Sta: Left Right Coeff Contr. Expan.  
 19241.37 20394.53 .1 .3

Ineffective Flow num= 2

| Sta L    | Sta R    | Elev    | Permanent |
|----------|----------|---------|-----------|
| 18410    | 19241.37 | 1174.12 | F         |
| 20394.53 | 21565.84 | 1175.94 | F         |

Downstream Deck/Roadway Coordinates

num= 21

| Sta      | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord |
|----------|---------|---------|----------|---------|---------|----------|---------|---------|
| 18410    | 1168.42 | 1168.42 | 18957.34 | 1173.92 | 1173.92 | 19060.89 | 1174.12 | 1174.12 |
| 19060.89 | 1174.12 | 1174.12 | 19241.27 | 1182.82 | 1182.82 | 19241.27 | 1182.82 | 1174.12 |
| 19348.67 | 1185.17 | 1178.27 | 19465.04 | 1186.91 | 1180.01 | 19581.41 | 1188.28 | 1181.38 |
| 19697.78 | 1189.08 | 1182.18 | 19814.15 | 1189.22 | 1182.32 | 19930.52 | 1189.15 | 1182.25 |
| 20046.89 | 1188.27 | 1181.37 | 20163.27 | 1186.96 | 1180.06 | 20279.64 | 1185.1  | 1178.2  |
| 20394.43 | 1182.82 | 1175.94 | 20394.63 | 1182.82 | 1182.82 | 20648.67 | 1176.12 | 1176.12 |
| 20914.95 | 1168.52 | 1168.52 | 21053.02 | 1170.52 | 1170.52 | 21565.84 | 1172.32 | 1172.32 |

Downstream Bridge Cross Section Data

Station Elevation Data num= 40

| Sta      | Elev    |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| 18410    | 1168.42 | 18957.34 | 1173.92 | 19060.89 | 1174.12 | 19241.27 | 1182.82 | 19241.37 | 1174.12 |
| 19241.46 | 1174.12 | 19348.67 | 1163.62 | 19354.58 | 1163.62 | 19408.63 | 1151.62 | 19465.04 | 1150.12 |
| 19470.96 | 1150.12 | 19527.96 | 1167.82 | 19581.41 | 1157.22 | 19587.33 | 1157.22 | 19651.04 | 1148.42 |
| 19697.78 | 1153.62 | 19703.7  | 1153.62 | 19767.7  | 1154.02 | 19814.15 | 1154.12 | 19820.07 | 1154.12 |
| 19929.73 | 1154.12 | 19936.44 | 1154.12 | 20000.94 | 1154.12 | 20046.89 | 1154.12 | 20052.81 | 1154.12 |
| 20111.49 | 1154.12 | 20163.27 | 1155.22 | 20169.18 | 1155.22 | 20226.78 | 1158.52 | 20279.64 | 1158.32 |
| 20285.56 | 1158.32 | 20306.86 | 1158.52 | 20363.17 | 1166.22 | 20394.43 | 1171.42 | 20394.53 | 1175.94 |
| 20394.63 | 1182.82 | 20648.67 | 1176.12 | 20914.95 | 1168.52 | 21053.02 | 1170.52 | 21565.84 | 1172.32 |

Manning's n Values

num= 3

| Sta   | n Val | Sta      | n Val | Sta      | n Val |
|-------|-------|----------|-------|----------|-------|
| 18410 | .05   | 19241.37 | .035  | 20394.53 | .05   |

Bank Sta: Left Right Coeff Contr. Expan.  
 19241.37 20394.53 .1 .3

Ineffective Flow num= 1

| Sta L | Sta R    | Elev    | Permanent |
|-------|----------|---------|-----------|
| 18410 | 19241.37 | 1182.12 | F         |

Upstream Embankment side slope = horiz. to 1.0 vertical  
 Downstream Embankment side slope = horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .95  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Piers = 9

Pier Data

Pier Station Upstream=19351.63 Downstream=19351.63  
 Upstream num= 2

width Elev width Elev  
 5.9 1163.12 5.9 1179.12  
 Downstream num=  
 width Elev width Elev  
 5.9 1163.12 5.9 1179.12

Pier Data  
 Pier Station Upstream= 19468 Downstream= 19468  
 Upstream num=  
 width Elev width Elev  
 5.9 1150.12 5.9 1180.12  
 Downstream num=  
 width Elev width Elev  
 5.9 1150.12 5.9 1180.12

Pier Data  
 Pier Station Upstream=19584.37 Downstream=19584.37  
 Upstream num=  
 width Elev width Elev  
 5.9 1157.12 5.9 1182.12  
 Downstream num=  
 width Elev width Elev  
 5.9 1157.12 5.9 1182.12

Pier Data  
 Pier Station Upstream=19700.74 Downstream=19700.74  
 Upstream num=  
 width Elev width Elev  
 5.9 1153.12 5.9 1183.12  
 Downstream num=  
 width Elev width Elev  
 5.9 1153.12 5.9 1183.12

Pier Data  
 Pier Station Upstream=19817.11 Downstream=19817.11  
 Upstream num=  
 width Elev width Elev  
 5.9 1154.12 5.9 1183.12  
 Downstream num=  
 width Elev width Elev  
 5.9 1154.12 5.9 1183.12

Pier Data  
 Pier Station Upstream=19933.48 Downstream=19933.48  
 Upstream num=  
 width Elev width Elev  
 5.9 1154.12 5.9 1183.12  
 Downstream num=  
 width Elev width Elev  
 5.9 1154.12 5.9 1183.12

Pier Data  
 Pier Station Upstream=20049.85 Downstream=20049.85  
 Upstream num=  
 width Elev width Elev  
 5.9 1154.12 5.9 1182.12  
 Downstream num=  
 width Elev width Elev  
 5.9 1154.12 5.9 1182.12

Pier Data  
 Pier Station Upstream=20166.23 Downstream=20166.23  
 Upstream num=  
 width Elev width Elev  
 5.9 1155.12 5.9 1180.12  
 Downstream num=  
 width Elev width Elev  
 5.9 1155.12 5.9 1180.12

Pier Data  
 Pier Station Upstream= 20282.6 Downstream= 20282.6  
 Upstream num=  
 width Elev width Elev  
 5.9 1158.12 5.9 1179.12  
 Downstream num=  
 width Elev width Elev  
 5.9 1158.12 5.9 1179.12

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy  
 Momentum Cd = 1.2  
 Yarnell Kva1 = 1.05  
 Selected Low Flow Methods = Highest Energy Answer

High Flow Method  
 Energy Only

Additional Bridge Parameters

Add Friction component to Momentum  
 Do not add weight component to Momentum  
 Class B flow critical depth computations use critical depth  
 inside the bridge at the upstream end  
 Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 223.08

INPUT  
 Description: Downstream face of McClintock bridge

| Station Elevation Data |                 | num= 40         |                 |
|------------------------|-----------------|-----------------|-----------------|
| Sta                    | Elev            | Sta             | Elev            |
| 18410                  | 1168.4218957.34 | 1173.9219060.89 | 1174.1219241.27 |
| 19241.46               | 1174.1219348.67 | 1163.6219354.58 | 1163.6219408.63 |
| 19470.96               | 1150.1219527.96 | 1167.8219581.41 | 1157.2219587.33 |
| 19697.78               | 1153.62 19703.7 | 1153.62 19767.7 | 1154.0219814.15 |
| 19929.73               | 1154.1219936.44 | 1154.1220000.94 | 1154.1220046.89 |
| 20111.49               | 1154.1220163.27 | 1155.2220169.18 | 1155.2220226.78 |
| 20285.56               | 1158.3220306.86 | 1158.5220363.17 | 1166.2220394.43 |
| 20394.63               | 1182.8220648.67 | 1176.1220914.95 | 1168.5221053.02 |
|                        |                 |                 | 1170.5221565.84 |
|                        |                 |                 | 1172.32         |

| Manning's n Values |             | num= 3       |       |
|--------------------|-------------|--------------|-------|
| Sta                | n Val       | Sta          | n Val |
| 18410              | .0519241.37 | .03520394.53 | .05   |

| Bank Sta: Left   | Right    | Lengths: Left | Channel   | Right | Coeff Contr. | Expan. |
|------------------|----------|---------------|-----------|-------|--------------|--------|
| 19241.37         | 20394.53 | 170           | 268.54    | 370   | .1           | .3     |
| Ineffective Flow |          | num= 1        |           |       |              |        |
| Sta L            | Sta R    | Elev          | Permanent |       |              |        |
| 18410            | 19241.37 | 1182.12       | F         |       |              |        |

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 223.02

INPUT  
 Description:

| Station Elevation Data |                 | num= 168        |                 |
|------------------------|-----------------|-----------------|-----------------|
| Sta                    | Elev            | Sta             | Elev            |
| 17971.69               | 1173.5219794.78 | 1173.6518010.57 | 1172.3618044.22 |
| 18117.68               | 1169.8218156.47 | 1169.8718175.38 | 1169.4818188.46 |
| 18228.44               | 1170.8218240.95 | 1170.9118256.37 | 1171.2318274.54 |
| 18315.99               | 1173.8218333.85 | 1175.1318341.31 | 1174.4518347.67 |
| 18371.85               | 1171.3218375.45 | 1170.6818412.76 | 117218439.92    |
| 18465.53               | 1170.6218484.53 | 1169.06 18497   | 1169.9318511.43 |
| 18523.02               | 1169.4218528.81 | 1170.5218559.96 | 1169.618569.11  |
| 18612.75               | 1168.0218633.07 | 1165.5818644.79 | 1165.0418665.56 |
| 18713.58               | 1165.0218754.75 | 1165.0718762.54 | 1165.4918767.23 |
| 18781.15               | 1165.7218823.15 | 1165.8718836.52 | 1165.9918854.62 |
| 18889.29               | 1167.1218899.81 | 1168.52 18906.1 | 1169.5418924.93 |
| 18967.55               | 1165.1219008.72 | 1165.0219114.49 | 1165.03 19116.9 |
| 19129.15               | 1165.3219165.22 | 1164.5619183.62 | 1164.5419185.96 |
| 19228.85               | 1167.2219254.14 | 1169.519267.45  | 1168.919280.62  |
| 19307.19               | 1173.0219329.31 | 1175.0919341.36 | 1170.4719389.13 |
| 19418.76               | 1150.2219445.72 | 1150.0819454.69 | 1149.7919514.54 |
| 19592.78               | 1148.92 19612.2 | 1148.4819666.81 | 1147.519701.26  |
| 19765.05               | 1145.9219775.01 | 1145.2819791.43 | 1144.7619821.12 |
| 19839.35               | 1142.1219849.98 | 1142.2719925.51 | 1143.6919940.87 |
| 19982.15               | 1143.32 20026.2 | 1143.8720050.74 | 1144.2720062.44 |
| 20138.82               | 1144.8220209.03 | 1145.2520260.66 | 1146.2820276.37 |
| 20313.92               | 1149.5220324.74 | 1149.4820401.47 | 1160.0420438.92 |
| 20538.9                | 1178.7220545.23 | 1179.4420556.91 | 1179.6220567.11 |
| 20606.17               | 1181.1220612.09 | 1181.2120623.35 | 1183.3620638.78 |
| 20655.98               | 1188.72 20662.2 | 1188.6720689.46 | 1183.120704.25  |
| 20730.77               | 1171.7220741.14 | 1169.8220748.35 | 1167.3720751.64 |
| 20766.25               | 1167.7220816.03 | 1168.3620831.05 | 1168.4520909.51 |
| 21009.27               | 1168.8221081.39 | 1169.4321099.05 | 1169.5421158.92 |
| 21196.89               | 1169.8221236.98 | 1170.0221249.56 | 1170.2221284.25 |
| 21321.62               | 1170.2221331.66 | 1170.1721361.53 | 1170.4721377.75 |
| 21407.41               | 1170.2221438.42 | 1170.5221470.92 | 1171.1221541.91 |
| 21674.4                | 1171.0221749.08 | 1171.9821815.71 | 1172.1821880.09 |
| 21933.59               | 1172.92 21941.3 | 1173.4821971.17 | 1174.0721984.85 |
| 22045.18               | 1177.0222071.91 | 1176.4722094.13 | 1174.47         |

| Manning's n Values |             | num= 3       |       |
|--------------------|-------------|--------------|-------|
| Sta                | n Val       | Sta          | n Val |
| 17971.69           | .0519329.31 | .035 20513.5 | .05   |

Corr\_Effective\_SkyHarbor.rep

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19329.31 20513.5 500 494.97 480 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 17971.6919329.31 1175.09 F  
 20513.522094.13 1174.24 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 222.93

INPUT

Description:

Station Elevation Data num= 194  

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev |
|----------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|
| 18044.81 | 1172.4218059.54 | 1172.218082.34  | 1173.9618085.02 | 1172.9518112.24 | 1169.75 |     |      |     |      |
| 18113.9  | 1169.3218124.59 | 1165.0318127.16 | 1164.4118130.08 | 1164.1118135.27 | 1164.33 |     |      |     |      |
| 18172.95 | 1162.72 18181.4 | 1162.6818188.17 | 1162.0818203.15 | 1161.4718206.38 | 1161.18 |     |      |     |      |
| 18221.12 | 1161.8218234.64 | 1160.9818250.81 | 1160.9618258.55 | 1161.1318270.09 | 1161.19 |     |      |     |      |
| 18289.38 | 1161.8218302.61 | 1162.0418311.85 | 1161.5418323.82 | 1161.718333.46  | 1161.03 |     |      |     |      |
| 18349.35 | 1160.2218374.85 | 1154.6218386.38 | 1152.9118392.15 | 1151.6818410.64 | 1147.09 |     |      |     |      |
| 18415.62 | 1146.7218434.07 | 1146.0918463.53 | 1145.7418486.43 | 1145.2218515.51 | 1145.1  |     |      |     |      |
| 18525.12 | 1144.4218542.97 | 1144.3518577.36 | 1143.6118587.91 | 1143.6718619.96 | 1144.87 |     |      |     |      |
| 18644.69 | 1146.1218653.36 | 1146.318666.31  | 1147.0718693.59 | 1149.3318698.21 | 1149.94 |     |      |     |      |
| 18709.45 | 1152.0218719.21 | 1154.3618725.67 | 1155.2518738.09 | 1157.1418743.38 | 1158.12 |     |      |     |      |
| 18748.91 | 1160.2218756.46 | 1160.2 18770    | 1159.1318787.62 | 1158.9918791.91 | 1159.37 |     |      |     |      |
| 18813.17 | 1158.4218841.62 | 1156.7818858.76 | 1158.1218881.49 | 1160.1418897.61 | 1161.95 |     |      |     |      |
| 18907.73 | 1163.7218909.57 | 1163.3418921.66 | 1162.6518925.78 | 1162.218936.53  | 1162.28 |     |      |     |      |
| 18944.94 | 1160.1218951.65 | 1159.9618969.72 | 1159.3218987.28 | 1158.5618997.79 | 1158.55 |     |      |     |      |
| 19026.88 | 1160.02 19036.5 | 1160.0119047.12 | 1159.7819058.92 | 1159.71 19099.8 | 1160.14 |     |      |     |      |
| 19108.79 | 1160.7219147.63 | 1167.1919162.91 | 1167.2319177.51 | 1166.8119182.74 | 1166.97 |     |      |     |      |
| 19226.65 | 1160.6219240.77 | 1159.5919252.37 | 1159.219268.47  | 1159.4319289.85 | 1159.4  |     |      |     |      |
| 19305.64 | 1157.92 19315.5 | 1156.7219327.75 | 1159.519348.09  | 1165.0219351.76 | 1163.54 |     |      |     |      |
| 19354.63 | 1162.7219361.43 | 1167.62 19371.1 | 1174.2319387.15 | 1173.5919415.35 | 1161.29 |     |      |     |      |
| 19419.6  | 1159.12 19427.4 | 1158.5819448.81 | 1149.1719451.67 | 1147.96 19453.7 | 1147.71 |     |      |     |      |
| 19465.43 | 1148.4219470.76 | 1145.9719475.04 | 1145.58 19484.7 | 1144.2 19505.7  | 1141.03 |     |      |     |      |
| 19533.01 | 1140.6219591.33 | 1139.8219639.73 | 1144.2619644.95 | 1144.6919647.95 | 1144.61 |     |      |     |      |
| 19700.44 | 1144.2219806.44 | 1142.2919818.97 | 1142.1219871.09 | 1141.66 19936.2 | 1142.25 |     |      |     |      |
| 19958.66 | 1142.2220036.35 | 1142.9220049.41 | 1142.9620133.62 | 1144.3320146.15 | 1144.46 |     |      |     |      |
| 20182.57 | 1144.7220225.98 | 1144.7420260.54 | 1146.0920280.58 | 1151.7420311.81 | 1160.15 |     |      |     |      |
| 20316.46 | 1159.8220329.75 | 1159.1720377.76 | 1172.20403.92   | 1172.8220412.11 | 1173.76 |     |      |     |      |
| 20443.67 | 1178.5220455.16 | 1178.4520541.87 | 1193.5420595.84 | 1201.7720620.14 | 1200.72 |     |      |     |      |
| 20626.95 | 1200.3220640.27 | 1199.20653.4    | 1198.6120663.01 | 1198.8120672.83 | 1198.81 |     |      |     |      |
| 20685.41 | 1196.72 20691.5 | 1195.9920704.53 | 1191.8520740.62 | 1180.2420759.66 | 1174.07 |     |      |     |      |
| 20775.41 | 1169.1220783.88 | 1168.46 20787.5 | 1168.2320791.24 | 1167.4920793.55 | 1166.75 |     |      |     |      |
| 20801.17 | 1165.2220802.77 | 1167.5320807.08 | 1167.5620811.98 | 1167.2920812.34 | 1168.88 |     |      |     |      |
| 20813.33 | 1167.42 20817   | 1168.7920827.62 | 1168.6820840.67 | 1166.93 20874.4 | 1166.81 |     |      |     |      |
| 20892.67 | 1167.2220934.23 | 1167.3220939.07 | 1167.3720976.51 | 1171.8520985.15 | 1168.49 |     |      |     |      |
| 21017.72 | 1169.0221088.07 | 1170.0921131.31 | 1170.721159.63  | 1170.6821210.47 | 1171.34 |     |      |     |      |
| 21255.35 | 1171.9221264.52 | 1172.0621268.88 | 1172.1321318.21 | 1174.3221357.38 | 1173.11 |     |      |     |      |
| 21473.22 | 1174.3221515.36 | 1174.6321548.08 | 1175.0421704.73 | 1176.2621756.14 | 1176.42 |     |      |     |      |
| 21889.34 | 1177.1221937.15 | 1177.3822053.19 | 1177.8822078.57 | 1177.6422104.77 | 1178.63 |     |      |     |      |
| 22117.89 | 1179.0222127.78 | 1179.18 22139.5 | 1178.99 22174.8 | 1179.25 22183.4 | 1178.96 |     |      |     |      |
| 22201.98 | 1179.2222206.83 | 1179.422210.88  | 1178.6122214.67 | 1178.52         |         |     |      |     |      |

Manning's n Values num= 3  

| Sta      | n Val | Sta     | n Val        |
|----------|-------|---------|--------------|
| 18044.81 | .05   | 19371.1 | .03520412.11 |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19371.120412.11 470 502.27 520 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 18044.81 19371.1 1174.23 F  
 20412.1122214.67 1173.76 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 222.83

INPUT

Description:

Station Elevation Data num= 207  

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev |
|----------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|
| 17961.21 | 1169.5217965.29 | 1169.6417987.09 | 1169.718016.31  | 1170.4718040.57 | 1171.6  |     |      |     |      |
| 18053.27 | 1171.9218089.71 | 1172.5118126.28 | 1172.1218156.09 | 1170.6618167.04 | 1169.75 |     |      |     |      |
| 18184.34 | 1173.7218186.48 | 1174.1718190.33 | 1169.71 18199.7 | 1168.2918221.05 | 1167.13 |     |      |     |      |
| 18241.73 | 1165.0218253.01 | 1162.8418263.42 | 1160.2118272.82 | 1158.0218277.84 | 1156.12 |     |      |     |      |
| 18292.96 | 1154.6218294.53 | 1152.31 18295.7 | 1152.0618308.08 | 1152.0518322.22 | 1153.48 |     |      |     |      |
| 18337.36 | 1154.6218345.61 | 1157.1318380.53 | 1157.1318393.59 | 1157.8218410.52 | 1157.9  |     |      |     |      |
| 18435.11 | 1160.2218479.88 | 1160.19 18495.4 | 1162.5118515.38 | 1162.7718532.28 | 1161.29 |     |      |     |      |
| 18538.83 | 1161.2218555.97 | 1161.3 18562.6  | 1161.6918579.85 | 1164.9518588.81 | 1164.95 |     |      |     |      |
| 18605.21 | 1163.1218618.77 | 1160.1818626.76 | 1157.7718628.35 | 1157.1118639.46 | 1155.89 |     |      |     |      |

Corr\_Effective\_SkyHarbor.rep

|          |         |          |         |          |         |          |         |          |         |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| 18647.65 | 1154.62 | 18657.1  | 1154.22 | 18666.6  | 1154.62 | 18686.41 | 1154.62 | 18700.37 | 1156.2  |
| 18709.28 | 1157.12 | 18722.91 | 1157.78 | 18741.07 | 1158.26 | 18775.85 | 1158.99 | 18780    | 1158.98 |
| 18789.49 | 1159.42 | 18814.28 | 1160.17 | 18831.01 | 1164.27 | 18842.81 | 1165.04 | 18853.6  | 1165.04 |
| 18905.71 | 1171.32 | 18910.16 | 1171.26 | 18924.78 | 1172.18 | 18934.46 | 1172.28 | 18936.54 | 1171.75 |
| 18959.52 | 1165.02 | 18971.38 | 1164.71 | 18975.93 | 1164.44 | 19001.94 | 1163.32 | 19037.07 | 1163.81 |
| 19059.59 | 1163.82 | 19094.58 | 1164.41 | 19115.59 | 1165.02 | 19122.44 | 1167.76 | 19126.84 | 1169.34 |
| 19129.27 | 1167.72 | 19134.29 | 1165.02 | 19144.01 | 1160.82 | 19145.23 | 1160.05 | 19202.96 | 1160.05 |
| 19225.71 | 1160.82 | 19235.33 | 1160.92 | 19252    | 1160.59 | 19266.38 | 1160.04 | 19299.83 | 1157.21 |
| 19334.93 | 1156.02 | 19365.14 | 1156.19 | 19380.63 | 1158.67 | 19394.72 | 1159.27 | 19409.5  | 1160.11 |
| 19412.49 | 1160.22 | 19414.28 | 1159.54 | 19419.84 | 1160.52 | 19427.45 | 1163.48 | 19450.79 | 1172.06 |
| 19465.83 | 1172.22 | 19478.7  | 1165.57 | 19491.02 | 1159.03 | 19505.27 | 1158.56 | 19516.1  | 1152.16 |
| 19549.08 | 1130.52 | 19573.13 | 1130.51 | 19583.62 | 1130.04 | 19586.27 | 1130.53 | 19598.27 | 1131.19 |
| 19619.16 | 1132.52 | 19643.43 | 1138    | 19649.42 | 1139.66 | 19659.21 | 1139.84 | 19711.71 | 1142.42 |
| 19717.47 | 1143.12 | 19755.3  | 1142.68 | 19854.38 | 1142.39 | 19898.28 | 1142.14 | 19981.21 | 1141.83 |
| 19989.54 | 1141.72 | 20009.71 | 1141.79 | 20095.91 | 1141.75 | 20129.9  | 1141.64 | 20175.64 | 1141.18 |
| 20247.52 | 1140.52 | 20271.76 | 1140.37 | 20345.97 | 1142.43 | 20363.76 | 1148.19 | 20370.31 | 1150.23 |
| 20401.04 | 1158.62 | 20419.29 | 1158.65 | 20461.53 | 1169.92 | 20466.01 | 1171.16 | 20477.75 | 1172.15 |
| 20509.81 | 1179.42 | 20549.27 | 1187.32 | 20554.87 | 1188.51 | 20557.9  | 1188.42 | 20575    | 1188.36 |
| 20609.25 | 1189.12 | 20613.63 | 1189.05 | 20631.69 | 1189.85 | 20662.3  | 1191.78 | 20676.58 | 1191.07 |
| 20684.69 | 1190.62 | 20698.98 | 1190.56 | 20708.31 | 1190.67 | 20744.71 | 1189.89 | 20760.91 | 1189.9  |
| 20790.04 | 1191.32 | 20803.44 | 1187.71 | 20833.92 | 1179.62 | 20865.39 | 1169.28 | 20866.62 | 1169.27 |
| 20901.79 | 1167.82 | 20913.97 | 1166.74 | 20923.87 | 1166.56 | 20936.75 | 1168.96 | 20944.23 | 1169.08 |
| 21041.84 | 1174.72 | 21060.9  | 1174.16 | 21077.54 | 1174.07 | 21146.04 | 1172.62 | 21231.63 | 1172.98 |
| 21288.53 | 1174.12 | 21290.92 | 1173.68 | 21309.06 | 1173.66 | 21320.45 | 1174.57 | 21339.54 | 1173.84 |
| 21345.9  | 1171.82 | 21363.31 | 1168.72 | 21373.76 | 1168.56 | 21399.93 | 1168.79 | 21408.61 | 1171.46 |
| 21416.67 | 1174.12 | 21433.8  | 1174.13 | 21461.03 | 1174.03 | 21465.67 | 1174.14 | 21467.08 | 1173.76 |
| 21505.24 | 1166.52 | 21510.85 | 1166.48 | 21522.52 | 1167.83 | 21538.01 | 1167.38 | 21590.57 | 1167.76 |
| 21602.98 | 1165.32 | 21619.14 | 1161.31 | 21627.31 | 1160.55 | 21649.11 | 1161.52 | 21673.25 | 1160.94 |
| 21704.37 | 1160.12 | 21712.13 | 1159.99 | 21751.87 | 1160.69 | 21787.6  | 1167.53 | 21817.59 | 1165.89 |
| 21841.71 | 1165.62 | 21855.88 | 1165.86 | 21924.9  | 1166.59 | 21939.97 | 1166.53 | 21947.94 | 1166.64 |
| 22001.19 | 1166.02 | 22058.68 | 1167.91 | 22101.69 | 1174.03 | 22109.78 | 1175.32 | 22111.55 | 1175.25 |
| 22121.15 | 1176.12 | 22125.94 | 1174.79 | 22132.03 | 1173.43 | 22144.69 | 1174.07 | 22165.48 | 1173.63 |
| 22179.43 | 1173.32 | 22216.33 | 1173.08 |          |         |          |         |          |         |

|                      |              |     |
|----------------------|--------------|-----|
| Manning's n Values   | num=         | 3   |
| Sta n Val Sta n Val  |              |     |
| 17961.21 .0519465.83 | .03520477.75 | .05 |

|                          |                             |              |        |
|--------------------------|-----------------------------|--------------|--------|
| Bank Sta: Left Right     | Lengths: Left Channel Right | Coeff Contr. | Expan. |
| 19465.8320477.75         | 497.11 497.11 497.11        | .1           | .3     |
| Ineffective Flow num=    | 2                           |              |        |
| Sta L Sta R Elev         | Permanent                   |              |        |
| 17961.2119465.83 1172.22 | F                           |              |        |
| 20477.7522216.33 1172.15 | F                           |              |        |

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 222.74

INPUT  
 Description:

|                                     |                 |                 |                 |         |
|-------------------------------------|-----------------|-----------------|-----------------|---------|
| Station Elevation Data              | num=            | 161             |                 |         |
| Sta Elev Sta Elev Sta Elev Sta Elev |                 |                 |                 |         |
| 17982.09 1172.9217992.53            | 1172.0817996.32 | 1171.9818032.69 | 1169.5718053.23 | 1170.85 |
| 18067.98 1174.82 18074.2            | 1173.45 18096.5 | 1179.2518098.56 | 1178.9418122.76 | 1173.65 |
| 18132.05 1172.1218158.62            | 1170.6218174.89 | 1169.518208.93  | 1169.3218216.61 | 1169.45 |
| 18232.17 1169.5218267.41            | 1169.8718317.51 | 1170.9818334.53 | 1171.3318358.54 | 1172.36 |
| 18373.22 1170.3218411.05            | 1164.8618436.87 | 1165.5318463.27 | 1166.1418480.46 | 1169.15 |
| 18508.28 1174.8218515.09            | 1176.18533.45   | 1174.26 18583.6 | 1168.4118588.28 | 1167.75 |
| 18605.22 1167.2218653.94            | 1165.34 18673.1 | 1169.3118710.22 | 1175.57 18720.1 | 1176.21 |
| 18730.18 1172.4218745.53            | 1169.4518755.93 | 1169.7818773.24 | 1168.818779.21  | 1168.37 |
| 18799.28 1168.9218826.98            | 1175.6418847.47 | 1180.6318872.64 | 1174.6518901.41 | 1168.49 |
| 18909.22 1168.9218942.54            | 1169.9418959.71 | 1169.8918964.66 | 1171.8518972.24 | 1172.71 |
| 18980.05 1171.7218988.04            | 1171.0519017.16 | 1175.5119090.23 | 1161.1119099.73 | 1160.56 |
| 19164.68 1158.1219180.85            | 1157.2119200.88 | 1156.1719220.13 | 1155.2219233.74 | 1155.96 |
| 19241.42 1155.92 19245.8            | 1156.4419257.91 | 1154.1119276.54 | 1157.919292.29  | 1158.84 |
| 19301.43 1159.9219319.12            | 1162.8619322.64 | 1163.6919341.09 | 1156.5919364.63 | 1147.77 |
| 19395.57 1146.6219411.84            | 1146.9419474.07 | 1167.19 19487.8 | 1171.5119506.54 | 1174.05 |
| 19522.71 1168.0219549.67            | 1157.7419563.25 | 1158.1419596.55 | 1138.5619598.23 | 1137.81 |
| 19629.09 1137.2219639.29            | 1136.28 19653.9 | 1139.5419659.49 | 1140.2219700.97 | 1140.79 |
| 19764.93 1141.4219836.78            | 1142.6319894.72 | 1143.8319925.21 | 1142.5620018.05 | 1142.25 |
| 20037.37 1142.5220062.45            | 1142.63 20167.3 | 1142.8620257.17 | 1142.9620313.38 | 1142.99 |
| 20371.73 1143.1220391.45            | 1142.9820450.23 | 1141.8920455.53 | 1141.8320466.88 | 1143.64 |
| 20477.89 1145.6220491.97            | 1147.12 20500.5 | 1151.9420505.97 | 1154.7320520.94 | 1154.67 |
| 20531.04 1158.9220535.25            | 1158.95 20546.8 | 1158.6620591.55 | 1170.5920603.24 | 1170.9  |
| 20618.71 1171.1220672.42            | 1175.220694.37  | 1176.1820708.79 | 1177.6820722.38 | 1179.19 |
| 20727.88 1179.72 20764.4            | 1183.4120774.47 | 1184.6220786.38 | 1185.8920818.82 | 1186.09 |
| 20847.26 1186.12 20877.3            | 1185.3220881.97 | 1185.3220885.59 | 1184.6220892.04 | 1185.57 |
| 20900.03 1182.6220903.33            | 1179.7920951.64 | 1163.41 20972.4 | 1164.1321006.74 | 1159.68 |
| 21022.81 1159.4221045.77            | 1159.3421073.73 | 1159.7521119.61 | 1160.121142.99  | 1160.18 |
| 21210.54 1159.5221242.07            | 1159.03 21264.3 | 1158.58 21271.2 | 1158.5821311.68 | 1158.23 |
| 21335.69 1158.1221344.52            | 1158.4221396.55 | 1158.9621419.85 | 1159.4121471.72 | 1159.94 |
| 21481.43 1160.0221517.63            | 1160.4121527.65 | 1160.4421541.52 | 1161.1521547.73 | 1161.57 |
| 21551.84 1162.7221587.19            | 1172.92 21595.8 | 1171.8821601.57 | 1171.5 21616    | 1168.26 |
| 21620.18 1166.7221633.88            | 1167.6821667.59 | 1169.4321681.23 | 1170.9921731.75 | 1171.73 |
| 21738.87 1171.72                    |                 |                 |                 |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 17982.09 .0519506.54 .03520603.24 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19506.5420603.24 482.71 482.71 482.71 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 17982.0919506.54 1174.05 F  
 20603.2421738.87 1170.9 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 222.65

INPUT  
 Description:

Station Elevation Data num= 155

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev    | Sta     | Elev | Sta | Elev |
|----------|-----------------|-----------------|-----------------|-----------------|---------|---------|------|-----|------|
| 17404.99 | 1173.8217455.15 | 1173.4717594.58 | 1172.7117610.45 | 1174.89         | 17630.6 | 1180.18 |      |     |      |
| 17638.11 | 1179.0217712.52 | 1165.5917721.07 | 1167.2417728.33 | 1168.417752.53  | 1169.43 |         |      |     |      |
| 17771.9  | 1168.9217779.32 | 1169.6317803.99 | 1169.8117814.02 | 1168.9417816.45 | 1168.46 |         |      |     |      |
| 17824.79 | 1167.4217834.91 | 1165.58 17861.4 | 1161.4617873.47 | 1163.3717930.08 | 1174.37 |         |      |     |      |
| 17936.15 | 1173.8217941.52 | 1173.8817965.96 | 1173.3317984.66 | 1171.7918000.74 | 1170.01 |         |      |     |      |
| 18014.08 | 1169.5218065.91 | 1164.1718071.71 | 1163.4618101.15 | 1166.7518108.42 | 1167.67 |         |      |     |      |
| 18123.61 | 1169.2218134.43 | 1169.6718155.83 | 1169.8518233.81 | 1170.3318246.71 | 1171    |         |      |     |      |
| 18272.02 | 1172.2218285.58 | 1173.1818324.19 | 1174.25 18330.8 | 1172.5618373.38 | 1169.11 |         |      |     |      |
| 18419    | 1169.7218428.86 | 1169.7818485.85 | 1170.4318500.56 | 1172.1818513.19 | 1170.77 |         |      |     |      |
| 18535.63 | 1167.62 18556   | 1165.23 18580.9 | 1165.8618595.32 | 1166.1518603.14 | 1167.92 |         |      |     |      |
| 18637.29 | 1176.2218661.17 | 1169.318678.19  | 1164.0518682.19 | 1164.1718707.41 | 1165.35 |         |      |     |      |
| 18713.37 | 1166.1218740.98 | 1168.7218748.05 | 1168.0418762.86 | 1166.0718780.67 | 1164.82 |         |      |     |      |
| 18809.79 | 1167.1218837.54 | 1171.3918852.87 | 1171.8918873.86 | 1173.4818881.29 | 1172.81 |         |      |     |      |
| 18926.37 | 1165.9218934.97 | 1165.8818985.26 | 1165.818991.65  | 1166.5819036.98 | 1173.38 |         |      |     |      |
| 19041.3  | 1173.7219060.89 | 1171.2719075.83 | 1166.4719108.82 | 1165.2919143.06 | 1163.74 |         |      |     |      |
| 19162.71 | 1158.2219197.45 | 1156.719213.69  | 1155.5719241.35 | 1156.719286.86  | 1156.32 |         |      |     |      |
| 19320.75 | 1155.0219351.72 | 1155.2119400.99 | 1153.8319440.57 | 1153.7819449.53 | 1153.5  |         |      |     |      |
| 19485.79 | 1165.2219496.37 | 1166.4419518.27 | 1173.1619534.96 | 1173.0119551.91 | 1167.58 |         |      |     |      |
| 19581.29 | 1157.4219594.59 | 1157.5719603.69 | 1153.1319624.13 | 1143.7 19658.7  | 1143.57 |         |      |     |      |
| 19665.28 | 1143.6219673.04 | 1146.6619673.96 | 1146.3219688.76 | 1142.319698.97  | 1143.36 |         |      |     |      |
| 19764    | 1144.62 19808.2 | 1145.4719938.09 | 1143.4419942.81 | 1143.3120064.62 | 1142.26 |         |      |     |      |
| 20179.57 | 1143.3220212.29 | 1143.3720266.54 | 1144.6 20341.2  | 1146.4420378.62 | 1145.57 |         |      |     |      |
| 20399.95 | 1144.8220414.25 | 1144.4420445.28 | 1144.2120453.86 | 1143.7420485.29 | 1143.88 |         |      |     |      |
| 20511.56 | 1143.7220521.79 | 1143.520543.11  | 1145.8520548.38 | 1145.7420567.92 | 1145.94 |         |      |     |      |
| 20575.16 | 1145.8220588.35 | 1145.5120613.27 | 1145.37 20632.9 | 1145.12 20668.5 | 1145.16 |         |      |     |      |
| 20713.81 | 1144.3220780.36 | 1143.8720805.06 | 1143.4220883.73 | 1141.4720935.22 | 1140.87 |         |      |     |      |
| 21003.81 | 1162.5221126.11 | 1165.821192.48  | 1145.7521221.17 | 1145.8221231.48 | 1145.96 |         |      |     |      |
| 21245.6  | 1146.42 21256.9 | 1150.9421270.39 | 1157.621279.83  | 1156.5821291.04 | 1155.9  |         |      |     |      |
| 21301.04 | 1164.92 21310.2 | 1171.2521321.95 | 1170.621323.69  | 1170.1621347.73 | 1167.16 |         |      |     |      |
| 21353.28 | 1167.0221374.94 | 1167.6521404.93 | 1168.8221441.38 | 1170.4921454.58 | 1171.75 |         |      |     |      |
| 21464.01 | 1171.9221488.71 | 1171.6421502.48 | 1171.3621543.81 | 1170.8221549.79 | 1170.92 |         |      |     |      |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 17404.99 .0519518.27 .03521126.11 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19518.2721126.11 525 522.87 470 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 17404.9919518.27 1173.16 F  
 20640.7521549.79 1170.12 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 222.55

INPUT  
 Description:

Station Elevation Data num= 116

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev |
|----------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|
| 17744.06 | 1175.9217756.47 | 1175.2717762.55 | 1175.117806.58  | 1174.7817834.02 | 1174.49 |     |      |     |      |
| 17897.72 | 1173.6217912.67 | 1173.5417936.16 | 1174.3317971.06 | 1179.218016.62  | 1171.31 |     |      |     |      |
| 18043.32 | 1172.9218075.87 | 1173.95 18095.2 | 1172.1318100.43 | 1172.9418121.15 | 1173.29 |     |      |     |      |
| 18122.99 | 1173.52 18128.9 | 1177.9618143.27 | 1175.6918171.07 | 1170.9918204.45 | 1171.73 |     |      |     |      |
| 18211.64 | 1172.2218243.71 | 1178.28 18293.5 | 1172.2618308.83 | 1170.918326.93  | 1169.49 |     |      |     |      |
| 18356.47 | 1168.3218528.14 | 1170.1518566.48 | 1170.5918595.99 | 1172.04 18646.3 | 1172.94 |     |      |     |      |
| 18668.09 | 1173.0218678.44 | 1173.03 18698.5 | 1169.2218705.62 | 1168.6318755.44 | 1166.95 |     |      |     |      |
| 18759.49 | 1167.8218768.93 | 1168.218777.73  | 1167.9618801.44 | 1167.7118860.97 | 1166.51 |     |      |     |      |
| 19004.58 | 1166.2219009.16 | 1166.3619013.63 | 1166.1519062.68 | 1165.6519076.86 | 1166.52 |     |      |     |      |
| 19103.91 | 1166.62 19151.9 | 1167.1119161.32 | 1167.0419209.63 | 1167.4319216.64 | 1167.32 |     |      |     |      |
| 19241.21 | 1161.7219298.08 | 1149.7919394.55 | 1149.419419.11  | 1149.4319448.19 | 1158.97 |     |      |     |      |
| 19489.95 | 1173.0219493.48 | 1172.5419501.76 | 1171.8619533.66 | 1161.12 19546.5 | 1156.6  |     |      |     |      |
| 19566.54 | 1157.6219569.57 | 1158.4419572.55 | 1156.5819585.14 | 1147.8619593.28 | 1146.7  |     |      |     |      |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 19627.97 | 1147.5219680.55 | 1147.6919710.26 | 1148.0219719.38 | 1149.8719726.64 | 1150.92 |
| 19742.6  | 1145.9219747.24 | 1144.8419752.29 | 114619769.32    | 1149.5919781.32 | 1147.57 |
| 19790.31 | 1147.5219861.96 | 1147.2619905.92 | 1146.419999.24  | 1143.7220018.77 | 1143.36 |
| 20134.34 | 1142.6220140.11 | 1142.7920204.62 | 1145.1420265.64 | 1146.12 20342.6 | 1145.27 |
| 20404.82 | 1144.8220491.58 | 1144.6920531.64 | 1144.37 20539.7 | 1144.420651.51  | 1142.31 |
| 20679.09 | 1141.7220708.14 | 1141.8320819.91 | 1142.2120839.79 | 1142.8120881.49 | 1144.43 |
| 20944.38 | 1145.9220948.55 | 1145.84 20963.9 | 114520996.56    | 1151.3621031.97 | 1157.44 |
| 21042.88 | 1159.6221063.95 | 1157.7521069.25 | 1159.3621091.25 | 1166.8821110.23 | 1172.24 |
| 21117.13 | 1171.3221127.04 | 1169.1521154.97 | 1159.1621158.21 | 1159.5921163.21 | 1159.22 |
| 21174.3  | 1176.8221180.73 | 1179.4221182.91 | 1179.7821220.99 | 1168.9721236.18 | 1176.05 |
| 21239.44 | 1176.62         |                 |                 |                 |         |

Manning's n Values num= 3

|          |             |             |       |     |       |
|----------|-------------|-------------|-------|-----|-------|
| Sta      | n Val       | Sta         | n Val | Sta | n Val |
| 17744.06 | .0419489.95 | .0321110.23 |       |     | .04   |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

|                  |  |     |       |     |    |    |
|------------------|--|-----|-------|-----|----|----|
| 19489.9521110.23 |  | 530 | 514.6 | 510 | .1 | .3 |
|------------------|--|-----|-------|-----|----|----|

Ineffective Flow num= 2

|                  |         |      |           |
|------------------|---------|------|-----------|
| Sta L            | Sta R   | Elev | Permanent |
| 17744.0619489.95 | 1173.02 |      | F         |
| 2079521239.44    | 1172.12 |      | F         |

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 222.45

INPUT  
 Description:

Station Elevation Data num= 130

|          |                 |                 |                 |                 |         |     |      |     |      |
|----------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|
| Sta      | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev |
| 17826.14 | 1168.2217847.35 | 1167.9517867.83 | 1167.83 17896.5 | 1167.9217909.57 | 1168.7  |     |      |     |      |
| 17929.22 | 1169.1217933.44 | 1168.7217945.88 | 1168.6617964.38 | 1168.5 18000.7  | 1168.47 |     |      |     |      |
| 18014.83 | 1168.7218040.52 | 1168.6918066.47 | 1168.7718080.29 | 1168.8518123.92 | 1169.21 |     |      |     |      |
| 18131.62 | 1169.5218134.38 | 1170.2 18154    | 1169.3218212.81 | 1170.0818217.63 | 1170.29 |     |      |     |      |
| 18231.89 | 1172.0218236.14 | 1169.2218313.15 | 1168.9618357.54 | 1169.1318365.31 | 1169.73 |     |      |     |      |
| 18405.52 | 1170.9218432.68 | 1171.518458.94  | 1176.3718467.92 | 1177.4518491.25 | 1171.06 |     |      |     |      |
| 18506.43 | 1167.7218562.53 | 1168.6218570.92 | 1168.8118593.26 | 1169.5818623.09 | 1173.18 |     |      |     |      |
| 18651.32 | 1181.6218666.72 | 1174.9718692.67 | 1171.7118721.79 | 1169.9318740.05 | 1170.47 |     |      |     |      |
| 18748.81 | 1170.6218764.51 | 1171.3418770.88 | 1170.78 18786.1 | 1169.14 18853.5 | 1169.75 |     |      |     |      |
| 18866.83 | 1170.1218869.66 | 1169.6218875.57 | 1168.2718880.81 | 1166.7218907.18 | 1160.15 |     |      |     |      |
| 18921.75 | 1163.8218935.89 | 1167.5218956.79 | 1168.4618982.03 | 1174.4219015.99 | 1172.09 |     |      |     |      |
| 19048.41 | 1172.5219075.35 | 1173.95 19087.5 | 1173.5519130.27 | 1172.919142.75  | 1168.87 |     |      |     |      |
| 19154.41 | 1164.9219163.56 | 1166.1219175.09 | 1165.6219201.66 | 1160.1619213.04 | 1159    |     |      |     |      |
| 19233.35 | 1155.72 19253   | 1152.9219268.39 | 1153.0819365.44 | 1153.3719368.91 | 1151.09 |     |      |     |      |
| 19388.71 | 1157.8219435.01 | 1173.3619444.85 | 1171.8819461.47 | 1167.0319477.62 | 1162.8  |     |      |     |      |
| 19495.51 | 1157.5219502.85 | 1157.4619515.29 | 1157.6919527.51 | 1151.8319535.78 | 1147.71 |     |      |     |      |
| 19536.81 | 1147.7219644.25 | 1145.1519648.81 | 1145.0719707.18 | 1145.5619783.36 | 1146.14 |     |      |     |      |
| 19789.94 | 1145.5219797.04 | 1147.7819802.38 | 1149.2719813.62 | 1146.9219828.92 | 1143.26 |     |      |     |      |
| 19844.54 | 1145.2219893.28 | 1144.2319913.38 | 1143.5519993.19 | 1141.7320050.51 | 1141.66 |     |      |     |      |
| 20076.37 | 1143.4220156.81 | 1145.78 20186.3 | 1145.6920259.79 | 1144.54 20320.2 | 1143.75 |     |      |     |      |
| 20357.92 | 1143.5220420.64 | 1144.2920455.71 | 1144.5920504.95 | 1144.5720589.88 | 1144.45 |     |      |     |      |
| 20612.55 | 1144.6220668.97 | 1145.2720725.94 | 1145.8320759.88 | 1146.5720809.08 | 1158.07 |     |      |     |      |
| 20816.37 | 1159.7220823.32 | 1159.5720847.23 | 1159.2320863.63 | 1165.0320877.99 | 1165.79 |     |      |     |      |
| 20879.89 | 1166.0220893.74 | 1171.2620896.64 | 1172.220908.16  | 1171.4720922.96 | 1167.35 |     |      |     |      |
| 20941.89 | 1167.9220980.46 | 1169.1721028.71 | 1168.9621064.77 | 1168.7821080.34 | 1168.81 |     |      |     |      |
| 21162.91 | 1169.1221209.22 | 1168.9421232.13 | 1168.6221248.59 | 1168.8521260.16 | 1168.77 |     |      |     |      |

Manning's n Values num= 3

|          |             |             |       |
|----------|-------------|-------------|-------|
| Sta      | n Val       | Sta         | n Val |
| 17826.14 | .0419435.01 | .0320896.64 | .04   |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

|                  |  |     |        |     |    |    |
|------------------|--|-----|--------|-----|----|----|
| 19435.0120896.64 |  | 420 | 480.98 | 550 | .1 | .3 |
|------------------|--|-----|--------|-----|----|----|

Ineffective Flow num= 2

|                  |         |      |           |
|------------------|---------|------|-----------|
| Sta L            | Sta R   | Elev | Permanent |
| 17826.1419435.01 | 1173.36 |      | F         |
| 20896.6421260.16 | 1172.2  |      | F         |

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 222.36

INPUT  
 Description:

Station Elevation Data num= 113

|          |                 |                 |                 |                 |         |     |      |     |      |
|----------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|
| Sta      | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev |
| 17829.74 | 1167.7217834.64 | 1168.5717859.39 | 1170.18 17874.8 | 1169.9717883.61 | 1168.56 |     |      |     |      |
| 17891.32 | 1168.1217905.68 | 1168.8217910.66 | 1168.97 17931.6 | 1168.7717963.15 | 1171.41 |     |      |     |      |
| 17976.79 | 1172.2218020.15 | 1181.0718025.61 | 1181.9918030.98 | 1183.2918059.18 | 1175.88 |     |      |     |      |
| 18085.25 | 1173.4218126.63 | 1170.4218145.23 | 1169.9318183.43 | 1169.0118206.06 | 1170.26 |     |      |     |      |
| 18216.67 | 1170.6218225.99 | 1169.4618227.08 | 1168.9618279.16 | 1169.0418386.63 | 1169.48 |     |      |     |      |
| 18397.83 | 1169.4218401.63 | 1169.5318496.65 | 1171.2518505.92 | 1169.3318516.61 | 1169.56 |     |      |     |      |
| 18531.18 | 1168.6218559.17 | 1175.5918574.35 | 1180.3718597.15 | 1177.9518610.09 | 1172.7  |     |      |     |      |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 18625.22 | 1171.2218658.09 | 1170.5818725.52 | 1167.4918730.59 | 1168.1818743.89 | 1169.64 |
| 18764.11 | 1172.1218779.5  | 1171.2218793.72 | 1170.5618798.51 | 1169.6218801.48 | 1169.51 |
| 18877.88 | 1167.6218888.14 | 1167.6218925.88 | 1167.1518973.11 | 1167.7518993.98 | 1167.98 |
| 19007.51 | 1168.3219014.24 | 1167.1919037.42 | 1161.3419048.71 | 1158.4219055.17 | 1160.43 |
| 19074.18 | 1166.6219172.16 | 1166.3919211.16 | 1166.119222.42  | 1166.8419247.58 | 1159.76 |
| 19271.77 | 1153.2219306.63 | 1153.1519368.58 | 1153.1819434.45 | 1171.6719443.83 | 1170.94 |
| 19449.19 | 1169.1219486.22 | 1157.1719507.55 | 1157.6619520.37 | 1157.6919541.32 | 1152.82 |
| 19563.69 | 1147.7219661.39 | 1146.8819678.04 | 1146.8319753.28 | 1144.1919759.31 | 1144    |
| 19766.05 | 1145.6219782    | 1140.9919785.96 | 1141.6219802.48 | 1143.9219806.33 | 1143.05 |
| 19809.02 | 1142.1219818.13 | 1142.9319874.46 | 1144.2319940.87 | 1145.6819953.56 | 1145.94 |
| 20023.18 | 1144.3220089.25 | 1142.7320110.35 | 1142.8520205.36 | 1143.7920230.2  | 1143.55 |
| 20341.82 | 1143.4220370.04 | 1143.5220462.13 | 1143.2720507.39 | 1143.0520520.17 | 1144.04 |
| 20552.46 | 1145.1220589.84 | 1153.4120612.04 | 1158.3220628.64 | 1158.5920643.46 | 1161.99 |
| 20682.64 | 1170.9220693.89 | 1171.4320706.91 | 1166.4220710.69 | 1166.4520728.15 | 1166.24 |
| 20754.56 | 1163.1220763.64 | 1161.620765.36  | 1162.1220778.51 | 1163.4120813.26 | 1165.5  |
| 20835.33 | 1165.8220851.05 | 1165.0720893.86 | 1165.93         |                 |         |

|                    |             |             |       |
|--------------------|-------------|-------------|-------|
| Manning's n Values |             | num=        | 3     |
| Sta                | n Val       | Sta         | n Val |
| 17829.74           | .0419434.45 | .0320693.89 | .04   |

|                  |          |               |           |       |       |        |        |
|------------------|----------|---------------|-----------|-------|-------|--------|--------|
| Bank Sta: Left   | Right    | Lengths: Left | Channel   | Right | Coeff | Contr. | Expan. |
| 19434.45         | 20693.89 | 630           | 487.06    | 380   | .1    | .3     |        |
| Ineffective Flow | num=     | 2             |           |       |       |        |        |
| Sta L            | Sta R    | Elev          | Permanent |       |       |        |        |
| 17829.74         | 19434.45 | 1171.67       | F         |       |       |        |        |
| 20693.89         | 20893.86 | 1171.43       | F         |       |       |        |        |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 222.27

INPUT

Description:

|                        |                 |                 |                 |                 |         |         |      |
|------------------------|-----------------|-----------------|-----------------|-----------------|---------|---------|------|
| Station Elevation Data |                 | num=            | 131             |                 |         |         |      |
| Sta                    | Elev            | Sta             | Elev            | Sta             | Elev    | Sta     | Elev |
| 18229.32               | 1168.2218250.05 | 1168.8718278.94 | 1169.718285.44  | 1169.2618297.52 | 1170.24 |         |      |
| 18329.34               | 1171.9218330.87 | 1171.8818339.83 | 1172.6218364.66 | 1172.55         | 18371   | 1173.87 |      |
| 18375.68               | 1173.0218417.64 | 1166.2818452.44 | 1166.118464.69  | 1166.2718471.17 | 1166.22 |         |      |
| 18538.67               | 1166.6218554.41 | 1166.618587.27  | 1166.5518589.89 | 1166.7518615.02 | 1167.56 |         |      |
| 18625.91               | 1167.5218650.9  | 1166.2718657.49 | 1166.1718668.84 | 1167.7118673.08 | 1167.56 |         |      |
| 18717.3                | 1166.9218741.7  | 1166.2518764.17 | 1167.0918767.26 | 1167.0118812.34 | 1165.44 |         |      |
| 18834.79               | 1165.1218851.48 | 1164.5918861.98 | 1165.5718904.93 | 1167.1918912.29 | 1167.09 |         |      |
| 18927.38               | 1166.6218950.33 | 1166.3618972.81 | 1165.4318980.73 | 1166.3918986.42 | 1167.48 |         |      |
| 19008.46               | 1171.9219012.93 | 1171.3519029.55 | 1170.2119075.71 | 1165.819120.33  | 1163.97 |         |      |
| 19137.67               | 1162.4219201.2  | 1165.219216.26  | 1166.7519218.15 | 1166.7719257.26 | 1166.07 |         |      |
| 19328.26               | 1168.0219358.6  | 1168.5119374.56 | 1168.2319385.2  | 1167.7619399.5  | 1168.21 |         |      |
| 19430.27               | 1169.1219454.16 | 1166.719474.54  | 1171.819486.26  | 1170.2419517.16 | 1162.3  |         |      |
| 19533.88               | 1157.8219554.39 | 1155.319588.86  | 1148.4219597.05 | 1146.8819600.22 | 1146.14 |         |      |
| 19651.54               | 1145.0219713.94 | 1144.5319735.4  | 1144.4519787.27 | 1143.5719800.41 | 1147.67 |         |      |
| 19820.21               | 1142.5219825.33 | 1141.3119845.23 | 1144.0219852.13 | 1143.0619867.25 | 1143.79 |         |      |
| 19999.63               | 1143.5220113.28 | 1144.7620129.11 | 1144.9120164.57 | 1144.220258.07  | 1142.15 |         |      |
| 20342.57               | 1142.9220392.03 | 1143.5120476.1  | 1144.6420488.7  | 1144.8720507.64 | 1148.86 |         |      |
| 20554.17               | 1157.9220568.05 | 1158.320577.97  | 1158.7220605.05 | 1166.2120624.27 | 1171.24 |         |      |
| 20636.35               | 1171.0220655.6  | 1166.1520690.53 | 1164.3820715.35 | 1162.4620740.17 | 1160.91 |         |      |
| 20753.58               | 1160.8220785.62 | 1160.9820816.23 | 1161.3120824    | 1161.5820842.81 | 1163.34 |         |      |
| 20855.55               | 1164.6220868.51 | 1164.2620883.38 | 1165.2120895.84 | 1165.1120931.13 | 1166.07 |         |      |
| 21041.27               | 1168.0221067.94 | 1167.9721130.05 | 1167.8621136.02 | 1167.9621184.06 | 1168.06 |         |      |
| 21195.48               | 1168.0221255.31 | 1167.9421260.95 | 1167.8621313.65 | 1168.1621421.15 | 1167.55 |         |      |
| 21464.35               | 1167.5221495.94 | 1173.5321510.65 | 1173.7621536.01 | 1174.3721550.81 | 1177.38 |         |      |
| 21574.05               | 1181.8221595.71 | 1182.8621599.29 | 1182.9721685.97 | 1186.221687.38  | 1186.1  |         |      |
| 21734.88               | 1181.9221743.24 | 1178.8921756.8  | 1173.1621769.18 | 1170.3721771.73 | 1170.52 |         |      |
| 21818.53               | 1173.82         |                 |                 |                 |         |         |      |

|                    |             |             |       |
|--------------------|-------------|-------------|-------|
| Manning's n Values |             | num=        | 3     |
| Sta                | n Val       | Sta         | n Val |
| 18229.32           | .0419474.54 | .0320624.27 | .04   |

|                  |          |               |           |       |       |        |        |
|------------------|----------|---------------|-----------|-------|-------|--------|--------|
| Bank Sta: Left   | Right    | Lengths: Left | Channel   | Right | Coeff | Contr. | Expan. |
| 19474.54         | 20624.27 | 580           | 492.86    | 420   | .1    | .3     |        |
| Ineffective Flow | num=     | 2             |           |       |       |        |        |
| Sta L            | Sta R    | Elev          | Permanent |       |       |        |        |
| 18229.32         | 19474.54 | 1171.8        | F         |       |       |        |        |
| 20624.27         | 21818.53 | 1171.24       | F         |       |       |        |        |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 222.17

INPUT

Description:

|                        |                 |         |         |                 |                 |        |      |
|------------------------|-----------------|---------|---------|-----------------|-----------------|--------|------|
| Station Elevation Data |                 | num=    | 231     |                 |                 |        |      |
| Sta                    | Elev            | Sta     | Elev    | Sta             | Elev            | Sta    | Elev |
| 16001.28               | 1175.3216010.24 | 1175.08 | 16032.2 | 1174.7416044.46 | 1174.8616072.51 | 1175.7 |      |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 16077.13 | 1175.9216081.42 | 1175.5416085.11 | 1175.6716102.83 | 1174.516202.06  | 1171.47 |
| 16236.12 | 1171.2216281.24 | 1171.4216375.72 | 1171.7116406.04 | 1171.1516421.21 | 1171.11 |
| 16455.41 | 1170.6216471.91 | 1170.4616489.06 | 1170.1116504.99 | 1169.0416518.22 | 1168.64 |
| 16523.56 | 1168.0216529.35 | 1168.216581.29  | 1169.98 16593   | 1170.3516595.27 | 1170.06 |
| 16606.1  | 1170.02 16637.2 | 1169.0816661.28 | 1169.2916722.46 | 1169.1316768.48 | 1169.11 |
| 16797.65 | 1168.3216858.29 | 1168.33 16905.4 | 1169.64 16963.1 | 1169.916968.54  | 1169.51 |
| 16979.96 | 1169.7217062.68 | 1169.54 17168   | 1169.1417184.94 | 1168.2517202.21 | 1166.84 |
| 17215.82 | 1166.9217241.17 | 1167.11 17254.1 | 1166.4917271.04 | 1166.1217305.87 | 1166.16 |
| 17427.69 | 1165.5217492.61 | 1165.3917565.11 | 1165.417704.21  | 1165.39 17771.8 | 1165.16 |
| 17801.01 | 1166.1217904.68 | 1166.0317988.14 | 1165.6518058.06 | 1165.0418197.72 | 1164.8  |
| 18243.48 | 1164.6218253.17 | 1164.8118287.07 | 1165.8318315.46 | 1166.7518341.15 | 1165.16 |
| 18367.15 | 1165.6218377.33 | 1166.118386.58  | 1170.5718398.81 | 1175.4718402.08 | 1176.42 |
| 18404.07 | 1176.4218449.38 | 1170.6 18475.7  | 1165.8618505.44 | 1163.6818520.42 | 1162.48 |
| 18528.89 | 1162.8218554.16 | 1162.8118559.77 | 1162.8918579.21 | 1162.6818623.02 | 1162.31 |
| 18690.01 | 1174.92 18697.1 | 1175.9218744.97 | 1166.46 18791.4 | 1168.618805.54  | 1167.15 |
| 18818.85 | 1167.12 18868.9 | 1167.4218908.37 | 1166.8818934.23 | 1166.3418949.94 | 1165.73 |
| 18964.81 | 1166.0218985.69 | 1165.9819046.21 | 1165.1619063.07 | 1165.8419072.52 | 1165.74 |
| 19091.14 | 1166.0219152.99 | 1166.2319189.83 | 1166.2219253.84 | 1164.7919285.42 | 1164.04 |
| 19297.98 | 1163.9219313.24 | 1164.1619363.42 | 1165.1419379.89 | 1157.5819381.52 | 1156.94 |
| 19388.63 | 1158.0219408.47 | 1159.2219420.26 | 1162.6519436.44 | 1168.9719443.16 | 1171.76 |
| 19461.81 | 1169.9219499.77 | 1159.3219509.91 | 1156.65 19529.3 | 1154.8519570.72 | 1145.7  |
| 19641.21 | 1144.0219649.85 | 1143.7619696.84 | 1141.6319716.44 | 1141.2219786.79 | 1140.3  |
| 19811.5  | 1141.6219819.37 | 1143.0719834.32 | 1139.2819843.55 | 114119905.75    | 1142.24 |
| 19917.22 | 1142.4219949.02 | 1142.2520048.18 | 1141.6120083.29 | 1141.9320176.26 | 1142.58 |
| 20216.1  | 1142.6220303.83 | 1142.81 20341.8 | 1143.5920409.23 | 1145.1 20457.3  | 1155.7  |
| 20483.6  | 1158.5220519.65 | 1167.4420529.27 | 1169.8520541.18 | 1171.1220556.34 | 1165.31 |
| 20598.89 | 1163.2220612.54 | 1162.2920659.27 | 1158.9720687.65 | 1158.9320732.69 | 1160.15 |
| 20775.8  | 1162.1220806.38 | 1163.9420818.05 | 1163.1620822.41 | 1165.0520838.59 | 1166.61 |
| 20840.87 | 1166.62 20852   | 1169.3920871.21 | 1173.7320891.26 | 1172.7120977.83 | 1172.92 |
| 20998.33 | 1173.1221023.94 | 1172.8821097.19 | 1172.9421115.39 | 1172.5721133.64 | 1167.94 |
| 21147.36 | 1164.7221177.14 | 1165.0221179.91 | 1164.9821213.22 | 1165.23 21250   | 1163.56 |
| 21259.45 | 1165.8221274.23 | 1169.6121297.37 | 1167.8821362.64 | 1167.4121368.24 | 1167.53 |
| 21391.63 | 1168.2221412.38 | 1169.1221432.43 | 1168.6121488.36 | 1167.0521512.65 | 1168.2  |
| 21558.53 | 1167.8221608.54 | 1185.2621613.67 | 1186.2921627.01 | 1188.1521673.59 | 1188.78 |
| 21700.29 | 1188.7221715.78 | 1188.3321747.01 | 1186.83 21759.1 | 1182.5121769.12 | 1175.07 |
| 21779.93 | 1170.52 21788.9 | 1168.4821797.62 | 1166.35 21808.8 | 1165.8521825.05 | 1166.04 |
| 21856.54 | 1165.8221864.78 | 1164.1221873.76 | 1162.9221886.62 | 1165.4121926.57 | 1165.58 |
| 21986    | 1167.7221987.67 | 1167.7522058.41 | 1167.8422082.99 | 116822150.65    | 1166.5  |
| 22157.49 | 1166.4222190.04 | 1166.95 22237.4 | 1166.95 22269.6 | 1167.1422339.21 | 1167.13 |
| 22414.64 | 1165.7222484.43 | 1165.7122534.23 | 1165.5922604.52 | 1165.222624.87  | 1164.83 |
| 22673.28 | 1164.7222727.45 | 1164.9322784.46 | 1168.0322800.58 | 1168.6222818.56 | 1168.85 |
| 22879.81 | 1169.9222900.34 | 1170.4122918.49 | 1171.0822970.85 | 1172.5423041.65 | 1173.23 |
| 23054.92 | 1173.5223065.88 | 1173.6523088.44 | 1174.0523135.78 | 1174.5323169.17 | 1175.28 |
| 23181.67 | 1175.0223198.65 | 1175.15 23265.1 | 1175.8823291.59 | 1176.1523297.34 | 1176.34 |
| 23306.8  | 1176.4223381.41 | 1177.1123408.83 | 1177.36 23411.3 | 1177.25 23431.3 | 1175.75 |
| 23439.11 | 1175.92         |                 |                 |                 |         |

|                               |             |     |
|-------------------------------|-------------|-----|
| Manning's n Values            | num=        | 3   |
| Sta n Val Sta n Val Sta n Val |             |     |
| 16001.28 .0419443.16          | .0320541.18 | .04 |

|                            |                             |              |        |
|----------------------------|-----------------------------|--------------|--------|
| Bank Sta: Left Right       | Lengths: Left Channel Right | Coeff Contr. | Expan. |
| 19443.1620541.18           | 410 381.57 360              | .1           | .3     |
| Ineffective Flow num=      | 2                           |              |        |
| Sta L Sta R Elev Permanent | F                           |              |        |
| 16001.2819443.16 1171.76   | F                           |              |        |
| 20541.1823439.11 1171.12   | F                           |              |        |

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 222.09

INPUT  
 Description: Upstream face of Rural Road Bridge

|   |      |    |
|---|------|----|
| Station Elevation Data  | num= | 61 |
| Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev                                    |      |    |
| 18210 1166.12 19030 1166.12 19200 1170.12 19457.2 1173.92 19457.3 1167.22       |      |    |
| 19457.3 1166.72 19498.1 1159.72 19551.1 1154.12 19571.9 1153.72 19577.9 1153.72 |      |    |
| 19580.9 1150.22 19635.4 1140.92 19692.9 1138.52 19698.9 1138.52 19736.9 1138.12 |      |    |
| 19745.9 1138.12 19764.9 1138.32 19792.4 1139.12 19813.9 1138.82 19819.9 1138.82 |      |    |
| 19839.9 1138.32 19859.9 1138.32 19890.9 1138.82 19913.4 1139.12 19934.9 1139.22 |      |    |
| 19940.9 1139.22 19998.4 1139.22 20055.9 1139.02 20061.9 1139.02 20092.9 1139.72 |      |    |
| 20102.9 1139.92 20106.9 1139.92 20131.9 1140.12 20146.9 1140.12 20176.9 1140.12 |      |    |
| 20182.9 1140.12 20240.4 1141.02 20297.9 1141.12 20303.9 1141.12 20361.4 1141.52 |      |    |
| 20418.9 1142.92 20424.9 1142.92 20448.4 1143.22 20477.9 1154.92 20515.9 1159.62 |      |    |
| 20530.9 1164.22 20539.9 1168.82 20545.9 1168.82 20564.4 1167.52 20580.4 1164.42 |      |    |
| 20601.4 1159.12 20660.9 1158.12 20666.9 1158.12 20669.9 1158.12 20728.9 1158.52 |      |    |
| 20769.9 1158.02 20781.6 1159.52 20781.7 1167.12 20781.8 1173.82 21050 1170.12   |      |    |
| 21220 1166.12   |      |    |

|                               |             |     |
|-------------------------------|-------------|-----|
| Manning's n Values            | num=        | 3   |
| Sta n Val Sta n Val Sta n Val |             |     |
| 18210 .04 19457.3             | .03 20545.9 | .04 |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19457.3 20545.9 154.01 154.01 154.01 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 18210 19457.3 1167.22 F  
 20545.9 21220 1168.82 F

BRIDGE

RIVER: Salt  
 REACH: 1 RS: 222.085

INPUT

Description: Rural Road  
 Distance from Upstream XS = 30  
 Deck/Roadway Width = 94  
 Weir Coefficient = 2.6  
 Upstream Deck/Roadway Coordinates

| num= 15 |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Sta     | Hi Cord | Lo Cord | Sta     | Hi Cord | Lo Cord | Sta     | Hi Cord | Lo Cord |
| 19030   | 1166.12 | 1166.12 | 19200   | 1170.12 | 1170.12 | 19457.2 | 1173.92 | 1173.92 |
| 19457.3 | 1173.93 | 1167.22 | 19571.9 | 1176.34 | 1169.72 | 19692.9 | 1178.32 | 1171.65 |
| 19813.9 | 1179.74 | 1173.07 | 19934.9 | 1180.74 | 1174.07 | 20055.9 | 1181.18 | 1174.51 |
| 20176.9 | 1181.23 | 1174.56 | 20297.9 | 1180.75 | 1174.12 | 20418.9 | 1179.69 | 1173.02 |
| 20539.9 | 1178.24 | 1171.57 | 20660.9 | 1176.27 | 1169.62 | 20781.6 | 1173.86 | 1167.19 |

Upstream Bridge Cross Section Data

| Station Elevation Data num= 61 |         |         |         |         |         |         |         |         |         |     |      |
|--------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-----|------|
| Sta                            | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta | Elev |
| 18210                          | 1166.12 | 19030   | 1166.12 | 19200   | 1170.12 | 19457.2 | 1173.92 | 19457.3 | 1167.22 |     |      |
| 19457.3                        | 1166.72 | 19498.1 | 1159.72 | 19551.1 | 1154.12 | 19571.9 | 1153.72 | 19577.9 | 1153.72 |     |      |
| 19580.9                        | 1150.22 | 19635.4 | 1140.92 | 19692.9 | 1138.52 | 19698.9 | 1138.52 | 19736.9 | 1138.12 |     |      |
| 19745.9                        | 1138.12 | 19764.9 | 1138.32 | 19792.4 | 1139.12 | 19813.9 | 1138.82 | 19819.9 | 1138.82 |     |      |
| 19839.9                        | 1138.32 | 19859.9 | 1138.32 | 19890.9 | 1138.82 | 19913.4 | 1139.12 | 19934.9 | 1139.22 |     |      |
| 19940.9                        | 1139.22 | 19998.4 | 1139.22 | 20055.9 | 1139.02 | 20061.9 | 1139.02 | 20092.9 | 1139.72 |     |      |
| 20102.9                        | 1139.92 | 20106.9 | 1139.92 | 20131.9 | 1140.12 | 20146.9 | 1140.12 | 20176.9 | 1140.12 |     |      |
| 20182.9                        | 1140.12 | 20240.4 | 1141.02 | 20297.9 | 1141.12 | 20303.9 | 1141.12 | 20361.4 | 1141.52 |     |      |
| 20418.9                        | 1142.92 | 20424.9 | 1142.92 | 20448.4 | 1143.22 | 20477.9 | 1154.92 | 20515.9 | 1159.62 |     |      |
| 20530.9                        | 1164.22 | 20539.9 | 1168.82 | 20545.9 | 1168.82 | 20564.4 | 1167.52 | 20580.4 | 1164.42 |     |      |
| 20601.4                        | 1159.12 | 20660.9 | 1158.12 | 20666.9 | 1158.12 | 20669.9 | 1158.12 | 20728.9 | 1158.52 |     |      |
| 20769.9                        | 1158.02 | 20781.6 | 1159.52 | 20781.7 | 1167.12 | 20781.8 | 1173.82 | 21050   | 1170.12 |     |      |
| 21220                          | 1166.12 |         |         |         |         |         |         |         |         |     |      |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 18210 .04 19457.3 .03 20545.9 .04

Bank Sta: Left Right Coeff Contr. Expan.  
 19457.3 20545.9 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 18210 19457.3 1167.22 F  
 20545.9 21220 1168.82 F

Downstream Deck/Roadway Coordinates

| num= 15 |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Sta     | Hi Cord | Lo Cord | Sta     | Hi Cord | Lo Cord | Sta     | Hi Cord | Lo Cord |
| 19030   | 1166.12 | 1166.12 | 19200   | 1170.12 | 1170.12 | 19457.2 | 1173.92 | 1173.92 |
| 19457.3 | 1173.93 | 1167.22 | 19571.9 | 1176.34 | 1169.72 | 19692.9 | 1178.32 | 1171.65 |
| 19813.9 | 1179.74 | 1173.07 | 19934.9 | 1180.74 | 1174.07 | 20055.9 | 1181.18 | 1174.51 |
| 20176.9 | 1181.23 | 1174.56 | 20297.9 | 1180.75 | 1174.12 | 20418.9 | 1179.69 | 1173.02 |
| 20539.9 | 1178.24 | 1171.57 | 20660.9 | 1176.27 | 1169.62 | 20781.6 | 1173.86 | 1167.19 |

Downstream Bridge Cross Section Data

| Station Elevation Data num= 61 |         |         |         |         |         |         |         |         |         |     |      |
|--------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-----|------|
| Sta                            | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta | Elev |
| 18210                          | 1166.12 | 19030   | 1166.12 | 19200   | 1170.12 | 19457.2 | 1173.92 | 19457.3 | 1167.22 |     |      |
| 19457.3                        | 1166.72 | 19498.1 | 1159.72 | 19551.1 | 1154.12 | 19571.9 | 1153.72 | 19577.9 | 1153.72 |     |      |
| 19580.9                        | 1150.22 | 19635.4 | 1140.92 | 19692.9 | 1138.52 | 19698.9 | 1138.52 | 19736.9 | 1138.12 |     |      |
| 19745.9                        | 1138.12 | 19764.9 | 1138.32 | 19792.4 | 1139.12 | 19813.9 | 1138.82 | 19819.9 | 1138.82 |     |      |
| 19839.9                        | 1138.32 | 19859.9 | 1138.32 | 19890.9 | 1138.82 | 19913.4 | 1139.12 | 19934.9 | 1139.22 |     |      |
| 19940.9                        | 1139.22 | 19998.4 | 1139.22 | 20055.9 | 1139.02 | 20061.9 | 1139.02 | 20092.9 | 1139.72 |     |      |
| 20102.9                        | 1139.92 | 20106.9 | 1139.92 | 20131.9 | 1140.12 | 20146.9 | 1140.12 | 20176.9 | 1140.12 |     |      |
| 20182.9                        | 1140.12 | 20240.4 | 1141.02 | 20297.9 | 1141.12 | 20303.9 | 1141.12 | 20361.4 | 1141.52 |     |      |
| 20418.9                        | 1142.92 | 20424.9 | 1142.92 | 20448.4 | 1143.22 | 20477.9 | 1154.92 | 20515.9 | 1159.62 |     |      |
| 20530.9                        | 1164.22 | 20539.9 | 1168.82 | 20545.9 | 1168.82 | 20564.4 | 1167.52 | 20580.4 | 1164.42 |     |      |
| 20601.4                        | 1159.12 | 20660.9 | 1158.12 | 20666.9 | 1158.12 | 20669.9 | 1158.12 | 20728.9 | 1158.52 |     |      |
| 20769.9                        | 1158.02 | 20781.6 | 1159.52 | 20781.7 | 1167.12 | 20781.8 | 1173.82 | 21050   | 1170.12 |     |      |
| 21220                          | 1166.12 |         |         |         |         |         |         |         |         |     |      |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 18210 .04 19457.3 .03 20545.9 .04

Bank Sta: Left Right Coeff Contr. Expan.  
 19457.3 20545.9 .1 .3

|                  |         |         |           |
|------------------|---------|---------|-----------|
| Ineffective Flow | num=    | 2       |           |
| Sta L            | Sta R   | Elev    | Permanent |
| 18210            | 19457.3 | 1167.22 | F         |
| 20545.9          | 21220   | 1168.82 | F         |

|   |   |                        |
|---|---|------------------------|
| Upstream Embankment side slope              | = | horiz. to 1.0 vertical |
| Downstream Embankment side slope            | = | horiz. to 1.0 vertical |
| Maximum allowable submergence for weir flow | = | .95                    |
| Elevation at which weir flow begins         | = |                        |
| Energy head used in spillway design         | = |                        |
| Spillway height used in design              | = |                        |
| weir crest shape                            | = | Broad Crested          |

Number of Piers = 10

|              |           |         |                     |
|--------------|-----------|---------|---------------------|
| Pier Data    |           |         |                     |
| Pier Station | Upstream= | 19574.9 | Downstream= 19574.9 |
| Upstream     | num=      | 2       |                     |
| Width        | Elev      | Width   | Elev                |
| 6            | 1153.72   | 6       | 1169.72             |
| Downstream   | num=      | 2       |                     |
| Width        | Elev      | Width   | Elev                |
| 6            | 1153.72   | 6       | 1169.72             |

|              |           |         |                     |
|--------------|-----------|---------|---------------------|
| Pier Data    |           |         |                     |
| Pier Station | Upstream= | 19695.9 | Downstream= 19695.9 |
| Upstream     | num=      | 2       |                     |
| Width        | Elev      | Width   | Elev                |
| 6            | 1138.52   | 6       | 1171.65             |
| Downstream   | num=      | 2       |                     |
| Width        | Elev      | Width   | Elev                |
| 6            | 1138.52   | 6       | 1171.65             |

|              |           |         |                     |
|--------------|-----------|---------|---------------------|
| Pier Data    |           |         |                     |
| Pier Station | Upstream= | 19816.9 | Downstream= 19816.9 |
| Upstream     | num=      | 2       |                     |
| Width        | Elev      | Width   | Elev                |
| 6            | 1138.82   | 6       | 1173.12             |
| Downstream   | num=      | 2       |                     |
| Width        | Elev      | Width   | Elev                |
| 6            | 1138.82   | 6       | 1173.12             |

|              |           |         |                     |
|--------------|-----------|---------|---------------------|
| Pier Data    |           |         |                     |
| Pier Station | Upstream= | 19937.9 | Downstream= 19937.9 |
| Upstream     | num=      | 2       |                     |
| Width        | Elev      | Width   | Elev                |
| 6            | 1139.22   | 6       | 1174.07             |
| Downstream   | num=      | 2       |                     |
| Width        | Elev      | Width   | Elev                |
| 6            | 1139.22   | 6       | 1174.07             |

|              |           |         |                     |
|--------------|-----------|---------|---------------------|
| Pier Data    |           |         |                     |
| Pier Station | Upstream= | 20058.9 | Downstream= 20058.9 |
| Upstream     | num=      | 2       |                     |
| Width        | Elev      | Width   | Elev                |
| 6            | 1139.02   | 6       | 1174.51             |
| Downstream   | num=      | 2       |                     |
| Width        | Elev      | Width   | Elev                |
| 6            | 1139.02   | 6       | 1174.51             |

|              |           |         |                     |
|--------------|-----------|---------|---------------------|
| Pier Data    |           |         |                     |
| Pier Station | Upstream= | 20179.9 | Downstream= 20179.9 |
| Upstream     | num=      | 2       |                     |
| Width        | Elev      | Width   | Elev                |
| 6            | 1140.12   | 6       | 1174.52             |
| Downstream   | num=      | 2       |                     |
| Width        | Elev      | Width   | Elev                |
| 6            | 1140.12   | 6       | 1174.52             |

|              |           |         |                     |
|--------------|-----------|---------|---------------------|
| Pier Data    |           |         |                     |
| Pier Station | Upstream= | 20300.9 | Downstream= 20300.9 |
| Upstream     | num=      | 2       |                     |
| Width        | Elev      | Width   | Elev                |
| 6            | 1141.12   | 6       | 1174.12             |
| Downstream   | num=      | 2       |                     |
| Width        | Elev      | Width   | Elev                |
| 6            | 1141.12   | 6       | 1174.12             |

|              |           |         |                     |
|--------------|-----------|---------|---------------------|
| Pier Data    |           |         |                     |
| Pier Station | Upstream= | 20421.9 | Downstream= 20421.9 |
| Upstream     | num=      | 2       |                     |
| Width        | Elev      | Width   | Elev                |
| 6            | 1142.92   | 6       | 1173.02             |
| Downstream   | num=      | 2       |                     |
| Width        | Elev      | Width   | Elev                |
| 6            | 1142.92   | 6       | 1173.02             |

Pier Data

Pier Station Upstream= 20542.9  
 Upstream num= 2  
 width Elev width Elev  
 6 1168.82 6 1171.62  
 Downstream num= 2  
 width Elev width Elev  
 6 1168.82 6 1171.62

Downstream= 20542.9

Pier Data  
 Pier Station Upstream= 20663.9 Downstream= 20663.9  
 Upstream num= 2  
 width Elev width Elev  
 6 1158.12 6 1169.62  
 Downstream num= 2  
 width Elev width Elev  
 6 1158.12 6 1169.62

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy  
 Momentum Cd = 1.2  
 Yarnell KVal = 1.05

Selected Low Flow Methods = Highest Energy Answer

High Flow Method  
 Energy Only

Additional Bridge Parameters

Add Friction component to Momentum  
 Do not add Weight component to Momentum  
 Class B flow critical depth computations use critical depth  
 inside the bridge at the upstream end  
 Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 222.08

INPUT  
 Description: Downstream face of Rural Road Bridge

Station Elevation Data num= 61

| Sta     | Elev    |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 18210   | 1166.12 | 19030   | 1166.12 | 19200   | 1170.12 | 19457.2 | 1173.92 | 19457.3 | 1167.22 |
| 19457.3 | 1166.72 | 19498.1 | 1159.72 | 19551.1 | 1154.12 | 19571.9 | 1153.72 | 19577.9 | 1153.72 |
| 19580.9 | 1150.22 | 19635.4 | 1140.92 | 19692.9 | 1138.52 | 19698.9 | 1138.52 | 19736.9 | 1138.12 |
| 19745.9 | 1138.12 | 19764.9 | 1138.32 | 19792.4 | 1139.12 | 19813.9 | 1138.82 | 19819.9 | 1138.82 |
| 19839.9 | 1138.32 | 19859.9 | 1138.32 | 19890.9 | 1138.82 | 19913.4 | 1139.12 | 19934.9 | 1139.22 |
| 19940.9 | 1139.22 | 19998.4 | 1139.22 | 20055.9 | 1139.02 | 20061.9 | 1139.02 | 20092.9 | 1139.72 |
| 20102.9 | 1139.92 | 20106.9 | 1139.92 | 20131.9 | 1140.12 | 20146.9 | 1140.12 | 20176.9 | 1140.12 |
| 20182.9 | 1140.12 | 20240.4 | 1141.02 | 20297.9 | 1141.12 | 20303.9 | 1141.12 | 20361.4 | 1141.52 |
| 20418.9 | 1142.92 | 20424.9 | 1142.92 | 20448.4 | 1143.22 | 20477.9 | 1154.92 | 20515.9 | 1159.62 |
| 20530.9 | 1164.22 | 20539.9 | 1168.82 | 20545.9 | 1168.82 | 20564.4 | 1167.52 | 20580.4 | 1164.42 |
| 20601.4 | 1159.12 | 20660.9 | 1158.12 | 20666.9 | 1158.12 | 20669.9 | 1158.12 | 20728.9 | 1158.52 |
| 20769.9 | 1158.02 | 20781.6 | 1159.52 | 20781.7 | 1167.12 | 20781.8 | 1173.82 | 21050   | 1170.12 |
| 21220   | 1166.12 |         |         |         |         |         |         |         |         |

Manning's n Values num= 3

| Sta   | n Val | Sta     | n Val | Sta     | n Val |
|-------|-------|---------|-------|---------|-------|
| 18210 | .04   | 19457.3 | .03   | 20545.9 | .04   |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19457.3 20545.9 580 440.56 330 .1 .3

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent

|         |         |         |   |
|---------|---------|---------|---|
| 18210   | 19457.3 | 1167.22 | F |
| 20545.9 | 21220   | 1168.82 | F |

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 221.99

INPUT  
 Description:

Station Elevation Data num= 200

| Sta      | Elev    |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| 17228.1  | 1169.42 | 17258.96 | 1168.22 | 17291.63 | 1171.34 | 17293.52 | 1171.41 | 17354.45 | 1168.62 |
| 17358.04 | 1168.62 | 17386.91 | 1168.06 | 17430.53 | 1167.57 | 17465.42 | 1166.89 | 17504.19 | 1166.23 |
| 17517.7  | 1165.92 | 17557.37 | 1165.22 | 17568.46 | 1165.11 | 17596.15 | 1165.35 | 17646.22 | 1165.16 |
| 17664.33 | 1165.02 | 17731.94 | 1164.89 | 17764.84 | 1164.65 | 17842.88 | 1164.51 | 17895.13 | 1164.26 |
| 17950    | 1163.92 | 17992.32 | 1163.72 | 18008.74 | 1163.59 | 18042.78 | 1163.42 | 18085.64 | 1163.3  |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 18095.78 | 1163.3218181.67 | 1163.7218206.63 | 1163.718296.43  | 1163.5118335.79 | 1163.49 |
| 18389.47 | 1163.5218419.45 | 1163.4418459.39 | 1163.1718508.93 | 1163.1118618.73 | 1163.14 |
| 18725.56 | 1163.02 18734.5 | 1162.9818810.21 | 1163.4718837.68 | 1163.5 18936.6  | 1163.39 |
| 18955.95 | 1163.42 19027.2 | 1163.7119072.68 | 1163.7719091.72 | 1163.919107.22  | 1163.55 |
| 19117.15 | 1163.1219125.19 | 1163.5519167.72 | 1163.319170.23  | 1163.34 19204.7 | 1162.98 |
| 19214.48 | 1162.5219272.73 | 1162.42 19280.4 | 1161.9819312.77 | 1160.5219334.57 | 1159.16 |
| 19362.41 | 1167.1219375.13 | 1170.919387.53  | 1172.61 19423.3 | 1157.9319424.11 | 1157.71 |
| 19444.1  | 1158.9219466.76 | 1158.1819473.13 | 1157.7919487.21 | 1156.4619498.52 | 1156.21 |
| 19508.31 | 1156.8219522.21 | 1147.8519526.03 | 1148.0219542.04 | 1148.119548.13  | 1145.88 |
| 19549.74 | 1144.9219578.31 | 1144.8419608.92 | 1144.4219622.35 | 1144.67 19625.8 | 1144.55 |
| 19629.95 | 1144.0219662.92 | 1143.05 19757.8 | 1140.2619790.37 | 1140.4619889.34 | 1141.34 |
| 20013.16 | 1140.82 20021.4 | 1140.820046.59  | 1141.3920150.57 | 1143.620168.42  | 1143.53 |
| 20279.22 | 1141.8220311.82 | 1142.9720339.33 | 1144.220380.39  | 1152.48 20395.1 | 1155.47 |
| 20408.91 | 1157.1220451.75 | 1166.1220464.34 | 1168.86 20474.1 | 1170.720520.34  | 1163.92 |
| 20524.22 | 1163.62 20551.1 | 1163.84 20569   | 1160.6620579.56 | 1160.3120581.69 | 1159.94 |
| 20619.68 | 1160.2220624.32 | 1160.3920636.26 | 1160.3620682.65 | 1160.3420708.27 | 1161.77 |
| 20747.43 | 1167.2220810.38 | 1171.2120865.53 | 1170.7320878.38 | 1170.7120925.02 | 1171.16 |
| 20977.87 | 1170.6220990.49 | 1170.6321017.94 | 1166.0321020.96 | 1164.3421027.69 | 1162.23 |
| 21041.39 | 1162.3221048.88 | 1166.5821051.31 | 1166.8521103.84 | 1166.4521113.72 | 1166.32 |
| 21167.12 | 1166.4221199.72 | 1166.4521238.15 | 1166.8221244.69 | 1167.6321250.07 | 1167.59 |
| 21255.82 | 1167.2221263.75 | 1164.7121273.81 | 1164.6521441.29 | 1164.0421461.92 | 1164.74 |
| 21468.87 | 1164.8221483.54 | 1165.7421530.74 | 1166.921532.64  | 1167.7321578.49 | 1186.59 |
| 21580.42 | 1187.42 21583.3 | 1187.2721603.14 | 1186.79 21614.3 | 1186.1121640.68 | 1184.7  |
| 21655.09 | 1184.4221667.69 | 1185.1921684.27 | 1185.9321707.08 | 1187.5821717.84 | 1187.96 |
| 21729.19 | 1187.8221758.49 | 1176.4221786.72 | 1163.8521788.91 | 1163.5321814.08 | 1163.37 |
| 21824.13 | 1163.7221829.11 | 1164.521843.37  | 1163.6521858.77 | 1163.7321885.49 | 1163.93 |
| 21909.83 | 1164.0221920.48 | 1164.6921936.69 | 1165.0921976.35 | 1164.2822029.88 | 1164.39 |
| 22120.51 | 1163.9222128.67 | 1163.9322133.27 | 1163.8222196.18 | 1163.8222222.92 | 1164.63 |
| 22230.32 | 1164.4222238.27 | 1163.5322269.18 | 1163.4422332.41 | 1163.3322339.87 | 1163.6  |
| 22350.41 | 1163.3222441.19 | 1163.74 22490   | 1164.1822504.47 | 1165.5 22519.1  | 1165.16 |
| 22613.27 | 1165.3222638.03 | 1165.2722664.13 | 1165.1422668.84 | 1165.2722699.98 | 1165.68 |
| 22742.99 | 1166.2222775.57 | 1166.0822823.75 | 1166.2422840.56 | 1166.4822888.81 | 1167    |
| 22942.19 | 1169.42 22960.9 | 1170.222991.9   | 1171.0123023.13 | 1172.3123043.49 | 1172.68 |
| 23080.41 | 1173.62 23092.3 | 1174.23129.53   | 1174.8723168.04 | 1175.3623174.01 | 1175.52 |
| 23188.8  | 1176.2223254.98 | 1177.1723286.26 | 1177.4823307.91 | 1177.4323338.46 | 1177.9  |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 17228.1 .0419387.53 .03 20474.1 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19387.53 20474.1 560 510.5 470 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 17228.119387.53 1172.61 F  
 20474.123338.46 1170.7 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 221.89

INPUT

Description:

|                                 |                 |                 |                 |                 |         |          |                 |                 |                 |                 |         |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|---------|----------|-----------------|-----------------|-----------------|-----------------|---------|
| Station Elevation Data num= 169 |                 |                 |                 |                 |         |          |                 |                 |                 |                 |         |
| Sta                             | Elev            | Sta             | Elev            | Sta             | Elev    | Sta      | Elev            | Sta             | Elev            | Sta             | Elev    |
| 18161.32                        | 1191.1218182.36 | 1188.4218272.19 | 1175.5218277.68 | 1176.4918296.84 | 1176.74 | 18327.04 | 1177.5218351.63 | 1178.6518365.81 | 1178.5918388.58 | 1175.5718404.71 | 1174.04 |
| 18446.03                        | 1168.2218461.79 | 1168.1118502.06 | 1166.8418528.23 | 1165.7818553.47 | 1165.36 | 18598.41 | 1163.9218644.49 | 1163.1518701.92 | 1163.3918748.85 | 1163.0318822.97 | 1163.1  |
| 18837.4                         | 1162.9218915.81 | 1161.7518968.45 | 1160.8618983.15 | 1160.7918996.08 | 1159.64 | 19009.62 | 1162.4219015.83 | 1162.219057.14  | 1160.9319066.94 | 1161.6319089.99 | 1162.41 |
| 19119.06                        | 1161.3219179.93 | 1160.0119232.08 | 1152.6119251.46 | 1149.9219253.61 | 1149.86 | 19274.36 | 1151.5219275.56 | 1151.8119289.33 | 1156.5419294.75 | 1156.8819323.57 | 1164.76 |
| 19337.79                        | 1168.9219346.18 | 1172.4519348.98 | 1173.4419356.76 | 1169.99 19392.1 | 1155.87 | 19419.99 | 1156.1219429.76 | 1156.1219442.34 | 1154.1119445.01 | 1153.4319459.64 | 1157.41 |
| 19467.67                        | 1157.3219471.52 | 1157.4119483.77 | 1145.1419487.24 | 1141.8419528.76 | 1140.57 | 19558.85 | 1138.3219601.29 | 1142.219609.97  | 1143.0119619.19 | 1143.3219633.53 | 1144.1  |
| 19640.82                        | 1143.5219722.43 | 1140.8919766.05 | 1143.2519851.35 | 1143.3519899.11 | 1143.53 | 19971.6  | 1143.9220028.47 | 1144.2220089.74 | 1142.3620162.05 | 1140.8720164.13 | 1140.91 |
| 20287.09                        | 1144.4220291.34 | 1145.24 20307.8 | 1148.9320329.94 | 1153.4920348.08 | 1153.84 | 20368.68 | 1160.5220396.08 | 1169.8720399.15 | 1169.1820418.06 | 1168.2720493.63 | 1159.27 |
| 20555.01                        | 1163.7220570.26 | 1161.820578.82  | 1161.6120608.46 | 1161.3420621.68 | 1161.54 | 20638.74 | 1161.7220651.79 | 1163.520659.22  | 1163.9820698.49 | 1163.7420728.25 | 1163.49 |
| 20744.67                        | 1163.0220770.67 | 1163.5 20785    | 1163.6320804.72 | 1164.3820819.52 | 1164.21 | 20838.48 | 1163.5220858.28 | 1163.2720886.14 | 1163.7520893.59 | 1163.7820905.54 | 1165.42 |
| 20935.3                         | 1165.8221015.06 | 1166.0821093.11 | 1167.1321110.98 | 1166.9421127.65 | 1167.54 | 21134.25 | 1166.7221296.92 | 1166.7121311.66 | 1166.6621316.66 | 1166.84 21334.9 | 1166.68 |
| 21355.48                        | 1177.7221391.39 | 1179.3521394.96 | 1179.421400.07  | 1180.6821427.55 | 1190.21 | 21450.73 | 1188.9221483.68 | 1189.8221495.96 | 1190.7821508.88 | 1191.4821573.43 | 1192.01 |
| 21580.3                         | 1191.9221592.27 | 1190.2221680.11 | 1175.2421681.99 | 1172.0921688.73 | 1164.37 | 21708.44 | 1164.4221714.52 | 1162.421755.73  | 1163.3121799.28 | 1165.8321812.85 | 1166.3  |
| 21862.85                        | 1165.7221920.72 | 1166.6421934.83 | 1166.6721954.46 | 1166.8622023.38 | 1167.27 | 22048.76 | 1167.4222090.36 | 1167.4122124.89 | 1166.8322171.39 | 1167.0622212.98 | 1167.15 |
| 22233.83                        | 1166.2222262.05 | 1164.7122302.38 | 1166.0722321.75 | 1166.5422378.71 | 1167.7  | 22439.74 | 1168.5222445.13 | 1168.5122478.45 | 1169.2922486.73 | 1169.32 22585.5 | 1169.46 |
| 22634.36                        | 1169.5222668.78 | 1169.422679.97  | 1169.1222713.73 | 1168.5222753.65 | 1175.64 |          |                 |                 |                 |                 |         |

22759.09 1175.62 22832.7 1175.3723002.71 1175.9623015.32 1175.9123050.61 1175.43  
23077.36 1176.3223124.52 1177.4823128.21 1177.7223147.58 1179.9223156.31 1181.07  
23182.18 1181.3223220.56 1180.6623281.93 1180.5823334.21 1180.76

Manning's n Values num= 3  
Sta n Val Sta n Val  
18161.32 .0419348.98 .0320396.08 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
19348.9820396.08 520 490.84 460 .1 .3  
Ineffective Flow num= 2  
Sta L Sta R Elev Permanent  
18161.3219348.98 1173.44 F  
20396.0823334.21 1169.87 F

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 221.80

INPUT  
Description:

Station Elevation Data num= 188  
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
18195.87 1212.7218206.33 1212.1818268.65 1209.8218276.94 1208.6118283.96 1204.91  
18294.72 1198.22 18328 1197.72 18348.1 1196.9718356.04 1195.5118362.14 1193.22  
18363.55 1192.5218376.79 1193.0118403.03 1192.7318417.69 1193.518420.16 1193.1  
18433.12 1189.8218482.24 1176.1818510.47 1168.0318531.57 1166.7618556.08 1166.15  
18589.61 1165.4218608.83 1165.0518655.29 1164.0818713.56 1164.32 18738.5 1164.43  
18742.4 1164.4218799.21 1163.9718835.11 1164.0818846.72 1160.118857.05 1162.52  
18899.99 1161.7218937.49 1163.1718945.96 1161.0518992.28 1159.2818998.83 1159.11  
19066.83 1150.5219070.07 1150.5819150.04 1153.4319165.16 1161.319179.04 1166.45  
19192.16 1168.4219195.49 1168.5419232.95 1152.5419238.01 1150.69 19280.9 1151.3  
19284.1 1151.3219286.96 115219309.57 1156.74 19343.5 1166.55 19350 1168.51  
19358.97 1171.7219377.34 1163.7519390.65 1164.3519400.98 1164.219440.36 1155.22  
19442.53 1154.7219470.25 1157.1919483.92 1155.8319502.11 1142.5619505.02 1140.66  
19552.6 1140.5219570.23 1138.4719606.09 1143.9219612.72 1144.9619636.74 1142.48  
19648.42 1141.5219749.09 1140.9619776.44 1140.4519782.55 1140.5519887.19 1140.95  
19912.95 1141.1220001.53 1139.5520047.61 1138.7920132.52 1141.820179.34 1143.28  
20233.4 1143.6220271.09 1143.7920287.08 1147.420323.83 1155.0720330.37 1155.02  
20343.75 1154.4220373.84 1165.7520381.57 1168.4120391.18 1167.2820399.13 1166.75  
20408.31 1167.4220429.06 1166.9520451.18 1166.3120458.79 1164.3920470.36 1161.97  
20477.35 1161.9220491.93 1162.19 20518.7 1163.0820526.46 1163.1520538.42 1163.56  
20552.5 1163.9220568.77 1163.87 20595.3 1163.6520629.76 1163.7820662.92 1163.65  
20708.54 1163.6220747.81 1163.6520775.58 1163.85 20798.6 1163.6720821.58 1163.77  
20884.34 1163.4220914.55 1163.1620959.94 1161.9821031.24 1162.5421040.75 1162.57  
21059.65 1162.4221087.69 1161.7121099.74 1161.9221116.21 1163.8821127.28 1164.78  
21137.95 1165.1221140.46 1165.7521200.32 1168.4121210.81 1169.2621271.48 1172.53  
21287.77 1173.9221295.81 1174.521342.69 1176.4921350.38 1176.7521426.93 1180.66  
21434.63 1180.62 21457.9 1173.2121479.51 1166.6421490.56 1165.9621503.06 1164.9  
21513.46 1164.8221527.74 1164.1721536.21 1163.3521562.56 1163.0121573.78 1163.12  
21584.6 1163.8221591.93 1164.1721606.96 1164.28 21640.1 1165.28 21656.9 1165.65  
21703.98 1166.0221707.22 1166.1521726.09 1166.1 21805.8 1165.1221849.97 1164.35  
21891.14 1163.9221947.27 1163.4621979.38 1163.3821998.69 1163.1122060.89 1164.46  
22079.78 1164.5222113.99 1165.2822118.49 1163.6322131.71 1164.5222155.67 1164.92  
22201.25 1165.8222220.21 1166.3822245.94 1167.0922262.29 1168.3522281.29 1167.93  
22306.73 1168.3222343.14 1168.7622360.44 1168.6722371.75 1168.1122383.67 1167.14  
22420.14 1167.9222446.45 1168.6722468.98 1168.8422538.97 1169.5322578.44 1169.88  
22579.7 1170.22 22607.9 1174.4622616.63 1174.71 22677.7 1175.6922730.96 1175.43  
22777 1175.8222794.36 1176.0422872.47 1176.4322927.16 1176.54 22933.6 1177.02  
23008.51 1177.2223039.74 117723081.93 1178.2223090.79 1178.6223108.08 1180.55  
23114.74 1181.1223130.35 1181.0423148.09 1181.19

Manning's n Values num= 3  
Sta n Val Sta n Val  
18195.87 .0419358.97 .0320381.57 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
19358.9720381.57 520 512.31 500 .1 .3  
Ineffective Flow num= 2  
Sta L Sta R Elev Permanent  
18195.8719358.97 1171.72 F  
20381.5723148.09 1168.41 F

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 221.70

INPUT  
Description:

Station Elevation Data num= 177  
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
18313.4 1209.8218331.21 1192.6718353.07 1180.9218357.74 1178.6118383.22 1175.14  
18388.14 1174.4218425.75 1172.718484.17 1170.8418551.42 1169.1718573.43 1168.84  
18584.11 1168.5218612.02 1168.2218666.45 1167.2618709.95 1166.6918726.98 1166.68

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 18729.96 | 1166.3218733.93 | 1165.3718741.54 | 1164.6518742.43 | 1164.318754.36  | 1165.2  |
| 18794.42 | 1164.7218812.28 | 1164.8118870.65 | 1156.8318917.38 | 1150.0418947.73 | 1150.63 |
| 18977.47 | 1149.7218991.82 | 1150.119043.31  | 1151.1719071.02 | 1151.46 19075.1 | 1151.46 |
| 19218.77 | 1149.6219309.85 | 1149.2619357.44 | 1151.01 19370.6 | 1155.1319374.03 | 1156.6  |
| 19383.37 | 1159.4219409.57 | 1167.9919416.32 | 1169.5119421.68 | 1170.8619441.88 | 1162.74 |
| 19459.38 | 1155.6219474.54 | 1156.3719485.11 | 1156.8119494.75 | 1156.8119501.02 | 1154.74 |
| 19518.83 | 1155.0219535.86 | 1155.719541.98  | 1155.6219565.71 | 1141.9719619.86 | 1139.69 |
| 19624.35 | 1139.5219634.06 | 1140.2819660.31 | 1142.5419662.96 | 1142.2719791.68 | 1139.72 |
| 19926.34 | 1136.4219979.53 | 1138.8220001.72 | 1139.4620058.56 | 1141.1520103.44 | 1140.75 |
| 20193.46 | 1139.4220218.21 | 1140.0420297.42 | 1143.1120315.77 | 1142.9520327.65 | 1143.99 |
| 20331.56 | 1145.5220336.16 | 1145.6520357.62 | 1151.5420366.55 | 1153.8720376.48 | 1155.67 |
| 20406.45 | 1162.1220424.35 | 1166.120429.66  | 1166.1520438.47 | 1165.620446.38  | 1164.57 |
| 20476.02 | 1161.1220483.23 | 1160.72 20515.8 | 1161.120530.06  | 1162.0820558.19 | 1163.4  |
| 20591.52 | 1162.5220616.24 | 1162.0320664.46 | 1160.6820680.13 | 1160.7620702.62 | 1161.09 |
| 20737.58 | 1161.1220784.83 | 1160.8520829.13 | 1159.5920912.47 | 1161.43 20933.1 | 1161.91 |
| 20954.93 | 1170.2220977.63 | 1179.49 20995.9 | 1180.4620999.53 | 1180.7521081.63 | 1180.35 |
| 21083.63 | 1180.4221093.55 | 1181.8421128.13 | 1180.8821190.62 | 1179.3921209.18 | 1171.98 |
| 21229.58 | 1164.9221237.19 | 1163.6121239.52 | 1162.6221268.55 | 1162.0921291.89 | 1167.06 |
| 21301.26 | 1166.7221306.68 | 1162.5821324.48 | 1165.0421348.89 | 1166.4921402.27 | 1167.63 |
| 21434.96 | 1173.4221449.56 | 1174.7221463.69 | 1176.9321490.56 | 1177.3621526.24 | 1178.87 |
| 21542.59 | 1179.02 21555.5 | 1179.6921594.85 | 1179.5721622.38 | 1184.1621629.26 | 1184.69 |
| 21641.43 | 1187.3221667.39 | 1191.7421680.98 | 1195.9721697.93 | 1201.4121733.38 | 1209.73 |
| 21756.81 | 1214.42 21768.5 | 1210.1221815.78 | 1185.5221825.94 | 1183.8121855.64 | 1178.29 |
| 21869.96 | 1175.5221875.52 | 1174.7921880.58 | 1174.6421930.63 | 1172.2521938.76 | 1172.13 |
| 22003.3  | 1172.9222072.34 | 1172.44 22089.3 | 1172.422143.78  | 1172.5922201.32 | 1173.29 |
| 22221.23 | 1173.2222291.67 | 1173.5822308.03 | 1173.7322363.53 | 1173.6222371.52 | 1173.93 |
| 22441.39 | 1176.0222459.63 | 1175.0322477.06 | 1174.8322511.23 | 1174.5222515.43 | 1174.53 |
| 22546.13 | 1173.92 22567.5 | 1173.9422627.63 | 1174.9122675.51 | 1174.4322686.47 | 1174.38 |
| 22704.37 | 1173.6222733.97 | 1173.3922742.09 | 1172.7422760.68 | 1178.6122765.21 | 1179.27 |
| 22771.49 | 1179.1222794.55 | 1177.8222832.55 | 1178.5122848.45 | 1177.5422869.41 | 1176.56 |
| 22880.16 | 1178.6222885.04 | 1179.7122896.93 | 1179.5922930.49 | 1179.0422938.35 | 1179.24 |
| 22981.95 | 1179.7223029.34 | 1180.6323071.34 | 1181.3423088.16 | 1181.59 23096.5 | 1181.52 |
| 23160.94 | 1181.5223225.52 | 1181.67         |                 |                 |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 18313.4 .0419421.68 .0320429.66 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19421.6820429.66 480 491.61 500 .1 .3

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 18313.419421.68 1170.86 F  
 20429.6623225.52 1166.15 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 221.61

INPUT Description:

Station Elevation Data num= 191

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev |
|----------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|
| 18678.5  | 1214.5218683.01 | 1213.1518689.82 | 1210.7718703.07 | 1205.8718715.48 | 1199.2  |     |      |     |      |
| 18718.55 | 1197.9218720.66 | 1197.6218744.02 | 1197.5718748.36 | 1196.7718750.08 | 1196.72 |     |      |     |      |
| 18759.03 | 1192.3218792.02 | 1160.0218804.93 | 1147.4618829.12 | 1145.3918856.12 | 1160.25 |     |      |     |      |
| 18869.54 | 1166.8218908.36 | 1166.3318915.11 | 1166.1718951.93 | 1165.618960.49  | 1165.54 |     |      |     |      |
| 18973.47 | 1165.8218982.88 | 1161.5519016.44 | 1148.3319049.87 | 1147.8919063.08 | 1147.84 |     |      |     |      |
| 19079.13 | 1148.2219082.86 | 1148.1419107.73 | 1147.0119133.21 | 1147.3619143.93 | 1147.99 |     |      |     |      |
| 19188.53 | 1149.4219247.86 | 1147.619284.38  | 1145.9719314.17 | 1150.5619314.76 | 1151.04 |     |      |     |      |
| 19372.29 | 1150.02 19392.3 | 1156.47 19397.5 | 1158.2519421.34 | 1164.5719434.25 | 1168.26 |     |      |     |      |
| 19434.8  | 1167.5219438.93 | 1170.5419443.22 | 1168.9119476.46 | 1156.5219486.31 | 1156.21 |     |      |     |      |
| 19501.93 | 1155.5219519.36 | 1156.1219529.18 | 1156.0319533.42 | 1154.41 19542.7 | 1154.01 |     |      |     |      |
| 19551.94 | 1154.5219558.35 | 1154.119564.25  | 1154.119583.11  | 1142.0519591.56 | 1136.51 |     |      |     |      |
| 19648.21 | 1138.8219677.11 | 1139.9319809.86 | 1136.119916.35  | 1136.9119935.06 | 1137.02 |     |      |     |      |
| 19990.46 | 1141.1220010.96 | 1142.8620062.96 | 1142.9220076.44 | 1142.82 20137.2 | 1142.86 |     |      |     |      |
| 20205.46 | 1143.62 20305.7 | 1142.8520341.53 | 1142.3420343.81 | 1142.7820353.78 | 1145.82 |     |      |     |      |
| 20380.41 | 1154.1220388.69 | 1154.8220419.66 | 1163.6220433.82 | 1167.5820447.28 | 1166.54 |     |      |     |      |
| 20458.72 | 1165.7220475.45 | 1163.1920499.06 | 1159.3920531.49 | 1161.58 20545.4 | 1160.1  |     |      |     |      |
| 20571.87 | 1159.6220578.81 | 1159.5520606.24 | 1159.5620616.16 | 1159.4420640.05 | 1159.92 |     |      |     |      |
| 20691.04 | 1161.3220694.58 | 1161.5120702.31 | 1162.7920707.85 | 1163.3820714.52 | 1164.3  |     |      |     |      |
| 20723.12 | 1169.4220734.57 | 1175.7220755.69 | 1175.8620780.53 | 1175.8720796.22 | 1176.13 |     |      |     |      |
| 20840.73 | 1176.32 20850.6 | 1176.2120857.79 | 1176.0120868.54 | 1176.4320895.56 | 1176.9  |     |      |     |      |
| 20907.19 | 1174.5220920.14 | 1171.26 20926.2 | 1171.8720939.07 | 1167.6420960.36 | 1165.44 |     |      |     |      |
| 20975.48 | 1165.5220989.85 | 1163.4221006.64 | 1162.4221028.57 | 1160.18 21060.5 | 1160.56 |     |      |     |      |
| 21092.06 | 1160.5221120.46 | 1160.51 21145.3 | 1160.4221150.14 | 1160.5621173.57 | 1164.41 |     |      |     |      |
| 21204.33 | 1168.7221232.66 | 1167.2521234.44 | 1165.9221241.62 | 1163.3221250.13 | 1165.19 |     |      |     |      |
| 21260.5  | 1166.2221290.65 | 1167.2121299.98 | 1167.8521315.94 | 1170.2921326.38 | 1172.84 |     |      |     |      |
| 21348.18 | 1176.1221409.65 | 1184.8221454.08 | 1189.8921464.71 | 1190.8221505.76 | 1192.49 |     |      |     |      |
| 21573.42 | 1182.0221596.51 | 1183.72 21602.4 | 1184.0521622.23 | 1186.9421655.45 | 1191.44 |     |      |     |      |
| 21671.98 | 1193.7221711.23 | 1196.57 21728.2 | 1199.2521777.27 | 1205.9521788.71 | 1206.38 |     |      |     |      |
| 21819.26 | 1207.7221841.15 | 1208.1521867.01 | 1205.3121903.18 | 1199.53 21932.3 | 1197    |     |      |     |      |
| 21945.8  | 1195.1221985.87 | 1187.8422004.02 | 1186.57 22027   | 1186.2622057.67 | 1189.91 |     |      |     |      |
| 22075.1  | 1192.0222085.84 | 1190.6822113.34 | 1187.5722115.25 | 1186.2222125.69 | 1184.95 |     |      |     |      |
| 22154.69 | 1181.82 22155.4 | 1181.8622176.65 | 1184 22200      | 1184.6822220.51 | 1184.15 |     |      |     |      |
| 22230.57 | 1183.3222264.92 | 1179.5422278.13 | 1180.2122302.74 | 1181.0922350.33 | 1179.55 |     |      |     |      |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 22381.18 | 1177.6222383.12 | 1178.1722397.28 | 1177.4822403.14 | 1176.822437.65  | 1174.5  |
| 22439.41 | 1174.5222472.76 | 1176.84 22494.1 | 1177.1822505.84 | 1178.0522516.42 | 1177.26 |
| 22553.24 | 1182.6222562.01 | 1183.0122577.08 | 1183.0822612.44 | 1185.3222617.73 | 1185.5  |
| 22632.53 | 1187.1222658.81 | 1187.3522669.56 | 1187.1722713.55 | 1183.9622715.82 | 1184.29 |
| 22718.59 | 1186.0222723.52 | 1184.8722735.39 | 1185.1622743.11 | 1184.5322776.65 | 1183.11 |
| 22777.91 | 1183.12         |                 |                 |                 |         |

Manning's n Values num= 3

| Sta     | n Val       | Sta | n Val       | Sta | n Val |
|---------|-------------|-----|-------------|-----|-------|
| 18678.5 | .0419438.93 |     | .0320433.82 |     | .04   |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

|          |          |     |       |     |    |    |
|----------|----------|-----|-------|-----|----|----|
| 19438.93 | 20433.82 | 420 | 571.5 | 760 | .1 | .3 |
|----------|----------|-----|-------|-----|----|----|

Ineffective Flow num= 2

| Sta L    | Sta R    | Elev    | Permanent |
|----------|----------|---------|-----------|
| 18678.5  | 19438.93 | 1170.54 | F         |
| 20433.82 | 22777.91 | 1167.58 | F         |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 221.50

INPUT  
Description:

Station Elevation Data num= 99

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev    | Sta      | Elev            | Sta             | Elev            |
|----------|-----------------|-----------------|-----------------|-----------------|---------|----------|-----------------|-----------------|-----------------|
| 18724.69 | 1226.4218736.78 | 1221.7118740.72 | 1220.0618746.27 | 1219.1618762.15 | 1209.18 | 18762.87 | 1208.8218779.35 | 1203.6518780.37 | 1203.5618804.96 |
| 18813.4  | 1195.5218835.21 | 1188.3218863.88 | 1165.4918883.84 | 1148.71 18910.1 | 1147.91 | 18943.52 | 1164.3218976.58 | 1163.3519025.23 | 1161.9319050.06 |
| 19088.81 | 1150.5219103.99 | 1149.9919122.88 | 1149.119152.74  | 1148.3619167.01 | 1148.46 | 19212.01 | 1148.1219222.05 | 1148.0219247.66 | 1145.9119287.05 |
| 19308.12 | 1147.1219350.49 | 1149.07 19384.7 | 1149.519388.07  | 1149.519414.13  | 1156.36 | 19421.77 | 1158.4219446.99 | 1164.8119452.98 | 1166.5519460.46 |
| 19478.02 | 1162.5219495.41 | 1162.6419508.22 | 1162.5619514.49 | 1160.8519535.89 | 1154.1  | 19549.16 | 1152.9219564.95 | 1153.43 19579.7 | 1154.3119590.95 |
| 19623.73 | 1142.9219639.47 | 1142.7319660.34 | 1141.819721.27  | 1138.99 19768.9 | 1136.2  | 19897.56 | 1138.2219971.91 | 1137.2320028.81 | 1136.3720038.11 |
| 20117.01 | 1141.3220150.41 | 1143.1320157.19 | 1144.6720260.17 | 1141.120290.02  | 1140.47 | 20365.62 | 1143.4220376.07 | 1143.8220405.82 | 1153.6620446.21 |
| 20489.79 | 1166.4220506.63 | 1166.8520509.77 | 1166.85 20520.6 | 1165.0420538.53 | 1170.78 | 20542.37 | 1171.9220552.68 | 1171.1920605.25 | 1168.2120627.64 |
| 20681.46 | 1168.8220690.88 | 1168.5820703.82 | 1166.1320710.31 | 1164.3120726.22 | 1164.74 | 20744.7  | 1164.8220753.41 | 1162.1620774.01 | 1169.420778.57  |
| 20811.33 | 1170.42 20827.3 | 1170.0620859.08 | 1168.7520875.49 | 1166.5220883.33 | 1167.89 | 20891.67 | 1170.7220906.56 | 1173.7620926.89 | 1174.6520993.81 |

Manning's n Values num= 3

| Sta      | n Val       | Sta | n Val       | Sta | n Val |
|----------|-------------|-----|-------------|-----|-------|
| 18724.69 | .0419460.46 |     | .0320506.63 |     | .04   |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

|          |          |     |        |     |    |    |
|----------|----------|-----|--------|-----|----|----|
| 19460.46 | 20506.63 | 510 | 506.96 | 520 | .1 | .3 |
|----------|----------|-----|--------|-----|----|----|

Ineffective Flow num= 2

| Sta L    | Sta R    | Elev    | Permanent |
|----------|----------|---------|-----------|
| 18724.69 | 19460.46 | 1170.25 | F         |
| 20506.63 | 20993.81 | 1166.85 | F         |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 221.40

INPUT  
Description:

Station Elevation Data num= 257

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev    | Sta      | Elev            | Sta             | Elev            |
|----------|-----------------|-----------------|-----------------|-----------------|---------|----------|-----------------|-----------------|-----------------|
| 18652.1  | 1207.1218671.59 | 1202.67 18699.2 | 1194.3518707.99 | 1191.5318714.68 | 1188.91 | 18723.36 | 1187.1218763.39 | 1174.0518779.65 | 1170.4218828.27 |
| 18906.14 | 1170.8218911.84 | 1170.92 18935.5 | 1170.4218948.16 | 1166.6518978.02 | 1159.21 | 18991.43 | 1156.0218993.58 | 1156.2619033.37 | 1156.8119043.37 |
| 19058.77 | 1157.52 19061   | 1157.5519072.37 | 1158.4919083.23 | 1157.8319097.13 | 1156.85 | 19138.46 | 1159.6219155.07 | 1160.81 19166.8 | 1162.619213.05  |
| 19249.06 | 1161.8219254.05 | 1162.4419283.37 | 1157.6419311.47 | 1152.19 19324   | 1149.49 | 19346.26 | 1145.1219354.28 | 1144.2819356.11 | 1145.1519383.67 |
| 19408.59 | 1156.6219441.58 | 1166.85 19445   | 1166.319449.43  | 1167.0119456.36 | 1169.12 | 19480.62 | 1157.9219493.16 | 1157.3819503.91 | 1157.2119516.58 |
| 19549.14 | 1151.5219559.75 | 1152.6119570.58 | 1153.8519577.91 | 1153.3819582.95 | 1146.55 | 19585.63 | 1143.7219594.37 | 1144.6119600.79 | 1145.6219607.14 |
| 19614.57 | 1145.02 19642.3 | 1144.6719646.34 | 1144.4319655.98 | 1144.3519677.03 | 1143.38 | 19785.47 | 1138.3219807.92 | 1137.9519895.92 | 1138.2719914.19 |
| 20050.59 | 1135.9220171.35 | 1135.3320255.63 | 1136.9120306.82 | 1137.9120337.14 | 1140.16 | 20387.05 | 1143.9220396.05 | 1147.9920408.08 | 1152.9120422.65 |
| 20470.54 | 1156.7220487.47 | 1158.0220500.27 | 1159.4920515.11 | 1160.8420540.48 | 1160.67 | 20565.02 | 1166.6220574.62 | 1167.3620584.25 | 1174.2920634.72 |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 20707.14 | 1174.4220716.33 | 1174.4920721.03 | 1174.4220750.05 | 1172.2220764.44 | 1171.52 |
| 20772.33 | 1169.7220776.01 | 1169.5620794.23 | 1164.1320800.86 | 1163.82 20810.3 | 1164.1  |
| 20838.2  | 1165.4220845.54 | 1162.2920866.66 | 1168.7120871.05 | 1170.11 20875.8 | 1168.32 |
| 20899.66 | 1167.8220912.01 | 1167.0420916.66 | 1167.0520938.55 | 1167.820948.58  | 1168.57 |
| 20975.14 | 1173.3221020.84 | 1177.9421052.25 | 1179.8921102.75 | 1183.3721116.56 | 1184.8  |
| 21155.53 | 1190.4221201.77 | 1197.7721207.52 | 1198.0921276.43 | 120521289.39    | 1206.25 |
| 21317.85 | 1202.2221330.02 | 1200.4321339.16 | 1201.2321370.97 | 1202.9921397.84 | 1204.26 |
| 21460.04 | 1214.7221461.59 | 1215.05 21511.7 | 1223.8 21546.9  | 1229.921568.77  | 1233.44 |
| 21596.38 | 1238.8221640.13 | 1251.1121665.43 | 1256.5821692.78 | 1261.68 21697.2 | 1263.15 |
| 21707.51 | 1264.9221716.32 | 1266.2621791.55 | 1261.0921850.25 | 1254.1421857.65 | 1253.31 |
| 21863.4  | 1253.0221873.08 | 1251.6421962.35 | 1238.4221967.51 | 123722016.88    | 1225.37 |
| 22023.23 | 1223.1222031.27 | 1220.722051.75  | 1223.5122060.31 | 1224.53 22065.8 | 1224    |
| 22075.24 | 1223.9222110.52 | 1222.7222144.58 | 1219.9222155.42 | 1219.3322158.53 | 1220.63 |
| 22163.19 | 1220.0222183.22 | 1219.522190.13  | 1219.6722193.29 | 1219.4322226.28 | 1219.09 |
| 22232.43 | 1218.5222242.46 | 1218.6222284.81 | 1218.2522320.94 | 1224.6522333.23 | 1225.24 |
| 22342.68 | 1224.9222351.29 | 1226.7922382.67 | 1220.3822390.51 | 1218.8922398.53 | 1218.31 |
| 22438.98 | 1214.1222481.19 | 1208.0822485.17 | 1207.9622495.98 | 1209.1322527.13 | 1213.21 |
| 22538.15 | 1212.6222559.76 | 1212.7622596.84 | 1209.3522607.16 | 1208.7622631.18 | 1209.87 |
| 22642.13 | 1211.0222661.99 | 1213.6122692.22 | 1218.0822711.98 | 1221.1122736.36 | 1224.56 |
| 22759.23 | 1228.7222790.77 | 1232.7322805.91 | 1235.0822825.04 | 1235.2722836.73 | 1234.8  |
| 22882.49 | 1229.12 22887   | 1228.7222917.78 | 1227.1922938.05 | 1225.3322955.82 | 1223.61 |
| 22986.03 | 1222.2222992.72 | 1222.0623006.88 | 1222.2623022.46 | 1221.9423026.55 | 1221.66 |
| 23080.52 | 1219.4223088.12 | 1218.9123104.31 | 1218.6923143.27 | 1217.1823148.76 | 1215.21 |
| 23210.02 | 1218.4223269.57 | 1221.0123283.38 | 1223.6223289.05 | 1224.4423321.66 | 1226.91 |
| 23339.03 | 1226.0223382.95 | 1231.8523387.74 | 1231.8623463.23 | 1230.8223483.01 | 1231.24 |
| 23493.93 | 1231.2223502.63 | 1232.2923505.14 | 1232.1523546.35 | 1230.58 23548.8 | 1230.51 |
| 23564.58 | 1230.7223601.96 | 1231.3623609.11 | 1231.6523678.59 | 1233.623685.07  | 1233.12 |
| 23726.3  | 1233.7223727.36 | 1233.47 23756.2 | 1231.8523766.62 | 1232.6123771.63 | 1232.56 |
| 23785.18 | 1233.6223801.99 | 1232.58 23826.7 | 1234.8123886.44 | 1239.1423911.27 | 1240.34 |
| 23924.45 | 1238.0223934.49 | 1238.6923940.75 | 1239.2723973.91 | 1244.4523982.18 | 1244.22 |
| 24021.62 | 1244.1224040.01 | 1248.8724072.75 | 1254.0724101.71 | 1254.16 24161.4 | 1255.67 |
| 24168.61 | 1255.8224171.81 | 1257.5124181.98 | 1265.2624201.38 | 1264.7224227.48 | 1262.76 |
| 24240.14 | 1257.0224260.47 | 1256.324287.05  | 1249.8824294.26 | 1250.2124294.86 | 1249.87 |
| 24296.66 | 1258.02 24312.7 | 1257.61         |                 |                 |         |

|                               |              |     |
|-------------------------------|--------------|-----|
| Manning's n Values            | num=         | 3   |
| Sta n Val Sta n Val Sta n Val |              |     |
| 18652.1 .0519456.36           | .03520584.25 | .05 |

|                            |                             |              |        |
|----------------------------|-----------------------------|--------------|--------|
| Bank Sta: Left Right       | Lengths: Left Channel Right | Coeff Contr. | Expan. |
| 19456.3620584.25           | 460 504.7 540               | .1           | .3     |
| Ineffective Flow num=      | 2                           |              |        |
| Sta L Sta R Elev Permanent |                             |              |        |
| 18652.119456.36 1169.12    | F                           |              |        |
| 20584.25 24312.7 1174.29   | F                           |              |        |

CROSS SECTION

RIVER: Salt  
 REACH: 1  
 RS: 221.31

INPUT  
 Description:

|  |                 |                 |                 |         |
|--|-----------------|-----------------|-----------------|---------|
| Station Elevation Data                       | num=            | 360             |                 |         |
| Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev |                 |                 |                 |         |
| 14992.66 1170.1215026.77                     | 1167.715030.91  | 1167.5515037.28 | 1167.9115069.86 | 1167.94 |
| 15070.88 1167.5215076.04                     | 1168.17 15112.2 | 1167.6815117.18 | 1167.5415176.25 | 1167.13 |
| 15268.31 1167.0215278.91                     | 1166.7615310.35 | 1166.5915385.32 | 1166.8715490.94 | 1167.2  |
| 15609.05 1167.5215625.53                     | 1167.4115743.82 | 1167.5715753.35 | 1167.5715780.48 | 1167.13 |
| 15782.39 1167.1215782.71                     | 1167.7315787.31 | 1167.7215811.68 | 1167.1415873.21 | 1167.11 |
| 15876.97 1167.3215893.61                     | 1167.715958.36  | 1168.2415987.66 | 1167.615998.23  | 1167.52 |
| 16040.32 1166.7216069.32                     | 1166.3316070.86 | 1166.2216186.62 | 1166.8216236.42 | 1167.02 |
| 16259.59 1167.3216271.17                     | 1166.8616276.84 | 1166.7316297.25 | 1166.5316321.85 | 1166.44 |
| 16329.32 1166.5216345.93                     | 1167.0316406.44 | 1167.4316457.25 | 1166.4916498.72 | 1166.16 |
| 16502.17 1166.5216544.29                     | 1166.48 16621.4 | 1166.6816666.91 | 1165.7216685.69 | 1165.64 |
| 16694.4 1165.9216717.07                      | 1166.4816743.19 | 1166.9316765.72 | 1166.2716823.31 | 1166.03 |
| 16851.5 1165.9216935.43                      | 1165.9616940.48 | 1165.9117003.31 | 1165.6317032.32 | 1165.6  |
| 17077.17 1165.4217096.38                     | 1165.2717107.31 | 1165.5117112.64 | 1165.3317125.84 | 1165.36 |
| 17161.34 1165.6217169.83                     | 1165.5417179.29 | 1165.6817207.69 | 1165.3317221.38 | 1165.08 |
| 17239.25 1165.2217363.03                     | 1166.4517429.76 | 1166.4717603.57 | 1166.117646.95  | 1166.21 |
| 17662.19 1165.5217722.37                     | 1166.4417801.03 | 1167.4317825.03 | 1168.7317856.64 | 1168.19 |
| 17901.38 1167.4217920.15                     | 1167.4217958.22 | 1168.0318003.49 | 1168.3118024.75 | 1172.92 |
| 18038.49 1176.0218053.57                     | 1176.418097.69  | 1180.9318109.61 | 1181.9 18124.8  | 1182.75 |
| 18152.51 1183.9218164.97                     | 1183.37 18180.7 | 1183.4918206.05 | 1185.89 18213.6 | 1185.59 |
| 18219.9 1184.2218233.66                      | 1178.918241.03  | 1178.5218270.87 | 1178.5718283.06 | 1179.02 |
| 18335.33 1178.9218373.63                     | 1178.6318418.06 | 1178.3518454.07 | 1177.718466.72  | 1177.05 |
| 18495.09 1176.5218504.69                     | 1175.5318523.54 | 1173.3918563.58 | 1167.4918572.61 | 1165.91 |
| 18588.35 1164.9218593.96                     | 1163.5418608.67 | 1162.5418622.35 | 1162.5718651.41 | 1163.21 |
| 18709.57 1161.3218728.59                     | 1160.79 18749.8 | 1159.7818796.71 | 1159.3818803.75 | 1159.35 |
| 18846.73 1158.2218868.26                     | 1157.818901.47  | 1158.01 18906   | 1158.218912.34  | 1157.9  |
| 18948.25 1156.8218955.06                     | 1158.0618961.51 | 1158.9418967.74 | 1157.6818980.99 | 1155.8  |
| 19023.11 1156.4219073.86                     | 1156.64 19114   | 1156.06 19122.7 | 1155.9719156.14 | 1154.39 |
| 19180.43 1153.6219195.14                     | 1155.67 19209.9 | 1156.9819219.29 | 1156.0219227.23 | 1153.65 |
| 19234.54 1151.9219264.72                     | 1150.7319301.88 | 1151.319312.66  | 1151.3619321.63 | 1155.19 |
| 19345.79 1162.6219359.34                     | 1166.0519372.89 | 1162.1319413.94 | 1151.3919424.31 | 1152.14 |
| 19429.24 1153.5219449.21                     | 1158.17 19463.2 | 1157.8719470.75 | 1157.4919482.11 | 1158.03 |
| 19490.16 1158.6219515.24                     | 1159.25 19531.2 | 1158.9719538.57 | 1158.8719557.52 | 1158.17 |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 19569.37 | 1156.4219578.77 | 1153.119621.52  | 1137.8119639.77 | 1139.7819664.83 | 1140.48 |
| 19683.76 | 1141.7219696.55 | 1142.3219792.75 | 1138.0719801.48 | 1137.7519809.81 | 1137.76 |
| 19930.61 | 1137.72 19952.6 | 1137.1420048.27 | 1134.120062.35  | 1133.5520118.13 | 1134.15 |
| 20188.61 | 1134.9220256.01 | 1135.9520328.23 | 1137.1120344.49 | 1137.8520398.32 | 1152.45 |
| 20444.56 | 1151.4220448.72 | 1151.3620500.55 | 1155.7420532.37 | 1163.6120549.57 | 1162.63 |
| 20591.58 | 1161.7220597.21 | 1165.9920601.99 | 1170.0820608.04 | 1170.6120623.32 | 1172.52 |
| 20633.95 | 1187.4220664.73 | 1190.5520691.02 | 1195.6220695.44 | 1195.87 20731.2 | 1196.77 |
| 20757.37 | 1196.3220802.53 | 1195.24 20875.7 | 1172.74 20935.8 | 1153.8921005.31 | 1153.5  |
| 21015.05 | 1153.5221032.49 | 1161.3321042.59 | 1164.421067.91  | 1164.1821078.72 | 1164.16 |
| 21087.43 | 1161.9221108.55 | 1166.5521119.27 | 1168.4921136.51 | 1170.921156.97  | 1173.9  |
| 21181.55 | 1175.3221224.13 | 1176.2121225.45 | 1176.1521237.16 | 1174.7221259.28 | 1175.49 |
| 21263.15 | 1176.0221265.76 | 1176.6621290.93 | 1183.4221294.11 | 1183.821307.93  | 1186.22 |
| 21311.44 | 1186.0221323.42 | 1188.3921330.86 | 1190.12 21350.2 | 1192.77 21383.8 | 1196    |
| 21398.66 | 1198.0221412.73 | 1198.621457.15  | 1201.5821465.59 | 1202.4121472.67 | 1202.42 |
| 21494.72 | 1201.9221504.66 | 1201.9921507.38 | 1201.6421513.07 | 1201.4921550.52 | 1201.07 |
| 21556.04 | 1200.52 21565.5 | 1199.1221600.52 | 1195.3321641.91 | 1197.6521657.62 | 1198.67 |
| 21668.48 | 1198.9221700.06 | 1200.1 21737.6  | 1203.0221761.14 | 1205.3321776.72 | 1205.11 |
| 21809.75 | 1201.4221823.95 | 1198.5321841.35 | 1195.8421860.33 | 1192.7221870.81 | 1192.33 |
| 21876.3  | 1191.4221877.32 | 1191.8521886.39 | 1184.9121889.31 | 1184.0521924.92 | 1200.66 |
| 21961.7  | 1217.9221975.74 | 1217.4322016.97 | 1218.3422055.35 | 1219.1122056.74 | 1219.33 |
| 22068.24 | 1219.6222085.46 | 1212.57 22117.6 | 1200.2922144.34 | 1203.2 22149.1  | 1203.42 |
| 22172.26 | 1203.9222186.69 | 1200.522212.74  | 1194.922227.35  | 1193.3522233.87 | 1192.41 |
| 22238.41 | 1192.6222264.25 | 1203.6622293.82 | 1206.0122306.88 | 1207.0822329.48 | 1207.95 |
| 22355.06 | 1206.32 22362.7 | 1207.1222381.95 | 1209.8522409.35 | 1212.9522422.38 | 1215.94 |
| 22452.03 | 1219.4222465.67 | 1220.322486.12  | 1222.0222521.14 | 1226.1122541.54 | 1229.53 |
| 22565.51 | 1230.7222593.47 | 1231.76 22599.6 | 1231.8622632.35 | 123222692.15    | 1232.33 |
| 22784.26 | 1232.3222789.94 | 1232.2922834.18 | 1228.3622845.95 | 1227.222870.24  | 1224.16 |
| 22905.22 | 1219.2222943.77 | 1217.9522971.27 | 1219.76 22987.3 | 1219.6523025.79 | 1218.2  |
| 23041.13 | 1216.1223057.71 | 1214.323080.55  | 1215.0923085.19 | 1214.7223101.56 | 1212.08 |
| 23105.4  | 1212.7223114.94 | 1216.0923128.29 | 1216.1823160.28 | 1222.57 23227.7 | 1230.52 |
| 23255.87 | 1229.1223295.71 | 1228.1 23316.8  | 1227.1223353.75 | 1231.2223362.76 | 1231.66 |
| 23379.03 | 1234.02 23383.4 | 1233.7323400.86 | 1234.8823414.28 | 1235.29 23442.3 | 1234.69 |
| 23485.54 | 1235.6223504.28 | 1236.1723519.98 | 1234.823538.44  | 1235.523551.81  | 1236.12 |
| 23569.64 | 1230.9223593.85 | 1224.7223612.35 | 1223.2623617.94 | 1222.8923666.63 | 1218.48 |
| 23697.32 | 1214.0223718.26 | 1217.3623733.11 | 1218.5323754.02 | 1219.8323795.87 | 1222.56 |
| 23802.27 | 1222.8223810.78 | 1223.3623853.34 | 1229.94 23875.7 | 1230.5523907.31 | 1229.11 |
| 23909.33 | 1229.3223932.78 | 1232.4523960.12 | 1233.4723975.15 | 1232.9424031.74 | 1237.35 |
| 24040.61 | 1238.1224080.63 | 1236.4524095.36 | 1234.74 24155.4 | 1228.524156.92  | 1228.39 |
| 24172.86 | 1228.3224184.42 | 1230.3824192.42 | 1230.5524207.32 | 1230.2824216.38 | 1230.21 |
| 24250.41 | 1229.8224277.05 | 1232.9124281.21 | 1233.2924306.16 | 1234.724320.27  | 1234.58 |

|                    |             |              |       |      |       |
|--------------------|-------------|--------------|-------|------|-------|
| Manning's n Values |             |              |       | num= | 3     |
| Sta                | n Val       | Sta          | n Val | Sta  | n Val |
| 14992.66           | .0519515.24 | .03520532.37 | .05   |      |       |

|                  |         |               |           |       |       |        |        |
|------------------|---------|---------------|-----------|-------|-------|--------|--------|
| Bank Sta: Left   | Right   | Lengths: Left | Channel   | Right | Coeff | Contr. | Expan. |
| 19515.2420532.37 |         | 220           | 262.31    | 780   | .1    | .3     |        |
| Ineffective Flow | num=    | 2             |           |       |       |        |        |
| Sta L            | Sta R   | Elev          | Permanent |       |       |        |        |
| 14992.6619515.24 | 1159.25 |               | F         |       |       |        |        |
| 20532.3724320.27 | 1163.61 |               | F         |       |       |        |        |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 221.26

INPUT  
Description: Upstream face of New Mill Ave Bridge

|                        |                 |                 |                 |                 |         |     |      |     |      |      |      |
|------------------------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|------|------|
| Station Elevation Data |                 |                 |                 |                 |         |     |      |     |      | num= | 54   |
| Sta                    | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev | Sta  | Elev |
| 19250.65               | 1155.5219328.32 | 1162.1219346.95 | 1157.1219365.49 | 1152.1219373.18 | 1150.12 |     |      |     |      |      |      |
| 19379.27               | 1149.9219405.67 | 1149.3219421.12 | 1149.1219428.81 | 1150.1219435.43 | 1152.12 |     |      |     |      |      |      |
| 19440.82               | 1153.12 19460.6 | 1154.1219485.32 | 1155.1219495.66 | 1154.3319516.22 | 1154.17 |     |      |     |      |      |      |
| 19528.92               | 1146.21 19563.1 | 1139.0719641.28 | 1136.52 19667   | 1131.71 19688.2 | 1136.93 |     |      |     |      |      |      |
| 19787.1                | 1136.1519809.84 | 1130.1919835.67 | 1134.7819929.08 | 1133.2919952.46 | 1126.41 |     |      |     |      |      |      |
| 19982.57               | 1132.1320059.41 | 1131.7820080.56 | 1129.4420095.93 | 1128.6920108.75 | 1128.05 |     |      |     |      |      |      |
| 20132.81               | 1131.3620168.05 | 1132.2920215.61 | 1133.6320238.76 | 1129.7420269.26 | 1133.52 |     |      |     |      |      |      |
| 20316.63               | 1136.4820387.64 | 1138.5920404.56 | 1150.4920438.76 | 1151.320479.33  | 1162.31 |     |      |     |      |      |      |
| 20557.7                | 1160.3520571.28 | 1160.12 20594.5 | 1159.9220611.72 | 1159.1220615.34 | 1159.12 |     |      |     |      |      |      |
| 20632.65               | 1158.3220645.98 | 1158.0220657.81 | 1158.62 20658.7 | 1157.2220676.27 | 1158.42 |     |      |     |      |      |      |
| 20734.91               | 1177.6220745.77 | 1181.3220783.91 | 1194.0220790.27 | 1197.52         |         |     |      |     |      |      |      |

|                    |             |              |       |      |       |
|--------------------|-------------|--------------|-------|------|-------|
| Manning's n Values |             |              |       | num= | 3     |
| Sta                | n Val       | Sta          | n Val | Sta  | n Val |
| 19250.65           | .0519495.66 | .03520479.33 | .05   |      |       |

|                  |         |               |           |        |       |        |        |
|------------------|---------|---------------|-----------|--------|-------|--------|--------|
| Bank Sta: Left   | Right   | Lengths: Left | Channel   | Right  | Coeff | Contr. | Expan. |
| 19495.6620479.33 |         | 101.04        | 101.04    | 101.04 | .1    | .3     |        |
| Ineffective Flow | num=    | 2             |           |        |       |        |        |
| Sta L            | Sta R   | Elev          | Permanent |        |       |        |        |
| 19250.6519495.66 | 1157.12 |               | F         |        |       |        |        |
| 20479.3320790.27 | 1162.31 |               | F         |        |       |        |        |

BRIDGE

RIVER: Salt  
 REACH: 1 RS: 221.25

INPUT  
 Description: New Mill Avenue Bridge (North Bound)  
 Distance from Upstream XS = 26.5  
 Deck/Roadway width = 48  
 Weir Coefficient = 2.6  
 Upstream Deck/Roadway Coordinates

| num= 23  |         |         |          |         |         |          |         |         |
|----------|---------|---------|----------|---------|---------|----------|---------|---------|
| Sta      | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord |
| 19250.65 | 1177.12 | 1152.12 | 19250.66 | 1177.12 | 1166.12 | 19321.13 | 1177.77 | 1172.77 |
| 19391.61 | 1178.07 | 1166.12 | 19462.08 | 1178.37 | 1173.37 | 19532.56 | 1178.67 | 1166.92 |
| 19603.04 | 1178.97 | 1173.97 | 19673.52 | 1179.27 | 1167.32 | 19743.99 | 1179.57 | 1174.57 |
| 19814.47 | 1179.94 | 1167.92 | 19884.95 | 1179.64 | 1174.64 | 19955.43 | 1179.34 | 1167.32 |
| 20025.9  | 1179.04 | 1174.04 | 20096.38 | 1178.74 | 1166.92 | 20166.86 | 1178.44 | 1173.44 |
| 20237.34 | 1178.14 | 1166.12 | 20307.81 | 1177.84 | 1172.84 | 20378.29 | 1177.54 | 1165.62 |
| 20448.77 | 1177.24 | 1172.24 | 20519.25 | 1176.94 | 1165.12 | 20589.72 | 1176.64 | 1171.64 |
| 20660.19 | 1176.34 | 1165.12 | 20660.2  | 1176.34 | 1152.12 |          |         |         |

Upstream Bridge Cross Section Data

| Station Elevation Data num= 54 |         |          |         |          |         |          |         |          |         |
|--------------------------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| Sta                            | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    |
| 19250.65                       | 1155.52 | 19328.32 | 1162.12 | 19346.95 | 1157.12 | 19365.49 | 1152.12 | 19373.18 | 1150.12 |
| 19379.27                       | 1149.92 | 19405.67 | 1149.32 | 19421.12 | 1149.12 | 19428.81 | 1150.12 | 19435.43 | 1152.12 |
| 19440.82                       | 1153.12 | 19460.6  | 1154.12 | 19485.32 | 1155.12 | 19495.66 | 1154.33 | 19516.22 | 1154.17 |
| 19528.92                       | 1146.21 | 19563.1  | 1139.07 | 19641.28 | 1136.52 | 19667    | 1131.71 | 19688.2  | 1136.93 |
| 19787.1                        | 1136.15 | 19809.84 | 1130.19 | 19835.67 | 1134.78 | 19929.08 | 1133.29 | 19952.46 | 1126.41 |
| 19982.57                       | 1132.13 | 20059.41 | 1131.78 | 20080.56 | 1129.44 | 20095.93 | 1128.69 | 20108.75 | 1128.05 |
| 20132.81                       | 1131.36 | 20168.05 | 1132.29 | 20215.61 | 1133.63 | 20238.76 | 1129.74 | 20269.26 | 1133.52 |
| 20316.63                       | 1136.48 | 20387.64 | 1138.59 | 20404.56 | 1150.49 | 20438.76 | 1151.32 | 20479.33 | 1162.31 |
| 20557.7                        | 1160.35 | 20571.28 | 1160.12 | 20594.5  | 1159.92 | 20611.72 | 1159.12 | 20615.34 | 1159.12 |
| 20632.65                       | 1158.32 | 20645.98 | 1158.02 | 20657.81 | 1158.62 | 20658.7  | 1157.22 | 20676.27 | 1158.42 |
| 20734.91                       | 1177.62 | 20745.77 | 1181.32 | 20783.91 | 1194.02 | 20790.27 | 1197.52 |          |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 19250.65 .05 19495.66 .03 20479.33 .05

Bank Sta: Left Right Coeff Contr. Expan.  
 19495.66 20479.33 .1 .3

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 19250.65 19495.66 1157.12 F  
 20479.33 20790.27 1162.31 F

Downstream Deck/Roadway Coordinates

| num= 23  |         |         |          |         |         |          |         |         |
|----------|---------|---------|----------|---------|---------|----------|---------|---------|
| Sta      | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord |
| 19250.65 | 1177.12 | 1152.12 | 19250.66 | 1177.12 | 1166.12 | 19321.13 | 1177.77 | 1172.77 |
| 19391.61 | 1178.07 | 1166.12 | 19462.08 | 1178.37 | 1173.37 | 19532.56 | 1178.67 | 1166.92 |
| 19603.04 | 1178.97 | 1173.97 | 19673.52 | 1179.27 | 1167.32 | 19743.99 | 1179.57 | 1174.57 |
| 19814.47 | 1179.94 | 1167.92 | 19884.95 | 1179.64 | 1174.64 | 19955.43 | 1179.34 | 1167.32 |
| 20025.9  | 1179.04 | 1174.04 | 20096.38 | 1178.74 | 1166.92 | 20166.86 | 1178.44 | 1173.44 |
| 20237.34 | 1178.14 | 1166.12 | 20307.81 | 1177.84 | 1172.84 | 20378.29 | 1177.54 | 1165.62 |
| 20448.77 | 1177.24 | 1172.24 | 20519.25 | 1176.94 | 1165.12 | 20589.72 | 1176.64 | 1171.64 |
| 20660.19 | 1176.34 | 1165.12 | 20660.2  | 1176.34 | 1152.12 |          |         |         |

Downstream Bridge Cross Section Data

| Station Elevation Data num= 54 |         |          |         |          |         |          |         |          |         |
|--------------------------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| Sta                            | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    |
| 19250.65                       | 1155.52 | 19328.32 | 1162.12 | 19346.95 | 1157.12 | 19365.49 | 1152.12 | 19373.18 | 1150.12 |
| 19379.27                       | 1149.92 | 19405.67 | 1149.32 | 19421.12 | 1149.12 | 19428.81 | 1150.12 | 19435.43 | 1152.12 |
| 19440.82                       | 1153.12 | 19460.6  | 1154.12 | 19485.32 | 1155.12 | 19495.66 | 1154.33 | 19516.22 | 1154.17 |
| 19528.92                       | 1146.21 | 19563.1  | 1139.07 | 19641.28 | 1136.52 | 19667    | 1131.71 | 19688.2  | 1136.93 |
| 19787.1                        | 1136.15 | 19809.84 | 1130.19 | 19835.67 | 1134.78 | 19929.08 | 1133.29 | 19952.46 | 1126.41 |
| 19982.57                       | 1132.13 | 20059.41 | 1131.78 | 20080.56 | 1129.44 | 20095.93 | 1128.69 | 20108.75 | 1128.05 |
| 20132.81                       | 1131.36 | 20168.05 | 1132.29 | 20215.61 | 1133.63 | 20238.76 | 1129.74 | 20269.26 | 1133.52 |
| 20316.63                       | 1136.48 | 20387.64 | 1138.59 | 20404.56 | 1150.49 | 20438.76 | 1151.32 | 20479.33 | 1162.31 |
| 20557.7                        | 1160.35 | 20571.28 | 1160.12 | 20594.5  | 1159.92 | 20611.72 | 1159.12 | 20615.34 | 1159.12 |
| 20632.65                       | 1158.32 | 20645.98 | 1158.02 | 20657.81 | 1158.62 | 20658.7  | 1157.22 | 20676.27 | 1158.42 |
| 20734.91                       | 1177.62 | 20745.77 | 1181.32 | 20783.91 | 1194.02 | 20790.27 | 1197.52 |          |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 19250.65 .05 19495.66 .03 20479.33 .05

Bank Sta: Left Right Coeff Contr. Expan.  
 19495.66 20479.33 .1 .3

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 19250.65 19495.66 1157.12 F  
 20479.33 20790.27 1162.31 F

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .95

Elevation at which weir flow begins  
Energy head used in spillway design  
Spillway height used in design  
weir crest shape

=  
=  
=  
= Broad Crested

Number of Piers = 9

Pier Data  
Pier Station Upstream=19391.61 Downstream=19391.61  
Upstream num= 2  
width Elev width Elev  
10 1142.12 10 1167.12  
Downstream num= 2  
width Elev width Elev  
10 1142.12 10 1167.12

Pier Data  
Pier Station Upstream=19532.56 Downstream=19532.56  
Upstream num= 2  
width Elev width Elev  
10 1142.12 10 1167.12  
Downstream num= 2  
width Elev width Elev  
10 1142.12 10 1167.12

Pier Data  
Pier Station Upstream=19673.52 Downstream=19673.52  
Upstream num= 2  
width Elev width Elev  
10 1132.12 10 1168.12  
Downstream num= 2  
width Elev width Elev  
10 1132.12 10 1168.12

Pier Data  
Pier Station Upstream=19814.47 Downstream=19814.47  
Upstream num= 2  
width Elev width Elev  
10 1132.12 10 1168.12  
Downstream num= 2  
width Elev width Elev  
10 1132.12 10 1168.12

Pier Data  
Pier Station Upstream=19955.43 Downstream=19955.43  
Upstream num= 2  
width Elev width Elev  
10 1030.12 10 1168.12  
Downstream num= 2  
width Elev width Elev  
10 1030.12 10 1168.12

Pier Data  
Pier Station Upstream=20096.38 Downstream=20096.38  
Upstream num= 2  
width Elev width Elev  
10 1027.12 10 1168.12  
Downstream num= 2  
width Elev width Elev  
10 1027.12 10 1168.12

Pier Data  
Pier Station Upstream=20237.34 Downstream=20237.34  
Upstream num= 2  
width Elev width Elev  
10 1127.12 10 1167.12  
Downstream num= 2  
width Elev width Elev  
10 1127.12 10 1167.12

Pier Data  
Pier Station Upstream=20378.29 Downstream=20378.29  
Upstream num= 2  
width Elev width Elev  
10 1130.12 10 1167.12  
Downstream num= 2  
width Elev width Elev  
10 1130.12 10 1167.12

Pier Data  
Pier Station Upstream=20519.25 Downstream=20519.25  
Upstream num= 2  
width Elev width Elev  
10 1127.12 10 1167.12  
Downstream num= 2  
width Elev width Elev  
10 1127.12 10 1167.12

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy
Momentum Cd = 1.2
Yarnell KVal = 1.05
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
Energy Only

Additional Bridge Parameters

Add Friction component to Momentum
Do not add Weight component to Momentum
Class B flow critical depth computations use critical depth
inside the bridge at the upstream end
Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Salt
REACH: 1 RS: 221.24

INPUT
Description: Downstream face of New Mill Ave Bridge

Station Elevation Data num= 54
Table with 10 columns: Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev. Contains 20 rows of station and elevation data.

Manning's n Values num= 3
Table with 5 columns: Sta, n Val, Sta, n Val, Sta, n Val. Contains 1 row of Manning's n values.

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
Ineffective Flow num= 2
Table with 7 columns: Bank Sta, Left, Right, Lengths, Left, Channel, Right, Coeff Contr., Expan. Contains 1 row of bank station data and 1 row of ineffective flow data.

CROSS SECTION

RIVER: Salt
REACH: 1 RS: 221.2

INPUT
Description: Upstream face of Old Mill Ave Bridge

Station Elevation Data num= 94
Table with 10 columns: Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev. Contains 20 rows of station and elevation data.

Manning's n Values num= 3
Table with 5 columns: Sta, n Val, Sta, n Val, Sta, n Val. Contains 1 row of Manning's n values.

Bank Sta: Left Right Lengths: Left Channel Right Corr\_Effective\_SkyHarbor.rep Coeff Contr. Expan.  
 19419.2620410.66 91.95 91.95 91.95 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 1915019419.26 1157.12 F  
 20410.6620667.87 1161.12 F

BRIDGE

RIVER: Salt  
 REACH: 1 RS: 221.195

INPUT

Description: Old Mill Avenue Bridge (South Bound)  
 Distance from Upstream XS = 22.98  
 Deck/Roadway Width = 46  
 Weir Coefficient = 2.6  
 Upstream Deck/Roadway Coordinates

| Upstream Deck/Roadway Coordinates |         |         |          |         |         |          |         |         |     |         |         |
|-----------------------------------|---------|---------|----------|---------|---------|----------|---------|---------|-----|---------|---------|
| num= 27                           |         |         |          |         |         |          |         |         |     |         |         |
| Sta                               | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord | Sta | Hi Cord | Lo Cord |
| 19150                             | 1177.12 | 1177.12 | 19150.1  | 1177.12 | 1177.12 | 19200    | 1177.12 | 1158.12 |     |         |         |
| 19244.57                          | 1177.12 | 1171.12 | 19302.58 | 1177.12 | 1163.12 | 19361.94 | 1177.12 | 1171.12 |     |         |         |
| 19421.3                           | 1177.12 | 1155.12 | 19480.67 | 1177.12 | 1171.12 | 19540.03 | 1177.12 | 1152.12 |     |         |         |
| 19599.39                          | 1177.12 | 1171.12 | 19658.75 | 1177.12 | 1152.12 | 19718.12 | 1177.12 | 1171.12 |     |         |         |
| 19777.48                          | 1177.12 | 1152.12 | 19836.84 | 1177.12 | 1171.12 | 19896.2  | 1177.12 | 1152.12 |     |         |         |
| 19955.57                          | 1177.12 | 1171.12 | 20014.93 | 1177.12 | 1152.12 | 20074.29 | 1177.12 | 1171.12 |     |         |         |
| 20133.65                          | 1177.12 | 1152.12 | 20193.02 | 1177.12 | 1171.12 | 20252.38 | 1177.12 | 1152.12 |     |         |         |
| 20311.74                          | 1177.12 | 1171.12 | 20371.1  | 1177.12 | 1152.12 | 20429.11 | 1177.12 | 1171.12 |     |         |         |
| 20487.11                          | 1177.12 | 1158.62 | 20517.01 | 1177.12 | 1177.12 | 20517.02 | 1177.12 | 1177.12 |     |         |         |

Upstream Bridge Cross Section Data

| Upstream Bridge Cross Section Data |         |          |         |          |         |          |         |          |         |     |      |
|------------------------------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|-----|------|
| Station Elevation Data num= 94     |         |          |         |          |         |          |         |          |         |     |      |
| Sta                                | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta | Elev |
| 19150                              | 1165.32 | 19151.72 | 1165.42 | 19171.3  | 1161.82 | 19182.63 | 1155.32 | 19194.41 | 1155.32 |     |      |
| 19194.5                            | 1156.22 | 19194.68 | 1157.22 | 19215.25 | 1152.22 | 19236.37 | 1152.12 | 19248.15 | 1152.12 |     |      |
| 19268.09                           | 1158.12 | 19282.77 | 1162.12 | 19303.26 | 1162.12 | 19324.72 | 1157.12 | 19340.96 | 1153.12 |     |      |
| 19362.53                           | 1153.02 | 19373.13 | 1154.12 | 19396.42 | 1154.02 | 19419.26 | 1154.12 | 19443.64 | 1152.32 |     |      |
| 19452.61                           | 1152.12 | 19459.68 | 1153.12 | 19483.61 | 1153.12 | 19487.05 | 1152.12 | 19493.21 | 1149.82 |     |      |
| 19497.2                            | 1148.92 | 19510.34 | 1142.12 | 19518.41 | 1140.52 | 19520.86 | 1140.42 | 19530.74 | 1137.92 |     |      |
| 19541.7                            | 1137.12 | 19562.09 | 1135.22 | 19589.92 | 1134.12 | 19604.42 | 1133.92 | 19611.22 | 1133.52 |     |      |
| 19619.1                            | 1133.62 | 19649.46 | 1133.12 | 19658.43 | 1133.12 | 19682.63 | 1133.12 | 19704.66 | 1133.12 |     |      |
| 19713.07                           | 1133.12 | 19754.5  | 1133.12 | 19776.89 | 1133.12 | 19797.37 | 1133.12 | 19817.4  | 1132.22 |     |      |
| 19836.52                           | 1132.12 | 19839.42 | 1132.12 | 19861.27 | 1131.52 | 19867.06 | 1131.52 | 19900.87 | 1131.12 |     |      |
| 19922.35                           | 1131.12 | 19945.55 | 1131.12 | 19963.49 | 1130.32 | 19984.25 | 1130.12 | 20003.37 | 1130.82 |     |      |
| 20014.97                           | 1130.92 | 20036.9  | 1131.12 | 20062.37 | 1131.32 | 20084.03 | 1131.52 | 20099.26 | 1131.92 |     |      |
| 20128.71                           | 1132.12 | 20145.21 | 1132.12 | 20161.79 | 1133.22 | 20183.09 | 1134.12 | 20199.13 | 1134.92 |     |      |
| 20227.41                           | 1135.52 | 20254.78 | 1136.52 | 20274.45 | 1137.22 | 20298.28 | 1138.12 | 20315.23 | 1139.42 |     |      |
| 20321.57                           | 1140.12 | 20342.6  | 1145.82 | 20347.59 | 1147.12 | 20352.93 | 1148.12 | 20377.4  | 1149.12 |     |      |
| 20396.98                           | 1156.12 | 20410.66 | 1161.12 | 20427.79 | 1161.12 | 20440.12 | 1158.12 | 20468.5  | 1157.32 |     |      |
| 20484.07                           | 1158.12 | 20494.69 | 1158.12 | 20509.54 | 1159.72 | 20525.22 | 1161.12 | 20533.29 | 1162.12 |     |      |
| 20550.32                           | 1163.12 | 20562.56 | 1164.12 | 20580.14 | 1165.12 | 20602.54 | 1166.92 | 20606.89 | 1167.72 |     |      |
| 20617.12                           | 1168.72 | 20624.55 | 1168.72 | 20643.58 | 1170.42 | 20667.87 | 1170.72 |          |         |     |      |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 19150 .0519419.26 .03520410.66 .05

Bank Sta: Left Right Coeff Contr. Expan.  
 19419.2620410.66 .1 .3

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 1915019419.26 1157.12 F  
 20410.6620667.87 1161.12 F

Downstream Deck/Roadway Coordinates

| Downstream Deck/Roadway Coordinates |         |         |          |         |         |          |         |         |     |         |         |
|-------------------------------------|---------|---------|----------|---------|---------|----------|---------|---------|-----|---------|---------|
| num= 27                             |         |         |          |         |         |          |         |         |     |         |         |
| Sta                                 | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord | Sta | Hi Cord | Lo Cord |
| 19150                               | 1177.12 | 1177.12 | 19150.1  | 1177.12 | 1177.12 | 19200    | 1177.12 | 1158.12 |     |         |         |
| 19244.57                            | 1177.12 | 1171.12 | 19302.58 | 1177.12 | 1163.12 | 19361.94 | 1177.12 | 1171.12 |     |         |         |
| 19421.3                             | 1177.12 | 1155.12 | 19480.67 | 1177.12 | 1171.12 | 19540.03 | 1177.12 | 1152.12 |     |         |         |
| 19599.39                            | 1177.12 | 1171.12 | 19658.75 | 1177.12 | 1152.12 | 19718.12 | 1177.12 | 1171.12 |     |         |         |
| 19777.48                            | 1177.12 | 1152.12 | 19836.84 | 1177.12 | 1171.12 | 19896.2  | 1177.12 | 1152.12 |     |         |         |
| 19955.57                            | 1177.12 | 1171.12 | 20014.93 | 1177.12 | 1152.12 | 20074.29 | 1177.12 | 1171.12 |     |         |         |
| 20133.65                            | 1177.12 | 1152.12 | 20193.02 | 1177.12 | 1171.12 | 20252.38 | 1177.12 | 1152.12 |     |         |         |
| 20311.74                            | 1177.12 | 1171.12 | 20371.1  | 1177.12 | 1152.12 | 20429.11 | 1177.12 | 1171.12 |     |         |         |
| 20487.11                            | 1177.12 | 1158.62 | 20517.01 | 1177.12 | 1177.12 | 20517.02 | 1177.12 | 1177.12 |     |         |         |

Downstream Bridge Cross Section Data

| Downstream Bridge Cross Section Data |         |          |         |          |         |          |         |          |         |     |      |
|--------------------------------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|-----|------|
| Station Elevation Data num= 94       |         |          |         |          |         |          |         |          |         |     |      |
| Sta                                  | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta | Elev |
| 19150                                | 1165.32 | 19151.72 | 1165.42 | 19171.3  | 1161.82 | 19182.63 | 1155.32 | 19194.41 | 1155.32 |     |      |
| 19194.5                              | 1156.22 | 19194.68 | 1157.22 | 19215.25 | 1152.22 | 19236.37 | 1152.12 | 19248.15 | 1152.12 |     |      |
| 19268.09                             | 1158.12 | 19282.77 | 1162.12 | 19303.26 | 1162.12 | 19324.72 | 1157.12 | 19340.96 | 1153.12 |     |      |
| 19362.53                             | 1153.02 | 19373.13 | 1154.12 | 19396.42 | 1154.02 | 19419.26 | 1154.12 | 19443.64 | 1152.32 |     |      |
| 19452.61                             | 1152.12 | 19459.68 | 1153.12 | 19483.61 | 1153.12 | 19487.05 | 1152.12 | 19493.21 | 1149.82 |     |      |
| 19497.2                              | 1148.92 | 19510.34 | 1142.12 | 19518.41 | 1140.52 | 19520.86 | 1140.42 | 19530.74 | 1137.92 |     |      |
| 19541.7                              | 1137.12 | 19562.09 | 1135.22 | 19589.92 | 1134.12 | 19604.42 | 1133.92 | 19611.22 | 1133.52 |     |      |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 19619.1  | 1133.6219649.46 | 1133.1219658.43 | 1133.1219682.63 | 1133.1219704.66 | 1133.12 |
| 19713.07 | 1133.12 19754.5 | 1133.1219776.89 | 1133.1219797.37 | 1133.12 19817.4 | 1132.22 |
| 19836.52 | 1132.1219839.42 | 1132.1219861.27 | 1131.5219867.06 | 1131.5219900.87 | 1131.12 |
| 19922.35 | 1131.1219945.55 | 1131.1219963.49 | 1130.3219984.25 | 1130.1220003.37 | 1130.82 |
| 20014.97 | 1130.92 20036.9 | 1131.1220062.37 | 1131.3220084.03 | 1131.5220099.26 | 1131.92 |
| 20128.71 | 1132.1220145.21 | 1132.1220161.79 | 1133.2220183.09 | 1134.1220199.13 | 1134.92 |
| 20227.41 | 1135.5220254.78 | 1136.5220274.45 | 1137.2220298.28 | 1138.1220315.23 | 1139.42 |
| 20321.57 | 1140.12 20342.6 | 1145.8220347.59 | 1147.1220352.93 | 1148.12 20377.4 | 1149.12 |
| 20396.98 | 1156.1220410.66 | 1161.1220427.79 | 1161.1220440.12 | 1158.12 20468.5 | 1157.32 |
| 20484.07 | 1158.1220494.69 | 1158.1220509.54 | 1159.7220525.22 | 1161.1220533.29 | 1162.12 |
| 20550.32 | 1163.1220562.56 | 1164.1220580.14 | 1165.1220602.54 | 1166.9220606.89 | 1167.72 |
| 20617.12 | 1168.7220624.55 | 1168.7220643.58 | 1170.4220667.87 | 1170.72         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 19150 .0519419.26 .03520410.66 .05

Bank Sta: Left Right Coeff Contr. Expan.  
 19419.2620410.66 .1 .3

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 1915019419.26 1157.12 F  
 20410.6620667.87 1161.12 F

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .95  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Piers = 10

Pier Data  
 Pier Station Upstream=19302.58 Downstream=19302.58  
 Upstream num= 2  
 Width Elev Width Elev  
 14 1127.12 14 1157.12  
 Downstream num= 2  
 Width Elev Width Elev  
 14 1127.12 14 1157.12

Pier Data  
 Pier Station Upstream= 19421.3 Downstream= 19421.3  
 Upstream num= 2  
 Width Elev Width Elev  
 9 1127.12 9 1157.12  
 Downstream num= 2  
 Width Elev Width Elev  
 9 1127.12 9 1157.12

Pier Data  
 Pier Station Upstream=19540.03 Downstream=19540.03  
 Upstream num= 2  
 Width Elev Width Elev  
 9 1127.12 9 1157.12  
 Downstream num= 2  
 Width Elev Width Elev  
 9 1127.12 9 1157.12

Pier Data  
 Pier Station Upstream=19658.75 Downstream=19658.75  
 Upstream num= 2  
 Width Elev Width Elev  
 14 1127.12 14 1157.12  
 Downstream num= 2  
 Width Elev Width Elev  
 14 1127.12 14 1157.12

Pier Data  
 Pier Station Upstream=19777.48 Downstream=19777.48  
 Upstream num= 2  
 Width Elev Width Elev  
 9 1127.12 9 1157.12  
 Downstream num= 2  
 Width Elev Width Elev  
 9 1127.12 9 1157.12

Pier Data  
 Pier Station Upstream= 19896.2 Downstream= 19896.2  
 Upstream num= 2  
 Width Elev Width Elev  
 9 1127.12 9 1157.12  
 Downstream num= 2  
 Width Elev Width Elev  
 9 1127.12 9 1157.12

Pier Data  
 Pier Station Upstream=20014.93 Downstream=20014.93  
 Upstream num= 2  
 width Elev width Elev  
 9 1127.12 9 1157.12  
 Downstream num= 2  
 width Elev width Elev  
 9 1127.12 9 1157.12

Pier Data  
 Pier Station Upstream=20133.65 Downstream=20133.65  
 Upstream num= 2  
 width Elev width Elev  
 14 1127.12 14 1157.12  
 Downstream num= 2  
 width Elev width Elev  
 14 1127.12 14 1157.12

Pier Data  
 Pier Station Upstream=20252.38 Downstream=20252.38  
 Upstream num= 2  
 width Elev width Elev  
 9 1127.12 9 1157.12  
 Downstream num= 2  
 width Elev width Elev  
 9 1127.12 9 1157.12

Pier Data  
 Pier Station Upstream= 20371.1 Downstream= 20371.1  
 Upstream num= 2  
 width Elev width Elev  
 9 1127.12 9 1157.12  
 Downstream num= 2  
 width Elev width Elev  
 9 1127.12 9 1157.12

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy  
 Momentum Cd = 1.2  
 Yarnell Kval = 1.05

Selected Low Flow Methods = Highest Energy Answer

High Flow Method  
 Energy Only

Additional Bridge Parameters

Add Friction component to Momentum  
 Do not add weight component to Momentum  
 Class B flow critical depth computations use critical depth  
 inside the bridge at the upstream end  
 Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 221.19

INPUT

Description: Downstream face of Old Mill Ave Bridge

| Station Elevation Data |         | num= 94  |         |          |         |          |         |          |         |
|------------------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| Sta                    | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    |
| 19150                  | 1165.32 | 19151.72 | 1165.42 | 19171.3  | 1161.82 | 19182.63 | 1155.32 | 19194.41 | 1155.32 |
| 19194.5                | 1156.22 | 19194.68 | 1157.22 | 19215.25 | 1152.22 | 19236.37 | 1152.12 | 19248.15 | 1152.12 |
| 19268.09               | 1158.12 | 19282.77 | 1162.12 | 19303.26 | 1162.12 | 19324.72 | 1157.12 | 19340.96 | 1153.12 |
| 19362.53               | 1153.02 | 19373.13 | 1154.12 | 19396.42 | 1154.02 | 19419.26 | 1154.12 | 19443.64 | 1152.32 |
| 19452.61               | 1152.12 | 19459.68 | 1153.12 | 19483.61 | 1153.12 | 19487.05 | 1152.12 | 19493.21 | 1149.82 |
| 19497.2                | 1148.92 | 19510.34 | 1142.12 | 19518.41 | 1140.52 | 19520.86 | 1140.42 | 19530.74 | 1137.92 |
| 19541.7                | 1137.12 | 19562.09 | 1135.22 | 19589.92 | 1134.12 | 19604.42 | 1133.92 | 19611.22 | 1133.52 |
| 19619.1                | 1133.62 | 19649.46 | 1133.12 | 19658.43 | 1133.12 | 19682.63 | 1133.12 | 19704.66 | 1133.12 |
| 19713.07               | 1133.12 | 19754.5  | 1133.12 | 19776.89 | 1133.12 | 19797.37 | 1133.12 | 19817.4  | 1132.22 |
| 19836.52               | 1132.12 | 19839.42 | 1132.12 | 19861.27 | 1131.52 | 19867.06 | 1131.52 | 19900.87 | 1131.12 |
| 19922.35               | 1131.12 | 19945.55 | 1131.12 | 19963.49 | 1130.32 | 19984.25 | 1130.12 | 20003.37 | 1130.82 |
| 20014.97               | 1130.92 | 20036.9  | 1131.12 | 20062.37 | 1131.32 | 20084.03 | 1131.52 | 20099.26 | 1131.92 |
| 20128.71               | 1132.12 | 20145.21 | 1132.12 | 20161.79 | 1133.22 | 20183.09 | 1134.12 | 20199.13 | 1134.92 |
| 20227.41               | 1135.52 | 20254.78 | 1136.52 | 20274.45 | 1137.22 | 20298.28 | 1138.12 | 20315.23 | 1139.42 |
| 20321.57               | 1140.12 | 20342.6  | 1145.82 | 20347.59 | 1147.12 | 20352.93 | 1148.12 | 20377.4  | 1149.12 |
| 20396.98               | 1156.12 | 20410.66 | 1161.12 | 20427.79 | 1161.12 | 20440.12 | 1158.12 | 20468.5  | 1157.32 |
| 20484.07               | 1158.12 | 20494.69 | 1158.12 | 20509.54 | 1159.72 | 20525.22 | 1161.12 | 20533.29 | 1162.12 |
| 20550.32               | 1163.12 | 20562.56 | 1164.12 | 20580.14 | 1165.12 | 20602.54 | 1166.92 | 20606.89 | 1167.72 |
| 0617.12                | 1168.72 | 20624.55 | 1168.72 | 20643.58 | 1170.42 | 20667.87 | 1170.72 |          |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 19150 .0519419.26 .03520410.66 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19419.2620410.66 790 650.87 300 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 1915019419.26 1157.12 F  
 20410.6620667.87 1161.12 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 221.06

INPUT  
 Description: Upstream face of SPRR bridge

Station Elevation Data num= 60

| Sta      | Elev    |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| 18840    | 1166.82 | 19100.66 | 1168.65 | 19100.76 | 1164.32 | 19100.86 | 1160.82 | 19131.19 | 1156.52 |
| 19133.48 | 1156.52 | 19162.91 | 1154.12 | 19165.2  | 1154.12 | 19194.54 | 1150.72 | 19195.73 | 1150.72 |
| 19196.93 | 1150.72 | 19226.26 | 1150.12 | 19228.55 | 1150.12 | 19257.89 | 1150.12 | 19260.28 | 1150.12 |
| 19289.61 | 1149.72 | 19291.9  | 1149.72 | 19321.44 | 1148.12 | 19326.41 | 1148.12 | 19331.88 | 1147.82 |
| 19359.72 | 1147.12 | 19370.37 | 1147.12 | 19402.49 | 1146.12 | 19419.89 | 1146.62 | 19427.85 | 1146.62 |
| 19432.82 | 1148.42 | 19452.71 | 1149.92 | 19498.46 | 1152.12 | 19517.35 | 1153.12 | 19571.55 | 1152.42 |
| 19579.51 | 1152.42 | 19619.89 | 1134.22 | 19682.54 | 1128.12 | 19723.61 | 1130.12 | 19731.57 | 1130.12 |
| 19801.88 | 1128.92 | 19874.97 | 1128.12 | 19882.93 | 1128.12 | 19953.04 | 1128.12 | 20026.94 | 1128.22 |
| 20034.89 | 1128.22 | 20110.17 | 1132.12 | 20187.95 | 1135.52 | 20196.3  | 1135.52 | 20272.28 | 1137.12 |
| 20350.05 | 1137.32 | 20358.01 | 1137.32 | 20380.68 | 1137.12 | 20414.49 | 1147.82 | 20440.35 | 1153.42 |
| 20479.13 | 1159.52 | 20494.05 | 1153.92 | 20501.31 | 1152.12 | 20509.27 | 1152.12 | 20515.93 | 1152.12 |
| 20603.15 | 1153.52 | 20611.11 | 1153.72 | 20631.99 | 1169.64 | 20640.04 | 1169.62 | 20868.78 | 1170.12 |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 18840 .05 19517.35 .03 20479.13 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19517.3520479.13 84.74 84.74 84.74 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 1884019517.35 1157.12 F  
 20479.1320868.78 1159.52 F

BRIDGE

RIVER: Salt  
 REACH: 1 RS: 221.055

INPUT  
 Description: Southern Pacific Railraod  
 Distance from Upstream XS = 31  
 Deck/Roadway Width = 23  
 Weir Coefficient = 2.6  
 Upstream Deck/Roadway Coordinates

num= 20

| Sta      | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord |
|----------|---------|---------|----------|---------|---------|----------|---------|---------|
| 18840    | 1166.82 | 1166.82 | 19100.66 | 1168.65 | 1168.65 | 19100.76 | 1168.65 | 1164.35 |
| 19131.19 | 1168.72 | 1164.42 | 19162.91 | 1168.77 | 1164.47 | 19194.54 | 1168.84 | 1164.54 |
| 19226.26 | 1168.9  | 1164.62 | 19257.89 | 1168.96 | 1164.66 | 19289.61 | 1169.21 | 1163.91 |
| 19321.44 | 1169.21 | 1163.91 | 19419.89 | 1169.57 | 1164.27 | 19571.55 | 1169.57 | 1164.27 |
| 19723.61 | 1169.58 | 1164.28 | 19874.97 | 1169.6  | 1164.32 | 20026.94 | 1169.63 | 1164.33 |
| 20187.95 | 1169.65 | 1164.35 | 20350.05 | 1169.67 | 1164.37 | 20501.31 | 1169.69 | 1164.39 |
| 20603.15 | 1169.62 | 1164.32 | 20631.99 | 1169.64 | 1165.19 |          |         |         |

Upstream Bridge Cross Section Data

Station Elevation Data num= 60

| Sta      | Elev    |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| 18840    | 1166.82 | 19100.66 | 1168.65 | 19100.76 | 1164.32 | 19100.86 | 1160.82 | 19131.19 | 1156.52 |
| 19133.48 | 1156.52 | 19162.91 | 1154.12 | 19165.2  | 1154.12 | 19194.54 | 1150.72 | 19195.73 | 1150.72 |
| 19196.93 | 1150.72 | 19226.26 | 1150.12 | 19228.55 | 1150.12 | 19257.89 | 1150.12 | 19260.28 | 1150.12 |
| 19289.61 | 1149.72 | 19291.9  | 1149.72 | 19321.44 | 1148.12 | 19326.41 | 1148.12 | 19331.88 | 1147.82 |
| 19359.72 | 1147.12 | 19370.37 | 1147.12 | 19402.49 | 1146.12 | 19419.89 | 1146.62 | 19427.85 | 1146.62 |
| 19432.82 | 1148.42 | 19452.71 | 1149.92 | 19498.46 | 1152.12 | 19517.35 | 1153.12 | 19571.55 | 1152.42 |
| 19579.51 | 1152.42 | 19619.89 | 1134.22 | 19682.54 | 1128.12 | 19723.61 | 1130.12 | 19731.57 | 1130.12 |
| 19801.88 | 1128.92 | 19874.97 | 1128.12 | 19882.93 | 1128.12 | 19953.04 | 1128.12 | 20026.94 | 1128.22 |
| 20034.89 | 1128.22 | 20110.17 | 1132.12 | 20187.95 | 1135.52 | 20196.3  | 1135.52 | 20272.28 | 1137.12 |
| 20350.05 | 1137.32 | 20358.01 | 1137.32 | 20380.68 | 1137.12 | 20414.49 | 1147.82 | 20440.35 | 1153.42 |
| 20479.13 | 1159.52 | 20494.05 | 1153.92 | 20501.31 | 1152.12 | 20509.27 | 1152.12 | 20515.93 | 1152.12 |
| 20603.15 | 1153.52 | 20611.11 | 1153.72 | 20631.99 | 1169.64 | 20640.04 | 1169.62 | 20868.78 | 1170.12 |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 18840 .05 19517.35 .03 20479.13 .05

Bank Sta: Left Right Coeff Contr. Expan.

19517.3520479.13 .1  
Ineffective Flow num= 2  
Sta L Sta R Elev Permanent  
1884019517.35 1157.12 F  
20479.1320868.78 1159.52 F

Downstream Deck/Roadway Coordinates

num= 20  
Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord  
18840 1166.82 1166.8219100.66 1168.65 1168.6519100.76 1168.65 1164.35  
19131.19 1168.72 1164.4219162.91 1168.77 1164.4719194.54 1168.84 1164.54  
19226.26 1168.9 1164.6219257.89 1168.96 1164.6619289.61 1169.21 1163.91  
19321.44 1169.21 1163.9119419.89 1169.57 1164.2719571.55 1169.57 1164.27  
19723.61 1169.58 1164.2819874.97 1169.6 1164.320026.94 1169.63 1164.33  
20187.95 1169.65 1164.3520350.05 1169.67 1164.3720501.31 1169.69 1164.39  
20603.15 1169.62 1164.3220631.99 1169.64 1165.19

Downstream Bridge Cross Section Data

Station Elevation Data num= 60  
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
18840 1166.8219100.66 1168.6519100.76 1164.3219100.86 1160.8219131.19 1156.52  
19133.48 1156.5219162.91 1154.12 19165.2 1154.1219194.54 1150.7219195.73 1150.72  
19196.93 1150.7219226.26 1150.1219228.55 1150.1219257.89 1150.1219260.28 1150.12  
19289.61 1149.72 19291.9 1149.7219321.44 1148.1219326.41 1148.1219331.88 1147.82  
19359.72 1147.1219370.37 1147.1219402.49 1146.1219419.89 1146.6219427.85 1146.62  
19432.82 1148.4219452.71 1149.9219498.46 1152.1219517.35 1153.1219571.55 1152.42  
19579.51 1152.4219619.89 1134.2219682.54 1128.1219723.61 1130.1219731.57 1130.12  
19801.88 1128.9219874.97 1128.1219882.93 1128.1219953.04 1128.1220026.94 1128.22  
20034.89 1128.2220110.17 1132.1220187.95 1135.52 20196.3 1135.5220272.28 1137.12  
20350.05 1137.3220358.01 1137.3220380.68 1137.1220414.49 1147.8220440.35 1153.42  
20479.13 1159.5220494.05 1153.9220501.31 1152.1220509.27 1152.1220515.93 1152.12  
20603.15 1153.5220611.11 1153.7220631.99 1169.6420640.04 1169.6220868.78 1170.12

Manning's n Values num= 3  
Sta n Val Sta n Val  
18840 .03519517.35 .03520479.13

Bank Sta: Left Right Coeff Contr. Expan.  
19517.3520479.13 .1 .3

Ineffective Flow num= 2  
Sta L Sta R Elev Permanent  
1884019517.35 1157.12 F  
20479.1320868.78 1159.52 F

Upstream Embankment side slope = horiz. to 1.0 vertical  
Downstream Embankment side slope = horiz. to 1.0 vertical  
Maximum allowable submergence for weir flow = .95  
Elevation at which weir flow begins =  
Energy head used in spillway design =  
Spillway height used in design =  
weir crest shape = Broad Crested

Number of Piers = 16

Pier Data  
Pier Station Upstream=19133.34 Downstream=19133.34  
Upstream num= 2  
width Elev width Elev  
2.3 1122.12 2.3 1165.12  
Downstream num= 2  
width Elev width Elev  
2.3 1122.12 2.3 1165.12

Pier Data  
Pier Station Upstream=19165.06 Downstream=19165.06  
Upstream num= 2  
width Elev width Elev  
2.3 1122.12 2.3 1165.12  
Downstream num= 2  
width Elev width Elev  
2.3 1122.12 2.3 1165.12

Pier Data  
Pier Station Upstream= 19193.7 Downstream= 19193.7  
Upstream num= 2  
width Elev width Elev  
2.3 1122.12 2.3 1165.12  
Downstream num= 2  
width Elev width Elev  
2.3 1122.12 2.3 1165.12

Pier Data  
Pier Station Upstream=19228.41 Downstream=19228.41  
Upstream num= 2  
width Elev width Elev  
2.3 1122.12 2.3 1165.12  
Downstream num= 2  
width Elev width Elev

2.3 1122.12 2.3 1165.12

Pier Data  
 Pier Station Upstream=19260.04 Downstream=19260.04  
 Upstream num= 2  
     width Elev width Elev  
     2.3 1122.12 2.3 1165.12  
 Downstream num= 2  
     width Elev width Elev  
     2.3 1122.12 2.3 1165.12

Pier Data  
 Pier Station Upstream=19291.76 Downstream=19291.76  
 Upstream num= 2  
     width Elev width Elev  
     2.3 1122.12 2.3 1165.12  
 Downstream num= 2  
     width Elev width Elev  
     2.3 1122.12 2.3 1165.12

Pier Data  
 Pier Station Upstream=19323.59 Downstream=19323.59  
 Upstream num= 2  
     width Elev width Elev  
     2.3 1122.12 2.3 1165.12  
 Downstream num= 2  
     width Elev width Elev  
     2.3 1122.12 2.3 1165.12

Pier Data  
 Pier Station Upstream=19424.89 Downstream=19424.89  
 Upstream num= 2  
     width Elev width Elev  
     8 1122.12 8 1165.12  
 Downstream num= 2  
     width Elev width Elev  
     8 1122.12 8 1165.12

Pier Data  
 Pier Station Upstream=19576.55 Downstream=19576.55  
 Upstream num= 2  
     width Elev width Elev  
     8 1122.12 8 1165.12  
 Downstream num= 2  
     width Elev width Elev  
     8 1122.12 8 1165.12

Pier Data  
 Pier Station Upstream=19728.61 Downstream=19728.61  
 Upstream num= 2  
     width Elev width Elev  
     8 1122.12 8 1165.12  
 Downstream num= 2  
     width Elev width Elev  
     8 1122.12 8 1165.12

Pier Data  
 Pier Station Upstream=19879.97 Downstream=19879.97  
 Upstream num= 2  
     width Elev width Elev  
     8 1122.12 8 1165.12  
 Downstream num= 2  
     width Elev width Elev  
     8 1122.12 8 1165.12

Pier Data  
 Pier Station Upstream=20031.94 Downstream=20031.94  
 Upstream num= 2  
     width Elev width Elev  
     8 1122.12 8 1165.12  
 Downstream num= 2  
     width Elev width Elev  
     8 1122.12 8 1165.12

Pier Data  
 Pier Station Upstream=20192.95 Downstream=20192.95  
 Upstream num= 2  
     width Elev width Elev  
     8 1122.12 8 1165.12  
 Downstream num= 2  
     width Elev width Elev  
     8 1122.12 8 1165.12

Pier Data  
 Pier Station Upstream=20355.05 Downstream=20355.05  
 Upstream num= 2  
     width Elev width Elev  
     8 1122.12 8 1165.12

Downstream num= 2  
 width Elev width Elev  
 8 1122.12 8 1165.12

Pier Data  
 Pier Station Upstream=20506.31 Downstream=20506.31

Upstream num= 2  
 width Elev width Elev  
 8 1122.12 8 1165.12

Downstream num= 2  
 width Elev width Elev  
 8 1122.12 8 1165.12

Pier Data  
 Pier Station Upstream=20608.15 Downstream=20608.15

Upstream num= 2  
 width Elev width Elev  
 8 1122.12 8 1165.12

Downstream num= 2  
 width Elev width Elev  
 8 1122.12 8 1165.12

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy  
 Momentum Cd = 1.2  
 Yarnell KVal = 1.05

Selected Low Flow Methods = Highest Energy Answer

High Flow Method  
 Energy Only

Additional Bridge Parameters

Add Friction component to Momentum  
 Add Weight component to Momentum  
 Class B flow critical depth computations use critical depth  
 inside the bridge at the upstream end  
 Criteria to check for pressure flow = Upstream water surface

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 221.05

INPUT  
 Description: Downstream face of SPRR bridge

| Station Elevation Data |         | num= 60  |         | Sta Elev |         | Sta Elev |         | Sta Elev |         |
|------------------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| Sta                    | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    |
| 18840                  | 1166.82 | 19100.66 | 1168.65 | 19100.76 | 1164.32 | 19100.86 | 1160.82 | 19131.19 | 1156.52 |
| 19133.48               | 1156.52 | 19162.91 | 1154.12 | 19165.2  | 1154.12 | 19194.54 | 1150.72 | 19195.73 | 1150.72 |
| 19196.93               | 1150.72 | 19226.26 | 1150.12 | 19228.55 | 1150.12 | 19257.89 | 1150.12 | 19260.28 | 1150.12 |
| 19289.61               | 1149.72 | 19291.9  | 1149.72 | 19321.44 | 1148.12 | 19326.41 | 1148.12 | 19331.88 | 1147.82 |
| 19359.72               | 1147.12 | 19370.37 | 1147.12 | 19402.49 | 1146.12 | 19419.89 | 1146.62 | 19427.85 | 1146.62 |
| 19432.82               | 1148.42 | 19452.71 | 1149.92 | 19498.46 | 1152.12 | 19517.35 | 1153.12 | 19571.55 | 1152.42 |
| 19579.51               | 1152.42 | 19619.89 | 1134.22 | 19682.54 | 1128.12 | 19723.61 | 1130.12 | 19731.57 | 1130.12 |
| 19801.88               | 1128.92 | 19874.97 | 1128.12 | 19882.93 | 1128.12 | 19953.04 | 1128.12 | 20026.94 | 1128.22 |
| 20034.89               | 1128.22 | 20110.17 | 1132.12 | 20187.95 | 1135.52 | 20196.3  | 1135.52 | 20272.28 | 1137.12 |
| 20350.05               | 1137.32 | 20358.01 | 1137.32 | 20380.68 | 1137.12 | 20414.49 | 1147.82 | 20440.35 | 1153.42 |
| 20479.13               | 1159.52 | 20494.05 | 1153.92 | 20501.31 | 1152.12 | 20509.27 | 1152.12 | 20515.93 | 1152.12 |
| 20603.15               | 1153.52 | 20611.11 | 1153.72 | 20631.99 | 1169.64 | 20640.04 | 1169.62 | 20868.78 | 1170.12 |

| Manning's n Values |       | num= 3   |       | Sta n Val |       |
|--------------------|-------|----------|-------|-----------|-------|
| Sta                | n Val | Sta      | n Val | Sta       | n Val |
| 18840              | .035  | 19517.35 | .035  | 20479.13  | .035  |

| Bank Sta:        | Left     | Right    | Lengths:  | Left | Channel | Right | Coeff | Contr. | Expan. |
|------------------|----------|----------|-----------|------|---------|-------|-------|--------|--------|
|                  | 19517.35 | 20479.13 |           | 210  | 167.68  | 80    | .1    | .3     |        |
| Ineffective Flow | num= 2   |          |           |      |         |       |       |        |        |
| Sta L            | Sta R    | Elev     | Permanent |      |         |       |       |        |        |
| 18840            | 19517.35 | 1157.12  | F         |      |         |       |       |        |        |
| 20479.13         | 20868.78 | 1159.52  | F         |      |         |       |       |        |        |

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 221.02

INPUT  
 Description:  
 Station Elevation Data num= 285

| Sta     | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    |
|---------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| 15044.3 | 1163.12 | 15046.74 | 1162.93 | 15054.99 | 1163.11 | 15067.31 | 1162.81 | 15118.09 | 1161.79 |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 15188.86 | 1162.0215261.54 | 1162.0915295.45 | 1162.2615332.02 | 1160.7315339.82 | 1160.36 |
| 15380.65 | 1159.8215388.69 | 1159.8815513.83 | 1161.2315577.72 | 1160.5415622.59 | 1160.49 |
| 15670.19 | 1160.4215740.55 | 1161.315755.81  | 1161.3115780.94 | 1160.54 15794.9 | 1160.19 |
| 15840.15 | 1159.12 15862.8 | 1160.1615868.58 | 1160.3715878.24 | 1160.3915931.25 | 1159.56 |
| 16026.39 | 1160.42 16042.1 | 1160.4716063.87 | 1160.1816173.44 | 1159.8416198.77 | 1159.69 |
| 16240.13 | 1159.0216263.89 | 1159.8916286.32 | 1158.6116315.25 | 1159.816425.38  | 1158.76 |
| 16472.1  | 1158.3216481.97 | 1158.2516484.62 | 1158.3616543.72 | 1158.09 16656.3 | 1157.87 |
| 16680.03 | 1158.5216701.67 | 1157.816728.06  | 1159.24 16750.9 | 1159.0716855.76 | 1159.17 |
| 16901.91 | 1159.2216958.94 | 1158.7417074.38 | 1157.7817090.35 | 1158.4 17098.2  | 1158.61 |
| 17121.74 | 1157.2217157.02 | 1157.5117177.67 | 1157.4917290.67 | 1157.9317359.48 | 1158.56 |
| 17401.65 | 1158.7217496.83 | 1159.5917533.23 | 1159.8317610.32 | 1160.0817651.54 | 1160.39 |
| 17781.11 | 1160.6217812.58 | 1160.9517889.77 | 1160.617945.95  | 1160.5518065.89 | 1160.56 |
| 18105.38 | 1160.4218202.28 | 116018260.45    | 1159.9618310.83 | 1160.17 18378   | 1160.66 |
| 18419.2  | 1159.8218429.86 | 1159.518444.45  | 1159.8918468.43 | 1160.3718483.22 | 1158.83 |
| 18487.84 | 1158.82 18552   | 1159.7418598.58 | 1159.63 18671.6 | 1159.5918724.73 | 1159.4  |
| 18802.71 | 1159.2218855.51 | 1159.0118882.85 | 1158.5218939.89 | 1159.1318962.01 | 1159.02 |
| 18980.67 | 1158.8218996.52 | 1158.8719046.82 | 1158.5119054.65 | 1158.0719125.72 | 1154.76 |
| 19144.8  | 1159.42 19147.3 | 1159.9319158.87 | 1160.919187.22  | 1154.8519199.35 | 1152.13 |
| 19201.06 | 1151.4219219.83 | 1151.9919235.69 | 1152.0719258.88 | 1151.1319304.33 | 1150.16 |
| 19324    | 1151.6219332.28 | 1151.519355.27  | 1151.119376.72  | 1149.8419403.68 | 1148.2  |
| 19419.08 | 1149.22 19423.4 | 1149.4119495.54 | 1156.17 19517.5 | 1154.1519549.33 | 1137.48 |
| 19552.87 | 1135.5219554.34 | 1135.6519573.39 | 1134.5919596.68 | 1137.1419601.53 | 1136.94 |
| 19702.75 | 1133.1219732.46 | 1132.6519814.47 | 1132.4619836.04 | 1132.319975.05  | 1133.92 |
| 20064.35 | 1132.7220095.86 | 1132.18 20155.2 | 1132.8720233.83 | 1133.67 20325.5 | 1133.5  |
| 20386.81 | 1147.2220408.54 | 1149.9220419.42 | 1152.1820451.78 | 1158.7120491.77 | 1152.77 |
| 20510.97 | 1155.5220514.94 | 1155.4920528.31 | 1154.8820572.59 | 1152.4320585.04 | 1152.76 |
| 20626.37 | 1153.6220662.58 | 1162.3620712.66 | 1179.7220718.86 | 1181.6920725.27 | 1184.25 |
| 20753.98 | 1193.0220766.38 | 1195.6820794.56 | 1195.6120802.53 | 1195.1520860.02 | 1194.6  |
| 20891.04 | 1191.1220921.83 | 1186.6720973.53 | 1178.721007.78  | 1171.83 21020.9 | 1168.82 |
| 21043.59 | 1170.0221058.76 | 1169.5121077.96 | 1167.2221084.16 | 1166.6321125.91 | 1174.61 |
| 21137.04 | 1177.5221155.09 | 1179.1821179.84 | 1180.44 21199.1 | 1181.8221217.63 | 1182.08 |
| 21324.45 | 1185.0221329.09 | 1185.0121337.12 | 1183.0921339.29 | 1183.4321359.14 | 1185.39 |
| 21368.63 | 1184.3221379.89 | 1183.5221410.49 | 1183.1121439.46 | 1182.921455.92  | 1182.18 |
| 21468.95 | 1181.4221470.21 | 1181.8621475.48 | 1182.121499.92  | 1179.421505.23  | 1179.02 |
| 21509.4  | 1179.9221555.88 | 1193.2921570.26 | 1196.0921572.09 | 1196.921600.37  | 1197.73 |
| 21610.52 | 1197.7221618.72 | 1198.2521666.21 | 1198.4921680.57 | 1197.8121714.58 | 1196.9  |
| 21730.11 | 1196.6221742.46 | 1196.8421795.72 | 1193.93 21831.3 | 1192.4221844.02 | 1192.33 |
| 21857.8  | 1195.5221868.24 | 1195.8921900.08 | 1197.2921920.57 | 1197.1421934.48 | 1197.21 |
| 21969.69 | 1196.6221976.39 | 1195.9921983.44 | 1194.4522009.08 | 1189.1122014.93 | 1186.61 |
| 22029.94 | 1183.0222037.04 | 1184.5822091.03 | 1192.0222162.07 | 1192.9922166.94 | 1192.98 |
| 22215.5  | 1192.4222266.04 | 1192.24 22298.3 | 1192.7822366.78 | 1194.0322403.52 | 1191.43 |
| 22423.03 | 1189.9222445.82 | 1190.5522464.84 | 1189.9722480.95 | 1191.2622494.56 | 1193.42 |
| 22503.83 | 1195.8222519.51 | 1199.5722549.87 | 1201.3522551.71 | 1201.422593.44  | 1190.7  |
| 22602.18 | 1187.7222606.36 | 1188.3622646.46 | 1192.622659.37  | 1194.0422679.25 | 1196.33 |
| 22689.24 | 1196.2222712.89 | 1195.7622724.02 | 1197.2722742.53 | 1199.1722793.34 | 1207.35 |
| 22794.69 | 1207.5222840.11 | 1210.7122859.08 | 1211.91 22867.2 | 1212.4922871.18 | 1212.41 |
| 22901.97 | 1210.7222925.46 | 1206.7623009.68 | 1189.0323011.18 | 1189.0623034.04 | 1193.79 |
| 23060.11 | 1197.4223082.52 | 1200.1623142.98 | 1205.0523146.07 | 1205.3923211.74 | 1210.33 |
| 23222.67 | 1210.2223242.42 | 1210.2523281.11 | 1209.88 23320.2 | 1208.27 23334.1 | 1207.64 |
| 23424.31 | 1204.1223453.03 | 1203.0223472.73 | 1203.18 23496.6 | 1203.2823505.04 | 1203.48 |
| 23591.98 | 1204.02 23598   | 1203.5623626.23 | 1202.0223657.13 | 1200.123660.64  | 1200.23 |
| 23675.64 | 1200.2223734.52 | 1197.5123759.52 | 1196.4923785.55 | 1195.1523838.22 | 1193.45 |
| 23861.28 | 1194.3223891.49 | 1197.3823911.55 | 1200.1623951.75 | 1203.6623963.55 | 1204.56 |
| 23973    | 1204.8223990.63 | 1207.2224027.75 | 1211.6324034.76 | 1212.4924051.49 | 1213.64 |
| 24083.81 | 1216.5224148.96 | 1217.8624163.71 | 1213.3424178.37 | 1214.2624204.33 | 1213.34 |
| 24212.4  | 1212.2224281.78 | 1204.5224340.67 | 1211.5224367.64 | 1212.3324376.47 | 1212.43 |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 15044.3 .03519495.54 .03520451.78 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19495.5420451.78 530 503.55 450 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 15044.319495.54 1156.17 F  
 20451.7824376.47 1158.71 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 220.92

INPUT

Description:  
 Station Elevation Data num= 308

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev |
|----------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|
| 15056.94 | 1160.4215076.82 | 1158.3615078.01 | 1158.6215085.42 | 1159.1 15091.4  | 1159.66 |     |      |     |      |
| 15092.38 | 1159.8215132.68 | 1158.3115136.58 | 1158.1315142.69 | 1158.1615285.82 | 1158.21 |     |      |     |      |
| 15333.21 | 1157.5215354.33 | 1156.915385.82  | 1157.42 15402   | 1157.5915501.97 | 1158.44 |     |      |     |      |
| 15525.24 | 1158.2215590.72 | 1157.52 15610.6 | 1157.4615746.64 | 1157.5215775.17 | 1157.03 |     |      |     |      |
| 15792.22 | 1157.0215831.19 | 1156.8215850.08 | 1156.715854.93  | 1156.6315860.35 | 1155.88 |     |      |     |      |
| 15861.43 | 1155.9215883.33 | 1158.2615928.57 | 1157.7315962.04 | 1157.415975.13  | 1157.45 |     |      |     |      |
| 15996.69 | 1157.4216126.78 | 1157.0516218.25 | 1156.7216274.39 | 1157.3216288.62 | 1157.31 |     |      |     |      |
| 16354.88 | 1156.7216404.13 | 1156.7216519.19 | 1156.6916521.31 | 1156.79 16544.3 | 1157.31 |     |      |     |      |
| 16674.08 | 1158.3216693.66 | 1157.5116704.58 | 1157.3316754.43 | 1156.8716767.64 | 1156.63 |     |      |     |      |
| 16947.93 | 1156.0217054.56 | 1155.4117089.35 | 1156.717115.83  | 1155.87 17124.3 | 1156.17 |     |      |     |      |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 17152.88 | 1156.8217229.24 | 1157.2917259.62 | 1157.6217358.95 | 1157.0517368.96 | 1157.24 |
| 17384.65 | 1158.3217408.17 | 1157.0217428.41 | 1158.3917434.19 | 1158.4617506.93 | 1158.5  |
| 17532.5  | 1158.7217643.84 | 1158.617662.16  | 1158.7317702.03 | 1158.82 17817.4 | 1159.04 |
| 17830.58 | 1159.1217917.79 | 1159.75 17979.7 | 1159.7718018.43 | 1159.6418084.18 | 1159.18 |
| 18143.35 | 1159.6218147.32 | 1159.6518297.14 | 1159.3518301.96 | 1159.3318323.41 | 1158.88 |
| 18375.77 | 1157.9218380.73 | 1157.9118409.33 | 1157.8518422.82 | 1157.6318452.23 | 1157.65 |
| 18468.78 | 1158.0218481.68 | 1157.9818496.53 | 1158.1518551.56 | 1157.7918647.29 | 1156.69 |
| 18693.89 | 1156.0218707.39 | 1155.7618754.24 | 1155.8818813.55 | 1155.9918864.59 | 1156.18 |
| 18887.41 | 1156.8218913.94 | 1157.1318934.68 | 1158.3518984.13 | 1152.69 18986.8 | 1152.44 |
| 19004.77 | 1155.4219026.27 | 115919040.29    | 1159.6519050.92 | 1157.9719073.98 | 1154.46 |
| 19092.01 | 1153.7219116.39 | 1152.1719123.92 | 1151.4819138.68 | 1151.4819192.02 | 1151.65 |
| 19214.34 | 1152.0219229.37 | 1154.7619252.46 | 1160.23 19262.2 | 1160.9919297.45 | 1159.23 |
| 19318.87 | 1157.9219324.16 | 1156.91 19345.6 | 1152.3319393.36 | 1151.1919440.17 | 1149.99 |
| 19483.52 | 1149.8219505.95 | 1149.5719520.91 | 1151.3819533.07 | 1153.0819545.94 | 1152.53 |
| 19576.51 | 1136.7219587.17 | 1131.28 19608.3 | 1132.2119676.46 | 1133.83 19705.2 | 1134.08 |
| 19733.24 | 1133.8219838.63 | 1132.4719914.22 | 1133.719977.78  | 1134.6920015.93 | 1134.06 |
| 20098.73 | 1132.4220220.32 | 1133.5620236.84 | 1133.6820266.69 | 1133.7220358.46 | 1133.73 |
| 20387.17 | 1142.4220398.68 | 1145.7420414.42 | 1147.0320423.49 | 1147.4420434.59 | 1147.21 |
| 20452.66 | 1151.1220478.34 | 1157.9820500.34 | 1155.7820517.26 | 1153.920534.04  | 1155.78 |
| 20550.83 | 1157.3220586.97 | 1155.0620612.39 | 1158.8720658.12 | 1165.4520671.02 | 1165.65 |
| 20687.74 | 1165.5220738.56 | 1181.9220774.83 | 1193.4920800.66 | 1193.34 20804.1 | 1193    |
| 20824.56 | 1191.5220851.13 | 1192.9620874.18 | 1193.220941.46  | 1194.2820978.01 | 1193.19 |
| 20982.4  | 1192.9221008.46 | 1195.6521016.52 | 1194.9221033.82 | 1194.8321056.09 | 1194.85 |
| 21105.45 | 1180.6221154.97 | 1165.0621224.56 | 1166.0421300.76 | 1167.82 21334.6 | 1169.93 |
| 21348.51 | 1168.8221358.61 | 1167.5921385.06 | 1170.0721409.45 | 1168.12 21414.6 | 1167.89 |
| 21417.39 | 1170.6221429.15 | 1180.7821433.72 | 1180.5521441.24 | 1179.7821447.86 | 1180.05 |
| 21464.7  | 1180.5221471.88 | 1180.0521486.87 | 1179.5721524.71 | 1178.8121570.22 | 1177.24 |
| 21579.81 | 1177.4221582.09 | 1177.3221594.81 | 1174.5721597.81 | 1174.5721618.81 | 1178.97 |
| 21623.8  | 1179.8221636.86 | 1179.5421646.82 | 1178.8521679.64 | 1176.921702.01  | 1176.34 |
| 21704.67 | 1176.8221721.42 | 1177.0621740.46 | 1178.2521746.66 | 1178.4721773.81 | 1178.71 |
| 21787.05 | 1178.2221792.77 | 1177.5721822.28 | 1178.9821838.23 | 1179.2421868.53 | 1180.06 |
| 21871.44 | 1180.2221877.86 | 1179.9721903.56 | 1178.6221908.69 | 1175.7621921.88 | 1174.68 |
| 21936.7  | 1178.8221948.26 | 1179.6421955.08 | 1180.321978.05  | 1181.7621987.23 | 1183.44 |
| 21991.73 | 1184.0222001.18 | 1184.0222022.78 | 1186.2422029.69 | 1187.0822051.86 | 1188.03 |
| 22081.2  | 1189.2222087.57 | 1189.5722112.52 | 1187.7822122.29 | 1186.4522146.68 | 1184.28 |
| 22172.21 | 1182.6222189.25 | 1179.6322196.21 | 1178.9822204.41 | 1178.4922207.61 | 1178.62 |
| 22229.25 | 1177.5222252.83 | 1182.6122263.35 | 1183.3622272.03 | 1182.6622326.75 | 1182.31 |
| 22330.68 | 1182.5222367.48 | 1186.0422408.32 | 1187.0322434.33 | 1187.5422440.61 | 1187.46 |
| 22461.3  | 1186.9222481.54 | 1186.5222517.74 | 1186.6522541.33 | 1186.9322553.21 | 1187.8  |
| 22570.11 | 1188.5222584.93 | 1189.09 22604.7 | 1186.5622607.62 | 1186.622721.99  | 1186.92 |
| 22726.6  | 1187.0222765.21 | 1188.0822787.42 | 1188.3822818.78 | 1189.5822872.88 | 1190.05 |
| 22898.91 | 1190.6222965.49 | 1190.3422983.54 | 1190.4123016.85 | 1190.35 23021.3 | 1190.38 |
| 23043.47 | 1190.2223076.97 | 1191.0623136.37 | 1191.9723145.85 | 1192.08 23155.9 | 1192.02 |
| 23179.9  | 1192.1223187.54 | 1191.92 23204.3 | 1188.6923224.62 | 1189.1523236.98 | 1189.72 |
| 23243.05 | 1189.8223255.26 | 1190.1323303.44 | 1191.3123309.59 | 1190.623351.25  | 1192.43 |
| 23380.47 | 1193.9223416.36 | 1199.41 23505.4 | 1211.0623549.46 | 1213.3523567.19 | 1210.72 |
| 23587.21 | 1208.4223594.62 | 1207.4 23633.5  | 1206.5623643.71 | 1206.723649.32  | 1206.64 |
| 23711.69 | 1198.9223723.75 | 1198.2623748.17 | 1201.1723751.46 | 1201.7223757.89 | 1201.92 |
| 23799.99 | 1198.3223808.97 | 1199.5223828.15 | 1200.0523867.37 | 1203.8723874.94 | 1205.94 |
| 23883.19 | 1206.4223910.05 | 1207.0223941.39 | 1206.78 23953.4 | 1206.7823981.76 | 1206.63 |
| 24044.8  | 1206.4224075.27 | 1206.2124100.71 | 1205.8724146.43 | 1205.6224160.54 | 1205.52 |
| 24169.47 | 1205.2224242.01 | 1205.1924250.55 | 1205.76         |                 |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 15056.94 .03519533.07 .03520478.34 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19533.0720478.34 560 518.52 450 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 15056.9419533.07 1153.08 F  
 20478.3424250.55 1157.98 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 220.82

INPUT Description:

Station Elevation Data num= 315

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev            | Sta     | Elev | Sta | Elev |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|------|-----|------|
| 14966.67 | 1157.82         | 14994.9         | 1157.3515013.71 | 1156.1315021.11 | 1155.3615050.66 | 1154.77 |      |     |      |
| 15099.94 | 1154.82         | 15126.2         | 1154.71 15191.9 | 1154.9815243.19 | 1154.5915250.24 | 1154.49 |      |     |      |
| 15320    | 1155.0215352.84 | 1155.6615386.05 | 1155.615392.04  | 1155.32 15408   | 1154.35         |         |      |     |      |
| 15416.37 | 1154.4215429.68 | 1154.6915444.43 | 1154.4615469.09 | 1154.3715557.75 | 1153.98         |         |      |     |      |
| 15628.53 | 1154.62 15672.2 | 1155.115686.44  | 1153.6515728.08 | 1154.2815748.26 | 1154.47         |         |      |     |      |
| 15782.75 | 1155.5215803.31 | 1154.915849.34  | 1154.5315922.54 | 1153.6615965.71 | 1153.69         |         |      |     |      |
| 16105.59 | 1153.6216112.76 | 1153.7316148.28 | 1156.1516175.63 | 1156.0316187.03 | 1155.61         |         |      |     |      |
| 16210.44 | 1155.5216219.87 | 1155.2816229.03 | 1155.5516231.92 | 1155.8416303.07 | 1154.75         |         |      |     |      |
| 16354.15 | 1154.8216380.98 | 1154.8416394.77 | 1154.7416430.95 | 1155.0116514.83 | 1155.25         |         |      |     |      |
| 16560.89 | 1155.5216578.84 | 1154.716629.65  | 1152.5416648.01 | 1152.5716695.46 | 1153.07         |         |      |     |      |
| 16724.6  | 1153.2216832.81 | 1153.9616937.42 | 1153.916970.15  | 1154.5116981.11 | 1154.6          |         |      |     |      |
| 16989.67 | 1155.0217011.25 | 1154.8917034.73 | 1155.2217039.76 | 1155.4417062.09 | 1157.26         |         |      |     |      |
| 17147.1  | 1156.0217172.08 | 1156.1417193.39 | 1157.6417202.14 | 115817248.97    | 1158.02         |         |      |     |      |
| 17265.63 | 1157.8217297.38 | 1156.8817315.73 | 1155.9917319.73 | 1155.7217352.48 | 1156.38         |         |      |     |      |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 17361.43 | 1156.5217372.68 | 1156.4317442.96 | 1155.7617471.11 | 1156.5317499.21 | 1157.77 |
| 17565.37 | 1157.5217596.88 | 1157.38 17615.1 | 1157.9717640.73 | 1158.5717653.51 | 1158.43 |
| 17664.8  | 1158.22 17677   | 1158.65 17703.8 | 1158.7417762.99 | 1158.21 17805.4 | 1158.33 |
| 17842.82 | 1158.5217871.78 | 1158.9717885.61 | 1158.4917937.13 | 1158.9817965.61 | 1159.38 |
| 17997.08 | 1159.2218162.42 | 1159.2518212.41 | 1159.1318217.42 | 1159.0718247.84 | 1157.13 |
| 18291.62 | 1158.9218294.91 | 1159.1818323.51 | 1156.72 18349.5 | 1156.1218364.36 | 1155.68 |
| 18380.47 | 1156.7218411.31 | 1155.7918465.27 | 1155.5818533.94 | 1154.718551.54  | 1154.7  |
| 18577.54 | 1154.5218629.65 | 1154.78 18635.6 | 1154.9518686.63 | 1155.918723.07  | 1156.25 |
| 18733.12 | 1156.9218806.96 | 1156.0718815.49 | 1155.7518848.51 | 1151.8418861.19 | 1150.65 |
| 18876.01 | 1150.9218879.55 | 1151.4418908.05 | 1155.91 18919.3 | 1155.5218983.58 | 1154.42 |
| 19000.8  | 1153.92 19010   | 1155.8619023.73 | 1158.3919034.07 | 1159.4119037.58 | 1158.65 |
| 19073.99 | 1151.2219089.08 | 1151.419093.85  | 1151.1919102.34 | 1152.5419115.72 | 1152.5  |
| 19135.01 | 1152.7219152.18 | 1151.7119196.97 | 1151.0919202.14 | 1150.9319216.01 | 1151.25 |
| 19228.26 | 1151.0219235.07 | 1149.88 19299.3 | 1150.0419335.62 | 1150.3719357.09 | 1150.69 |
| 19390.82 | 1157.5219394.26 | 1158.11 19404.6 | 1158.7819422.48 | 1154.8319456.86 | 1147.34 |
| 19466.2  | 1148.72 19492.6 | 1152.2719507.76 | 1152.96 19513.3 | 1147.2519521.34 | 1140.02 |
| 19535.91 | 1141.5219554.48 | 1135.0619565.22 | 1131.6819593.76 | 1132.4219639.73 | 1133.85 |
| 19657.19 | 1133.6219773.87 | 1132.119873.48  | 1133.119913.76  | 1133.3119944.72 | 1133.12 |
| 20035.35 | 1132.1220064.49 | 1132.1320174.19 | 1132.1620216.93 | 1132.1120301.27 | 1131.83 |
| 20329.01 | 1132.8220343.21 | 1137.28 20365.9 | 1145.8120387.28 | 1146.5820416.82 | 1147.29 |
| 20440.64 | 1153.2220462.85 | 1158.7220480.62 | 1158.3820503.43 | 1158.1420520.86 | 1157.9  |
| 20610.58 | 1179.4220618.09 | 1181.0920650.23 | 1180.0420654.43 | 1181.220672.84  | 1185.1  |
| 20691.43 | 1184.6220711.77 | 1184.4320726.85 | 1182.6920751.98 | 1178.6520790.42 | 1179.95 |
| 20866.31 | 1181.5220886.86 | 1182.20891.78   | 1182 20945.2    | 1180.4520946.24 | 1180.58 |
| 20970.97 | 1185.1220977.55 | 1185.7220990.97 | 1184.4821016.54 | 1185.9621027.23 | 1186.36 |
| 21049.3  | 1187.7221139.77 | 1164.4321157.79 | 1159.7821160.49 | 1159.5221179.51 | 1156.85 |
| 21238.31 | 1155.62 21243.5 | 1155.9321315.86 | 1159.4121324.45 | 1159.7 21363.1  | 1161.6  |
| 21380.83 | 1162.6221399.61 | 1167.4221437.88 | 1166.0821447.56 | 1162.8 21454.8  | 1160.15 |
| 21473.7  | 1160.52 21494.5 | 1160.7221549.92 | 1160.4121575.58 | 1162.0621603.97 | 1167.02 |
| 21625.71 | 1171.6221631.47 | 1173.321647.04  | 1170.0221667.64 | 1172.5321673.43 | 1173.09 |
| 21685.04 | 1172.8221720.26 | 1173.4521734.34 | 1173.6421777.94 | 1173.14 21794.5 | 1173.25 |
| 21803.73 | 1173.4221815.17 | 1173.8321830.12 | 1172.0421841.34 | 1170.421848.75  | 1171.65 |
| 21866.74 | 1175.5221873.12 | 1177.0421919.28 | 1177.3921939.52 | 1177.3221987.72 | 1177.47 |
| 22008.71 | 1178.2222022.69 | 1178.4322044.47 | 1178.5422061.01 | 1178.8322105.28 | 1179.04 |
| 22127.76 | 1178.92 22155.6 | 1179.5822185.01 | 1178.822253.65  | 1179.2222327.29 | 1177.49 |
| 22341.26 | 1177.4222408.59 | 1178.0922420.56 | 1184.2422430.93 | 1186.5322455.02 | 1187.66 |
| 22498.64 | 1188.5222528.32 | 1189.222547.85  | 1189.4922613.03 | 1191.8922628.56 | 1192.27 |
| 22692.42 | 1191.9222729.49 | 1191.4422816.03 | 1187.0222825.01 | 1186.6422851.72 | 1186.41 |
| 22871.37 | 1186.5222899.79 | 1185.4122924.29 | 1184.69 22945.8 | 1184.5322971.38 | 1185.2  |
| 23000.84 | 1185.2223020.21 | 1184.9423025.73 | 1184.7823052.98 | 1183.5423076.38 | 1183.65 |
| 23096.7  | 1185.3223121.44 | 1185.5423159.34 | 1185.9723161.94 | 1186.0723164.26 | 1185.54 |
| 23185.17 | 1179.62 23201.8 | 1181.5523212.44 | 1183.9423218.91 | 1183.1523257.33 | 1182.2  |
| 23268.82 | 1182.0223272.49 | 1182.1123283.71 | 1182.8123311.15 | 1186.523344.13  | 1194.1  |
| 23371.97 | 1195.1223403.29 | 1195.5723452.17 | 1195.6123455.92 | 1195.3423484.16 | 1193.77 |
| 23502.65 | 1192.3223526.76 | 1191.0523566.97 | 1191.8623575.16 | 1191.8323648.69 | 1211.69 |
| 23653.44 | 1211.4223683.28 | 1209.4923709.76 | 1200.58 23757.7 | 1195.323760.97  | 1195.34 |
| 23768.31 | 1195.8223820.08 | 1195.1823832.26 | 1195.1523856.11 | 1195.5823876.79 | 1196.35 |
| 23913.62 | 1197.12 23920.1 | 1197.12 23937.7 | 1198.723939.72  | 1199.2723954.29 | 1201.06 |
| 23987.9  | 1199.2223991.34 | 1199.2524013.63 | 1200.0824016.42 | 1200.0824029.48 | 1197.11 |

|                               |              |      |
|-------------------------------|--------------|------|
| Manning's n Values            | num=         | 3    |
| Sta n Val Sta n Val Sta n Val |              |      |
| 14966.67 .03519507.76         | .03520462.85 | .035 |

|                  |           |               |         |       |              |        |
|------------------|-----------|---------------|---------|-------|--------------|--------|
| Bank Sta: Left   | Right     | Lengths: Left | Channel | Right | Coeff Contr. | Expan. |
| 19507.7620462.85 |           | 500           | 494.93  | 490   | .1           | .3     |
| Ineffective Flow | num=      | 2             |         |       |              |        |
| Sta L Sta R Elev | Permanent | F             |         |       |              |        |
| 14966.6719507.76 | 1152.96   | F             |         |       |              |        |
| 20462.8524029.48 | 1158.72   | F             |         |       |              |        |

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 220.73

INPUT  
 Description:

|                            |                 |                 |
|----------------------------|-----------------|-----------------|
| Station Elevation Data     | num=            | 313             |
| Sta Elev Sta Elev Sta Elev |                 |                 |
| 14797.3 1156.4214913.57    | 1154.54 14944.1 | 1154.3814944.42 |
| 14980.8 1154.4215003.23    | 1154.3215059.05 | 1154.3115081.02 |
| 15126.06 1154.2215181.19   | 1153.7315210.79 | 1152.5915233.66 |
| 15273.4 1153.1215362.88    | 1152.7115379.06 | 1152.1715423.88 |
| 15539.57 1151.4215572.44   | 1151.415584.29  | 1151.6215599.68 |
| 15672.24 1151.5215700.28   | 1153.47 15798   | 1153.49 15867.6 |
| 15952.86 1153.1216008.14   | 1153.0316080.12 | 1153.8716088.31 |
| 16139.26 1155.0216148.32   | 1154.7416153.19 | 1155.3516160.23 |
| 16243.62 1153.4216274.61   | 1153.42 16363.6 | 1153.6116393.63 |
| 16490.57 1153.9216564.86   | 1153.9316567.24 | 1153.89 16703.9 |
| 16724.61 1153.8216797.96   | 1153.8916899.05 | 1153.87 16906.7 |
| 16942.39 1154.32 16955.5   | 1154.8816971.52 | 1155.3716982.43 |
| 17049.19 1155.2217072.46   | 1155.217121.46  | 1155.0117145.41 |
| 17215.62 1155.3217238.43   | 1155.1517247.66 | 1154.7517269.82 |
| 17364.73 1155.52 17374.5   | 1155.7617397.24 | 1155.4817437.21 |
| 17525.1 1155.9217548.55    | 1155.55 17626.8 | 1156.4117747.58 |
| 17778.06 1156.3217792.77   | 1156.67 17840.7 | 1157.0817896.44 |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 17924.66 | 1157.0217968.81 | 1156.4218001.48 | 1156.5518082.98 | 1156.4418106.55 | 1156.68 |
| 18117.14 | 1156.7218144.52 | 1157.2518166.73 | 1157.18 18183.2 | 1157.2518210.02 | 1157.4  |
| 18218.19 | 1157.3218251.96 | 1156.6318271.92 | 1156.2918289.25 | 1155.8118309.93 | 1156.39 |
| 18348.27 | 1155.4218353.67 | 1155.2918492.05 | 1155.4318501.57 | 1155.3918558.69 | 1155.34 |
| 18604.41 | 1155.3218618.27 | 1155.0318676.89 | 1154.27 18726.4 | 1151.1618748.84 | 1149.7  |
| 18787.16 | 1149.0218832.85 | 1148.3318862.62 | 1154.8418869.61 | 1156.1318945.35 | 1155.93 |
| 18952.13 | 1154.6218954.69 | 1154.3618985.94 | 1155.0819036.14 | 1155.3719045.15 | 1156.21 |
| 19057.29 | 1154.4219087.96 | 1152.5719132.13 | 1152.6119162.52 | 1153.0219192.54 | 1153.81 |
| 19218.75 | 1153.3219232.69 | 1153.9619251.32 | 1153.5519302.95 | 1153.68 19341.3 | 1152.86 |
| 19381.97 | 1151.7219439.95 | 1153.7919450.97 | 1154.0819479.57 | 1160.1219490.11 | 1161.14 |
| 19492.12 | 1160.62 19515.2 | 1155.6819531.14 | 1152.9119555.44 | 1135.4819557.72 | 1134.33 |
| 19576.93 | 1133.6219658.15 | 1131.0819701.95 | 1129.8119712.81 | 1130.47 19715.3 | 1130.73 |
| 19760.95 | 1131.4219803.61 | 1131.4619851.53 | 1131.63 19950.1 | 1132.7219973.26 | 1132.81 |
| 20100.83 | 1133.0220112.26 | 1133.1120141.19 | 1132.5920222.72 | 1131.1820239.48 | 1130.87 |
| 20265.71 | 1131.6220365.39 | 1134.520374.45  | 1136.1920381.94 | 1138.4320423.81 | 1150.79 |
| 20441.46 | 1155.7220453.82 | 1157.6720476.74 | 1160.1920495.14 | 1162.38 20503.4 | 1164.3  |
| 20564.01 | 1177.6220578.57 | 1178.7720595.22 | 1181.0320620.06 | 1180.6620631.53 | 1180.81 |
| 20644.53 | 1180.8220676.97 | 1175.720739.84  | 1165.2220756.44 | 1165.7320786.35 | 1166.04 |
| 20833.99 | 1167.02 20861.4 | 1166.3520868.64 | 1166.4520875.76 | 1166.3620907.84 | 1166.28 |
| 20926.94 | 1168.0220936.61 | 1168.5220963.09 | 1170.3720978.69 | 1176.5521014.75 | 1190.65 |
| 21036.74 | 1190.7221049.33 | 1190.7321126.03 | 1169.5121141.74 | 1165.5821147.25 | 1164.29 |
| 21162.06 | 1161.6221169.27 | 1161.421221.77  | 1161.7321288.72 | 1161.23 21296.9 | 1162.14 |
| 21311.98 | 1164.3221324.94 | 1163.9521345.92 | 1163.521351.63  | 1160.6521364.03 | 1154.12 |
| 21386.28 | 1154.3221402.73 | 1145.2821406.95 | 1142.8521424.81 | 1144.3721442.17 | 1151.4  |
| 21451.75 | 1155.4221477.29 | 1155.3621492.55 | 1155.2221565.24 | 1154.921589.18  | 1153.63 |
| 21648.09 | 1153.1221676.81 | 1152.83 21687.2 | 1155.1521691.96 | 1155.99 21694   | 1155.7  |
| 21705.22 | 1155.6221747.92 | 1154.8621763.65 | 1157.321768.74  | 1158.1821780.97 | 1159.13 |
| 21785.19 | 1159.8221799.01 | 1162.9621849.66 | 1164.8221868.62 | 1163.1121880.15 | 1164.07 |
| 21897.96 | 1166.5221923.34 | 1166.6721939.34 | 1167.2121967.35 | 1168.2521991.87 | 1168.49 |
| 22036.99 | 1169.7222046.99 | 1170.2122070.54 | 1168.4622091.72 | 1169.77 22094   | 1170.01 |
| 22100.85 | 1169.7222114.57 | 1169.622158.49  | 1168.79 22173.5 | 1169.1222193.46 | 1168.56 |
| 22234.87 | 1168.3222258.75 | 1168.5722292.82 | 1169.42 22320.1 | 1169.5522329.22 | 1169.19 |
| 22352.2  | 1168.5222366.09 | 1169.2622415.22 | 1169.5922453.69 | 1169.8922492.16 | 1170.68 |
| 22642.92 | 1172.3222688.53 | 1172.622739.89  | 1172.8822822.87 | 1172.8822871.73 | 1172.51 |
| 22889.98 | 1172.8222937.42 | 117423028.91    | 1175.9323031.57 | 1176.0323070.19 | 1178.1  |
| 23095.28 | 1178.6223102.86 | 1179 23148.1    | 1181.5223163.39 | 1181.9723165.07 | 1182.12 |
| 23188.47 | 1182.5223213.41 | 1181.8223249.54 | 1182.0523278.98 | 1182.15 23290.4 | 1182.3  |
| 23363.69 | 1182.9223383.38 | 1182.5423401.79 | 1182.1923419.41 | 1182.3323433.68 | 1180.41 |
| 23452.43 | 1177.6223471.84 | 1178.7523487.22 | 1176.823499.32  | 1178.2123523.76 | 1179.08 |
| 23530.78 | 1179.1223580.84 | 1180.9923599.92 | 1181.8523610.68 | 1182.3623668.01 | 1185.42 |
| 23684.49 | 1185.2223737.23 | 1185.323753.82  | 1186.1123771.45 | 1186.6323788.82 | 1187.57 |
| 23802.17 | 1187.0223805.38 | 1186.7923809.24 | 1186.9923813.53 | 1186.7623851.27 | 1185.84 |
| 23864.52 | 1185.9223891.02 | 1185.3823892.96 | 1185.4423897.08 | 1184.8223973.88 | 1174.78 |
| 24039.67 | 1175.5224085.52 | 1189.4224090.47 | 1191.224151.58  | 1192.924165.54  | 1193.38 |
| 24172.71 | 1193.5224192.87 | 1193.7124242.54 | 1194.3824276.93 | 1194.7324289.34 | 1197.61 |
| 24302.68 | 1200.02 24332   | 1199.7424347.55 | 1200.27         |                 |         |

|                               |              |      |
|-------------------------------|--------------|------|
| Manning's n Values            | num=         | 3    |
| Sta n Val Sta n Val Sta n Val |              |      |
| 14797.3 .03519490.11          | .03520495.14 | .035 |

|                            |                             |              |        |
|----------------------------|-----------------------------|--------------|--------|
| Bank Sta: Left Right       | Lengths: Left Channel Right | Coeff Contr. | Expan. |
| 19490.1120495.14           | 510 501.55 490              | .1           | .3     |
| Ineffective Flow num=      | 2                           |              |        |
| Sta L Sta R Elev Permanent |                             |              |        |
| 14797.319490.11 1161.14    | F                           |              |        |
| 20495.1424347.55 1162.38   | F                           |              |        |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 220.63

INPUT  
Description:

|  |                 |                 |                 |         |
|--|-----------------|-----------------|-----------------|---------|
| Station Elevation Data                       | num=            | 293             |                 |         |
| Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev |                 |                 |                 |         |
| 14824 1152.4214870.19                        | 1152.0914906.61 | 1152.58 14934.6 | 1152.3914996.54 | 1151.75 |
| 15005.4 1151.42 15035.6                      | 1151.8415073.05 | 1151.8215119.49 | 1151.6215140.51 | 1150.77 |
| 15164.17 1151.6215176.48                     | 1151.9215188.71 | 1151.8815222.37 | 1152.0415284.22 | 1151.53 |
| 15311.03 1151.8215339.76                     | 1152.3815407.72 | 1151.8215469.64 | 1151.615540.95  | 1151.43 |
| 15601.47 1150.62 15631.9                     | 1151.4315681.89 | 1151.9815766.94 | 1152.115791.74  | 1151.93 |
| 15882.72 1152.2215969.23                     | 1152.616026.97  | 1153.4916037.23 | 1152.9916047.44 | 1152.34 |
| 16051.03 1152.3216077.31                     | 1151.3416098.49 | 1153.3416164.63 | 1152.62 16172.4 | 1152.65 |
| 16267.84 1152.5216308.54                     | 1152.8216383.35 | 1153.6116440.92 | 1153.6416503.85 | 1153.29 |
| 16547.1 1153.2216625.17                      | 1153.1316666.85 | 1153.7216686.26 | 1154.2716703.27 | 1154.03 |
| 16750.45 1153.6216831.13                     | 1153.8216846.42 | 1153.7716860.48 | 1153.4916872.44 | 1153.71 |
| 16891.43 1153.6216919.41                     | 1154.2616929.14 | 1154.3517034.57 | 1154.2817112.73 | 1154.43 |
| 17804.7 1152.2217925.11                      | 1156.4417981.54 | 1156.6918023.62 | 1156.7118059.13 | 1156.64 |
| 8113.05 1156.2218137.88                      | 1156.2518140.35 | 1156.3118159.61 | 1156.7818172.45 | 1156.7  |
| 18185.1 1156.4218215.34                      | 1155.6918233.36 | 1156.1118307.25 | 1155.2718360.97 | 1155.2  |
| 18408.08 1155.6218500.25                     | 1156.1718520.71 | 1154.8218535.53 | 1154.8118539.52 | 1154.29 |
| 18551.01 1153.8218558.74                     | 1153.6518573.36 | 1153.1318611.78 | 1152.76 18625.8 | 1152.58 |
| 18647.75 1155.12 18657.7                     | 1155.9518674.43 | 1154.8918723.13 | 1154.8618734.97 | 1154.66 |

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|          |                 |                 |       |                 |                 |         |
|----------|-----------------|-----------------|-------|-----------------|-----------------|---------|
| 18743.63 | 1154.4218780.43 | 1152.78         | 18816 | 1154.2318843.95 | 1156.5418864.43 | 1156.78 |
| 18922.43 | 1158.5218936.63 | 1158.5518972.93 |       | 1155.6219047.63 | 1156.2 19180.2  | 1156.99 |
| 19184.81 | 1156.9219228.77 | 1156.6519245.97 |       | 1156.619262.55  | 1156.6219312.33 | 1156.77 |
| 19339.84 | 1156.8219364.44 | 1156.2219384.69 |       | 1154.7619429.36 | 1145.6719434.17 | 1145.38 |
| 19437.42 | 1146.1219487.14 | 1158.319502.33  |       | 1161.319508.86  | 1158.2519533.27 | 1147.98 |
| 19545.56 | 1149.1219552.18 | 1144.3719562.89 |       | 1135.7619591.04 | 1134.4919650.01 | 1131.26 |
| 19773.79 | 1131.6219790.22 | 1131.6119802.35 |       | 1131.3719912.09 | 1129.29 19968.5 | 1129.22 |
| 19998.74 | 1129.4220051.26 | 1131.4920068.85 |       | 1131.5220178.63 | 1130.98 20268.5 | 1131.92 |
| 20304.69 | 1132.6220328.46 | 1132.8320359.22 |       | 1132.7320416.92 | 1140.3620430.96 | 1147.36 |
| 20440.58 | 1149.5220475.73 | 1158.0820483.75 |       | 1158.2120494.25 | 1158.8720495.83 | 1158.36 |
| 20517.61 | 1163.3220571.44 | 1176.5920606.77 |       | 1176.3920610.81 | 1176.2520641.95 | 1168.64 |
| 20689.44 | 1157.1220692.07 | 1157.220726.24  |       | 1158.5620766.82 | 1159.3720783.96 | 1159.62 |
| 20815.62 | 1159.3220830.99 | 1159.2520842.11 |       | 1158.9920875.53 | 1158.9720911.76 | 1162.8  |
| 20935.56 | 1162.6220937.82 | 1162.7320985.04 |       | 1185.9620990.99 | 1186.08 21011.6 | 1184.86 |
| 21099.54 | 1160.5221115.04 | 1156.321117.51  |       | 1156.3821170.33 | 1157.7121193.48 | 1161.11 |
| 21199.07 | 1162.0221207.28 | 1161.8721228.86 |       | 1160.7321250.98 | 115321272.44    | 1153.48 |
| 21291.3  | 1143.3221314.36 | 1143.2221321.72 |       | 1147.15 21333.2 | 1153.6521348.91 | 1153.98 |
| 21376.92 | 1153.6221411.05 | 1153.5421474.01 |       | 1153.2121553.59 | 1153.2321637.39 | 1152.91 |
| 21722.63 | 1152.8221785.67 | 1152.8521874.62 |       | 1154.1121878.38 | 1154.1521921.19 | 1161.81 |
| 21948.69 | 1162.8221992.61 | 1164.3122000.71 |       | 1162.6222008.81 | 1160.7322018.63 | 1162.07 |
| 22032.5  | 1163.8222048.31 | 1163.7622055.74 |       | 1164.05 22094   | 1165.222134.12  | 1166.51 |
| 22143.98 | 1167.2222154.38 | 1165.9922176.46 |       | 1163.6 22190.1  | 1167.0122195.05 | 1167.07 |
| 22228.55 | 1167.2222302.09 | 1167.9122385.05 |       | 1169.2722394.52 | 1169.3422452.52 | 1168.53 |
| 22520.66 | 1167.7222561.39 | 1167.3122580.78 |       | 1167.4722602.39 | 1167.7222636.28 | 1166.81 |
| 22655.55 | 1166.5222690.77 | 1165.6322697.75 |       | 1165.522702.64  | 1164.4222753.06 | 1154.83 |
| 22801.2  | 1156.1222825.88 | 1156.7322880.79 |       | 1162.55 22884.4 | 1162.8522888.09 | 1163.64 |
| 22924    | 1167.6222955.81 | 1166.0222967.88 |       | 1165.522985.75  | 1165.5723003.91 | 1169.05 |
| 23020.6  | 1170.5223039.26 | 1172.2723047.39 |       | 1173.82 23059   | 1176.4423113.46 | 1185.87 |
| 23129.96 | 1188.7223137.87 | 1189.2823234.39 |       | 1197.27 23268.4 | 1198.23 23278.9 | 1198.34 |
| 23289.67 | 1198.7223300.62 | 1199.58 23329   |       | 1197.1223354.08 | 1192.1923359.12 | 1193.05 |
| 23364.81 | 1194.9223377.13 | 1198.4323381.26 |       | 1199.0723402.82 | 1197.1123412.98 | 1195.72 |
| 23418.94 | 1194.6223442.23 | 1189.9723455.44 |       | 1188.05 23473.3 | 1184.8923480.12 | 1185.3  |
| 23500.09 | 1185.6223511.29 | 1186.0423528.38 |       | 1181.2523531.54 | 1179.9923542.35 | 1180.86 |
| 23558.13 | 1181.8223564.97 | 1182.0923576.86 |       | 1181.52 23611.1 | 1179.5223628.94 | 1184.02 |
| 23666.9  | 1194.2223690.06 | 119523754.42    |       | 1198.2223759.24 | 1198.9523774.42 | 1195.32 |
| 23805.81 | 1188.5223842.08 | 1188.2423884.13 |       | 1188.0523889.09 | 1187.7623923.01 | 1184.87 |
| 23994.76 | 1185.3224012.39 | 1185.16 24030.1 |       | 1182.5824046.96 | 1187.1324084.61 | 1192.67 |
| 24101.8  | 1193.1224136.25 | 1193.5424170.43 |       | 1194.224211.66  | 1195.1624220.01 | 1195.41 |
| 24252.23 | 1194.9224282.41 | 1195.2524299.04 |       | 1195.41         |                 |         |

Manning's n Values

|       |              |              |      |      |
|-------|--------------|--------------|------|------|
| Sta   | n Val        | Sta          | num= | 3    |
| 14824 | .03519502.33 | .03520494.25 |      | .035 |

|                  |          |               |           |       |              |        |
|------------------|----------|---------------|-----------|-------|--------------|--------|
| Bank Sta: Left   | Right    | Lengths: Left | Channel   | Right | Coeff Contr. | Expan. |
| 19502.33         | 20494.25 | 490           | 501.08    | 510   | .1           | .3     |
| Ineffective Flow | num=     | 2             |           |       |              |        |
| Sta L            | Sta R    | Elev          | Permanent |       |              |        |
| 14824            | 19502.33 | 1161.3        | F         |       |              |        |
| 20494.25         | 24299.04 | 1158.87       | F         |       |              |        |

CROSS SECTION

RIVER: Salt  
 REACH: 1  
 RS: 220.54

INPUT

Description:

|          |                 |                 |                 |                 |         |     |      |     |      |
|----------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|
| Station  | Elevation       | Data            | num=            | 318             |         |     |      |     |      |
| Sta      | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev |
| 14801.12 | 1150.2214812.54 | 1150.1914917.34 | 1149.514942.26  | 1148.6314971.01 | 1149.56 |     |      |     |      |
| 14987.16 | 1149.7215014.67 | 1149.6215087.52 | 1149.3915174.13 | 1149.0315179.25 | 1148.83 |     |      |     |      |
| 15198.73 | 1147.1215227.13 | 1149.0615255.43 | 1150.2915326.06 | 1150.6515350.94 | 1150.54 |     |      |     |      |
| 15371.84 | 1149.8215395.39 | 1149.78 15403.6 | 1149.715438.23  | 1149.99 15442.3 | 1151.26 |     |      |     |      |
| 15474.44 | 1150.1215485.49 | 1150.3615528.24 | 1151.1815544.24 | 1150.8815568.11 | 1149.5  |     |      |     |      |
| 15645.6  | 1149.32 15695.2 | 1149.5615712.03 | 1152.2115760.49 | 1151.3915778.54 | 1151.05 |     |      |     |      |
| 15796.55 | 1151.0215878.15 | 1151.5515936.34 | 1151.5816036.67 | 1151.0716081.24 | 1151.09 |     |      |     |      |
| 16132.26 | 1151.52 16138.4 | 1151.5216193.74 | 1152.0516245.08 | 1152.2816287.42 | 1151.9  |     |      |     |      |
| 16328.17 | 1152.0216408.16 | 1152.3116436.34 | 1151.316469.09  | 1152.6716478.31 | 1153.03 |     |      |     |      |
| 16494.71 | 1152.2216516.71 | 1152.1316578.93 | 1152.1816592.92 | 1152.1616698.21 | 1152.18 |     |      |     |      |
| 16766.45 | 1152.9216795.37 | 1153.716822.36  | 1153.4616839.56 | 1152.9816850.28 | 1153.11 |     |      |     |      |
| 16914.07 | 1153.6216976.42 | 1153.6117033.22 | 1153.8117080.06 | 1153.7417109.07 | 1153.79 |     |      |     |      |
| 17180.95 | 1153.8217204.63 | 1153.9717265.71 | 1154.0517282.42 | 1154.01 17301.8 | 1153.74 |     |      |     |      |
| 17351.35 | 1153.9217381.17 | 1153.8317423.14 | 1153.9717451.37 | 1153.6717471.72 | 1153.55 |     |      |     |      |
| 17490.39 | 1153.3217550.02 | 1153.5517577.93 | 1153.9717591.81 | 1154.4217603.93 | 1155.17 |     |      |     |      |
| 17616.04 | 1155.7217638.31 | 1156.1217648.83 | 1156.2117661.78 | 1155.9717698.43 | 1155.47 |     |      |     |      |
| 17750.33 | 1155.0217802.96 | 1154.717845.63  | 1154.4517856.54 | 1154.8817871.73 | 1155.25 |     |      |     |      |
| 17899.64 | 1155.5217932.91 | 1155.5418011.33 | 1154.8318028.57 | 1154.83 18060.3 | 1154.92 |     |      |     |      |
| 18070.9  | 1154.3218125.61 | 1154.5218139.99 | 1154.4918143.34 | 1154.7418154.39 | 1155.16 |     |      |     |      |
| 18165.9  | 1153.9218176.18 | 1152.9818193.98 | 1154.3218210.24 | 1155.418363.83  | 1155.8  |     |      |     |      |
| 18515.17 | 1153.4218533.63 | 1153.2718547.59 | 1153.0518583.44 | 1151.9918589.14 | 1151.78 |     |      |     |      |
| 18591.13 | 1151.9218623.29 | 1153.5118643.25 | 115418663.74    | 1154.3318689.11 | 1154.32 |     |      |     |      |
| 18762.5  | 1155.3218764.59 | 1156.1318797.54 | 1155.9718841.07 | 1155.818888.92  | 1155.8  |     |      |     |      |
| 18894.16 | 1156.6218906.46 | 1158.1318923.78 | 1156.2818930.74 | 1155.45 18931.5 | 1155.66 |     |      |     |      |
| 18944.76 | 1155.8218973.23 | 1156.619043.11  | 1156.58 19057.5 | 1156.53 19086.5 | 1156.26 |     |      |     |      |
| 19126.25 | 1156.2219221.41 | 1157.319262.48  | 1157.5219316.88 | 1158.0419322.58 | 1158.09 |     |      |     |      |
| 19351.74 | 1158.1219373.63 | 1148.96 19398.6 | 1137.8319415.07 | 1135.5719418.42 | 1135.79 |     |      |     |      |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|
| 19443.87 | 1142.92         | 19492.1         | 1156.219508.34  | 1159.9219536.59 | 1145.2519546.11 | 1147.36 |
| 19563.04 | 1135.3219565.48 | 1133.6619567.11 | 1133.6919586.71 | 1132.9119664.41 | 1132.01         | 1130.2  |
| 19726.79 | 1131.7219754.39 | 1131.3719798.54 | 1130.8119848.54 | 1130.1319888.08 | 1130.03         | 1141.83 |
| 19987.58 | 1129.9220102.16 | 1129.5120114.83 | 1129.4420125.16 | 1129.520240.77  | 1130.03         | 1141.83 |
| 20326.68 | 1130.5220349.68 | 1130.620357.7   | 1130.6920425.53 | 1141.2720428.07 | 1141.83         | 1158.42 |
| 20437.09 | 1145.9220447.18 | 1148.0820460.57 | 1151.9720481.21 | 1157.4320491.27 | 1158.42         | 1162.83 |
| 20505.8  | 1157.6220544.78 | 1166.0920582.75 | 1166.0520596.25 | 1165.7520608.52 | 1162.83         | 1156.42 |
| 20642.57 | 1154.4220672.4  | 1154.5820684.76 | 1154.6420753.51 | 1156.4420766.23 | 1156.42         | 1158.98 |
| 20791.41 | 1156.2220805.86 | 1155.9220841.26 | 1155.8420868.87 | 1158.9520900.95 | 1158.98         | 1156.73 |
| 20917.6  | 1160.8220924.05 | 1161.3920934.41 | 1162.0220951.83 | 1163.4820968.01 | 1156.73         | 1158.59 |
| 20989.78 | 1148.6221025.2  | 1147.5521038.38 | 1149.1621076    | 1159.8421110.76 | 1158.59         | 1156.52 |
| 21129.93 | 1153.7221132.61 | 1152.9721158.94 | 1155.4921176.73 | 1155.7421197.09 | 1156.52         | 1147.36 |
| 21203.78 | 1152.2221217.27 | 1142.4821245.34 | 1141.9121262.49 | 1141.821275.44  | 1147.36         | 1152.34 |
| 21284.3  | 1152.8221302.26 | 1152.5921311.98 | 1152.9421327.71 | 1153.221377.48  | 1152.34         | 1151.95 |
| 21401.21 | 1151.9221454    | 1151.9721556.04 | 1151.8521633.17 | 1151.8521650.47 | 1151.95         | 1156.63 |
| 21796.34 | 1152.3221872.57 | 1152.3321917.66 | 1152.0521954.45 | 1151.9921974.64 | 1156.63         | 1160.9  |
| 21994.3  | 1160.8222036.34 | 1161.6222058.49 | 1157.6522082.22 | 1161.7722098.66 | 1160.9          | 1161.56 |
| 22143.89 | 1162.8222168.86 | 1162.0322182.01 | 1161.5422189.91 | 1161.9622193.83 | 1161.56         | 1163.16 |
| 22212.89 | 1160.022227.2   | 1162.0922231.65 | 1162.4722233    | 1163.5722274.63 | 1163.16         | 1154.56 |
| 22292.93 | 1159.2222314.39 | 1154.6722336.43 | 1154.8222394.74 | 1154.8422536.32 | 1154.56         | 1162.97 |
| 22549.68 | 1156.2222578.44 | 1158.6722587.09 | 1159.7122601.62 | 1160.4422634.03 | 1162.97         | 1182.63 |
| 22649.16 | 1165.3222652.36 | 1166.8822698.86 | 117322732.02    | 1180.6222750.13 | 1182.63         | 1187.92 |
| 22764.69 | 1185.9222786.36 | 1187.2122801.42 | 1188.8922807.62 | 1189.0722821.79 | 1187.92         | 1171.45 |
| 22837.43 | 1184.5222869.3  | 1185.1422895.2  | 1184.6422904.25 | 1181.722933.69  | 1171.45         | 1171.31 |
| 22950.9  | 1172.9222965.88 | 1175.3222982.72 | 1173.6923029.35 | 1170.423037.9   | 1171.31         | 1186.53 |
| 23050.74 | 1173.4223094.46 | 1181.0823104.35 | 1182.6723113.1  | 1183.5523129.31 | 1186.53         | 1188.29 |
| 23158.01 | 1187.9223167.19 | 1188.2423175.38 | 1188.223251.08  | 1188.6423315.44 | 1188.29         | 1187.21 |
| 23330.46 | 1189.0223340.75 | 1190.223347.56  | 1190.1123361.34 | 1190.4223374.98 | 1187.21         | 1183.78 |
| 23384.93 | 1184.6223392.12 | 1185.623403.1   | 1185.2223417.07 | 1185.1423439.8  | 1183.78         | 1182.02 |
| 23467.05 | 1175.7223510.61 | 1168.1923546.75 | 1176.0223560.99 | 1177.3623605.58 | 1182.02         | 1186.47 |
| 23610.35 | 1182.3223648.59 | 1178.6323658.04 | 1179.1823679.04 | 1181.4923737.48 | 1186.47         | 1189.8  |
| 23746.68 | 1187.5223757.51 | 1188.3323782.27 | 1189.9523806.71 | 1190.4123814.08 | 1189.8          | 1185.34 |
| 23822.57 | 1187.7223836.1  | 1186.5723839.74 | 1185.8823876.7  | 1185.4423932.7  | 1185.34         | 1191.74 |
| 23939.22 | 1187.3223942.1  | 1187.7323948.18 | 1189.0523956.29 | 1190.2223973.47 | 1191.74         | 1195.23 |
| 23995.43 | 1191.5224030.29 | 1192.524061.1   | 1193.8224079.65 | 1194.4324092.29 | 1195.23         | 1186.89 |
| 24108.39 | 1194.2224116.9  | 1194.0424122.12 | 1193.2324132.53 | 1191.9724183.32 | 1186.89         |         |
| 24208.61 | 1180.4224227.19 | 1185.0324228.22 | 1185.22         |                 |                 |         |

|                    |              |              |      |
|--------------------|--------------|--------------|------|
| Manning's n Values | num=         | 3            |      |
| Sta n Val          | Sta n Val    | Sta n Val    |      |
| 14801.12           | .03519508.34 | .03520491.27 | .035 |

|                  |          |               |           |       |              |        |
|------------------|----------|---------------|-----------|-------|--------------|--------|
| Bank Sta: Left   | Right    | Lengths: Left | Channel   | Right | Coeff Contr. | Expan. |
| 19508.34         | 20491.27 | 470           | 492.46    | 510   | .1           | .3     |
| Ineffective Flow | num=     | 2             |           |       |              |        |
| Sta L            | Sta R    | Elev          | Permanent |       |              |        |
| 14801.12         | 19508.34 | 1159.92       | F         |       |              |        |
| 20491.27         | 24228.22 | 1158.42       | F         |       |              |        |

CROSS SECTION

RIVER: Salt  
REACH: 1  
RS: 220.45

INPUT  
Description:

|                        |                 |                 |                 |                 |         |
|------------------------|-----------------|-----------------|-----------------|-----------------|---------|
| Station Elevation Data | num=            | 300             |                 |                 |         |
| Sta Elev               | Sta Elev        | Sta Elev        | Sta Elev        | Sta Elev        |         |
| 14746.98               | 1148.3214752.11 | 1148.2814851.06 | 1148.1814881.09 | 1146.2614910.13 | 1147.82 |
| 14925.3                | 1148.3214999.81 | 1148.3615023.75 | 1148.3915115.38 | 1147.9315137.82 | 1147.57 |
| 15144.01               | 1147.4215160.69 | 1147.515176.34  | 1147.815184.15  | 1148.4515241.95 | 1148.75 |
| 15281.17               | 1149.0215309.12 | 1148.8215343.83 | 1149.1215371.59 | 1149.3915386.45 | 1149.35 |
| 15467.17               | 1148.9215478.24 | 1149.1615519.72 | 1149.3815566.17 | 1149.5615703.9  | 1150.2  |
| 15879.53               | 1151.4215903.48 | 1151.5616002.54 | 1150.9416043.15 | 1150.8216096.54 | 1150.7  |
| 16155.73               | 1150.4216205.69 | 1150.5216292.19 | 1150.6116344.01 | 1150.1816355.56 | 1151.2  |
| 16366.8                | 1151.6216377.57 | 1152.3716384.06 | 1151.4316467.03 | 1152.7616629.45 | 1156.65 |
| 16647.95               | 1156.5216654.8  | 1156.616671.82  | 1154.8816685.8  | 1151.9416704.38 | 1152.32 |
| 16731.97               | 1152.6216753.89 | 1151.7816759.47 | 1151.6616774.45 | 1152.1316781.12 | 1152.49 |
| 16822.5                | 1152.3216914.48 | 1152.5116964.07 | 1152.3717015.87 | 1152.317115.48  | 1152.39 |
| 17187.88               | 1152.8217261.47 | 1152.7917330.5  | 1152.6517389.14 | 1152.6617454.55 | 1152.88 |
| 17484.6                | 1152.8217564.97 | 1152.4417593.47 | 1152.4417606.17 | 1152.3917616.31 | 1152.12 |
| 17625.19               | 1152.6217645.56 | 1153.3517649.08 | 1153.3517705.84 | 1154.1517761.81 | 1154.71 |
| 17778.02               | 1153.8217799.36 | 1153.2617813.13 | 1153.2117884.85 | 1153.6617965.3  | 1152.8  |
| 18001.45               | 1152.5218020.96 | 1152.2518030.58 | 1151.8818070.55 | 1151.6718080.22 | 1152    |
| 18090.73               | 1152.2218108.23 | 1151.4118115.98 | 1150.9618187.96 | 1150.6918459.38 | 1151.85 |
| 18486.51               | 1151.9218492.09 | 1151.7818519.46 | 1151.1118529.99 | 1152.1718545.81 | 1152.34 |
| 18609.17               | 1150.3218628.58 | 1150.7318662.47 | 1153.8218721.65 | 1158.3118808.58 | 1159.11 |
| 18824.67               | 1158.8218860.42 | 1157.9818934.66 | 1156.1618956.18 | 1155.4918972.54 | 1156.36 |
| 18977.64               | 1157.0218986.44 | 1156.5119001.14 | 1155.7419022.53 | 1156.3219085.01 | 1155.32 |
| 19149.05               | 1154.5219204.31 | 115419229.04    | 1155.7919242.84 | 1156.9219261.71 | 1158.86 |
| 19263.03               | 1159.0219275.24 | 1159.519303.4   | 1160.1219310.63 | 1159.0719326.37 | 1156.96 |
| 19333.35               | 1156.5219355.52 | 1155.7119361.74 | 1156.8819392.06 | 1142.619416.73  | 1131.75 |
| 19490.61               | 1153.7219495.17 | 1155.0619510.69 | 1157.0419520.68 | 1153.4519544.52 | 1145.47 |
| 19553.74               | 1147.7219572.14 | 1131.919665.24  | 1132.7219786.7  | 1128.6719856.98 | 1129.5  |
| 19925.41               | 1130.3220052.36 | 1128.0720178    | 112920308.6     | 1127.5520337.05 | 1129.03 |
| 20359.69               | 1130.2220418.9  | 1138.8920433.54 | 1141.0720442.6  | 1145.0920452.11 | 1147.16 |
| 20459.98               | 1149.1220486.73 | 1156.120501.85  | 1154.3220505.69 | 1153.9620508.94 | 1154.35 |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 20520.58 | 1157.0220536.79 | 115720579.49    | 1156.120596.08  | 1154.8520626.31 | 1155.16 |
| 20638.92 | 1155.1220676.95 | 1154.1620712.89 | 1153.0620732.98 | 1153.8620744.81 | 1153.72 |
| 20771.95 | 1153.8220800.57 | 1152.9420804.59 | 1152.7820830.42 | 1155.34 20875   | 1154.85 |
| 20887.8  | 1154.92 20896.5 | 1152.9820922.93 | 1147.6420938.03 | 1146.8920957.31 | 1145.79 |
| 20981.34 | 1147.32 21015.1 | 1157.6221034.51 | 1155.421041.76  | 1154.7821066.29 | 1146.4  |
| 21135.83 | 1146.1221154.19 | 1146.36 21225.1 | 1146.8921232.85 | 1148.2121249.91 | 1151.44 |
| 21275.87 | 1151.7221280.71 | 1151.6621284.16 | 1150.2721300.98 | 1142.721329.25  | 1142.21 |
| 21345.2  | 1142.2221351.19 | 1145.1321365.21 | 1151.1321385.23 | 1150.7421389.35 | 1150.75 |
| 21391.53 | 1150.4221406.85 | 1149.3421414.28 | 1149.5821430.38 | 1149.6321459.89 | 1149.78 |
| 21501.59 | 1150.5221669.43 | 1150.8121698.08 | 1150.8321706.27 | 1150.8821828.84 | 1151.87 |
| 21966.13 | 1150.9221975.32 | 1150.9621988.33 | 1151.28 22026.1 | 1158.1322047.67 | 1161    |
| 22052.31 | 1161.0222066.78 | 1159.5822089.29 | 1164.1322094.55 | 1165.1422102.22 | 1162.34 |
| 22108.11 | 1162.6222126.83 | 1164.4722134.31 | 1164.4322140.23 | 1164.2622171.87 | 1163.94 |
| 22185.25 | 1163.9222223.04 | 1163.1822229.65 | 1163.0122241.59 | 1161.0522247.22 | 1160.28 |
| 22263.02 | 1157.8222277.72 | 1162.56 22295   | 1160.8322312.49 | 1166.7422323.46 | 1169.83 |
| 22326.51 | 1170.5222334.35 | 1171.27 22354.2 | 1173.422358.34  | 1173.0322366.27 | 1172.79 |
| 22389.93 | 1164.8222426.46 | 1167.4722447.68 | 1168.7322460.42 | 1167.0222478.36 | 1164    |
| 22493.23 | 1160.9222548.65 | 1171.08 22557.7 | 1172.8922571.15 | 1173.7922589.76 | 1173.92 |
| 22608.2  | 1173.9222632.49 | 1167.6622655.97 | 1167.3322666.17 | 1167.3322706.69 | 1160.33 |
| 22733.65 | 1161.8222770.59 | 1158.5522796.01 | 1161.8922799.92 | 1162.2722833.84 | 1162.37 |
| 22864.9  | 1163.32 22880.6 | 1164.7922890.85 | 1166.5222917.15 | 1167.1722930.23 | 1168.3  |
| 22940.6  | 1168.2222971.53 | 1174.4222986.71 | 1174.6123002.29 | 1175.0623015.56 | 1173.51 |
| 23034.78 | 1170.8223058.87 | 1171.3423069.85 | 1171.4823104.84 | 1171.7423151.57 | 1172.16 |
| 23174.83 | 1171.9223201.95 | 1171.8623205.45 | 1171.23214.31   | 1169.5323241.36 | 1163.81 |
| 23247.9  | 1166.7223269.96 | 1172.3323283.36 | 1171.77 23293   | 1171.9423295.79 | 1171.84 |
| 23312.61 | 1172.0223326.72 | 1174.4123338.48 | 1176.2323365.04 | 1176.923374.67  | 1177.4  |
| 23401.49 | 1180.4223428.88 | 1184.0123450.92 | 1185.2323467.59 | 1187.56 23529.2 | 1189.9  |
| 23533.18 | 1189.82 23583.4 | 1183.4823609.86 | 1185.2323613.57 | 1185.4123632.88 | 1184.78 |
| 23672.89 | 1184.52 23712.1 | 1184.4423727.43 | 1184.0623751.66 | 1183.223776.53  | 1182.55 |
| 23781.57 | 1182.323801.96  | 1182.6123855.26 | 1183.0923873.06 | 1185.0723882.04 | 1184.97 |
| 23890.47 | 1184.32 23941.5 | 1182.624011.76  | 1180.624062.88  | 1181.0224078.81 | 1181.11 |

|                       |              |           |
|-----------------------|--------------|-----------|
| Manning's n Values    | num=         | 3         |
| Sta n Val Sta n Val   | Sta n Val    | Sta n Val |
| 14746.98 .03519510.69 | .03520486.73 | .035      |

|                          |           |               |         |       |              |        |
|--------------------------|-----------|---------------|---------|-------|--------------|--------|
| Bank Sta: Left           | Right     | Lengths: Left | Channel | Right | Coeff Contr. | Expan. |
| 19510.6920486.73         |           | 500           | 506.77  | 520   | .1           | .3     |
| Ineffective Flow         | num=      | 2             |         |       |              |        |
| Sta L Sta R Elev         | Permanent |               |         |       |              |        |
| 14746.9819510.69 1157.04 | F         |               |         |       |              |        |
| 20486.7324078.81 1156.1  | F         |               |         |       |              |        |

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 220.35

INPUT

Description:

|                            |                 |                 |
|----------------------------|-----------------|-----------------|
| Station Elevation Data     | num=            | 282             |
| Sta Elev Sta Elev Sta Elev | Sta Elev        | Sta Elev        |
| 14725.39 1147.6214734.14   | 1147.5914749.59 | 1147.0814753.94 |
| 14783.72 1146.7214795.36   | 1146.7714804.37 | 1146.9814823.99 |
| 14835.67 1147.7214923.33   | 1148.814966.39  | 1148.615039.52  |
| 15049.3 1147.5215062.11    | 1145.9315082.92 | 1146.7515099.12 |
| 15117.01 1147.4215160.07   | 1148.515194.51  | 1147.815220.11  |
| 15296.52 1150.0215307.85   | 1150.2815314.28 | 1149.915336.75  |
| 15380.22 1148.7215393.86   | 1148.8215413.12 | 1149.6815440.83 |
| 15523.42 1149.0215540.82   | 1148.9215642.16 | 1150.3815661.09 |
| 15861.97 1150.6215964.59   | 1150.4116035.38 | 1151.0616050.56 |
| 16136.13 1148.8216148.11   | 1148.916172.71  | 1150.2216238.71 |
| 16286.77 1148.9216359.94   | 1150.0416384.15 | 1148.7716386.33 |
| 16413.24 1149.4216428.09   | 1151.0116462.01 | 1151.1316531.58 |
| 16636.45 1151.4216648.83   | 1150.1316654.62 | 1150.0416676.35 |
| 16721.43 1151.5216751.94   | 1151.4716845.03 | 1151.7216937.24 |
| 16985.73 1150.8217000.91   | 1150.7617010.69 | 1150.8817021.47 |
| 17054.03 1152.4217064.58   | 1152.4817143.42 | 1152.4917240.43 |
| 17281.85 1152.1217305.82   | 1151.6117311.15 | 1151.7317331.18 |
| 17459.87 1152.1217469.16   | 1152.117595.87  | 1152.2117634.61 |
| 17758.47 1152.1217893.22   | 1150.94 17925.8 | 1150.65 17948.2 |
| 18001.09 1150.5218006.03   | 1150.69 18044.3 | 1149.7718078.29 |
| 18176.17 1149.9218180.45   | 1150.0218266.54 | 1150.8218279.26 |
| 18394.67 1149.8218462.46   | 1148.7818497.19 | 1148.3618505.15 |
| 18561.93 1148.6218574.15   | 1148.0118595.21 | 1148.6418611.09 |
| 18642.24 1149.5218655.46   | 1148.89 18672.4 | 1146.2518674.03 |
| 18701.34 1145.5218727.85   | 1148.818745.64  | 1151.9718777.23 |
| 18871.15 1155.2218908.75   | 1155.0218933.78 | 1154.4218959.08 |
| 18989.29 1154.4219036.39   | 1154.9419038.88 | 1155.0819060.44 |
| 19090.67 1154.8219128.69   | 1155.1319148.78 | 1155.119202.42  |
| 19308.46 1158.3219353.13   | 1156.2219365.17 | 1155.5519392.88 |
| 19400.85 1153.2219432.33   | 1135.1219500.71 | 1153.4919502.69 |
| 19539 1148.7219549.07      | 1144.0919557.01 | 1146.5419564.03 |
| 19631.86 1129.5219687.85   | 1129.3 19723.5  | 1128.8219825.47 |
| 19883.63 1128.4219989.51   | 1126.47 20081.1 | 1128.5220115.32 |
| 20175.73 1127.9220246.04   | 1126.1120276.03 | 1126.9720290.12 |
| 20426.97 1132.1220449.72   | 1143.61 20458.5 | 1145.8920477.29 |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|
| 20511.6  | 1152.1220518.58 | 1151.3420530.19 | 1152.07         | 20547.5         | 1153.2720575.07 | 1152.39 |
| 20578.53 | 1152.5220588.29 | 1153.4120610.78 | 1153.0420640.86 | 1152.6720660.11 | 1152.47         |         |
| 20675.24 | 1151.8220706.15 | 1150.0620728.63 | 1151.120731.37  | 1151.7620735.97 | 1151.4          |         |
| 20740.15 | 1151.3220789.02 | 1150.23 20809.2 | 1150.320846.38  | 1152.7120864.44 | 1153.41         |         |
| 20872.47 | 1153.7220873.77 | 1153.4620912.02 | 1147.7420928.49 | 1147.2620966.28 | 1145.95         |         |
| 20978.93 | 1145.9220990.28 | 1145.5921008.25 | 1150.2721024.38 | 1154.4121058.78 | 1153.18         |         |
| 21066.86 | 1150.3221075.46 | 1146.3621155.96 | 1146.16 21229.4 | 114621316.03    | 1145.46         |         |
| 21317.74 | 1146.2221331.92 | 1150.8721359.64 | 1151.2321360.18 | 1150.7521373.89 | 1141.83         |         |
| 21393.03 | 1141.22 21415.4 | 1141.0421429.42 | 1145.6921439.44 | 1149.4 21455.6  | 1149.28         |         |
| 21462.13 | 1149.1221473.03 | 1148.521482.38  | 1147.8721499.16 | 1147.2821579.66 | 1147.63         |         |
| 21791.94 | 1149.3221856.09 | 1149.4221869.98 | 1149.5121943.36 | 1149.6121995.53 | 1149.31         |         |
| 22028.65 | 1149.2222031.46 | 1151.22 22070.6 | 1154.622088.35  | 1153.7222103.06 | 1148.59         |         |
| 22110.94 | 1146.0222119.14 | 1150.7322129.17 | 1157.7822158.73 | 1157.422205.83  | 1156.98         |         |
| 22246.47 | 1163.9222259.44 | 1166.2822279.81 | 1169.3622295.82 | 1168.7122298.17 | 1168.92         |         |
| 22321.53 | 1170.2222331.99 | 1170.6722364.86 | 1169.9822419.41 | 1169.6 22478.6  | 1169.36         |         |
| 22491.1  | 1169.2222538.98 | 1168.4522594.96 | 1168.7322606.99 | 1168.6422640.11 | 1168.17         |         |
| 22667.95 | 1167.5222685.57 | 1168.2222706.79 | 1169.3222735.69 | 1167.87 22764.9 | 1165.98         |         |
| 22804.35 | 1164.5222865.92 | 1159.1622891.83 | 1159.41 22902.1 | 1159.1822941.33 | 1158.93         |         |
| 22981.98 | 1168.8223006.53 | 1175.8823009.37 | 1174.5323011.72 | 1173.9123017.67 | 1174.26         |         |
| 23044.31 | 1175.22 23056.5 | 1174.6723110.78 | 1175.123119.28  | 1175.24 23122.8 | 1175.13         |         |
| 23172.06 | 1174.3223191.68 | 1174.6423195.02 | 1174.48 23209.6 | 1173.0623219.89 | 1174.94         |         |
| 23223.55 | 1175.3223263.08 | 1168.66         |                 |                 |                 |         |

|                               |              |      |
|-------------------------------|--------------|------|
| Manning's n Values            | num=         | 3    |
| Sta n Val Sta n Val Sta n Val |              |      |
| 14725.39 .03519519.66         | .03520496.54 | .035 |

|                            |                             |              |        |
|----------------------------|-----------------------------|--------------|--------|
| Bank Sta: Left Right       | Lengths: Left Channel Right | Coeff Contr. | Expan. |
| 19519.6620496.54           | 490 500.81 520              | .1           | .3     |
| Ineffective Flow           | num=                        | 2            |        |
| Sta L Sta R Elev Permanent |                             |              |        |
| 14725.3919519.66 1158.53   | F                           |              |        |
| 20496.5423263.08 1154.02   | F                           |              |        |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 220.25

INPUT  
Description:

|  |      |     |
|--|------|-----|
| Station Elevation Data   | num= | 349 |
| Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev                                     |      |     |
| 14669.3 1143.32 14696 1143.5314716.46 1143.9214734.89 1142.3614738.34 1142.12    |      |     |
| 14768.15 1143.7214812.37 1143.69 14838.8 1144.114890.22 1144.6614893.45 1144.59  |      |     |
| 14952.96 1144.0214990.54 1143.9615014.65 1143.39 15045.5 1143.9315053.65 1143.92 |      |     |
| 15146.97 1143.6215157.23 1143.915244.56 1146.1615266.24 1146.1215326.43 1147.38  |      |     |
| 15385.32 1147.6215516.41 1146.5915540.47 1146.4715579.56 1147.7815680.58 1146.14 |      |     |
| 15706.7 1145.7215726.55 1145.7115754.97 1147.215769.83 1147.9115806.78 1147.31   |      |     |
| 15847.95 1146.9215908.04 1148.1815939.34 1148.6615962.83 1148.3115972.94 1147.77 |      |     |
| 15986.85 1147.4216000.95 1147.2416024.19 1147.7616105.28 1148.316115.42 1148.34  |      |     |
| 16230.86 1150.1216244.42 1149.3916258.68 1148.7216266.61 1148.4416293.47 1148.21 |      |     |
| 16301.66 1148.2216383.22 1148.84 16414.9 1148.8416482.81 1149.3516504.83 1149.5  |      |     |
| 16572.16 1149.4216578.56 1149.0716609.46 1148.3116633.03 1149.116649.47 1149.46  |      |     |
| 16683.41 1149.7216741.32 1150.0216756.58 1149.8816770.63 1149.6716808.89 1149.58 |      |     |
| 16851.53 1150.0216901.19 1150.32 16920.3 1149.7916939.23 1149.4416953.12 1149.63 |      |     |
| 16967.88 1150.0216989.95 1149.8517061.99 1150.7717131.84 1150.9717184.33 1150.56 |      |     |
| 17227.94 1150.6217239.04 1150.5117265.97 1151.8 17292 1149.9717303.04 1150.17    |      |     |
| 17309.99 1150.8217320.73 1150.617366.68 1151.8117373.41 1151.9517389.09 1151.95  |      |     |
| 17504.52 1151.8217533.74 1150.2117546.98 1149.5817587.64 1149.8917659.68 1150.74 |      |     |
| 17759.26 1150.2217829.13 1149.5617834.45 1149.5217847.61 1148.7117850.37 1148.92 |      |     |
| 17860.97 1148.3217879.42 1148.1617912.16 1147.9817921.91 1148.0617941.62 1148.94 |      |     |
| 17978.97 1148.8218099.37 1147.8118178.51 1147.9218227.54 1147.5818292.64 1147.32 |      |     |
| 18360.29 1146.5218416.44 1144.7518447.34 1145.3618474.49 1146.6318542.66 1147.79 |      |     |
| 18546.53 1147.9218577.13 1149.54 18602.8 1150.7718619.79 1150.0118649.25 1149.13 |      |     |
| 18663.27 1148.9218687.94 1148.0518750.86 1148.6 18782.2 1149.1318849.61 1150.6   |      |     |
| 18902.85 1151.6218980.06 1151.8218987.95 1152.1819004.24 1151.6819011.28 1151.66 |      |     |
| 19087.34 1154.0219090.48 1154.05 19116.5 1154.0919124.55 1153.1619130.34 1152.32 |      |     |
| 19136.83 1152.9219146.03 1154.1619162.08 1153.9119184.38 1153.4919206.42 1151.73 |      |     |
| 19218 1150.4219242.91 1149.8519260.28 1149.4919277.78 1148.7219296.05 1148.05    |      |     |
| 19315.11 1150.4219336.56 1153.4219384.06 1153.9719403.77 1154.0919432.88 1154.06 |      |     |
| 19442.06 1153.72 19447 1150.1119457.65 1143.0219488.89 1149.5719507.63 1153.44   |      |     |
| 19522.87 1155.6219554.33 1143.219559.11 1144.4219561.79 1144.8819577.69 1138.8   |      |     |
| 19600.27 1129.22 19613.8 1129.1819660.05 1128.6719717.39 1128.1119739.56 1128.14 |      |     |
| 19798.63 1128.9219898.04 1126.6919925.47 1126.1319948.27 1126.4920038.98 1128.15 |      |     |
| 20051.01 1128.3220181.25 1126.2720280.79 1129.6220309.66 1130.7120371.33 1131.21 |      |     |
| 20431.79 1131.8220446.94 1138.45 20454.8 1141.7420497.24 1152.4320498.94 1152.92 |      |     |
| 20540.34 1147.92 20550 1148.7420568.14 1150.0220569.31 1150.2620569.71 1151.46   |      |     |
| 20592.92 1150.9220615.52 1150.6920619.54 1151.1720637.93 1151.8820641.95 1151.3  |      |     |
| 20651.88 1151.4220653.82 1151.20662.5 1151.9720690.24 1150.0720704.98 1149.57    |      |     |
| 20728.18 1149.5220749.28 1149.2620765.93 1151.4120797.28 1151.22 20812 1150.9    |      |     |
| 20834.04 1149.4220847.92 1149.0220861.76 1149.2220865.13 1148.5820867.65 1149.04 |      |     |
| 20905.04 1154.2220905.07 1155.2620907.01 1156.2320925.14 1156.1320942.62 1155.34 |      |     |
| 20957.29 1151.6220973.44 1147.3220977.87 1148.7320993.54 1148.0721027.21 1146.37 |      |     |
| 21036.39 1146.0221082.58 1145.8321083.18 1147.4321084.35 1147.1821107.03 1152.52 |      |     |
| 21112.26 1153.6221115.86 1153.6421117.26 1154.6921125.17 1151.6321134.03 1151.57 |      |     |
| 21148.61 1152.02 21148.7 1152.7821156.06 1146.38 21157.4 1145.4421171.27 1146.73 |      |     |

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|          |                 |                 |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|
| 21173.46 | 1146.2221197.06 | 1145.5221201.63 | 1145.01         | 21219.1         | 1144.9321272.36 | 1144.55         |         |
| 21272.7  | 1145.1221303.18 | 1144.5821324.66 | 1144.5221372.84 | 1145.4321390.94 | 1146.08         |                 |         |
| 21395.65 | 1145.9221402.53 | 1147.6321413.78 | 1150.7621416.07 | 1152.29         | 21438.9         | 1152.55         |         |
| 21442.05 | 1151.1221444.91 | 1146.81         | 21449.4         | 1140.95         | 21459.3         | 1142.7821484.71 | 1142.46 |
| 21496.57 | 1142.2221500.37 | 1141.08         | 21509.3         | 1145.29         | 21515           | 1148.1121516.27 | 1148.53 |
| 21546.73 | 1149.9221548.94 | 1148.1121550.77 | 1147.9921558.28 | 1149.0221558.63 |                 | 1148.2          |         |
| 21583.57 | 1149.7221585.59 | 1149.7521600.87 | 1149.9821609.33 | 1148.7721625.89 |                 | 1148.06         |         |
| 21667.88 | 1147.7221692.76 | 1147.6221702.11 | 1148.2921712.99 | 1149.721755.73  |                 | 1148.59         |         |
| 21773.13 | 1147.9221804.28 | 1148.6921809.78 | 1148.9421824.28 | 1148.67         | 21830.5         | 1148.46         |         |
| 21838.18 | 1148.5221853.31 | 1149.7421862.39 | 1150.3221878.77 | 1150.6921886.99 |                 | 1149.37         |         |
| 21892.55 | 1149.0221912.24 | 1148.9521949.06 | 114921955.72    | 1149.2221992.39 |                 | 1150.2          |         |
| 21993.27 | 1149.7222003.04 | 1149.2522013.87 | 1149.7622020.58 | 1150.86         | 22023.8         | 1153.62         |         |
| 22024.87 | 1154.0222029.37 | 1152.6822030.61 | 1152.07         | 22030.9         | 1149.822032.04  | 1150.42         |         |
| 22032.09 | 1154.0222033.36 | 1153.1722035.83 | 1149.7322045.88 | 1149.7722054.82 |                 | 1149.97         |         |
| 22058.73 | 1150.2222068.2  | 1149.9922076.26 | 1149.5622083.29 | 1154            | 22088.5         | 1154.97         |         |
| 22095    | 1155.8222102.18 | 1154.5922111.71 | 1149.96         | 22113.2         | 1149.3922117.92 | 1152.05         |         |
| 22123.62 | 1155.6222130.31 | 1159.5          | 22135.7         | 1156.622157.41  | 1158.03         | 22163.5         | 1156.48 |
| 22180.59 | 1151.2222181.12 | 1150.1822186.75 | 1152.1322199.13 | 1155.8122201.91 |                 | 1156.74         |         |
| 22205.97 | 1157.7222211.34 | 1157.4422231.42 | 1156.0722233.49 | 1156.3622248.76 |                 | 1157.05         |         |
| 22294.99 | 1154.82         | 22358.5         | 1155.5922364.22 | 1155.6522412.11 | 1156.9522415.49 |                 | 1157.88 |
| 22415.89 | 1158.9222419.27 | 1158.0722429.54 | 1157.2122450.54 | 1160.0122483.44 |                 | 1165.59         |         |
| 22508.73 | 1165.2222514.12 | 1164.9822521.49 | 1165.36         | 22541.1         | 1166.0122546.09 |                 | 1166.29 |
| 22553.57 | 1167.2222559.79 | 1168.1222607.78 | 1168.7622685.95 | 1170.1522694.88 |                 | 1170.22         |         |
| 22712.45 | 1170.0222738.54 | 1169.7622764.84 | 1168.6122775.76 | 1165.5622783.83 |                 | 1167.22         |         |
| 22785.1  | 1167.6222819.35 | 1168.0122846.71 | 1166.0322860.22 | 1166.1722888.52 |                 | 1163.82         |         |
| 22898.03 | 1164.4222908.01 | 1164.1522927.09 | 1164.822936.67  | 1164.88         |                 |                 |         |

Manning's n Values num= 3

| Sta     | n Val        | Sta | n Val        | Sta | n Val |
|---------|--------------|-----|--------------|-----|-------|
| 14669.3 | .03519522.87 |     | .03520498.94 |     | .035  |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

|                  |  |     |        |     |    |    |
|------------------|--|-----|--------|-----|----|----|
| 19522.8720498.94 |  | 500 | 500.83 | 490 | .1 | .3 |
|------------------|--|-----|--------|-----|----|----|

Ineffective Flow num= 2

| Sta L            | Sta R   | Elev | Permanent |
|------------------|---------|------|-----------|
| 14669.319522.87  | 1155.62 |      | F         |
| 20498.9422936.67 | 1152.92 |      | F         |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 220.16

INPUT

Description:

Station Elevation Data num= 259

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev            | Sta             | Elev    | Sta    | Elev |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|--------|------|
| 14558.26 | 1142.2214601.34 | 114214620.29    | 1142.0114648.79 | 1143.6314664.25 | 1142.73         |                 |         |        |      |
| 14699.34 | 1143.7214718.01 | 1143.7114790.33 | 1143.7114818.53 | 1143.9814895.67 | 1144.3          |                 |         |        |      |
| 15034.84 | 1146.0215053.17 | 1145.7915096.39 | 1145.19         | 15111.3         | 1145.0715132.96 |                 | 1145.07 |        |      |
| 15169.64 | 1145.5215197.82 | 1146.0215251.91 | 1146.02         | 15289.9         | 1147.9615300.92 |                 | 1148.63 |        |      |
| 15495.98 | 1145.7215524.65 | 1145.4515535.19 | 1145.6315572.76 | 1146.3815589.11 | 1146.55         |                 |         |        |      |
| 15614.98 | 1146.6215687.06 | 1147.21         | 15734.3         | 1147.5215803.62 | 1146.8815859.66 |                 | 1146.33 |        |      |
| 15868.89 | 1146.1215893.57 | 1146.1715934.43 | 1147.24         | 15967.5         | 1147.2515993.08 |                 | 1147.28 |        |      |
| 16008.42 | 1147.1216039.76 | 1146.6616055.43 | 1147.0716152.98 | 1148.116156.28  | 1148.14         |                 |         |        |      |
| 16187.56 | 1147.1216196.71 | 1147.1116210.32 | 1147.5216216.18 | 1147.5516233.87 | 1147.12         |                 |         |        |      |
| 16271.52 | 1147.2216327.67 | 1147.5416366.09 | 1148.0816374.17 | 1148.25         | 16417.1         | 1148.43         |         |        |      |
| 16484.92 | 1148.5216497.32 | 1148.7116513.78 | 1148.816539.16  | 1147.4916560.28 | 1147.47         |                 |         |        |      |
| 16577.35 | 1147.5216668.97 | 1148.4          | 16689.1         | 1147.46         | 16700.4         | 1147.0716728.75 |         | 1147.2 |      |
| 16832.02 | 1149.72         | 16837           | 1149.7516858.13 | 1148.5116867.63 | 1148.7216879.67 |                 | 1148.79 |        |      |
| 16908.91 | 1148.4217022.46 | 1149.61         | 17149.3         | 1149.9417167.69 | 1148.51         | 17175.6         | 1148.86 |        |      |
| 17193.26 | 1150.42         | 17217.1         | 1150.4317227.91 | 1150.2717242.49 | 1149.9217354.23 |                 | 1150.57 |        |      |
| 17382.23 | 1150.6217409.55 | 1149.9317425.59 | 1149.62         | 17568.1         | 1147.2217649.12 |                 | 1146.55 |        |      |
| 17682.1  | 1146.1217710.46 | 1146.3817771.01 | 1147.3217778.25 | 1147.4317792.86 | 1147.27         |                 |         |        |      |
| 17804.62 | 1147.3217817.29 | 1147.22         | 17852.1         | 1147.117869.04  | 114717987.97    |                 | 1147.48 |        |      |
| 18006.3  | 1147.8218056.03 | 1148.318068.08  | 1148.0518098.69 | 1148.6818107.36 | 1148.75         |                 |         |        |      |
| 18142.42 | 1147.8218202.88 | 1146.2818218.04 | 1146.6418233.08 | 1147.4718252.18 | 1147.37         |                 |         |        |      |
| 18278.9  | 1147.4218290.75 | 1147.5718340.71 | 1148.0818372.38 | 1147.8218379.92 | 1147.65         |                 |         |        |      |
| 18409.63 | 1148.4218413.87 | 1148.4118430.47 | 1147.318457.38  | 1147.1718514.13 | 1146.69         |                 |         |        |      |
| 18547.44 | 1147.1218575.72 | 1147.2818655.55 | 1147.5218750.49 | 1147.5618839.08 | 1146.63         |                 |         |        |      |
| 18847.3  | 1146.4218925.78 | 1143.9619006.31 | 1145.819012.55  | 1145.9119121.56 | 1147.6          |                 |         |        |      |
| 19156.79 | 1147.1219203.49 | 1148.1419209.43 | 1148.4619219.89 | 1148.519234.21  | 1148.45         |                 |         |        |      |
| 19241.65 | 1149.2219268.87 | 1150.1119272.29 | 1150.0919289.79 | 1152.3719300.47 | 1156.18         |                 |         |        |      |
| 19315.85 | 1161.2219322.74 | 1158.5819341.28 | 1151.9819361.08 | 1151.5519367.81 | 1151.38         |                 |         |        |      |
| 19378.01 | 1151.6219399.76 | 1151.6519414.12 | 1151.8919415.39 | 1151.8219451.58 | 1140.93         |                 |         |        |      |
| 19454.2  | 1140.0219501.23 | 1153.2719510.31 | 1156.219515.25  | 1154.8219522.24 | 1153.96         |                 |         |        |      |
| 19532    | 1153.3219539.77 | 115019547.51    | 1148.0219556.05 | 1146.29         | 19561.2         | 1143.88         |         |        |      |
| 19575.95 | 1136.3219608.44 | 1132.85         | 19637           | 1128.6519664.14 | 1128.1219716.23 |                 | 1128.3  |        |      |
| 19735.51 | 1128.3219805.41 | 1128.4619854.78 | 1128.3519862.41 | 1128.3619977.89 | 1127.71         |                 |         |        |      |
| 19988    | 1127.7220055.71 | 1127.6920098.15 | 1128.0120118.29 | 1127.5820225.13 | 1128.31         |                 |         |        |      |
| 20246.76 | 1128.4220256.27 | 1128.2320377.74 | 1126.720386.58  | 1127.5520451.67 | 1134.12         |                 |         |        |      |
| 20465.75 | 1140.6220490.53 | 1150.4620493.76 | 1152.0620502.77 | 1152.3320505.34 | 1153.28         |                 |         |        |      |
| 20515.14 | 1153.4220526.39 | 1153.3220530.89 | 1153.3720537.96 | 1153.1220557.56 | 1152.27         |                 |         |        |      |
| 20577.7  | 1152.22         | 20612.4         | 1151.1120650.93 | 1153.0420676.41 | 1154.5420699.12 |                 | 1149.56 |        |      |
| 20720.21 | 1145.82         | 20762.3         | 1146.8420828.37 | 1147.6420830.49 | 1147.7620878.51 |                 | 1147.26 |        |      |
| 20899.15 | 1147.1220915.75 | 1146.4220933.85 | 1144.6320938.75 | 1144.4720943.08 | 1143.99         |                 |         |        |      |
| 20946.54 | 1145.12         | 20949.2         | 1145.1720955.72 | 1149.0420979.74 | 1155.9421012.55 |                 | 1166.63 |        |      |

Corr\_Effective\_SkyHarbor.rep

|          |         |          |         |          |         |          |         |          |         |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| 21027.23 | 1166.62 | 21059.64 | 1166.72 | 21097.75 | 1153.87 | 21122.9  | 1145.72 | 21126.93 | 1145.54 |
| 21131.64 | 1143.22 | 21138.96 | 1143.62 | 21158.51 | 1136.26 | 21211.22 | 1136.17 | 21230.9  | 1143    |
| 21249.19 | 1143.82 | 21275.9  | 1152.35 | 21278.43 | 1153.11 | 21287.42 | 1153.12 | 21297.37 | 1151.93 |
| 21321.46 | 1150.62 | 21328.5  | 1145.98 | 21330.79 | 1144.62 | 21351.03 | 1143.78 | 21363.9  | 1143.59 |
| 21393.58 | 1144.02 | 21405.26 | 1143.43 | 21438.19 | 1143.41 | 21452.4  | 1143.47 | 21473.13 | 1143.93 |
| 21484.79 | 1147.52 | 21494.9  | 1150.31 | 21509.25 | 1150.97 | 21523.37 | 1152.09 | 21530.92 | 1147.21 |
| 21541.36 | 1140.62 | 21588.15 | 1141.19 | 21600.99 | 1146.96 | 21630.49 | 1147.48 | 21652.18 | 1147.78 |
| 21693.37 | 1148.02 | 21699.87 | 1148.06 | 21757.41 | 1149.32 | 21786.74 | 1149.92 | 21819.64 | 1150.63 |
| 21823.23 | 1150.52 | 21876.31 | 1150.12 | 21940.69 | 1152.59 | 21968.32 | 1153.78 | 21985.13 | 1155.46 |
| 21989.98 | 1156.22 | 22011.31 | 1156.68 | 22029.38 | 1156.92 | 22035.21 | 1154.42 | 22042.51 | 1151    |
| 22067.57 | 1155.02 | 22071.58 | 1155.22 | 22102.57 | 1155.21 | 22111.37 | 1155.67 | 22128.28 | 1156.2  |
| 22141.3  | 1161.22 | 22153.18 | 1165.99 | 22186.69 | 1179.19 | 22190.01 | 1179.2  |          |         |

Manning's n Values num= 3

| Sta      | n Val | Sta      | n Val | Sta      | n Val |
|----------|-------|----------|-------|----------|-------|
| 14558.26 | .035  | 19510.31 | .035  | 20515.14 | .035  |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

|          |          |     |        |     |    |    |
|----------|----------|-----|--------|-----|----|----|
| 19510.31 | 20515.14 | 480 | 495.84 | 550 | .1 | .3 |
|----------|----------|-----|--------|-----|----|----|

Ineffective Flow num= 2

| Sta L    | Sta R    | Elev    | Permanent |
|----------|----------|---------|-----------|
| 14558.26 | 19510.31 | 1156.2  | F         |
| 20515.14 | 2190.01  | 1153.42 | F         |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 220.06

INPUT  
Description: Upstream face of Preist Rd Bridge

Station Elevation Data num= 34

| Sta     | Elev    |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 18820   | 1146.12 | 19040   | 1150.12 | 19210   | 1154.12 | 19541.7 | 1158.14 | 19541.8 | 1151.19 |
| 19541.9 | 1150.62 | 19555.9 | 1150.39 | 19568.6 | 1140.81 | 19576.6 | 1140.03 | 19594.4 | 1128.98 |
| 19652.1 | 1128.22 | 19661.1 | 1126.26 | 19665.1 | 1126.26 | 19728.4 | 1125.02 | 19781.5 | 1126.11 |
| 19785.5 | 1126.11 | 19844.6 | 1125.22 | 19903   | 1125.58 | 19963   | 1125.12 | 20023.2 | 1125.17 |
| 20101.5 | 1125.72 | 20105.9 | 1127.75 | 20146.2 | 1128.52 | 20204.1 | 1128.43 | 20267.2 | 1128.62 |
| 20327.5 | 1128.39 | 20388.2 | 1128.42 | 20452.8 | 1128.98 | 20488.2 | 1150.65 | 20494.5 | 1150.64 |
| 20504.7 | 1150.67 | 20504.8 | 1160.42 | 20504.9 | 1167.32 | 21100   | 1182.12 |         |         |

Manning's n Values num= 3

| Sta   | n Val | Sta     | n Val | Sta     | n Val |
|-------|-------|---------|-------|---------|-------|
| 18820 | .035  | 19541.8 | .035  | 20504.8 | .035  |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

|         |         |       |       |       |    |    |
|---------|---------|-------|-------|-------|----|----|
| 19541.8 | 20504.8 | 176.4 | 176.4 | 176.4 | .1 | .3 |
|---------|---------|-------|-------|-------|----|----|

Ineffective Flow num= 2

| Sta L   | Sta R   | Elev    | Permanent |
|---------|---------|---------|-----------|
| 18820   | 19541.8 | 1151.19 | F         |
| 20504.8 | 21100   | 1160.42 | F         |

BRIDGE

RIVER: Salt  
REACH: 1 RS: 220.05

INPUT  
Description: Priest Road

Distance from Upstream XS = .1  
Deck/Roadway Width = 105  
Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates num= 13

| Sta     | Hi Cord | Lo Cord | Sta     | Hi Cord | Lo Cord | Sta     | Hi Cord | Lo Cord |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 18820   | 1146.12 | 1146.12 | 19040   | 1150.12 | 1150.12 | 19210   | 1154.12 | 1154.12 |
| 19541.7 | 1158.14 | 1158.14 | 19541.7 | 1158.14 | 1151.19 | 19661.1 | 1159.38 | 1152.43 |
| 19781.5 | 1160.56 | 1153.61 | 19903   | 1161.77 | 1154.82 | 20023.2 | 1163.01 | 1156.06 |
| 20142.2 | 1164.22 | 1157.23 | 20263.2 | 1165.44 | 1158.49 | 20384.2 | 1166.45 | 1159.52 |
| 20504.7 | 1167.32 | 1160.37 |         |         |         |         |         |         |

Upstream Bridge Cross Section Data

Station Elevation Data num= 34

| Sta     | Elev    |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 18820   | 1146.12 | 19040   | 1150.12 | 19210   | 1154.12 | 19541.7 | 1158.14 | 19541.8 | 1151.19 |
| 19541.9 | 1150.62 | 19555.9 | 1150.39 | 19568.6 | 1140.81 | 19576.6 | 1140.03 | 19594.4 | 1128.98 |
| 19652.1 | 1128.22 | 19661.1 | 1126.26 | 19665.1 | 1126.26 | 19728.4 | 1125.02 | 19781.5 | 1126.11 |
| 19785.5 | 1126.11 | 19844.6 | 1125.22 | 19903   | 1125.58 | 19963   | 1125.12 | 20023.2 | 1125.17 |
| 20101.5 | 1125.72 | 20105.9 | 1127.75 | 20146.2 | 1128.52 | 20204.1 | 1128.43 | 20267.2 | 1128.62 |
| 20327.5 | 1128.39 | 20388.2 | 1128.42 | 20452.8 | 1128.98 | 20488.2 | 1150.65 | 20494.5 | 1150.64 |
| 20504.7 | 1150.67 | 20504.8 | 1160.42 | 20504.9 | 1167.32 | 21100   | 1182.12 |         |         |

Manning's n Values num= 3

| Sta   | n Val | Sta     | n Val | Sta     | n Val |
|-------|-------|---------|-------|---------|-------|
| 18820 | .035  | 19541.8 | .035  | 20504.8 | .035  |

Bank Sta: Left Right Coeff Contr. Expan.  
 19541.8 20504.8 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 18820 19541.8 1151.19 F  
 20504.8 21100 1160.42 F

Downstream Deck/Roadway Coordinates  
 num= 13  
 Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord  
 18820 1146.12 1146.12 19040 1150.12 1150.12 19210 1154.12 1154.12  
 19541.7 1158.14 1158.14 19541.7 1158.14 1151.19 19661.1 1159.38 1152.43  
 19781.5 1160.56 1153.61 19903 1161.77 1154.82 20023.2 1163.01 1156.06  
 20142.2 1164.22 1157.23 20263.2 1165.44 1158.49 20384.2 1166.45 1159.52  
 20504.7 1167.32 1160.37

Downstream Bridge Cross Section Data  
 Station Elevation Data num= 34  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 18820 1146.12 19040 1150.12 19210 1154.12 19541.7 1158.14 19541.8 1151.19  
 19541.9 1150.62 19555.9 1150.39 19568.6 1140.81 19576.6 1140.03 19594.4 1128.98  
 19652.1 1128.22 19661.1 1126.26 19665.1 1126.26 19728.4 1125.02 19781.5 1126.11  
 19785.5 1126.11 19844.6 1125.22 19903 1125.58 19963 1125.12 20023.2 1125.17  
 20101.5 1125.72 20105.9 1127.75 20146.2 1128.52 20204.1 1128.43 20267.2 1128.62  
 20327.5 1128.39 20388.2 1128.42 20452.8 1128.98 20488.2 1150.65 20494.5 1150.64  
 20504.7 1150.67 20504.8 1160.42 20504.9 1167.32 21100 1182.12

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 18820 .035 19541.8 .035 20504.8 .035

Bank Sta: Left Right Coeff Contr. Expan.  
 19541.8 20504.8 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 18820 19541.8 1151.19 F  
 20504.8 21100 1160.42 F

Upstream Embankment side slope = horiz. to 1.0 vertical  
 Downstream Embankment side slope = horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .95  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 weir crest shape = Broad Crested

Number of Piers = 7

Pier Data  
 Pier Station Upstream= 19663.1 Downstream= 19663.1  
 Upstream num= 2  
 width Elev width Elev  
 4 1125.12 4 1153.12  
 Downstream num= 2  
 width Elev width Elev  
 4 1125.12 4 1153.12

Pier Data  
 Pier Station Upstream= 19783.5 Downstream= 19783.5  
 Upstream num= 2  
 width Elev width Elev  
 4 1125.12 4 1154.12  
 Downstream num= 2  
 width Elev width Elev  
 4 1125.12 4 1154.12

Pier Data  
 Pier Station Upstream= 19905 Downstream= 19905  
 Upstream num= 2  
 width Elev width Elev  
 4 1125.12 4 1155.12  
 Downstream num= 2  
 width Elev width Elev  
 4 1125.12 4 1155.12

Pier Data  
 Pier Station Upstream= 20025.2 Downstream= 20025.2  
 Upstream num= 2  
 width Elev width Elev  
 4 1125.12 4 1156.12  
 Downstream num= 2  
 width Elev width Elev  
 4 1125.12 4 1156.12

Pier Data  
 Pier Station Upstream= 20144.2 Downstream= 20144.2  
 Upstream num= 2  
 width Elev width Elev

4 1128.12 4 1158.12  
 Downstream num= 2  
 width Elev width Elev  
 4 1128.12 4 1158.12

Pier Data  
 Pier Station Upstream= 20265.2 Downstream= 20265.2  
 Upstream num= 2  
 width Elev width Elev  
 4 1128.12 4 1159.12  
 Downstream num= 2  
 width Elev width Elev  
 4 1128.12 4 1159.12

Pier Data  
 Pier Station Upstream= 20386.2 Downstream= 20386.2  
 Upstream num= 2  
 width Elev width Elev  
 4 1128.12 4 1160.12  
 Downstream num= 2  
 width Elev width Elev  
 4 1128.12 4 1160.12

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy  
 Momentum Cd = 1.2  
 Yarnell Kval = 1.05

Selected Low Flow Methods = Energy

High Flow Method  
 Energy Only

Additional Bridge Parameters

Add Friction component to Momentum  
 Do not add weight component to Momentum  
 Class B flow critical depth computations use critical depth  
 inside the bridge at the upstream end  
 Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 220.03

INPUT

Description: Downstream face of Preist Rd Bridge

Station Elevation Data num= 34  

| Sta     | Elev    |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 18820   | 1146.12 | 19040   | 1150.12 | 19210   | 1154.12 | 19541.7 | 1158.14 | 19541.8 | 1151.19 |
| 19541.9 | 1150.62 | 19555.9 | 1150.39 | 19568.6 | 1140.81 | 19576.6 | 1140.03 | 19594.4 | 1128.98 |
| 19652.1 | 1128.22 | 19661.1 | 1126.26 | 19665.1 | 1126.26 | 19728.4 | 1125.02 | 19781.5 | 1126.11 |
| 19785.5 | 1126.11 | 19844.6 | 1125.22 | 19903   | 1125.58 | 19963   | 1125.12 | 20023.2 | 1125.17 |
| 20101.5 | 1125.72 | 20105.9 | 1127.75 | 20146.2 | 1128.52 | 20204.1 | 1128.43 | 20267.2 | 1128.62 |
| 20327.5 | 1128.39 | 20388.2 | 1128.42 | 20452.8 | 1128.98 | 20488.2 | 1150.65 | 20494.5 | 1150.64 |
| 20504.7 | 1150.67 | 20504.8 | 1160.42 | 20504.9 | 1167.32 | 21100   | 1182.12 |         |         |

Manning's n Values num= 3  

| Sta   | n Val | Sta     | n Val | Sta     | n Val |
|-------|-------|---------|-------|---------|-------|
| 18820 | .035  | 19541.8 | .035  | 20504.8 | .035  |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19541.8 20504.8 840 799.9 720 .1 .3  
 Ineffective Flow num= 2  

| Sta L   | Sta R   | Elev    | Permanent |
|---------|---------|---------|-----------|
| 18820   | 19541.8 | 1151.19 | F         |
| 20504.8 | 21100   | 1160.42 | F         |

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 219.88

INPUT

Description:

Station Elevation Data num= 261  

| Sta      | Elev    |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| 14514.07 | 1141.12 | 14534.1  | 1140.97 | 14545.54 | 1141.11 | 14568.07 | 1142.22 | 14616.5  | 1142.44 |
| 14716.7  | 1143.12 | 14745.12 | 1142.98 | 14840.33 | 1142.34 | 14862.85 | 1141.97 | 14909.77 | 1141.45 |
| 14931.77 | 1142.82 | 14961.51 | 1144.02 | 14973.84 | 1143.66 | 14992.46 | 1143.31 | 15030.45 | 1143.18 |
| 15047.06 | 1143.02 | 15059.77 | 1143.47 | 15078.45 | 1143.91 | 15107.01 | 1142.08 | 15123.4  | 1142.24 |
| 15199.13 | 1142.32 | 15217.64 | 1142.52 | 15301.85 | 1144.66 | 15323.64 | 1143.13 | 15345.17 | 1142.36 |
| 15380.24 | 1142.42 | 15441.95 | 1142.15 | 15464.09 | 1141.88 | 15548.89 | 1143.91 | 15563.61 | 1144.18 |
| 15578.38 | 1142.82 | 15601.21 | 1142.18 | 15608.94 | 1142.17 | 15634.45 | 1142.92 | 15649.04 | 1142.95 |
| 15719.22 | 1143.22 | 15815.93 | 1143.75 | 15837.84 | 1142.75 | 15860.05 | 1142.27 | 15893.02 | 1142.98 |

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|          |                 |                 |                 |                 |                 |                 |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 15939.51 | 1142.8215978.38 | 1142.78         | 16064.4         | 1145.2716070.41 | 1145.3416095.29 | 1143.76         |
| 16115.96 | 1143.4216119.03 | 1143.5216134.54 | 1143.6916146.86 | 1144.0116169.82 | 1144.21         | 1144.02         |
| 16236.82 | 1145.6216306.63 | 1147.0216330.96 | 1147.6716356.32 | 1147.1616390.25 | 1147.02         | 1146.78         |
| 16418.37 | 1148.2216499.77 | 1148.5316543.51 | 1148.716545.29  | 1148.5616607.82 | 1146.78         | 1147.66         |
| 16624.62 | 1146.9216876.38 | 1147.1716916.17 | 1147.4316938.38 | 1147.516953.95  | 1147.66         | 1146.05         |
| 16977.85 | 1146.6216984.79 | 1146.3217015.75 | 1146.1717019.85 | 1146.5317024.96 | 1146.05         | 1144.34         |
| 17076.6  | 1145.7217080.54 | 1145.9217109.82 | 1145.717203.42  | 1144.7          | 17223.3         | 1144.34         |
| 17320.75 | 1144.6217338.45 | 1145.01         | 17457.6         | 1144.0317572.79 | 1143.6317582.93 | 1143.5          |
| 17588.97 | 1143.6217626.53 | 1143.26         | 17630.9         | 1144.1317642.89 | 1145.4317665.29 | 1144.4          |
| 17673.37 | 1144.1217690.74 | 1144.0317757.85 | 1143.7517933.69 | 1142.93         | 18090.1         | 1142.05         |
| 18246.31 | 1142.3218269.96 | 1142.3518307.92 | 1142.5918469.32 | 1142.518475.89  | 1142.49         | 1142.49         |
| 18530.05 | 1138.2218574.27 | 1138.3118616.16 | 1138.4418617.38 | 1138.1918669.45 | 1137.62         | 1136.56         |
| 18722.74 | 1137.7218758.73 | 1138.218801.35  | 1136.9218813.29 | 1136.6618825.95 | 1136.56         | 1135.86         |
| 18948.97 | 1135.2219124.49 | 1136.2919150.71 | 1136.4219175.81 | 1136.3819242.66 | 1135.86         | 1132.79         |
| 19280.61 | 1134.4219300.45 | 1133.9619312.63 | 1133.2819339.53 | 1133.1119367.29 | 1132.79         | 1138.17         |
| 19377.92 | 1133.8219385.17 | 1134.819400.47  | 1135.3519437.39 | 1137.17         | 19458.1         | 1138.17         |
| 19516.39 | 1150.12         | 19523.8         | 1148.7219527.76 | 1147.5319551.27 | 1142.3519567.62 | 1138.45         |
| 19583.83 | 1128.9219590.67 | 1124.4119682.49 | 1121.6219806.82 | 1123.56         | 19858.6         | 1124.03         |
| 19875.84 | 1124.3219937.15 | 1125.9820067.48 | 1124.3820073.13 | 1124.47         | 20196.5         | 1126.82         |
| 20230.3  | 1127.02         | 20327.1         | 1127.6320344.25 | 1127.2620441.63 | 1126.6320459.19 | 1126.62         |
| 20462.04 | 1126.92         | 20473.1         | 1134.3420494.93 | 1147.9520511.31 | 1149.2520520.67 | 1149.37         |
| 20532.47 | 1145.1220552.33 | 1141.6620569.55 | 1146.2320630.63 | 1160.6420644.87 | 1160.95         | 1142.29         |
| 20659.44 | 1161.0220689.08 | 1160.6920709.23 | 1160.7320742.28 | 1152.9          | 20786           | 1142.29         |
| 20820.66 | 1141.62         | 20838.8         | 1135.4720851.83 | 1137.8320873.02 | 1140.7420904.34 | 1141.75         |
| 20914.53 | 1142.02         | 20930.3         | 1139.3620954.89 | 1144.920967.13  | 1147.8121028.23 | 1145.85         |
| 21038.71 | 1145.4221109.85 | 1145.8221125.63 | 1141.6121156.43 | 1133.8921173.08 | 1136.96         | 1141.2          |
| 21202.67 | 1142.3221223.83 | 1142.5321235.54 | 1142.821249.54  | 1142.7921256.44 | 1141.2          | 1153.05         |
| 21276.33 | 1136.8221309.24 | 1143.8621343.49 | 1151.421373.03  | 1152.5121382.21 | 1153.05         | 1147.33         |
| 21405.52 | 1147.4221425.87 | 1142.4821435.22 | 1145.121447.44  | 1148.2421457.15 | 1147.33         | 1141.39         |
| 21464.44 | 1147.1221476.64 | 1150.7221498.65 | 1143.0421504.19 | 1141.2621507.27 | 1141.39         | 1153.87         |
| 21525.4  | 1142.7221536.85 | 1147.4521548.26 | 1152.6821562.18 | 1153.221573.25  | 1153.87         | 1146.32         |
| 21581.8  | 1146.1221586.19 | 1142.5421590.74 | 1139.1521614.98 | 1139.8621621.41 | 1146.32         | 1151.99         |
| 21627.18 | 1151.3221647.99 | 1151.92         | 21676.5         | 1152.5121698.78 | 1152.19         | 21704.8         |
| 21714.9  | 1152.0221718.82 | 1151.8921741.72 | 1152.3921756.99 | 1153.9721761.84 | 1154.41         | 1153.11         |
| 21770.32 | 1154.4221786.83 | 1153.8921798.92 | 1153.2821812.42 | 1153.3121825.82 | 1153.11         | 1155.4          |
| 21841.46 | 1153.32         | 21860.1         | 1152.8221867.61 | 1155.61         | 21875.5         | 1158.2321881.43 |
| 21885.28 | 1153.4221896.51 | 1153.0621900.43 | 1154.5321904.66 | 1155.6221912.81 | 1155.61         | 1150.03         |
| 21913.99 | 1155.2221919.15 | 1154.4221957.76 | 1152.8421960.81 | 1152.65         | 22016.2         | 1152.62         |
| 22029.46 | 1149.6222127.03 | 1151.4322174.32 | 1152.2422250.23 | 1152.4822289.13 | 1152.62         | 1161.12         |
| 22314.04 | 1152.9222475.21 | 1155.4922608.07 | 1157.89         | 22672.8         | 1158.8622834.76 | 1161.12         |
| 22874.27 | 1161.4222935.54 | 1161.9222958.25 | 1162.2123019.14 | 1169.5623077.95 | 1170.88         | 1172.56         |
| 23103.21 | 1170.7223119.43 | 1171.1823164.87 | 1171.4523224.52 | 1172.6723231.74 | 1172.56         | 1173.51         |
| 23235.16 | 1173.0223266.86 | 1173.8323290.08 | 1174.2323294.62 | 1174.5723314.61 | 1173.51         | 1181.02         |
| 23332.24 | 1173.6223335.15 | 1173.5923373.54 | 1179.5723376.52 | 1180.19         | 23468.6         | 1181.02         |
| 23524.62 | 1180.32         |                 |                 |                 |                 |                 |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 14514.07 .03519516.39 .03520520.67 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19516.3920520.67 460 484.7 520 .1 .3

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 14514.0719516.39 1150.12 F  
 20520.6723524.62 1149.37 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 219.79

INPUT

Description:  
 Station Elevation Data num= 223

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev            | Sta     | Elev            | Sta     | Elev |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|-----------------|---------|------|
| 14407.68 | 1141.3214468.83 | 1141.9414485.33 | 1142.05         | 14518           | 1142.0114548.99 | 1141.3  |                 |         |      |
| 14620.03 | 1141.4214668.12 | 1141.8714706.45 | 1141.87         | 14832.3         | 1140.44         | 14892.5 | 1140.21         |         |      |
| 14904.61 | 1140.5214928.04 | 1141.3914997.05 | 1140.9215025.99 | 1139.0415055.19 | 1139.86         |         |                 |         |      |
| 15090.5  | 1140.6215126.36 | 1140.8215276.76 | 1141.4115340.82 | 1140.9915451.12 | 1141.42         |         |                 |         |      |
| 15529.41 | 1141.5215612.27 | 1141.4715725.83 | 1141.8315741.08 | 1142.215775.12  | 1142.31         |         |                 |         |      |
| 15873.79 | 1143.2215910.11 | 1143.3816021.21 | 1144.7116027.75 | 1144.7716074.81 | 1144.74         |         |                 |         |      |
| 16203.28 | 1144.5216247.36 | 1145.2816274.57 | 1146.2216342.63 | 1146.8216451.28 | 1146.93         |         |                 |         |      |
| 16487.53 | 1146.82         | 16516.2         | 1147.0116536.79 | 1146.3716570.44 | 1147.3416584.21 | 1146.9  |                 |         |      |
| 16632.47 | 1146.5216744.74 | 1146.0416831.02 | 1146.5316889.17 | 1146.9616901.11 | 1146.37         |         |                 |         |      |
| 16918.3  | 1145.3216943.53 | 1144.816949.05  | 1144.6116952.26 | 1144.9316973.17 | 1146.49         |         |                 |         |      |
| 17009.58 | 1144.7217012.25 | 1144.717042.77  | 1144.7417159.75 | 114517191.74    | 1144.17         |         |                 |         |      |
| 17223.52 | 1142.1217234.95 | 1141.9517330.48 | 1141.6317360.77 | 1141.4917365.29 | 1141.61         |         |                 |         |      |
| 17445.7  | 1144.2217479.75 | 1143.6717492.77 | 1143.6117510.85 | 1143.9217541.66 | 1144.79         |         |                 |         |      |
| 17553.26 | 1143.3217563.12 | 1142.517572.19  | 1142.517574.51  | 1142.3917590.06 | 1144.51         |         |                 |         |      |
| 17593.85 | 1144.32         | 17613.7         | 1142.5317649.97 | 1142.1817656.94 | 1142.317712.79  | 1142.33 |                 |         |      |
| 17932.29 | 1142.02         | 17938.1         | 1141.98         | 18254.9         | 1141            | 18262.6 | 1140.9418381.92 | 1139.89 |      |
| 18518.03 | 1138.32         | 18535.5         | 1137.73         | 18599           | 1135.47         | 18634.5 | 1136.0918668.91 | 1136.76 |      |
| 18727.87 | 1136.6218773.84 | 1136.1718956.07 | 1135.6818965.29 | 1135.56         | 19059.1         | 1135.02 |                 |         |      |
| 19149.42 | 1136.0219199.61 | 1135.0319285.53 | 1132.7919300.58 | 1132.8319327.48 | 1133.02         |         |                 |         |      |
| 19342.87 | 1134.4219349.94 | 1134.9319375.09 | 1135.6619402.26 | 1136.5419422.93 | 1136.63         |         |                 |         |      |
| 19423.57 | 1136.8219466.98 | 1149.6319474.09 | 1148.4819481.23 | 1147.0419507.83 | 1140.16         |         |                 |         |      |

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|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 19514.17 | 1138.1219520.98 | 1133.7419534.67 | 1125.119592.24  | 1122.6719613.26 | 1121.75 |
| 19623.23 | 1121.4219688.14 | 1122.3519747.16 | 1123.4519877.07 | 1124.6219969.89 | 1123.02 |
| 20006.98 | 1122.4220045.82 | 1123.220135.59  | 1124.6520261.98 | 1123.7120265.76 | 1123.72 |
| 20295.54 | 1124.7220397.76 | 1128.5420419.57 | 1126.86 20440.4 | 1135.5320472.23 | 1149.68 |
| 20487.01 | 1147.8220493.02 | 1147.420504.32  | 1145.8920510.94 | 1144.3920531.87 | 1140.75 |
| 20596.65 | 1154.8220619.85 | 1159.5720637.69 | 1161.3820644.03 | 1161.9120670.81 | 1163.83 |
| 20683.95 | 1161.8220702.44 | 1159.4820720.83 | 1152.6120759.31 | 1142.4320765.94 | 1142.05 |
| 20789.25 | 1142.3220811.57 | 1142.7420865.32 | 1143.2320911.37 | 1161.0520922.09 | 1160.43 |
| 20932.71 | 1161.1220934.31 | 1160.920968.75  | 1154.7421013.76 | 1146.4421015.69 | 1146.43 |
| 21022.9  | 1145.2221061.13 | 1156.8321124.06 | 1154.8421135.53 | 1156.7421141.27 | 1157.53 |
| 21152.79 | 1157.12 21206.9 | 1155.3621239.23 | 1147.321269.78  | 1142.521302.85  | 1134.82 |
| 21322.67 | 1136.9221350.48 | 1140.5121372.98 | 1142.0621392.52 | 1144.2521424.09 | 1144.45 |
| 21440.91 | 1144.8221452.58 | 1146.9321463.84 | 1147.2221485.26 | 1147.56 21502.6 | 1145.32 |
| 21531.89 | 1140.8221567.05 | 1132.1321573.87 | 1130.2521581.65 | 1130.32 21617.3 | 1131.01 |
| 21677.8  | 1131.1221696.74 | 1136.6921704.97 | 1138.0721714.07 | 1139.9621721.93 | 1140.15 |
| 21766.84 | 1150.2221770.48 | 1151.0321794.34 | 1151.3121802.49 | 1151.2521828.42 | 1151.29 |
| 21837.25 | 1146.1221853.31 | 1139.1521870.03 | 1139.921879.62  | 1145.3821892.74 | 1149.54 |
| 21907.6  | 1149.7221916.48 | 1150.2721934.61 | 1152.3521941.35 | 1155.2921953.82 | 1154.94 |
| 21966.37 | 1151.9221979.15 | 1152.2521998.44 | 1154.32 22030.3 | 1152.1722129.14 | 1152.9  |
| 22161.16 | 1153.2222177.76 | 1153.5222249.65 | 1153.9822358.89 | 1155.77 22474.2 | 1156.98 |
| 22489.84 | 1157.1222654.62 | 1158.0422702.02 | 1157.9722777.01 | 1158.54 22806.8 | 1158.84 |
| 22838.75 | 1160.4222897.88 | 1164.3222928.01 | 1165.2822940.21 | 1165.3322970.64 | 1165.78 |
| 22986.06 | 1165.9223007.96 | 1165.64 23070   | 1166.0123246.96 | 1169.6823338.09 | 1170.34 |
| 23382.44 | 1170.8223389.54 | 1170.423399.66  | 1169.43         |                 |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 14407.68 .03519466.98 .03520472.23 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19466.9820472.23 420 490.52 550 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 14407.6819466.98 1149.63 F  
 20472.2323399.66 1149.68 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 219.70

INPUT  
 Description:

|                        |                 |                 |                 |                 |         |     |      |
|------------------------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|
| Station Elevation Data |                 | num= 215        |                 |                 |         |     |      |
| Sta                    | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev |
| 14633.62               | 1142.5214764.84 | 1141.7814844.88 | 1140.9514895.18 | 1140.3214947.92 | 1141.59 |     |      |
| 14963.26               | 1141.9214966.51 | 1141.7314991.08 | 1139.9515049.71 | 1140.9415058.26 | 1140.95 |     |      |
| 15086.6                | 1139.9215264.28 | 1142.3315343.48 | 1143.0515407.52 | 1142.8215507.95 | 1141.84 |     |      |
| 15562.35               | 1142.22 15691.2 | 1142.415750.02  | 1142.6815864.61 | 1142.8115930.64 | 1142.75 |     |      |
| 16007.91               | 1143.1216038.86 | 1143.0216078.48 | 1143.33 16114.7 | 1145.5916117.13 | 1145.84 |     |      |
| 16132.24               | 1145.9216319.58 | 1146.2316329.22 | 1146.916335.73  | 1146.9416362.18 | 1146.78 |     |      |
| 16407.68               | 1146.9216486.45 | 1146.6616566.52 | 1147.2816580.76 | 1147.1716604.06 | 1145.2  |     |      |
| 16634.35               | 1146.7216658.71 | 1147.0916665.82 | 1147.3216684.38 | 1146.8316816.17 | 1145.02 |     |      |
| 16816.85               | 1145.1216945.54 | 1145.87 16958   | 1145.97 16965.7 | 1145.6516989.86 | 1144.84 |     |      |
| 17017.43               | 1144.3217023.42 | 1145.69 17028   | 1146.4917070.17 | 1144.6717071.47 | 1144.65 |     |      |
| 17250.94               | 1145.3217259.15 | 1144.6717296.62 | 1142.0917355.46 | 1142.6617369.68 | 1142.76 |     |      |
| 17502.59               | 1143.2217532.54 | 1143.0617570.73 | 1143.0217608.36 | 1141.9517626.76 | 1140.9  |     |      |
| 17637.22               | 1140.6217654.23 | 1142.9717673.44 | 1141.3217682.64 | 1141.29 17842.4 | 1141.15 |     |      |
| 18023.52               | 1141.62 18102   | 1141.7418204.04 | 1141.4518279.06 | 1141.2618308.99 | 1140.71 |     |      |
| 18495.46               | 1138.4218551.03 | 1137.8118588.44 | 1136.0718714.96 | 1130.3418826.61 | 1130.15 |     |      |
| 18839.02               | 1130.2218938.73 | 1130.64 19017.9 | 1130.7519037.93 | 1131.1119100.52 | 1130.99 |     |      |
| 19215.21               | 1130.8219248.29 | 1130.9419280.17 | 1130.519285.54  | 1130.5119377.57 | 1131.11 |     |      |
| 19395.02               | 1131.2219399.73 | 1131.5419421.42 | 1133.1919429.68 | 1133.6619452.68 | 1135.31 |     |      |
| 19491.29               | 1143.7219513.76 | 1148.7319524.58 | 1144.9419527.35 | 1144.3319559.25 | 1138.74 |     |      |
| 19567.04               | 1136.72 19575.1 | 1130.6719581.75 | 1125.1119637.42 | 1124.7919690.95 | 1124.52 |     |      |
| 19797.6                | 1123.5219814.69 | 1123.3719944.41 | 1124.7919984.25 | 1123.4920074.13 | 1120.6  |     |      |
| 20130.98               | 1121.1220202.55 | 1121.9120273.94 | 1119.6920313.19 | 1118.2520332.53 | 1117.93 |     |      |
| 20402.51               | 1121.3220464.33 | 1124.2520480.18 | 1124.3620528.41 | 1143.1120544.81 | 1149.36 |     |      |
| 20549.49               | 1146.4220565.63 | 1143.7320590.33 | 1142.8420662.36 | 1139.2520667.43 | 1139.01 |     |      |
| 20671.64               | 1137.8220680.37 | 1135.6720690.16 | 1134.92 20707.5 | 1140.4520711.62 | 1141.43 |     |      |
| 20731.52               | 1143.8220768.16 | 1145.520787.42  | 1143.8120798.95 | 1142.2420809.29 | 1140.56 |     |      |
| 20869.2                | 1142.3220902.92 | 1137.5720947.18 | 1136.6120962.23 | 1134.01 20977.7 | 1131.03 |     |      |
| 20991.82               | 1134.5221009.72 | 1137.8921050.94 | 1135.9721052.85 | 1135.9321105.52 | 1137.86 |     |      |
| 21109.2                | 1137.9221221.24 | 1137.1221227.41 | 1136.9721230.59 | 1137.1221252.61 | 1137.73 |     |      |
| 21276.6                | 1137.5221303.51 | 1137.4821333.85 | 1138.89 21360.7 | 1139.1321389.07 | 1140.84 |     |      |
| 21409.47               | 1139.4221419.54 | 1139.9121465.27 | 1141.9921480.19 | 1140.2921506.69 | 1152.88 |     |      |
| 21546.35               | 1170.8221550.48 | 1172.0921604.24 | 1169.4221613.96 | 1168.9921616.47 | 1168.75 |     |      |
| 21645.1                | 1165.4221671.54 | 1165.6321686.93 | 1165.1921711.68 | 1164.6621739.31 | 1156.57 |     |      |
| 21794.52               | 1143.0221869.82 | 1130.9421877.11 | 1131.01 21907.6 | 1131.7221954.37 | 1145.78 |     |      |
| 21956.14               | 1146.5221959.45 | 1146.55 21987.8 | 1143.9122006.39 | 1149.8722022.35 | 1153.2  |     |      |
| 22052.98               | 1152.4222078.71 | 1151.4622092.62 | 1144.3122103.59 | 1138.3122124.51 | 1138.18 |     |      |
| 22138.52               | 1146.4222141.96 | 1149.8122156.81 | 1151.4322167.82 | 1151.5522200.31 | 1155.2  |     |      |
| 22222.88               | 1153.5222229.35 | 1152.7522241.45 | 1153.1222343.53 | 1156.6122382.64 | 1156.46 |     |      |
| 22464.86               | 1154.9222498.09 | 1155.14 22580.2 | 1154.5322599.65 | 1154.8722733.11 | 1158.12 |     |      |
| 22805.72               | 1159.6222816.51 | 1159.9122822.49 | 1159.822872.27  | 1160.9922908.77 | 1161.54 |     |      |
| 22937.69               | 1162.3222950.05 | 1162.3722960.03 | 1163.5122979.67 | 1164.6523004.16 | 1166.29 |     |      |
| 23009.95               | 1166.9223114.11 | 1167.4423142.08 | 1167.723151.18  | 1167.6723172.79 | 1167.92 |     |      |

23290.13 1168.0223336.65 1167.98 23397.6 1168.8223466.81 1169.7923469.22 1169.84

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 14633.62 .03519513.76 .03520544.81 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19513.7620544.81 460 477.05 540 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 14633.6219513.76 1148.73 F  
 20544.8123469.22 1149.36 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 219.61

INPUT

Description:

| Station Elevation Data |                 | num= 247        |                 |                 |                 |                 |         |     |      |     |      |
|------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|
| Sta                    | Elev            | Sta             | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev |
| 14651.85               | 1141.1214697.71 | 1141.1614706.79 | 1141.3814797.41 | 1141.3714832.95 | 1141.32         |                 |         |     |      |     |      |
| 14844.59               | 1141.7214933.07 | 1141.414966.85  | 1140.92         | 14984           | 1140.9415010.87 | 1140.75         |         |     |      |     |      |
| 15043.23               | 1140.7215099.91 | 1141.0315111.66 | 1141.0115134.51 | 1140.0415148.37 | 1140.04         |                 |         |     |      |     |      |
| 15170.52               | 1141.3215175.81 | 1141.615229.08  | 1142.2715270.91 | 1142.0415321.35 | 1140.66         |                 |         |     |      |     |      |
| 15375.73               | 1140.8215408.15 | 1141.9515518.03 | 1142.78         | 15549.8         | 1142.9215558.72 | 1142.61         |         |     |      |     |      |
| 15632                  | 1143.6215661.19 | 1144.5315682.16 | 1144.4115689.74 | 1144.7115770.19 | 1144.11         |                 |         |     |      |     |      |
| 15835.24               | 1143.5215897.66 | 1142.52         | 15980.3         | 1143.6416082.87 | 1143.416109.07  | 1144.65         |         |     |      |     |      |
| 16147.7                | 1144.3216164.41 | 1144.216230.45  | 1144.0616252.58 | 1143.916272.83  | 1143.36         |                 |         |     |      |     |      |
| 16331.44               | 1144.8216387.34 | 1143.7916436.59 | 1143.71         | 16504.6         | 1144.0316621.43 | 1144.42         |         |     |      |     |      |
| 16634.06               | 1144.5216667.37 | 1145.116680.81  | 1145.3816687.07 | 1145.6516701.14 | 1145.23         |                 |         |     |      |     |      |
| 16713.57               | 1145.2216747.97 | 1146.3816848.16 | 1144.5616890.73 | 1144.0116912.08 | 1144.13         |                 |         |     |      |     |      |
| 17022.75               | 1144.4217052.97 | 1143.6917071.64 | 1143.3417081.48 | 1143.417101.73  | 1143.92         |                 |         |     |      |     |      |
| 17111.26               | 1145.3217137.12 | 1144.4817146.81 | 1144.4917267.43 | 1144.0617308.32 | 1145.16         |                 |         |     |      |     |      |
| 17345.72               | 1142.7217355.11 | 1142.0217473.15 | 1141.2117558.32 | 114217564.58    | 1142            |                 |         |     |      |     |      |
| 17633.8                | 1141.7217650.52 | 1140.74         | 17664.3         | 1140.0717680.79 | 1139.4417692.86 | 1139.35         |         |     |      |     |      |
| 17708.67               | 1141.9217728.45 | 1140.2317754.54 | 1140.1117807.05 | 1140.1817893.02 | 1140.08         |                 |         |     |      |     |      |
| 17960.54               | 1141.0218084.72 | 1141.1718124.45 | 1141.4318170.64 | 1141.4818306.01 | 1141.6          |                 |         |     |      |     |      |
| 18513.36               | 1138.1218525.09 | 1137.6118583.09 | 1134.7118644.56 | 1133.8318654.84 | 1133.32         |                 |         |     |      |     |      |
| 18688.32               | 1132.3218706.18 | 1132.2218794.11 | 1132.1118840.37 | 1131.4618887.46 | 1132.1          |                 |         |     |      |     |      |
| 18906.22               | 1132.1218996.02 | 1131.9619017.85 | 1132.419115.34  | 1132.3719143.84 | 1131.79         |                 |         |     |      |     |      |
| 19176.75               | 1132.5219191.32 | 1132.8619203.48 | 1133.7819219.44 | 1134.819254.19  | 1135.18         |                 |         |     |      |     |      |
| 19278.79               | 1135.2219306.96 | 1134.5619356.04 | 1134.5919384.96 | 1133.3719394.54 | 1132.59         |                 |         |     |      |     |      |
| 19402.54               | 1132.22         | 19406           | 1131.6519422.11 | 1132.44         | 19422.9         | 1133.2719452.59 | 1132.9  |     |      |     |      |
| 19474.18               | 1132.6219479.79 | 1133.8319521.95 | 1144.119538.73  | 1145.1219567.21 | 1134.95         |                 |         |     |      |     |      |
| 19578.53               | 1135.8219586.01 | 1129.0519591.37 | 1125.1519602.42 | 1124.6819639.62 | 1124.31         |                 |         |     |      |     |      |
| 19707.4                | 1124.12         | 19754.2         | 1123.6419835.67 | 1122.9819908.35 | 1122.5619950.69 | 1121.89         |         |     |      |     |      |
| 20036.32               | 1121.0220140.17 | 1119.04         | 20150.7         | 1118.78         | 20252.9         | 1117.8520301.64 | 1117.33 |     |      |     |      |
| 20353.37               | 1115.6220368.53 | 1114.5120394.53 | 1114.5420422.02 | 1116.36         | 20533           | 1124.71         |         |     |      |     |      |
| 20538.69               | 1125.8220567.99 | 1146.5120580.96 | 1147.0520583.69 | 1146.9220590.96 | 1146.13         |                 |         |     |      |     |      |
| 20610.7                | 1143.4220627.36 | 1139.3720651.52 | 1138.6120666.08 | 1138.4920680.19 | 1138.89         |                 |         |     |      |     |      |
| 20701.25               | 1138.1220726.85 | 1132.7820736.71 | 1133.2820750.66 | 1140.0120758.46 | 1140.11         |                 |         |     |      |     |      |
| 20777.34               | 1140.7220826.99 | 1141.820833.14  | 1141.920839.92  | 1140.8820884.09 | 1134.11         |                 |         |     |      |     |      |
| 20911.21               | 1134.4220923.05 | 1134.5820996.31 | 1134.0321019.84 | 1133.521081.49  | 1133.36         |                 |         |     |      |     |      |
| 21118.96               | 1138.2221149.81 | 1142.2821211.27 | 1142.3621225.22 | 1141.921242.25  | 1139.48         |                 |         |     |      |     |      |
| 21291.23               | 1131.1221297.81 | 1130.9221317.56 | 1130.0121350.78 | 1127.2721363.69 | 1127.31         |                 |         |     |      |     |      |
| 21393.12               | 1127.6221440.76 | 1127.72         | 21481.2         | 1131.2921521.37 | 1133.4121550.21 | 1134.31         |         |     |      |     |      |
| 21583.63               | 1133.2221639.47 | 1130.4321672.65 | 1128.6321687.56 | 1128.8521734.61 | 1128.97         |                 |         |     |      |     |      |
| 21739.13               | 1129.2221789.72 | 1130.8321824.55 | 1130.4621840.03 | 1130.9921848.07 | 1130.83         |                 |         |     |      |     |      |
| 21859.98               | 1130.8221864.54 | 1130.6621904.22 | 1130.8321949.34 | 1130.7721963.01 | 1133.08         |                 |         |     |      |     |      |
| 22011.99               | 1137.5222017.42 | 1139.122038.21  | 1143.9722075.75 | 1152.4922107.68 | 1157.13         |                 |         |     |      |     |      |
| 22114.05               | 1156.5222129.53 | 1155.6622138.87 | 1152.3422145.72 | 1151.1922175.39 | 1151.67         |                 |         |     |      |     |      |
| 22194.88               | 1152.0222212.13 | 1141.8222217.47 | 1138.5922241.39 | 1138.5922243.16 | 1139.43         |                 |         |     |      |     |      |
| 22256.99               | 1147.2222272.64 | 1148.2522275.06 | 1149.3622276.96 | 1149.2822290.77 | 1146.18         |                 |         |     |      |     |      |
| 22302.5                | 1146.6222334.77 | 1147.8122344.24 | 1148.7222351.31 | 1150.7822385.92 | 1156.66         |                 |         |     |      |     |      |
| 22400.67               | 1155.3222413.67 | 1154.0122423.88 | 1156.15         | 22433           | 1159.8822450.45 | 1156.22         |         |     |      |     |      |
| 22462.91               | 1153.7222469.36 | 1156.8822484.16 | 1166.6522493.46 | 1170.5722501.87 | 1172.98         |                 |         |     |      |     |      |
| 22504.27               | 1174.02         | 22524.4         | 1180.722529.11  | 1179.9722539.59 | 1178.8822577.15 | 1168.78         |         |     |      |     |      |
| 22590.78               | 1165.72         | 22595.1         | 1165.0622601.97 | 1162.0622605.98 | 116222666.91    | 1158.88         |         |     |      |     |      |
| 22700.56               | 1158.6222804.52 | 1157.11         | 22876.8         | 1157.1922934.19 | 1158.64         | 22999.2         | 1158.8  |     |      |     |      |
| 23150.41               | 1185.5223163.78 | 1185.55         |                 |                 |                 |                 |         |     |      |     |      |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 14651.85 .03519538.73 .03520567.99 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19538.7320567.99 470 499.49 550 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 14651.8519538.73 1145.12 F  
 20567.9923163.78 1146.51 F

CROSS SECTION

RIVER: Salt  
REACH: 1

RS: 219.51

INPUT  
Description:

| Station Elevation Data |                 |                 |                 |                 |         |     |      |     |      |     |      |
|------------------------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|-----|------|
| num= 242               |                 |                 |                 |                 |         |     |      |     |      |     |      |
| Sta                    | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev | Sta | Elev |
| 14907.1                | 1139.8214918.73 | 1139.6814943.68 | 1139.0214991.19 | 1139.4515029.11 | 1138.91 |     |      |     |      |     |      |
| 15038.26               | 1139.5215056.17 | 1139.6115077.68 | 1138.8615084.36 | 1138.4815145.62 | 1139.77 |     |      |     |      |     |      |
| 15159.83               | 1140.2215191.79 | 1140.74 15219.5 | 1140.4315314.53 | 1139.9915372.32 | 1139.79 |     |      |     |      |     |      |
| 15419.74               | 1140.02 15530.8 | 1140.0115575.07 | 1140.7515616.57 | 1141.6615715.85 | 1141.95 |     |      |     |      |     |      |
| 15727.73               | 1142.0215781.62 | 1142.2715840.29 | 1142.4515854.62 | 1142.3615893.97 | 1142.37 |     |      |     |      |     |      |
| 15961.21               | 1142.5216003.39 | 1142.44 16029.7 | 1144.3716075.73 | 1144.4316283.73 | 1144.58 |     |      |     |      |     |      |
| 16362.84               | 1144.9216386.02 | 1144.8516472.11 | 1144.77 16477.3 | 1144.5816543.73 | 1144.98 |     |      |     |      |     |      |
| 16653.27               | 1144.9216670.33 | 1144.816703.08  | 1144.0116716.48 | 1144.116736.38  | 1142.67 |     |      |     |      |     |      |
| 16769.06               | 1142.5216801.48 | 1143.69 16866.3 | 1143.6916886.73 | 1143.6216948.97 | 1143.14 |     |      |     |      |     |      |
| 17014.66               | 1143.0217033.21 | 1142.7417052.23 | 1142.5617116.76 | 1141.6617168.51 | 1141.04 |     |      |     |      |     |      |
| 17181.51               | 1140.92 17196.8 | 1141.01 17299.4 | 1141.1117325.94 | 1140.9817385.87 | 1141    |     |      |     |      |     |      |
| 17413.69               | 1140.9217461.57 | 1140.2617509.77 | 1140.0717545.89 | 1139.817558.05  | 1139.59 |     |      |     |      |     |      |
| 17599.64               | 1139.0217623.36 | 1139.2217657.94 | 1139.0117675.27 | 1138.7617692.51 | 1138.34 |     |      |     |      |     |      |
| 17714.36               | 1138.3217724.37 | 1137.9517742.56 | 1139.5517752.02 | 1138.7617767.46 | 1138.66 |     |      |     |      |     |      |
| 17774.03               | 1138.9217783.01 | 1137.117787.08  | 1135.9717793.02 | 1136.97 17805.5 | 1138.87 |     |      |     |      |     |      |
| 17828.82               | 1138.7217884.99 | 1137.9417895.95 | 1137.9217940.12 | 1138.3717951.48 | 1138.43 |     |      |     |      |     |      |
| 17977.27               | 1137.82 17988   | 1137.3318036.31 | 1137.2418041.95 | 1137.3818062.82 | 1137.51 |     |      |     |      |     |      |
| 18123.49               | 1137.9218159.15 | 1137.7318203.12 | 1137.7418239.59 | 1137.89 18296.3 | 1137.77 |     |      |     |      |     |      |
| 18329.98               | 1137.7218390.66 | 1137.718422.21  | 1137.5118476.58 | 1137.3118517.78 | 1137.3  |     |      |     |      |     |      |
| 18538.38               | 1137.3218544.05 | 1137.218639.41  | 1135.6318667.57 | 1135.0418700.21 | 1135.6  |     |      |     |      |     |      |
| 18714.34               | 1135.5218716.44 | 1135.2818733.91 | 1132.7518744.18 | 1133.618768.41  | 1135.73 |     |      |     |      |     |      |
| 18843.86               | 1152.4218891.18 | 1162.718941.06  | 1164.118957.81  | 1164.2419011.57 | 1183.5  |     |      |     |      |     |      |
| 19169.29               | 1182.3219211.07 | 1182.1219230.82 | 1182.3619273.33 | 1183.1219315.33 | 1183.91 |     |      |     |      |     |      |
| 19356.71               | 1171.8219383.56 | 1163.819385.62  | 1163.62 19429.2 | 1161.0419434.44 | 1161.01 |     |      |     |      |     |      |
| 19478.03               | 1147.5219488.25 | 1144.4319493.28 | 1142.7119501.81 | 1144.219510.14  | 1143.84 |     |      |     |      |     |      |
| 19517.38               | 1143.72 19542.2 | 1134.76 19548.7 | 1132.6219559.57 | 1133.5319570.41 | 1125.28 |     |      |     |      |     |      |
| 19581.96               | 1124.0219595.79 | 1123.43 19725.6 | 1123.5919755.91 | 1123.8119812.57 | 1123.57 |     |      |     |      |     |      |
| 19889.13               | 1122.8219969.48 | 1121.4520064.29 | 1119.5720129.14 | 1118.1720175.09 | 1117.85 |     |      |     |      |     |      |
| 20184.45               | 1117.6220262.78 | 1115.0920304.95 | 1114.2220375.67 | 1113.7620433.28 | 1114.99 |     |      |     |      |     |      |
| 20459.44               | 1115.7220487.19 | 1117.1520510.33 | 1118.7520522.25 | 1119.3820554.82 | 1139.55 |     |      |     |      |     |      |
| 20564.57               | 1146.2220581.79 | 1145.5920589.29 | 1144.0520590.28 | 1143.5520616.53 | 1141.69 |     |      |     |      |     |      |
| 20622.56               | 1141.32 20683.6 | 1140.3120692.96 | 1139.9720705.62 | 1138.9220732.71 | 1134.6  |     |      |     |      |     |      |
| 20735                  | 1134.5220740.07 | 1134.9920748.73 | 1138.0420753.07 | 1139.7320755.82 | 1140.37 |     |      |     |      |     |      |
| 20763.22               | 1140.1220775.75 | 1139.7520812.37 | 1141.4320825.87 | 1141.9920839.04 | 1139.84 |     |      |     |      |     |      |
| 20866.18               | 1135.62 20882.4 | 1135.3820889.04 | 1135.49 20922.3 | 1139.7820933.37 | 1140.71 |     |      |     |      |     |      |
| 20961.26               | 1140.92 20989.1 | 1140.4520997.01 | 1139.7821014.79 | 1136.0821019.19 | 1136.25 |     |      |     |      |     |      |
| 21021.53               | 1137.4221064.97 | 1132.11 21128.4 | 1130.6321138.81 | 1130.4421180.03 | 1128.44 |     |      |     |      |     |      |
| 21212.36               | 1128.8221232.49 | 1128.6 21238.9  | 1128.3921265.92 | 1128.0521350.77 | 1128.13 |     |      |     |      |     |      |
| 21412.28               | 1128.2221431.15 | 1128.3221465.26 | 1128.1521542.92 | 1129.6821549.51 | 1129.74 |     |      |     |      |     |      |
| 21567.64               | 1129.2221620.01 | 1128.0421642.33 | 1127.6121694.68 | 1127.921703.12  | 1128.77 |     |      |     |      |     |      |
| 21734.34               | 1129.8221742.84 | 1130.3 21778.7  | 1130.1221854.71 | 1128.2121911.52 | 1138.9  |     |      |     |      |     |      |
| 21941                  | 1144.8221967.33 | 1145.0322014.55 | 1145.5222037.84 | 1145.4222067.55 | 1145.78 |     |      |     |      |     |      |
| 22085.53               | 1146.6222100.03 | 1147.5622104.75 | 1145.5122121.49 | 1137.6522139.24 | 1138.11 |     |      |     |      |     |      |
| 22150.56               | 1143.0222158.78 | 1146.4822180.45 | 1147.56 22223   | 1149.35 22227.4 | 1149.45 |     |      |     |      |     |      |
| 22270.04               | 1151.6222316.45 | 1153.5322326.33 | 1153.8222388.88 | 1153.822435.89  | 1154.4  |     |      |     |      |     |      |
| 22483.7                | 1155.2222562.58 | 1157.0522591.21 | 1157.6822600.01 | 1158.3322604.66 | 1158.96 |     |      |     |      |     |      |
| 22623.42               | 1161.7222642.13 | 1159.0322666.24 | 1160.5522703.02 | 1163.1922911.95 | 1164.67 |     |      |     |      |     |      |
| 23047.74               | 1165.72 23098.1 | 1172.4723103.39 | 1172.7723146.48 | 1172.223170.95  | 1172.2  |     |      |     |      |     |      |
| 23186.03               | 1172.3223222.21 | 1172.93         |                 |                 |         |     |      |     |      |     |      |

| Manning's n Values |              |     |              |     |       |
|--------------------|--------------|-----|--------------|-----|-------|
| num= 3             |              |     |              |     |       |
| Sta                | n Val        | Sta | n Val        | Sta | n Val |
| 14907.1            | .03519517.38 |     | .03520564.57 |     | .035  |

| Bank Sta:        | Left     | Right    | Lengths:  | Left | Channel | Right | Coeff | Contr. | Expan. |
|------------------|----------|----------|-----------|------|---------|-------|-------|--------|--------|
|                  | 19517.38 | 20564.57 |           | 450  | 497.52  | 570   | .1    |        | .3     |
| Ineffective Flow |          |          |           |      |         |       |       |        |        |
| num= 2           |          |          |           |      |         |       |       |        |        |
| Sta L            | Sta R    | Elev     | Permanent |      |         |       |       |        |        |
| 14907.1          | 19517.38 | 1143.72  | F         |      |         |       |       |        |        |
| 20564.57         | 23222.21 | 1146.22  | F         |      |         |       |       |        |        |

CROSS SECTION

RIVER: Salt  
REACH: 1

RS: 219.42

INPUT  
Description:

| Station Elevation Data |                 |                 |                 |                 |         |     |      |     |      |     |      |
|------------------------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|-----|------|
| num= 283               |                 |                 |                 |                 |         |     |      |     |      |     |      |
| Sta                    | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev | Sta | Elev |
| 14620.63               | 1136.32 14673.5 | 1136.714680.49  | 1136.7114707.56 | 1136.9314736.04 | 1136.91 |     |      |     |      |     |      |
| 14744.71               | 1136.8214800.61 | 1137.0814852.42 | 1137.4814872.53 | 1137.4614996.62 | 1138.14 |     |      |     |      |     |      |
| 15024.81               | 1137.1215040.07 | 1137.0715072.78 | 1137.4615104.52 | 1137.415154.61  | 1138.75 |     |      |     |      |     |      |
| 15165.85               | 1139.0215189.91 | 1140.7415193.62 | 1139.915202.22  | 1136.7515208.04 | 1136.82 |     |      |     |      |     |      |
| 15230.27               | 1137.72 15279.9 | 1138.5315359.95 | 1140.2215389.72 | 1140.2215395.67 | 1139.99 |     |      |     |      |     |      |
| 15416.25               | 1139.4215441.94 | 1139.4815550.39 | 1139.9615645.01 | 1140.3215651.61 | 1140.4  |     |      |     |      |     |      |
| 15660.76               | 1141.0215673.51 | 1141.1315715.64 | 1141.4415799.73 | 1141.7815841.82 | 1141.87 |     |      |     |      |     |      |
| 15849.26               | 1141.4216021.57 | 1141.1616032.03 | 1141.2116042.84 | 1141.1216062.45 | 1141.07 |     |      |     |      |     |      |
| 16064.41               | 1141.2216223.75 | 1143.7316265.53 | 1143.9816287.67 | 1143.8316449.11 | 1143.36 |     |      |     |      |     |      |
| 16462.9                | 1143.3216484.58 | 1143.62 16497.9 | 1144.11 16504   | 1143.3116513.84 | 1143.44 |     |      |     |      |     |      |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 16535.01 | 1144.2216564.67 | 1145.6316604.72 | 1145.6116672.76 | 1144.7916718.88 | 1144.68 |
| 16728.56 | 1144.4216754.76 | 1141.7816760.38 | 1141.316766.02  | 1141.3316791.74 | 1141.88 |
| 16802.67 | 1142.4216809.73 | 1142.8216853.31 | 1143.2116866.4  | 1143.716896.15  | 1142.77 |
| 16991.5  | 1142.7217013.35 | 1142.7217024.6  | 1143.8817043.95 | 1143.7717087.99 | 1143.21 |
| 17208.6  | 1143.6217267.12 | 1143.6117365.55 | 1142.217436.94  | 1141.5517452.76 | 1141.02 |
| 17466.98 | 1140.6217497.46 | 1140.2217509.21 | 1141.8717513.99 | 1141.0917519.24 | 1140.92 |
| 17531.44 | 1139.9217538.37 | 1139.617552.39  | 1139.2817562.24 | 1138.7617576.82 | 1137.91 |
| 17610.19 | 1138.1217630.25 | 1138.4517662.06 | 1139.9217672.48 | 1140.3217695.69 | 1140.17 |
| 17714.32 | 1141.8217717.99 | 1142.3517745.18 | 1141.117754.43  | 1140.7317769.56 | 1143.33 |
| 17783.85 | 1146.1217790.83 | 1144.3117810.4  | 1138.7417845.26 | 1138.617930.63  | 1137.25 |
| 17975.54 | 1137.2217978.83 | 1137.3618025.92 | 1136.8318058.25 | 1136.7218076.99 | 1136.78 |
| 18217.18 | 1137.8218226.55 | 1135.4318241.01 | 1137.7418256.47 | 1137.7618279.52 | 1137.58 |
| 18286.14 | 1137.7218295.02 | 1137.6718333.81 | 1134.2418340.04 | 1133.8318387.94 | 1137.3  |
| 18393.95 | 1137.8218463.66 | 1138.4118499.34 | 1135.2818545.13 | 1135.7818628.93 | 1135.36 |
| 18656.03 | 1135.4218678.14 | 1135.118714.94  | 1135.1318758.06 | 1135.5418795.14 | 1136.02 |
| 18830.65 | 1136.6218880    | 1130.4118906.58 | 1127.4218940.59 | 1124.8318983.81 | 1124.43 |
| 19027.77 | 1124.1219068.19 | 1124.1319132.24 | 1124.319198.69  | 1124.0819255.29 | 1124.01 |
| 19282.93 | 1124.1219295.93 | 1124.3119333.76 | 1124.4119352.48 | 1124.3719363.04 | 1125.04 |
| 19404.32 | 1131.6219408.06 | 1132.2319449.44 | 1143.0119462.92 | 1142.9319472.78 | 1139.75 |
| 19494.42 | 1132.2219504.35 | 1132.4419516.83 | 1123.4419539.04 | 1122.1719623.47 | 1123.1  |
| 19657.78 | 1123.2219662.93 | 1123.3919766.98 | 1121.9319812.7  | 1121.5719910    | 1119.46 |
| 19929.43 | 1119.1220002.58 | 1118.6520063.35 | 1117.1620103.33 | 1115.9520178.65 | 1114.2  |
| 20203.64 | 1114.0220267.44 | 1114.1420326.95 | 1113.9520341.15 | 1114.2520358.47 | 1114.84 |
| 20387.52 | 1116.0220468.61 | 1119.2120476.84 | 1119.3320495.66 | 1131.8420514.18 | 1143.96 |
| 20532.19 | 1144.2220544.18 | 1144.1920576.7  | 1136.1420592.21 | 1136.620598.18  | 1135.14 |
| 20609.17 | 1135.8220613.05 | 1136.2620628.23 | 1136.5620637.8  | 1137.320652.72  | 1138.97 |
| 20684.01 | 1137.7220695.37 | 1138.8920707.99 | 1138.1620716.2  | 1137.2120749.84 | 1139.36 |
| 20759.31 | 1139.5220786.29 | 1140.9420810.01 | 1142.1120832.42 | 1141.3220870.53 | 1139.91 |
| 20878.86 | 1138.6220928.26 | 1130.5920940.8  | 1130.8420962.91 | 1131.6620981.03 | 1132.42 |
| 21015.89 | 1133.8221089.81 | 1136.621093.81  | 1136.5821134.01 | 1136.1221148.67 | 1135.92 |
| 21157.69 | 1135.4221183.89 | 1135.4521227.68 | 1134.9721268.38 | 1134.2421273.64 | 1134.09 |
| 21336.46 | 1128.8221392.95 | 1127.1721397.81 | 1126.8821407.96 | 1126.721460.82  | 1126.62 |
| 21471.44 | 1126.5221512.83 | 1126.321533.57  | 1126.2621553.12 | 1125.5321623.27 | 1126.34 |
| 21637.25 | 1126.7221691.89 | 1126.7421698.28 | 1126.8221741.53 | 1127.1921808.74 | 1127.72 |
| 21829.98 | 1128.9221869.21 | 1131.4721894.88 | 1130.2821924.41 | 1128.5621938.23 | 1128.5  |
| 21949.98 | 1128.3222000.57 | 1141.0522008.84 | 1143.3722012.87 | 1143.3222064.49 | 1142.26 |
| 22080.36 | 1143.5222100.73 | 1145.5922110.57 | 1145.9922133.37 | 1147.2422145.89 | 1141.24 |
| 22155.02 | 1137.2222171.69 | 1136.8222193.79 | 1146.4122211.23 | 1148.2322231.01 | 1148.38 |
| 22232.93 | 1148.5222244.68 | 1148.6622338.9  | 1150.4622367.96 | 1150.8122424.19 | 1151.62 |
| 22497.87 | 1153.5222554.89 | 1154.7822637.92 | 1155.3822674.7  | 1155.7822750.04 | 1156.15 |
| 22794.83 | 1159.2222799.99 | 1159.5222831.07 | 1161.5322855.05 | 1161.0922870.31 | 1161    |
| 22901.38 | 1161.1222946.92 | 1161.7722974.31 | 1162.3223008.94 | 1163.2823025.1  | 1163.63 |
| 23092.92 | 1163.9223115.83 | 1164.5423147.8  | 1166.23158.86   | 1167.7123168.54 | 1167.87 |
| 23183.72 | 1167.2223195.54 | 1167.4923227.06 | 1166.6623241.21 | 1166.8823252.68 | 1166.81 |
| 23266.75 | 1167.7223333.43 | 1168.9123388.4  | 1170.1623423.21 | 1170.2623441.97 | 1170.08 |
| 23471.66 | 1169.2223478.89 | 1170.6923509.38 | 1173.1423539.8  | 1172.7523560.68 | 1173.8  |
| 23569.43 | 1173.5223601.93 | 1172.4923628.07 | 1172.12         |                 |         |

|                       |              |           |
|-----------------------|--------------|-----------|
| Manning's n Values    | num=         | 3         |
| Sta n Val Sta n Val   | n Val        | Sta n Val |
| 14620.63 .03519462.92 | .03520514.18 | .035      |

|                          |           |               |         |       |       |        |        |
|--------------------------|-----------|---------------|---------|-------|-------|--------|--------|
| Bank Sta: Left           | Right     | Lengths: Left | Channel | Right | Coeff | Contr. | Expan. |
| 19462.9220514.18         |           | 410           | 470.96  | 560   | .1    |        | .3     |
| Ineffective Flow         | num=      | 2             |         |       |       |        |        |
| Sta L Sta R Elev         | Permanent |               |         |       |       |        |        |
| 14620.6319462.92 1142.93 | F         |               |         |       |       |        |        |
| 20514.1823628.07 1143.96 | F         |               |         |       |       |        |        |

CROSS SECTION

RIVER: Salt  
 REACH: 1  
 RS: 219.33

INPUT

|              |                                     |                 |                 |
|--------------|-------------------------------------|-----------------|-----------------|
| Description: | Station Elevation Data              | num=            | 258             |
|              | Sta Elev Sta Elev Sta Elev Sta Elev |                 |                 |
|              | 14841.36 1137.0214851.62            | 1137.0414986.39 | 1137.8115015.71 |
|              | 15064.99 1137.7215077.24            | 1139.4915090.55 | 1139.0415107.89 |
|              | 15169.63 1139.2215190.15            | 1140.415199.59  | 1140.7615219.78 |
|              | 15243.59 1137.82 15361              | 1139.6515386.12 | 1139.615405.99  |
|              | 15535.52 1139.7215568.85            | 1139.4815587.44 | 1139.6315612.13 |
|              | 15656.66 1139.5215694.61            | 1140.0415725.84 | 1139.8415731.28 |
|              | 15789.04 1138.5215803.97            | 1139.2315947.32 | 1139.5415958.36 |
|              | 16219.35 1141.1216282.77            | 1141.4916338.88 | 1141.1616423.21 |
|              | 16592.29 1142.2216707.93            | 1142.416713.27  | 1142.0416735.83 |
|              | 16763.34 1140.4216797.85            | 1141.4116807.74 | 1141.3316836.98 |
|              | 16869.35 1142.2216878.64            | 1142.2616942.64 | 1141.917051.78  |
|              | 17127.15 1139.4217133.29            | 1139.4617184.62 | 1139.0717193.09 |
|              | 17205.76 1140.4217211.37            | 1141.7917229.73 | 1141.7817245.6  |
|              | 17304.03 1141.1217333.74            | 1140.7317347.51 | 1140.7317381.09 |
|              | 17430.86 1140.5217481.44            | 1139.3717507.6  | 1138.9617512.96 |
|              | 17560.02 1138.1217577.76            | 1138.3317583.19 | 1138.5717642.53 |
|              | 17726.24 1138.5217754.01            | 1140.9217771.95 | 1140.7617779.81 |
|              | 17805.2 1139.7217819.74             | 1138.0617851.93 | 1137.4217952.13 |
|              | 17987.86 1138.0218048.27            | 1137.7318082.89 | 1137.8818091.62 |
|              |                                     |                 | 1137.3618115.85 |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 18121.19 | 1132.5218173.85 | 1134.9618204.13 | 1136.9918215.33 | 1136.8518235.15 | 1136.35 |
| 18245.91 | 1135.7218272.8  | 1135.7918524.41 | 1135.0118554.65 | 1135.118633.36  | 1136.21 |
| 18649.38 | 1135.8218657.54 | 1136.2918734.52 | 1136.8218736.34 | 1136.9318743.56 | 1135.73 |
| 18823.84 | 1124.6218836.47 | 1123.5118886.49 | 1123.4419032.83 | 1123.4519164.54 | 1123.28 |
| 19273.71 | 1122.9219316.38 | 1122.8519353.68 | 1131.5819356.3  | 1132.2319387.11 | 1142.54 |
| 19401.15 | 1142.8219430.58 | 1133.1519433.25 | 1132.5619440.95 | 1132.419456.11  | 1122.63 |
| 19466.61 | 1121.2219470.89 | 1120.7819509.1  | 1120.1919568.12 | 1119.619622.9   | 1118.95 |
| 19650.25 | 1118.9219723.26 | 1118.619829.07  | 1117.5819902.92 | 1116.8320012.93 | 1115.94 |
| 20033.87 | 1115.5220068.17 | 1115.820220.97  | 1116.6820303.43 | 1118.0920407.5  | 1119.37 |
| 20417.61 | 1118.9220425.97 | 1123.6720432.73 | 1128.3420441.7  | 1129.2620446.02 | 1129.12 |
| 20448.12 | 1128.5220468.98 | 1142.3120472.46 | 1144.8220489.35 | 1143.6320513.06 | 1137.09 |
| 20534.13 | 1130.9220589.19 | 1130.9720625.02 | 1130.620653.51  | 1133.0420708.31 | 1137.84 |
| 20718.59 | 1138.8220761.09 | 1143.6420808.6  | 1145.4820830.76 | 1146.1520884.38 | 1145.75 |
| 20943.28 | 1133.7220945.41 | 1133.4820993.85 | 1131.0621054.83 | 1127.4421097.16 | 1126.51 |
| 21129    | 1125.5221157.24 | 1125.1921195.02 | 1123.8321198.85 | 1123.5421223.93 | 1122.43 |
| 21232.62 | 1122.4221244.16 | 1121.8521265.72 | 1120.6521292.93 | 1121.9521308.98 | 1122.52 |
| 21324.3  | 1121.7221342.6  | 1121.3921353.11 | 1121.2821376.01 | 1122.0121408.57 | 1121.75 |
| 21420.04 | 1121.5221551.9  | 1121.1521578.61 | 1121.0321611.11 | 1121.121630.95  | 1121.08 |
| 21654.33 | 1121.0221754.59 | 1119.3621853.36 | 1121.0721863.14 | 1121.0421865.77 | 1122.03 |
| 21871.39 | 1123.6221913.22 | 1134.5521950.91 | 1135.521985.87  | 1136.0322014.52 | 1136.34 |
| 22035.73 | 1136.4222065.09 | 1141.922077.42  | 1144.422107.86  | 1145.7122122.28 | 1145.84 |
| 22126.11 | 1143.9222139.29 | 1138.4622162.26 | 1137.2322173.92 | 1143.8622176.48 | 1145.07 |
| 22185.97 | 1145.8222202.29 | 1146.9922217.97 | 1148.4622251.08 | 1148.0522299.83 | 1149.12 |
| 22323.78 | 1148.3222335.91 | 1149.1222349.03 | 1149.0922415.35 | 1150.0722509.12 | 1150.81 |
| 22562.42 | 1150.7222614.12 | 1151.1322625.45 | 1151.0222636.25 | 1153.1522650.36 | 1155.38 |
| 22663.97 | 1154.3222680.81 | 1152.2922694.38 | 1151.0822708.16 | 1150.7722727.33 | 1150.66 |
| 22807.97 | 1151.5222847.56 | 1152.4622868.91 | 1153.1722935.83 | 1153.9722981.91 | 1155.51 |
| 23005.61 | 1155.8223057.16 | 1157.3823071.69 | 1158.3623083.89 | 1158.8123100.19 | 1156.39 |
| 23104.54 | 1155.9223117.44 | 1156.2623135.42 | 1156.9423144.94 | 1157.7223159.22 | 1159.03 |
| 23196.77 | 1159.7223229.58 | 1160.223258.36  | 1160.7923280.1  | 1160.7323480.04 | 1159.36 |
| 23577.25 | 1159.0223595.16 | 1159.3323646.88 | 1161.4223719.99 | 1164.5223735.38 | 1165.29 |
| 23741.97 | 1165.5223751.71 | 1165.2423801.94 | 1164.8523824.49 | 1166.0523832.95 | 1166.13 |
| 23842.9  | 1165.6223866.3  | 1164.4523879.96 | 1165.09         |                 |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 14841.36 .03519401.15 .03520468.98 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19401.1520468.98 380 467.92 590 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 14841.3619401.15 1142.82 F  
 20468.9823879.96 1142.31 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 219.24

INPUT  
 Description:

|                                 |                 |                 |                 |                 |         |     |      |     |      |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|
| Station Elevation Data num= 257 |                 |                 |                 |                 |         |     |      |     |      |
| Sta                             | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev |
| 14646.32                        | 1136.5214764.4  | 1136.9814831.71 | 1137.3514844.69 | 1137.4414892.21 | 1137.25 |     |      |     |      |
| 14921.24                        | 1138.2214974.7  | 1138.9715052.31 | 1139.5115099.21 | 1137.8415106.88 | 1137.44 |     |      |     |      |
| 15191.55                        | 1138.6215221.5  | 1137.1515226.48 | 1136.9415290.32 | 1137.5115323.23 | 1138.25 |     |      |     |      |
| 15326.62                        | 1137.6215337.03 | 1135.3215387.5  | 1139.0215433.06 | 1138.9415539.19 | 1138.56 |     |      |     |      |
| 15563.61                        | 1138.6215584.96 | 1138.3815688.79 | 1138.515695.05  | 1138.1115719.52 | 1137.81 |     |      |     |      |
| 15887.11                        | 1138.9215940.24 | 1138.916059.1   | 1139.4116082.72 | 1138.9116111.12 | 1139.12 |     |      |     |      |
| 16127.59                        | 1139.4216170.82 | 1139.0816226.37 | 1139.1916275.63 | 1139.6616304.44 | 1139.41 |     |      |     |      |
| 16307.79                        | 1139.4216370.75 | 1139.3616425.82 | 1140.416473.32  | 1139.4616495.94 | 1139.59 |     |      |     |      |
| 16507.5                         | 1139.6216558.97 | 1139.8316592.8  | 1139.9116628.27 | 1139.9116662.48 | 1140.39 |     |      |     |      |
| 16689.32                        | 1140.5216702.03 | 1140.6416719.82 | 1140.6216738.98 | 1140.7416748.91 | 1141.53 |     |      |     |      |
| 16767.6                         | 1140.6216784.38 | 1140.5416821.91 | 1141.0516850.35 | 1141.5416859.33 | 1142.26 |     |      |     |      |
| 16912.28                        | 1142.6216970.34 | 1142.1917198.01 | 1141.5117221.24 | 1139.4517234.49 | 1138.46 |     |      |     |      |
| 17272.18                        | 1138.1217407.34 | 1138.9217431.72 | 1139.1917446.85 | 1140.2117480.31 | 1138.93 |     |      |     |      |
| 17503.82                        | 1138.7217552.53 | 1138.9517569.7  | 1139.0617610.6  | 1139.4117626.55 | 1138.4  |     |      |     |      |
| 17635.29                        | 1138.1217643.59 | 1137.117663.91  | 1136.0117678.4  | 1136.5717692.56 | 1136.71 |     |      |     |      |
| 17721.15                        | 1138.1217738.84 | 1138.8117764.86 | 1138.7817777.72 | 1138.9717849.78 | 1138.92 |     |      |     |      |
| 17857.28                        | 1138.9217920.2  | 1138.8117947.94 | 1138.1417966.4  | 1135.8718068.06 | 1134.82 |     |      |     |      |
| 18108.56                        | 1134.7218142.81 | 1134.9118249.02 | 1136.418324.26  | 1136.4218363.86 | 1136.22 |     |      |     |      |
| 18388.07                        | 1136.1218408.92 | 1136.2318487.59 | 1136.0218590    | 1135.8618649.24 | 1135.54 |     |      |     |      |
| 18688.62                        | 1135.5218708    | 1136.9318788.17 | 1136.4418850.1  | 1127.5718883.57 | 1123.09 |     |      |     |      |
| 18904.83                        | 1123.0218973.61 | 1123.1119117.02 | 1123.8119122.76 | 1123.8819163.61 | 1123.77 |     |      |     |      |
| 19204.77                        | 1123.0219305.4  | 1123.819367.5   | 1124.2519377.18 | 1126.6219399.49 | 1132.23 |     |      |     |      |
| 19405.74                        | 1134.0219428.05 | 114119436.24    | 1141.0519441.07 | 1140.8819464.52 | 1133.47 |     |      |     |      |
| 19472.76                        | 1130.7219475.72 | 1131.0419481.84 | 1131.3219490.28 | 1125.8719495.88 | 1121.94 |     |      |     |      |
| 19503.56                        | 1121.2219575.02 | 1117.3719583.91 | 1117.1219682.24 | 1116.519737.43  | 1115.65 |     |      |     |      |
| 19806.63                        | 1114.2219846.97 | 1114.5719977.39 | 1115.9720018.91 | 1116.4820027.94 | 1116.51 |     |      |     |      |
| 20058.13                        | 1116.7220207.74 | 1117.5820265.72 | 1118.2320322.01 | 1118.7120376.48 | 1118.32 |     |      |     |      |
| 20413.78                        | 1118.2220439.92 | 1117.8720457.36 | 1117.1520474.25 | 1130.8620483.45 | 1130.41 |     |      |     |      |
| 20490.4                         | 1127.8220496.83 | 1130.0720517.22 | 1142.2120530.41 | 1142.0120544.69 | 1138.92 |     |      |     |      |
| 20554.93                        | 1137.1220563.19 | 1133.520602.3   | 1128.2520608.87 | 1128.0520653.81 | 1127.02 |     |      |     |      |
| 20698.56                        | 1127.4220771.04 | 1128.3720771.61 | 1128.3720807.58 | 1131.6820831.36 | 1135.1  |     |      |     |      |
| 20878.82                        | 1136.5220898.67 | 1138.2620912.37 | 1139.2220969.84 | 1140.1520996.46 | 1140.77 |     |      |     |      |
| 21043.1                         | 1140.6221053.53 | 1140.5121079.47 | 1140.1121082.55 | 1140.1221086.12 | 1139.69 |     |      |     |      |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|
| 21103.33 | 1138.02         | 21110.2         | 1138.2321117.68 | 1138.2421123.72 | 1138.8521137.71 | 1139.39 |
| 21143.9  | 1138.5221154.24 | 1137.9921198.86 | 1137.5421233.74 | 1136.9721241.56 | 1137.08         |         |
| 21272.19 | 1137.9221279.85 | 1137.221422.76  | 1123.2421458.02 | 112021468.74    | 1119.91         |         |
| 21523.76 | 1118.3221590.37 | 1118.1921601.66 | 1119.4121641.76 | 1119.2521703.21 | 1119.37         |         |
| 21782.66 | 1120.0221808.93 | 1119.921876.88  | 1125.621880.78  | 1125.6821951.95 | 1124.83         |         |
| 21979.11 | 1132.7221989.42 | 1136.1122008.61 | 1136.79 22014.2 | 1137.0422020.74 | 1134.77         |         |
| 22039.31 | 1127.7222058.15 | 1121.5922076.68 | 1121.5822090.39 | 1121.7822107.16 | 1120.88         |         |
| 22119.61 | 1121.9222181.31 | 1122.2422186.64 | 1124.14 22214.9 | 1134.7322243.91 | 1134.8          |         |
| 22264.09 | 1134.92 22473.5 | 1136.922506.19  | 1137.1122560.06 | 1137.9322567.51 | 1137.95         |         |
| 22587.56 | 1139.52 22634.1 | 1145.7222671.68 | 1143.6722679.57 | 1141.4222697.08 | 1136.99         |         |
| 22713.99 | 1137.1222737.51 | 1137.42 22749.5 | 1142.36 22757.1 | 1145 22793.1    | 1144.7          |         |
| 22801.02 | 1144.8222827.93 | 1145.3322856.02 | 1145.3422872.09 | 1145.2522876.42 | 1145.65         |         |
| 22909.59 | 1147.2222925.78 | 1148.1422929.43 | 1148.2723082.04 | 1148.2123143.84 | 1149.35         |         |
| 23171.14 | 1149.2223190.17 | 1149.1123218.04 | 1149.8623270.26 | 1150.1323343.11 | 1151.22         |         |
| 23374.31 | 1151.6223407.84 | 1152.323457.49  | 1153.723483.69  | 1154.2423507.96 | 1155.3          |         |
| 23515.86 | 1154.6223528.25 | 1153.9723547.44 | 1155.0723572.23 | 1156.0623612.48 | 1155.91         |         |
| 23645.45 | 1156.0223690.07 | 1156.223716.54  | 1156.4223755.06 | 1156.8623786.78 | 1156.61         |         |
| 23851.78 | 1157.2223862.13 | 1157.1923875.66 | 1157.3823957.31 | 1157.9623980.42 | 1157.83         |         |
| 24063.68 | 1156.7224074.39 | 1156.76         |                 |                 |                 |         |

|                               |              |      |
|-------------------------------|--------------|------|
| Manning's n Values            | num=         | 3    |
| Sta n Val Sta n Val Sta n Val |              |      |
| 14646.32 .03519436.24         | .03520517.22 | .035 |

|                            |                             |              |        |
|----------------------------|-----------------------------|--------------|--------|
| Bank Sta: Left Right       | Lengths: Left Channel Right | Coeff Contr. | Expan. |
| 19436.2420517.22           | 510 511.34 500              | .1           | .3     |
| Ineffective Flow num=      | 2                           |              |        |
| Sta L Sta R Elev Permanent |                             |              |        |
| 14646.3219436.24 1141.05   | F                           |              |        |
| 20517.2224074.39 1142.21   | F                           |              |        |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 219.14

INPUT

Description:

|  |                 |   |  |
|--|-----------------|---|--|
| Station Elevation Data                       | num=            | 234                                     |  |
| Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev |                 |   |  |
| 15164.78 1138.52 15208.2 1139.2115256.23     | 113915380.96    | 1138.6715422.24 1138.51                 |  |
| 15435.33 1138.5215446.04                     | 1138.3315465.53 | 1138.0615519.25 1136.3615542.67 1135.72 |  |
| 15565.73 1136.3215589.49                     | 1136.7815597.77 | 1136.7415670.72 1137.6115802.44 1137.86 |  |
| 15827.2 1137.7216196.09                      | 1137.7316201.64 | 1137.7316664.74 1138.8 16758.6 1137.87  |  |
| 16870.13 1138.0216954.81                     | 1138.417040.55  | 1137.3217082.77 1136.8517168.23 1136.04 |  |
| 17192.15 1137.2217206.81                     | 1136.8217223.42 | 1136.6117230.65 1136.417259.46 1134.85  |  |
| 17365 1134.7217440.14                        | 1135.217514.47  | 1135.0717584.53 1134.7717773.68 1139.7  |  |
| 17780.81 1140.3217796.97                     | 1140.317831.92  | 1139.1917866.27 1138.7917871.77 1138.29 |  |
| 17888.74 1137.3217911.91                     | 1135.6 17919.2  | 1135.12 17927.9 1135.1217951.44 1135    |  |
| 17984.39 1137.3217989.89                     | 1137.7218002.57 | 1137.8418097.83 1137.9818160.79 1138.89 |  |
| 18183.72 1139.0218208.57                     | 1136.3918242.11 | 1132.0618247.45 1132.1118284.14 1132.25 |  |
| 18376.13 1132.9218429.04                     | 1133.2218436.08 | 1133.3218491.49 1133.8518511.74 1134.75 |  |
| 18546.94 1136.5218670.73                     | 1135.6518717.03 | 1135.4218776.64 1134.96 18789.6 1135.78 |  |
| 18817.97 1136.9218852.69                     | 1136.5218893.54 | 1136.3718904.92 1135.4218910.67 1134.82 |  |
| 19016.8 1121.7219037.75                      | 1119.4219042.38 | 1119.6619090.57 1119.9319140.69 1119.7  |  |
| 19217.98 1118.9219251.56                     | 1118.5519288.52 | 1119.1419303.43 1120.7719325.43 1120.62 |  |
| 19342.44 1121.4219372.01                     | 1125.4919386.41 | 1127.59 19406.2 1132.6119430.09 1140.13 |  |
| 19445.31 1140.02 19448.4                     | 1139.4419468.34 | 1139.1719470.09 1139.0719495.93 1122.02 |  |
| 19497.57 1121.5219524.89                     | 1118.3819534.77 | 1117.3619568.82 1115.87 19629.2 1112.54 |  |
| 19649.81 1112.5219773.39                     | 1113.519866.54  | 1113.9919893.37 1114.2219927.72 1114.79 |  |
| 20063.1 1117.1220149.03                      | 1118.9920181.57 | 1118.7320245.29 1117.7820275.45 1117.66 |  |
| 20310.17 1117.2220452.52                     | 1116.0220463.91 | 1116.4220480.07 1126.72 20483.3 1128.86 |  |
| 20492.82 1128.4220496.53                     | 1126.4220511.26 | 1134.8320520.48 1140.3620530.15 1140.2  |  |
| 20534.29 1140.7220543.75                     | 1138.2320548.42 | 1137.1620558.57 1133.6320568.89 1130.49 |  |
| 20596.43 1131.32 20621.7                     | 1132.3120681.66 | 1131.9120717.17 1131.4820767.68 1130.7  |  |
| 20836.05 1136.4220871.71                     | 1139.3120937.38 | 1132.2220964.21 1132.3720977.27 1132.08 |  |
| 20988.72 1133.1220999.08                     | 1133.7921036.18 | 1134.621072.43 1129.05 21081.9 1129.39  |  |
| 21087.68 1130.8221133.93                     | 1131.121141.15  | 1131.2421151.53 1128.5121185.85 1128.29 |  |
| 21209.44 1128.42 21212.2                     | 1128.49 21217.6 | 1129.7321219.95 1130.0521263.22 1140.63 |  |
| 21266.96 1139.3221284.09                     | 1135.5421291.61 | 1135.321300.74 1135.4421322.62 1135.64  |  |
| 21361.86 1135.02 21390.2                     | 1134.3421394.13 | 1134.3521454.34 1134.1321464.97 1134.23 |  |
| 21476.33 1134.1221540.74                     | 1132.2221568.29 | 1131.5621620.64 1131.2921647.09 1131.3  |  |
| 21664.31 1129.72 21721.5                     | 1126.3621749.96 | 1125.27 21761.9 1124.6721827.64 1123.62 |  |
| 21865.73 1123.7221878.81                     | 1123.5621934.36 | 1124.121941.03 1124.821973.53 1126.95   |  |
| 22017.41 1133.9222035.36                     | 1135.2322053.41 | 1135.4122108.52 1125.2222141.46 1125.71 |  |
| 22167.67 1122.7222180.34                     | 1121.7522268.31 | 1121.7522278.16 1121.8822302.79 1121.82 |  |
| 22329.17 1121.92 22368                       | 1121.4822378.55 | 1121.5122389.88 1122.64 22476.5 1128.18 |  |
| 22551.91 1135.2222556.71                     | 1135.5922560.92 | 1136.1722592.74 1136.97 22613.6 1137.85 |  |
| 22620.2 1137.8222655.58                      | 1137.2722684.66 | 1137.2622717.56 1136.9522753.82 1136.76 |  |
| 22781.4 1136.9222794.68                      | 1137.0422875.32 | 1137.522948.92 1137.522981.01 1140.56   |  |
| 23018.92 1142.7223038.12                     | 1143.75 23095.2 | 1144.0323112.63 1144.2123153.66 1144.89 |  |
| 23186.62 1145.1223201.76                     | 1141.88 23217.3 | 1137.4223240.34 1137.48 23254.3 1137.16 |  |
| 23274.71 1142.8223282.92                     | 1144.8223291.34 | 1144.7223321.33 1144.7823331.53 1145.19 |  |
| 23349.27 1146.9223367.87                     | 1146.9823401.72 | 1146.0323459.98 1145.423542.75 1144.8   |  |
| 23622.63 1145.7223653.75                     | 1145.823696.07  | 1145.8923727.01 1147.2923773.37 1153.92 |  |
| 23779.91 1153.4223805.74                     | 1152.0923818.61 | 1153.3123823.91 1153.6823874.31 1153.4  |  |
| 23926.63 1153.3223980.52                     | 1153.224041.38  | 1153.39 24067.8 1153.59                 |  |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 15164.78 .0519470.09 .03520520.48 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19470.0920520.48 760 550.34 260 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 15164.7819470.09 1139.07 F  
 20520.48 24067.8 1140.36 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 219.03

INPUT  
 Description: Upstream face of Hohokam Bridge

Station Elevation Data num= 45  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 17290 1138.1217865.96 1136.4218102.01 1138.1218281.41 1142.1218715.74 1146.12  
 19304.64 1146.4219304.73 1139.7219326.92 1139.8 19359.5 111619387.82 1115.22  
 19395.38 1115.0219424.18 1115.0219429.84 1115.0219484.41 1115.0219548.81 1115.02  
 19554.47 1115.0219606.22 1115.0219673.45 1115.0219679.11 1115.0219728.96 1115.02  
 19771.17 1115.0219781.55 1115.7219798.08 1115.6219803.74 1115.6219853.13 1115.42  
 19922.71 1115.9719928.38 1115.9719976.81 1115.6220047.35 1115.6220053.01 1115.62  
 20104.28 1115.8220171.98 1116.4220177.65 1116.4220228.45 1116.4720296.62 1116.77  
 20299.45 1116.7720343.83 1116.8220383.48 1139.1220420.31 1139.12 20420.4 1140.62  
 20420.49 1147.3621293.41 1146.1221737.18 1142.1221793.83 1142.1222171.51 1146.12

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 17290 .0519304.73 .035 20420.4 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19304.73 20420.4 190.12 190.12 190.12 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 1729019304.73 1139.72 F  
 20420.422171.51 1140.62 F

BRIDGE

RIVER: Salt  
 REACH: 1 RS: 219.02

INPUT  
 Description: Hohokam Expressway (SR 143)  
 Distance from Upstream XS = 31.5  
 Deck/Roadway width = 127  
 Weir Coefficient = 2.6  
 Upstream Deck/Roadway Coordinates

num= 16  
 Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord  
 17290 1138.12 1138.1217865.96 1136.42 1136.4218102.01 1138.12 1138.12  
 18281.41 1142.12 1142.1218715.74 1146.12 1146.1219304.73 1146.42 1146.42  
 19304.73 1146.42 1139.819424.18 1146.55 1139.8419548.81 1147.39 1140.68  
 19673.45 1147.76 1141.0519798.08 1148.16 1141.4519922.71 1148.56 1141.85  
 20047.35 1148.83 1142.1220171.98 1149.11 1142.420299.45 1148.36 1141.65  
 20420.31 1147.36 1140.65

Upstream Bridge Cross Section Data

Station Elevation Data num= 45  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 17290 1138.1217865.96 1136.4218102.01 1138.1218281.41 1142.1218715.74 1146.12  
 19304.64 1146.4219304.73 1139.7219326.92 1139.8 19359.5 111619387.82 1115.22  
 19395.38 1115.0219424.18 1115.0219429.84 1115.0219484.41 1115.0219548.81 1115.02  
 19554.47 1115.0219606.22 1115.0219673.45 1115.0219679.11 1115.0219728.96 1115.02  
 19771.17 1115.0219781.55 1115.7219798.08 1115.6219803.74 1115.6219853.13 1115.42  
 19922.71 1115.9719928.38 1115.9719976.81 1115.6220047.35 1115.6220053.01 1115.62  
 20104.28 1115.8220171.98 1116.4220177.65 1116.4220228.45 1116.4720296.62 1116.77  
 20299.45 1116.7720343.83 1116.8220383.48 1139.1220420.31 1139.12 20420.4 1140.62  
 20420.49 1147.3621293.41 1146.1221737.18 1142.1221793.83 1142.1222171.51 1146.12

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 17290 .0519304.73 .035 20420.4 .05

Bank Sta: Left Right Coeff Contr. Expan.  
 19304.73 20420.4 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent

1729019304.73 1139.72 F  
 20420.422171.51 1140.62 F

Downstream Deck/Roadway Coordinates

| num= | Sta      | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord |
|------|----------|---------|---------|----------|---------|---------|----------|---------|---------|
| 16   | 17290    | 1138.12 | 1138.12 | 17865.96 | 1136.42 | 1136.42 | 18102.01 | 1138.12 | 1138.12 |
|      | 18281.41 | 1142.12 | 1142.12 | 18715.74 | 1146.12 | 1146.12 | 19304.73 | 1146.42 | 1146.42 |
|      | 19304.73 | 1146.42 | 1139.81 | 19424.18 | 1146.55 | 1139.84 | 19548.81 | 1147.39 | 1140.68 |
|      | 19673.45 | 1147.76 | 1141.05 | 19798.08 | 1148.16 | 1141.45 | 19922.71 | 1148.56 | 1141.85 |
|      | 20047.35 | 1148.83 | 1142.12 | 20171.98 | 1149.11 | 1142.42 | 20299.45 | 1148.36 | 1141.65 |
|      | 20420.31 | 1147.36 | 1140.65 |          |         |         |          |         |         |

Downstream Bridge Cross Section Data

| Station | Elevation | Data | num= | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev         |
|---------|-----------|------|------|----------|---------|----------|---------|----------|---------|----------|--------------|
|         |           |      | 45   | 17290    | 1138.12 | 17865.96 | 1136.42 | 18102.01 | 1138.12 | 18715.74 | 1146.12      |
|         |           |      |      | 19304.64 | 1146.42 | 19304.73 | 1139.72 | 19326.92 | 1139.84 | 19359.5  | 111619387.82 |
|         |           |      |      | 19395.38 | 1115.02 | 19424.18 | 1115.02 | 19429.84 | 1115.02 | 19484.41 | 1115.02      |
|         |           |      |      | 19554.47 | 1115.02 | 19606.22 | 1115.02 | 19673.45 | 1115.02 | 19679.11 | 1115.02      |
|         |           |      |      | 19771.17 | 1115.02 | 19781.55 | 1115.72 | 19798.08 | 1115.62 | 19803.74 | 1115.42      |
|         |           |      |      | 19922.71 | 1115.97 | 19928.38 | 1115.97 | 19976.81 | 1115.62 | 20047.35 | 1115.62      |
|         |           |      |      | 20104.28 | 1115.82 | 20171.98 | 1116.42 | 20177.65 | 1116.42 | 20228.45 | 1116.77      |
|         |           |      |      | 20299.45 | 1116.77 | 20343.83 | 1116.82 | 20383.48 | 1139.12 | 20420.31 | 1140.62      |
|         |           |      |      | 20420.49 | 1147.36 | 21293.41 | 1146.12 | 21737.18 | 1142.12 | 21793.83 | 1142.12      |
|         |           |      |      |          |         |          |         |          |         |          | 2171.51      |
|         |           |      |      |          |         |          |         |          |         |          | 1146.12      |

Manning's n Values

| num= | Sta   | n Val | Sta      | n Val | Sta     | n Val |
|------|-------|-------|----------|-------|---------|-------|
| 3    | 17290 | .05   | 19304.73 | .035  | 20420.4 | .05   |

Bank Sta: Left Right

| Coeff    | Contr.  | Expan. |
|----------|---------|--------|
| 19304.73 | 20420.4 | .1     |
|          |         | .3     |

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 1729019304.73 1139.72 F  
 20420.422171.51 1140.62 F

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .95  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 weir crest shape = Broad Crested

Number of Piers = 8

Pier Data

| Pier Station    | Upstream=    | Downstream= |
|-----------------|--------------|-------------|
|                 | 19427        | 19427       |
| Upstream num=   | 2            |             |
| Width Elev      | Width Elev   |             |
| 5.66 1112.12    | 5.66 1143.12 |             |
| Downstream num= | 2            |             |
| Width Elev      | Width Elev   |             |
| 5.66 1112.12    | 5.66 1143.12 |             |

Pier Data

| Pier Station    | Upstream=    | Downstream= |
|-----------------|--------------|-------------|
|                 | 19551.6      | 19551.6     |
| Upstream num=   | 2            |             |
| Width Elev      | Width Elev   |             |
| 5.66 1112.12    | 5.66 1143.12 |             |
| Downstream num= | 2            |             |
| Width Elev      | Width Elev   |             |
| 5.66 1112.12    | 5.66 1143.12 |             |

Pier Data

| Pier Station    | Upstream=    | Downstream= |
|-----------------|--------------|-------------|
|                 | 19676.3      | 19676.3     |
| Upstream num=   | 2            |             |
| Width Elev      | Width Elev   |             |
| 5.66 1112.12    | 5.66 1143.12 |             |
| Downstream num= | 2            |             |
| Width Elev      | Width Elev   |             |
| 5.66 1112.12    | 5.66 1143.12 |             |

Pier Data

| Pier Station    | Upstream=    | Downstream= |
|-----------------|--------------|-------------|
|                 | 19800.9      | 19800.9     |
| Upstream num=   | 2            |             |
| Width Elev      | Width Elev   |             |
| 5.66 1112.12    | 5.66 1143.12 |             |
| Downstream num= | 2            |             |
| Width Elev      | Width Elev   |             |
| 5.66 1112.12    | 5.66 1143.12 |             |

Pier Data

| Pier Station  | Upstream=    | Downstream= |
|---------------|--------------|-------------|
|               | 19925.5      | 19925.5     |
| Upstream num= | 2            |             |
| Width Elev    | Width Elev   |             |
| 5.66 1112.12  | 5.66 1143.12 |             |

Downstream num= 2  
 width Elev width Elev  
 5.66 1112.12 5.66 1143.12

Pier Data  
 Pier Station Upstream= 20050.2 Downstream= 20050.2  
 Upstream num= 2  
 width Elev width Elev  
 5.66 1112.12 5.66 1143.12  
 Downstream num= 2  
 width Elev width Elev  
 5.66 1112.12 5.66 1143.12

Pier Data  
 Pier Station Upstream= 20174.8 Downstream= 20174.8  
 Upstream num= 2  
 width Elev width Elev  
 5.66 1112.12 5.66 1143.12  
 Downstream num= 2  
 width Elev width Elev  
 5.66 1112.12 5.66 1143.12

Pier Data  
 Pier Station Upstream= 20299.8 Downstream= 20299.8  
 Upstream num= 2  
 width Elev width Elev  
 5.66 1112.12 5.66 1143.12  
 Downstream num= 2  
 width Elev width Elev  
 5.66 1112.12 5.66 1143.12

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy  
 Momentum Cd = 1.2  
 Yarnell Kval = 1.05

Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Pressure and Weir flow  
 Submerged Inlet Cd =  
 Submerged Inlet + Outlet Cd = .8  
 Max Low Cord =

Additional Bridge Parameters

Add Friction component to Momentum  
 Do not add weight component to Momentum  
 Class B flow critical depth computations use critical depth  
 inside the bridge at the upstream end  
 Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 219.01

INPUT

Description: Downstream face of Hohokam Bridge

Station Elevation Data num= 45

| Sta   | Elev         | Sta | Elev         | Sta | Elev         | Sta   | Elev         | Sta       | Elev    |
|-------|--------------|-----|--------------|-----|--------------|-------|--------------|-----------|---------|
| 17290 | 1138.1217865 | 96  | 1136.4218102 | 01  | 1138.1218281 | 41    | 1142.1218715 | 74        | 1146.12 |
| 19304 | 1146.4219304 | 73  | 1139.7219326 | 92  | 1139.8       | 19359 | 5            | 111619387 | 82      |
| 19395 | 1115.0219424 | 18  | 1115.0219429 | 84  | 1115.0219484 | 41    | 1115.0219548 | 81        | 1115.02 |
| 19554 | 1115.0219606 | 22  | 1115.0219673 | 45  | 1115.0219679 | 11    | 1115.0219728 | 96        | 1115.02 |
| 19771 | 1115.0219781 | 55  | 1115.7219798 | 08  | 1115.6219803 | 74    | 1115.6219853 | 13        | 1115.42 |
| 19922 | 1115.9719928 | 38  | 1115.9719976 | 81  | 1115.6220047 | 35    | 1115.6220053 | 01        | 1115.62 |
| 20104 | 1115.8220171 | 98  | 1116.4220177 | 65  | 1116.4220228 | 45    | 1116.4720296 | 62        | 1116.77 |
| 20299 | 1116.7720343 | 83  | 1116.8220383 | 48  | 1139.1220420 | 31    | 1139.12      | 20420     | 4       |
| 20420 | 1147.3621293 | 41  | 1146.1221737 | 18  | 1142.1221793 | 83    | 1142.1222171 | 51        | 1146.12 |

Manning's n Values num= 3

| Sta   | n Val    | Sta | n Val | Sta   | n Val |
|-------|----------|-----|-------|-------|-------|
| 17290 | .0519304 | 73  | .035  | 20420 | .4    |
|       |          |     |       |       | .05   |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19304.73 20420.4 111.97 111.97 111.97 .1 .3

Ineffective Flow num= 2

| Sta L | Sta R     | Elev    | Permanent |
|-------|-----------|---------|-----------|
| 17290 | 19304.73  | 1139.72 | F         |
| 20420 | 422171.51 | 1140.62 | F         |

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 218.97

INPUT  
 Description: Upstream face of SR153 bridge

Station Elevation Data num= 32

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev            | Sta     | Elev | Sta | Elev | Sta | Elev |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|------|-----|------|-----|------|
| 19459.46 | 1137.9919459.49 | 1137.9919466.11 | 1137.2719468.94 | 1135.7619479.54 | 1135.95         |         |      |     |      |     |      |
| 19514.5  | 1112.419546.88  | 1108.57         | 19567           | 1109.6819619.62 | 1111.2519692.07 | 1110.33 |      |     |      |     |      |
| 19758.59 | 1109.7919818.56 | 1110.6619830.19 | 1112.5919898.06 | 1113.3319960.72 | 1113.67         |         |      |     |      |     |      |
| 20034.81 | 1114.6920102.55 | 1115.9420108.76 | 1115.9420114.29 | 1114.1520176.09 | 1113.88         |         |      |     |      |     |      |
| 20220.38 | 1114.3620246.16 | 1113.7620315.81 | 1111.7820366.41 | 1113.2820389.63 | 1112.88         |         |      |     |      |     |      |
| 20460.12 | 1112.6420486.51 | 1128.5120497.67 | 1128.2220529.61 | 1137.5920537.11 | 1138.38         |         |      |     |      |     |      |
| 20575.51 | 1127.4420617.67 | 1127.74         |                 |                 |                 |         |      |     |      |     |      |

Manning's n Values num= 3

| Sta      | n Val       | Sta          | n Val | Sta | n Val |
|----------|-------------|--------------|-------|-----|-------|
| 19459.46 | .0519459.46 | .03520537.11 | .05   |     |       |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

| Left     | Right    | Left   | Channel | Right  | Coeff Contr. | Expan. |
|----------|----------|--------|---------|--------|--------------|--------|
| 19459.46 | 20537.11 | 138.88 | 138.88  | 138.88 | .1           | .3     |

Ineffective Flow num= 2

| Sta L    | Sta R    | Elev    | Permanent |
|----------|----------|---------|-----------|
| 19459.46 | 19459.46 | 1137.99 | F         |
| 20537.11 | 20617.67 | 1138.38 | F         |

BRIDGE

RIVER: Salt  
 REACH: 1 RS: 218.965

INPUT  
 Description: SR 153  
 Distance from Upstream XS = 10.9  
 Deck/Roadway Width = 117  
 Weir Coefficient = 2.6  
 Upstream Deck/Roadway Coordinates

num= 10

| Sta      | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord |
|----------|---------|---------|----------|---------|---------|----------|---------|---------|
| 19480.19 | 1150.58 | 1143.91 | 19595.74 | 1151.79 | 1145.12 | 19720.43 | 1152.75 | 1146.08 |
| 19851.65 | 1153.3  | 1146.63 | 19988.08 | 1153.42 | 1146.75 | 20128.34 | 1153.13 | 1146.46 |
| 20271.02 | 1152.41 | 1145.74 | 20414.69 | 1151.27 | 1144.62 | 20557.89 | 1149.71 | 1143.04 |
| 20670.18 | 1148.17 | 1141.5  |          |         |         |          |         |         |

Upstream Bridge Cross Section Data

Station Elevation Data num= 32

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev            | Sta     | Elev | Sta | Elev | Sta | Elev |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|------|-----|------|-----|------|
| 19459.46 | 1137.9919459.49 | 1137.9919466.11 | 1137.2719468.94 | 1135.7619479.54 | 1135.95         |         |      |     |      |     |      |
| 19514.5  | 1112.419546.88  | 1108.57         | 19567           | 1109.6819619.62 | 1111.2519692.07 | 1110.33 |      |     |      |     |      |
| 19758.59 | 1109.7919818.56 | 1110.6619830.19 | 1112.5919898.06 | 1113.3319960.72 | 1113.67         |         |      |     |      |     |      |
| 20034.81 | 1114.6920102.55 | 1115.9420108.76 | 1115.9420114.29 | 1114.1520176.09 | 1113.88         |         |      |     |      |     |      |
| 20220.38 | 1114.3620246.16 | 1113.7620315.81 | 1111.7820366.41 | 1113.2820389.63 | 1112.88         |         |      |     |      |     |      |
| 20460.12 | 1112.6420486.51 | 1128.5120497.67 | 1128.2220529.61 | 1137.5920537.11 | 1138.38         |         |      |     |      |     |      |
| 20575.51 | 1127.4420617.67 | 1127.74         |                 |                 |                 |         |      |     |      |     |      |

Manning's n Values num= 3

| Sta      | n Val       | Sta          | n Val | Sta | n Val |
|----------|-------------|--------------|-------|-----|-------|
| 19459.46 | .0519459.46 | .03520537.11 | .05   |     |       |

Bank Sta: Left Right Coeff Contr. Expan.

| Left     | Right    | Coeff Contr. | Expan. |
|----------|----------|--------------|--------|
| 19459.46 | 20537.11 | .1           | .3     |

Ineffective Flow num= 2

| Sta L    | Sta R    | Elev    | Permanent |
|----------|----------|---------|-----------|
| 19459.46 | 19459.46 | 1137.99 | F         |
| 20537.11 | 20617.67 | 1138.38 | F         |

Downstream Deck/Roadway Coordinates

num= 10

| Sta      | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord |
|----------|---------|---------|----------|---------|---------|----------|---------|---------|
| 19480.19 | 1150.58 | 1143.91 | 19595.74 | 1151.79 | 1145.12 | 19720.43 | 1152.75 | 1146.08 |
| 19851.65 | 1153.3  | 1146.63 | 19988.08 | 1153.42 | 1146.75 | 20128.34 | 1153.13 | 1146.46 |
| 20271.02 | 1152.41 | 1145.74 | 20414.69 | 1151.27 | 1144.62 | 20557.89 | 1149.71 | 1143.04 |
| 20670.18 | 1148.17 | 1141.5  |          |         |         |          |         |         |

Downstream Bridge Cross Section Data

Station Elevation Data num= 27

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev            | Sta     | Elev | Sta | Elev | Sta | Elev |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|------|-----|------|-----|------|
| 19456.79 | 1138.319464.29  | 1137.8819489.35 | 1119.9219499.81 | 1120.24         | 19527.2         | 1108.43 |      |     |      |     |      |
| 19575.01 | 1108.9819638.48 | 1109.219694.95  | 1110.18         | 19764.4         | 1110.6419823.34 | 1111.8  |      |     |      |     |      |
| 19828.52 | 1112.9619896.81 | 1113.0519965.33 | 1113.5720032.89 | 1114.0420105.85 | 1115.22         |         |      |     |      |     |      |
| 20175.18 | 1115.7520247.98 | 1115.3420326.04 | 1114.6820392.18 | 1113.8420465.08 | 1114.27         |         |      |     |      |     |      |
| 20485.85 | 1127.6120496.63 | 1127.6220529.33 | 1137.8620537.91 | 1138.0620572.86 | 1125.53         |         |      |     |      |     |      |
| 20600.86 | 1126.0420641.85 | 1124.96         |                 |                 |                 |         |      |     |      |     |      |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 19456.79 .0519456.79 .03520537.91 .05

Bank Sta: Left Right Coeff Contr. Expan.  
 19456.7920537.91 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 19456.7919456.79 1138.3 F  
 20537.9120641.85 1138.06 F

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .95  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Piers = 8

Pier Data  
 Pier Station Upstream=19595.74 Downstream=19595.74  
 Upstream num= 2  
 width Elev width Elev  
 6.5 1112.12 6.5 1147.12  
 Downstream num= 2  
 width Elev width Elev  
 6.5 1112.12 6.5 1147.12

Pier Data  
 Pier Station Upstream=19720.43 Downstream=19720.43  
 Upstream num= 2  
 width Elev width Elev  
 6.5 1112.12 6.5 1147.12  
 Downstream num= 2  
 width Elev width Elev  
 6.5 1112.12 6.5 1147.12

Pier Data  
 Pier Station Upstream=19851.65 Downstream=19851.65  
 Upstream num= 2  
 width Elev width Elev  
 6.5 1112.12 6.5 1147.12  
 Downstream num= 2  
 width Elev width Elev  
 6.5 1112.12 6.5 1147.12

Pier Data  
 Pier Station Upstream=19988.08 Downstream=19988.08  
 Upstream num= 2  
 width Elev width Elev  
 6.5 1112.12 6.5 1147.12  
 Downstream num= 2  
 width Elev width Elev  
 6.5 1112.12 6.5 1147.12

Pier Data  
 Pier Station Upstream=20128.34 Downstream=20128.34  
 Upstream num= 2  
 width Elev width Elev  
 6.5 1112.12 6.5 1147.12  
 Downstream num= 2  
 width Elev width Elev  
 6.5 1112.12 6.5 1147.12

Pier Data  
 Pier Station Upstream=20271.02 Downstream=20271.02  
 Upstream num= 2  
 width Elev width Elev  
 6.5 1112.12 6.5 1147.12  
 Downstream num= 2  
 width Elev width Elev  
 6.5 1112.12 6.5 1147.12

Pier Data  
 Pier Station Upstream=20414.69 Downstream=20414.69  
 Upstream num= 2  
 width Elev width Elev  
 6.5 1112.12 6.5 1147.12  
 Downstream num= 2  
 width Elev width Elev  
 6.5 1112.12 6.5 1147.12

Pier Data  
 Pier Station Upstream=20557.89 Downstream=20557.89  
 Upstream num= 2

Width Elev Width Elev  
 6.5 1112.12 6.5 1147.12  
 Downstream num= 2  
 Width Elev Width Elev  
 6.5 1112.12 6.5 1147.12

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy  
 Momentum Cd = 1.2  
 Yarnell KVal = 1.05  
 Selected Low Flow Methods = Highest Energy Answer

High Flow Method  
 Energy Only

Additional Bridge Parameters

Add Friction component to Momentum  
 Do not add Weight component to Momentum  
 Class B flow critical depth computations use critical depth  
 inside the bridge at the upstream end  
 Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 218.96

INPUT  
 Description: Downstream face of SR 153 Bridge

Station Elevation Data num= 27  

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev            | Sta     | Elev | Sta | Elev |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|------|-----|------|
| 19456.79 | 1138.319464.29  | 1137.8819489.35 | 1119.9219499.81 | 1120.24         | 19527.2         | 1108.43 |      |     |      |
| 19575.01 | 1108.9819638.48 | 1109.219694.95  | 1110.18         | 19764.4         | 1110.6419823.34 | 1111.8  |      |     |      |
| 19828.52 | 1112.9619896.81 | 1113.0519965.33 | 1113.5720032.89 | 1114.0420105.85 | 1115.22         |         |      |     |      |
| 20175.18 | 1115.7520247.98 | 1115.3420326.04 | 1114.6820392.18 | 1113.8420465.08 | 1114.27         |         |      |     |      |
| 20485.85 | 1127.6120496.63 | 1127.6220529.33 | 1137.8620537.91 | 1138.0620572.86 | 1125.53         |         |      |     |      |
| 20600.86 | 1126.0420641.85 | 1124.96         |                 |                 |                 |         |      |     |      |

Manning's n Values num= 3  

| Sta      | n Val       | Sta          | n Val | Sta | n Val |
|----------|-------------|--------------|-------|-----|-------|
| 19456.79 | .0519456.79 | .03520537.91 | .05   |     |       |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19456.7920537.91 570 812.27 860 .1 .3

Ineffective Flow num= 2  

| Sta L            | Sta R   | Elev | Permanent |
|------------------|---------|------|-----------|
| 19456.7919456.79 | 1138.3  | F    |           |
| 20537.9120641.85 | 1138.06 | F    |           |

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 218.80

INPUT  
 Description:

Station Elevation Data num= 213  

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|
| 19230.12 | 1145.7219275.95 | 1144.61         | 19298.4         | 1146.4          | 19303.6         | 1146.3219362.21 | 1144.89 |     |      |
| 19364.55 | 1142.5219366.35 | 1144.7819389.24 | 1137.1119390.52 | 1124.6719391.85 | 1124.72         |                 |         |     |      |
| 19416.06 | 1133.0219425.99 | 1136.0419434.92 | 1136.1119474.23 | 1136.5619480.09 | 1136.7          |                 |         |     |      |
| 19492.34 | 1126.6219519.89 | 1108.6919533.48 | 1108.2319592.78 | 1108.619642.24  | 1107.82         |                 |         |     |      |
| 19715.63 | 1107.9219775.16 | 1108.819831.61  | 1110.09         | 19872.3         | 1110.6          | 19895.6         | 1111.17 |     |      |
| 19928.19 | 1111.2219966.84 | 1111.37         | 20037.5         | 1111.6620055.76 | 1111.6120162.44 | 1111.16         |         |     |      |
| 20198.37 | 1111.3220274.27 | 1112.2520332.25 | 1112.220384.73  | 1111.9120452.41 | 1111.49         |                 |         |     |      |
| 20471.54 | 1111.5220477.22 | 1115.2820493.52 | 1126.7120502.73 | 1126.5920535.08 | 1136.21         |                 |         |     |      |
| 20552.07 | 1135.7220585.31 | 1123.0820621.87 | 1122.9920643.27 | 1123.4820749.27 | 1126.27         |                 |         |     |      |
| 20777.33 | 1126.7220801.74 | 1127.4520805.79 | 1125.8120853.71 | 1107.2120865.69 | 1108.14         |                 |         |     |      |
| 20888.39 | 1110.7220913.05 | 1112.7220935.57 | 1111.5820977.88 | 1110.5920986.53 | 1110.1          |                 |         |     |      |
| 21008.91 | 1110.4221050.42 | 1112.2521079.18 | 1113.3721102.02 | 1115.6121107.04 | 1115.92         |                 |         |     |      |
| 21135.68 | 1115.1221151.72 | 1115.1321172.25 | 1116.8621188.09 | 1117.0221191.61 | 1117.22         |                 |         |     |      |
| 21258.86 | 1118.3221268.91 | 1119.47         | 21306.2         | 1122.6221325.06 | 1123.6921339.08 | 1123.44         |         |     |      |
| 21382.66 | 1127.8221405.75 | 1128.7521437.56 | 1131.0421454.27 | 1131.1521463.86 | 1130.58         |                 |         |     |      |
| 21487.06 | 1129.5221495.49 | 1128.3321514.26 | 1122.8421537.98 | 1116.6821552.41 | 1116.52         |                 |         |     |      |
| 21626.08 | 1117.7221671.81 | 1118.7221688.82 | 1119.1921700.81 | 1119.4421702.91 | 1119.68         |                 |         |     |      |
| 21721.4  | 1119.72 21734.8 | 1119.83         | 21761.1         | 1120.1521780.54 | 1120.1821807.71 | 1120.51         |         |     |      |
| 21822.7  | 1119.8221848.49 | 112621868.08    | 1125.9821893.84 | 1132.2421938.83 | 1142.21         |                 |         |     |      |
| 21950.2  | 1145.3221956.33 | 1144.7721973.66 | 1143.6222005.29 | 1144.6122008.68 | 1144.69         |                 |         |     |      |
| 22014.31 | 1143.2222068.94 | 1128.17         | 22071.3         | 1128.1222075.71 | 1126.422103.57  | 1121.49         |         |     |      |
| 22106.12 | 1121.8222113.78 | 1120.622125.91  | 1120.8422153.35 | 1122.24         | 22180.4         | 1123.66         |         |     |      |
| 22185.65 | 1125.3222195.49 | 1124.4922234.58 | 1134.1722241.99 | 1135.0522266.04 | 1141.5          |                 |         |     |      |
| 22272.8  | 1141.5222279.88 | 1143.4122314.52 | 1143.322318.47  | 1142.6422367.43 | 1139.38         |                 |         |     |      |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 22376.61 | 1139.2222424.35 | 1136.7122441.67 | 1136.3922484.91 | 1132.8322499.19 | 1132.64 |
| 22523.07 | 1132.1222552.05 | 1130.722597.93  | 1128.8422608.56 | 1128.0622634.89 | 1126.57 |
| 22654.45 | 1125.7222664.92 | 1126.0622741.48 | 1126.1422747.42 | 1126.6622755.92 | 1127.08 |
| 22779.02 | 1126.3222788.15 | 1126.0322812.66 | 1127.9222823.63 | 1128.8622839.46 | 1129.08 |
| 22899.37 | 1129.6222912.58 | 1129.04 22915.4 | 1129.2122947.98 | 1128.6622957.23 | 1128.54 |
| 22968.67 | 1128.52 22995   | 1128.923026.16  | 1126.1923056.06 | 1128.1823079.88 | 1127.74 |
| 23086.46 | 1127.8223110.22 | 1128.1823151.93 | 1128.6823168.97 | 1131.2123194.38 | 1134.73 |
| 23290.06 | 1136.22 23301.8 | 1136.4723310.28 | 1136.4923321.13 | 1136.3923395.93 | 1136.04 |
| 23443.43 | 1135.92 23480.6 | 1135.9423509.86 | 1136.0223529.21 | 1137.9723552.04 | 1140.38 |
| 23569.37 | 1139.0223592.68 | 1137.8123612.48 | 1138.3423630.71 | 1142.5623636.28 | 1142.99 |
| 23652.07 | 1142.0223682.97 | 1139.9323713.99 | 1142.6423764.56 | 1140.823773.35  | 1141.22 |
| 23815.87 | 1143.4223837.66 | 1144.2423901.64 | 1138.7423913.74 | 1137.8223925.44 | 1140.18 |
| 23940.8  | 1143.1223974.94 | 1138.423984.38  | 1136.6824000.07 | 1135.624033.62  | 1135.54 |
| 24086.89 | 1135.5224105.37 | 1135.5124131.81 | 1135.724293.82  | 1137.4824310.94 | 1137.67 |
| 24349.58 | 1137.2224361.28 | 1137.26 24407   | 1139.6124417.24 | 1140.1624455.36 | 1135.66 |
| 24462.51 | 1134.5224534.87 | 1135.2424550.07 | 1135.2724640.38 | 1136.4924663.08 | 1140.18 |
| 24668.93 | 1141.0224699.68 | 1143.7424715.43 | 1141.624720.82  | 1142.2124732.47 | 1143.32 |
| 24750.1  | 1143.1224759.71 | 1141.6524790.49 | 1136.6424804.27 | 1136.6724813.68 | 1137.02 |
| 24876.08 | 1137.0224898.65 | 1137.1924949.53 | 1137.47         |                 |         |

|                               |              |     |
|-------------------------------|--------------|-----|
| Manning's n Values            | num=         | 3   |
| Sta n Val Sta n Val Sta n Val |              |     |
| 19230.12 .0519480.09          | .03520535.08 | .05 |

|                          |                             |              |        |
|--------------------------|-----------------------------|--------------|--------|
| Bank Sta: Left Right     | Lengths: Left Channel Right | Coeff Contr. | Expan. |
| 19480.0920535.08         | 480 483.7 500               | .1           | .3     |
| Ineffective Flow num=    | 2                           |              |        |
| Sta L Sta R Elev         | Permanent                   |              |        |
| 19230.1219480.09 1136.7  | F                           |              |        |
| 20535.0824949.53 1136.21 | F                           |              |        |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 218.71

INPUT  
Description:

|  |                 |                 |                 |                 |         |
|--|-----------------|-----------------|-----------------|-----------------|---------|
| Station Elevation Data                       | num=            | 291             |                 |                 |         |
| Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev |                 |                 |                 |                 |         |
| 13108.87 1140.5213278.13                     | 1140.6513307.83 | 1140.513369.82  | 1140.5813396.93 | 1140.92         |         |
| 13681.94 1141.1213897.73                     | 1139.2513907.57 | 1138.9814314.75 | 1141.6214476.52 | 1141.57         |         |
| 14689.5 1134.82 15041.7                      | 1132.3815083.77 | 1132.815151.48  | 1133.0515504.29 | 1133.56         |         |
| 15564.72 1134.9215830.77                     | 1136.3816062.47 | 1137.2816238.42 | 1137.2816416.42 | 1138.35         |         |
| 16480.68 1136.1216485.06                     | 1135.6116492.54 | 1137.0116507.64 | 1137.6216531.61 | 1135.17         |         |
| 16537.1 1135.1216566.43                      | 1135.9416604.42 | 1137.3516704.47 | 1135.5916721.25 | 1135.37         |         |
| 16727.23 1135.02 16808.6                     | 1134.6616818.38 | 1134.6716874.33 | 1134.8516906.02 | 1134.77         |         |
| 16975.84 1134.5216982.59                     | 1134.5817030.46 | 1134.5417080.83 | 1134.9517122.75 | 1135.15         |         |
| 17174.22 1135.6217207.36                     | 1136.45 17218.2 | 1136.7617224.56 | 1136.5617340.33 | 1135.95         |         |
| 17601.54 1134.02 17628                       | 1133.8817647.96 | 1133.5717657.08 | 1133.417666.42  | 1131.24         |         |
| 17724.79 1134.0217772.56                     | 1135.29 17777.1 | 1132.317790.25  | 1132.4617836.23 | 1132.87         |         |
| 18016.48 1132.0218128.88                     | 1131.3518194.29 | 1131.42 18238   | 1131.4518243.61 | 1132.76         |         |
| 18256.49 1134.7218278.83                     | 1131.35 18287   | 1131.4618316.96 | 1132.0618323.31 | 1132.5          |         |
| 18332.92 1133.0218344.89                     | 1132.6518358.07 | 1132.1718382.67 | 1132.1718587.59 | 1131.9          |         |
| 18623.24 1132.2218624.56                     | 1132.6 18746.1  | 1135.0218749.34 | 1134.8218766.91 | 1134.54         |         |
| 18775.97 1133.1218795.74                     | 1131.39 18814.3 | 1132.1818834.44 | 1130.9718838.62 | 1132.48         |         |
| 18846.35 1136.1218864.57                     | 1141.118879.51  | 114118912.85    | 1139.8518930.83 | 1139.37         |         |
| 18944.55 1139.8218973.23                     | 1139.6619001.84 | 1139.6819025.44 | 1133.519066.86  | 1122.14         |         |
| 19083.85 1120.5219144.47                     | 1120.4619171.15 | 1120.16 19215.4 | 1120.119224.64  | 1122.1          |         |
| 19233.12 1120.1219300.65                     | 1119.9319361.77 | 1120.5219378.92 | 1124.2619405.15 | 1133.59         |         |
| 19410.65 1133.0219436.06                     | 1132.5819437.98 | 1133.1919444.77 | 1136.4619448.35 | 1136.63         |         |
| 19476.64 1137.4219500.13                     | 1126.619501.23  | 1126.2519509.49 | 1125.9819528.44 | 1115.55         |         |
| 19542.17 1108.1219564.08                     | 1107.919571.57  | 1107.73 19630.1 | 1107.519746.14  | 1108.09         |         |
| 19859.52 1110.0219892.83                     | 1110.9919921.72 | 1111.1720003.31 | 1111.2220074.85 | 1110.77         |         |
| 20166.82 1111.4220212.22                     | 1111.4220321.34 | 1112.0920337.16 | 1112.1520349.18 | 1111.96         |         |
| 20411.63 1111.1220450.83                     | 1110.9620472.69 | 1110.96 20504.8 | 1130.7620519.04 | 1133.77         |         |
| 20524.71 1134.7220547.92                     | 1135.3920556.12 | 1135.5920580.57 | 1128.5220603.69 | 1122.01         |         |
| 20612.35 1123.6220637.84                     | 1127.65 20641.6 | 1127.36 20677.4 | 1123.8320712.93 | 1121.62         |         |
| 20739.22 1120.5220808.72                     | 1116.7120856.68 | 1115.8920868.49 | 1115.6520875.65 | 1115.25         |         |
| 20940.08 1113.9221015.17                     | 1113.321108.82  | 111221109.54    | 1112.0321184.42 | 1112.4          |         |
| 21206.58 1112.7221258.63                     | 1114.3321369.54 | 1114.5721478.56 | 1114.29 21503.8 | 1114.54         |         |
| 21620.62 1114.8221626.81                     | 1114.6521638.76 | 1113.7621660.46 | 1114.0721684.09 | 1114.77         |         |
| 21719.47 1119.1221739.99                     | 1121.5721752.31 | 1123.1121757.21 | 1123.3421797.09 | 1124.47         |         |
| 21830.57 1125.2221858.67                     | 1125.5321923.95 | 1111.1921958.12 | 1111.3621967.64 | 1114.19         |         |
| 22011.58 1127.5222044.59                     | 1126.7722088.13 | 1119.3822090.44 | 1118.8522092.67 | 1119.17         |         |
| 22120.97 1122.12 22146.3                     | 1121.7222181.35 | 1121.8122189.51 | 1120.2822194.81 | 1122.09         |         |
| 22213.55 1129.1222229.71                     | 1132.2322266.38 | 1133.6922288.71 | 1136.622301.95  | 1137.15         |         |
| 22316.34 1137.4222365.48                     | 1138.9922375.39 | 1139.05 22387.6 | 1138.2722431.44 | 1135.21         |         |
| 22484.06 1134.8222493.44                     | 1135.6222540.73 | 1133.9622546.12 | 1134.3322556.56 | 1133.51         |         |
| 22566.44 1132.4222599.84                     | 1130.58 22620.5 | 1129.5622635.98 | 1128.2822664.49 | 1127.61         |         |
| 22685.81 1126.5222701.91                     | 1127.4722717.77 | 1127.9122736.68 | 1128.6522746.98 | 1129.22         |         |
| 22783.01 1128.3222829.29                     | 1126.9322848.45 | 1126.7622869.88 | 1126.6522899.64 | 1125.38         |         |
| 22923.72 1124.7222943.69                     | 1124.26 22948.5 | 1124.0922986.22 | 1122.5823019.17 | 1121.3          |         |
| 23039.9                                      | 1120.7223068.79 | 1118.2123110.64 | 1115.7423133.17 | 1118.3823146.64 | 1120.57 |
| 23171.6                                      | 1123.1223212.57 | 1126.5523232.65 | 1126.9723281.57 | 1126.8623307.15 | 1127.2  |
| 23324.89                                     | 1127.5223375.35 | 1127.7823416.55 | 1129.4123447.76 | 1130.6723475.32 | 1131.66 |
| 23493.64                                     | 1132.7223506.14 | 1133.223535.86  | 1134.2523602.75 | 1135.2523621.85 | 1135.29 |

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|          |                 |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|
| 23649.32 | 1135.8223722.66 | 1135.0323759.51 | 1134.89         | 23785.2         | 1134.9323802.65 | 1135.17 |
| 23884.02 | 1135.8223946.91 | 1135.85         | 23971.7         | 1138.823990.48  | 1138.0824014.85 | 1138.8  |
| 24039.25 | 1137.22         | 24044.2         | 1137.4724063.83 | 1139.2924124.43 | 1139.3124168.68 | 1138.97 |
| 24191.37 | 1138.7224236.32 | 1139.2424243.91 | 1139.4224299.17 | 1139.4424337.13 | 1138.8          |         |
| 24392.36 | 1139.6224404.14 | 1138.7924453.95 | 1136.4324469.33 | 1136.8924501.82 | 1138.31         |         |
| 24514.8  | 1137.6224528.89 | 1137.424550.09  | 1135.8124574.19 | 1136.0524611.53 | 1136.16         |         |
| 24618.78 | 1136.2224640.33 | 1136.724672.32  | 1137.6624677.18 | 1137.8424706.31 | 1140.93         |         |
| 24724.88 | 1140.6224729.54 | 1140.3424740.65 | 1139.3424765.72 | 1136.5924778.49 | 1134.48         |         |
| 24788.01 | 1134.4224815.55 | 1134.2824847.55 | 1137.2724859.82 | 1138.5224883.17 | 1139.1          |         |
| 24886.57 | 1139.2224910.41 | 1140.9624915.93 | 1140.6124941.99 | 1141.0224953.01 | 1138.68         |         |
| 24968.51 | 1140.5224999.47 | 1136.0525033.02 | 1137.3225040.52 | 1137.4225101.43 | 1138.07         |         |
| 25106.12 | 1137.82         |                 |                 |                 |                 |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 13108.87 .0519476.64 .03520556.12 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19476.6420556.12 508.24 508.24 508.24 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 13108.8719476.64 1137.42 F  
 20556.1225106.12 1135.59 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 218.61

INPUT  
 Description:

Station Elevation Data num= 310

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev            | Sta             | Elev    | Sta     | Elev |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|---------|------|
| 13289.47 | 1139.7213346.61 | 1139.8113482.79 | 1139.7613524.63 | 1139.8613688.14 | 1139.54         |                 |         |         |      |
| 13855.31 | 1139.6213919.18 | 1139.2714090.61 | 1138.3414232.62 | 1139.1714635.33 | 1137.84         |                 |         |         |      |
| 14873.58 | 1131.2214982.81 | 1130.0215191.31 | 1131.9415261.79 | 1132.6415396.44 | 1133.14         |                 |         |         |      |
| 15844.49 | 1134.42         | 16148.8         | 1135.5716363.69 | 1136.5416707.94 | 1135.24         |                 |         |         |      |
| 16983.62 | 1133.8217212.16 | 1132.4417224.59 | 1133.417233.14  | 1132.2917346.12 | 1133.36         |                 |         |         |      |
| 17604.77 | 1131.9217635.65 | 1131.6617645.26 | 1132.9717654.92 | 1134.3217662.71 | 1134.29         |                 |         |         |      |
| 17810.2  | 1131.9217837.84 | 1131.6317849.59 | 1131.3317930.21 | 1130.8117940.16 | 1130.78         |                 |         |         |      |
| 17952.59 | 1131.02         | 17980.9         | 1130.4118009.99 | 1132.318183.13  | 1132.5318387.14 | 1133.43         |         |         |      |
| 18397.06 | 1131.7218417.48 | 1131.7818465.37 | 1131.7118493.07 | 1130.918564.61  | 1131.8          |                 |         |         |      |
| 18609.66 | 1132.1218660.73 | 1132.9518672.49 | 1133.49         | 18695.9         | 1134.0918703.44 | 1134.27         |         |         |      |
| 18755.9  | 1136.2218816.02 | 112018839.85    | 1113.3918852.69 | 1111.1218869.25 | 1111.42         |                 |         |         |      |
| 18881.75 | 1111.2218916.84 | 1110.0518921.76 | 1109.6118952.11 | 1108.318955.67  | 1108.05         |                 |         |         |      |
| 18981.82 | 1114.5219033.97 | 1118.919055.59  | 1118.6419074.97 | 1117.9519079.61 | 1120.14         |                 |         |         |      |
| 19087.8  | 1122.1219098.23 | 1125.519124.36  | 1124.2419140.32 | 1123.7119170.65 | 1123.27         |                 |         |         |      |
| 19193.18 | 1123.2219207.75 | 1127.4719228.42 | 1133.2319242.79 | 1132.9819263.02 | 1132.89         |                 |         |         |      |
| 19306.93 | 1127.2219312.04 | 1126.2419319.87 | 1126.2519366.08 | 1126.1519392.22 | 1127.63         |                 |         |         |      |
| 19396.62 | 1127.6219421.36 | 1129.3319427.81 | 1130.7519442.05 | 1134.3719449.11 | 1134.69         |                 |         |         |      |
| 19482.22 | 1135.7219499.23 | 1126.76         | 19504.2         | 1124.3319514.31 | 1124.8819528.38 | 1118.12         |         |         |      |
| 19541.06 | 1109.5219630.81 | 1108.3119658.86 | 1107.919730.79  | 1108.419780.04  | 1109.32         |                 |         |         |      |
| 19894.68 | 1111.1219936.32 | 1111.8419984.17 | 1111.2320102.24 | 1110.1420114.96 | 1109.95         |                 |         |         |      |
| 20134.74 | 1108.3220205.93 | 1105.2320220.47 | 1104.0320244.57 | 1104.820310.43  | 1108.93         |                 |         |         |      |
| 20324.3  | 1110.0220346.83 | 1110.1820468.14 | 1110.1220471.94 | 1109.9320491.39 | 1122.19         |                 |         |         |      |
| 20494.43 | 1123.9220504.21 | 1125.1920506.16 | 1125.7720537.49 | 1134.3520544.75 | 1134.7          |                 |         |         |      |
| 20551.74 | 1134.4220579.63 | 1123.8920586.05 | 112220608.67    | 1121.01         | 20662           | 1118.35         |         |         |      |
| 20674.67 | 1118.4220680.85 | 1117.2920694.05 | 1111.9320719.15 | 1111.6420728.31 | 1111.1          |                 |         |         |      |
| 20752.41 | 1110.5220762.22 | 1110.3720766.77 | 1110.4220790.72 | 1112.5620816.61 | 1112.96         |                 |         |         |      |
| 20839.45 | 1112.92         | 20861.8         | 1113.4720877.19 | 1112.7320884.38 | 1112.6320897.32 | 1112.68         |         |         |      |
| 20916.71 | 1113.0220990.92 | 1113.0721014.14 | 1113.0521065.12 | 1112.4121077.78 | 1112.13         |                 |         |         |      |
| 21117.21 | 1111.7221156.35 | 1111.7221163.52 | 1111.5521238.03 | 1111.8821256.45 | 1112.04         |                 |         |         |      |
| 21291.06 | 1112.1221327.34 | 1112.6421360.83 | 1113.0321389.39 | 1113.0721433.02 | 1113.37         |                 |         |         |      |
| 21460.08 | 1113.2221531.74 | 1114.2721537.12 | 1114.321549.16  | 1115.321603.09  | 1114.42         |                 |         |         |      |
| 21607.6  | 1114.2221670.02 | 1114.57         | 21678.5         | 1114.63         | 21688.3         | 1116.4721710.39 | 1118.46 |         |      |
| 21720.35 | 1119.5221727.17 | 1119.3721766.26 | 1122.07         | 21770.7         | 1121.8621792.95 | 1122.58         |         |         |      |
| 21804.93 | 1123.8221837.79 | 1129.0321846.13 | 1128.6821906.58 | 1126.7621909.29 | 1127.46         |                 |         |         |      |
| 21929.66 | 1130.3221936.81 | 1131.72         | 21962.3         | 1133.4321980.76 | 1132.7121985.59 | 1131.85         |         |         |      |
| 21993.41 | 1131.5221996.46 | 1131.6422045.28 | 1132.4822052.37 | 1132.1722059.43 | 1130.25         |                 |         |         |      |
| 22063.42 | 1129.9222076.54 | 1126.3522084.51 | 1126.222127.04  | 1125.3122132.06 | 1125.14         |                 |         |         |      |
| 22150.35 | 1126.6222178.85 | 1124.7622191.89 | 1123.0422200.66 | 1122.77         | 22216.9         | 1122.6          |         |         |      |
| 22251.77 | 1125.8222265.75 | 1130.6922296.06 | 1129.5322308.55 | 1129.1622323.19 | 1128.48         |                 |         |         |      |
| 22367.62 | 1129.4222418.57 | 1130.4122437.08 | 1132.4922455.65 | 1131.6622486.69 | 1126.57         |                 |         |         |      |
| 22502.31 | 1125.9222519.76 | 1127.09         | 22562.1         | 1126.4222602.04 | 1126.0322615.19 | 1124.97         |         |         |      |
| 22623.99 | 1125.5222655.54 | 1123.9522660.03 | 1125.2322676.42 | 1125.9922690.98 | 1126.12         |                 |         |         |      |
| 22711.45 | 1125.8222730.92 | 1125.4722784.64 | 1125.6522809.85 | 1125.722842.56  | 1125.92         |                 |         |         |      |
| 22895.97 | 1126.1222931.57 | 1126.6622956.78 | 1126.8923019.28 | 1127.2123038.53 | 1126.66         |                 |         |         |      |
| 23047.09 | 1126.7223076.14 | 1127.4523083.49 | 1127.5923128.33 | 1127.9723138.25 | 1127.73         |                 |         |         |      |
| 23155.78 | 1128.0223235.12 | 1128.72         | 23303.4         | 1128.81         | 23334.8         | 1128.69         | 23363   | 1128.68 |      |
| 23393.12 | 1129.0223442.45 | 1129.1223477.82 | 1129.6323509.64 | 1130.4423529.43 | 1131.03         |                 |         |         |      |
| 23554.38 | 1131.4223596.01 | 1131.4323619.55 | 1131.623629.35  | 1131.5223639.35 | 1131.32         |                 |         |         |      |
| 23687.46 | 1131.6223751.05 | 1126.8123803.22 | 1126.0323830.76 | 1124.6723869.72 | 1123.57         |                 |         |         |      |
| 23929.15 | 1121.8223934.29 | 1120.9623957.84 | 1120.9223973.32 | 1122.5224001.29 | 1121.73         |                 |         |         |      |
| 24018.6  | 1120.5224053.99 | 1120.3824070.18 | 1119.6524089.61 | 1119.9224139.08 | 1120.79         |                 |         |         |      |
| 24148.68 | 1122.4224159.19 | 1123.1424170.32 | 1130.5924184.95 | 1131.1924197.81 | 1137.29         |                 |         |         |      |
| 24205.02 | 1137.0224232.89 | 1128.3424279.33 | 1129.5524318.02 | 1126.8824353.43 | 1126.05         |                 |         |         |      |
| 24413.74 | 1128.6224459.64 | 1130.124527.69  | 1130.8924546.54 | 1131.6224611.74 | 1134.64         |                 |         |         |      |

Corr\_Effective\_SkyHarbor.rep

|          |                 |         |                 |                 |                 |         |
|----------|-----------------|---------|-----------------|-----------------|-----------------|---------|
| 24627.28 | 1136.42         | 24674.5 | 1136.9424685.21 | 1136.8924700.05 | 1137.0324713.14 | 1137.07 |
| 24799.3  | 1137.1224804.43 |         | 1137.14 24807.1 | 1137.5624821.43 | 1142.5824826.53 | 1141.63 |
| 24850.13 | 1139.4224872.13 |         | 1137.6424876.66 | 1137.0424944.38 | 1136.9824960.25 | 1137.09 |
| 24973.27 | 1140.32 24980.7 |         | 1142.4425022.17 | 1136.5725025.06 | 1136.2825048.29 | 1135.6  |
| 25064.13 | 1135.82 25071.8 |         | 1135.8225105.59 | 1136.0925116.87 | 1137.0525132.09 | 1138.63 |
| 25153.27 | 1138.3225164.17 |         | 1138.4 25189.7  | 1139.8525214.04 | 1135.5625223.69 | 1134.53 |
| 25242.27 | 1137.8225245.39 |         | 1138.4725248.39 | 1138.125256.53  | 1136.725272.47  | 1137.03 |
| 25348.94 | 1137.8225355.24 |         | 1131.1325359.63 | 1136.9125370.17 | 1138.0225396.51 | 1138.96 |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 13289.47 .0519482.22 .03520544.75 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19482.2220544.75 510 503.43 503.43 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 13289.4719482.22 1135.72 F  
 20544.7525396.51 1134.7 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 218.52

INPUT

Description:

| Station Elevation Data |                 | num= 293        |                 | Sta Elev        |         | Sta Elev |      | Sta Elev |      | Sta Elev |      |
|------------------------|-----------------|-----------------|-----------------|-----------------|---------|----------|------|----------|------|----------|------|
| Sta                    | Elev            | Sta             | Elev            | Sta             | Elev    | Sta      | Elev | Sta      | Elev | Sta      | Elev |
| 13520.55               | 1138.8213713.31 | 1138.713814.93  | 1138.9113884.19 | 1138.7713954.33 | 1138.79 |          |      |          |      |          |      |
| 14334.5                | 1137.0214700.72 | 1134.3415036.75 | 1130.5215107.35 | 1129.8415258.92 | 1129.89 |          |      |          |      |          |      |
| 15377.61               | 1130.1215613.04 | 1132.14 15863.4 | 1132.8416367.69 | 1134.5516490.01 | 1135.1  |          |      |          |      |          |      |
| 16574.82               | 1134.7216937.95 | 1135.5917050.22 | 1134.6617078.18 | 1134.47 17107.8 | 1133.94 |          |      |          |      |          |      |
| 17136.29               | 1133.5217179.59 | 1133.0917232.08 | 1132.6217279.59 | 1132.52 17321.3 | 1132.19 |          |      |          |      |          |      |
| 17369.88               | 1132.8217412.05 | 1132.6117523.48 | 1132.3117566.99 | 1131.97 17625   | 1131.48 |          |      |          |      |          |      |
| 17694.84               | 1131.1217720.53 | 1131.217760.84  | 1131.4917779.61 | 1131.7317856.52 | 1133.03 |          |      |          |      |          |      |
| 17893.45               | 1132.8218025.87 | 1132.9318040.83 | 1132.7818114.49 | 1132.7518192.45 | 1132.61 |          |      |          |      |          |      |
| 18208.3                | 1132.5218225.32 | 1133.1518235.41 | 1132.918236.01  | 1131.7618240.94 | 1130.87 |          |      |          |      |          |      |
| 18278.92               | 1130.4218333.44 | 1129.5118352.18 | 1129.2818457.54 | 1127.59 18481.2 | 1127.55 |          |      |          |      |          |      |
| 18498.98               | 1126.7218527.85 | 1126.618554.49  | 1125.1218599.47 | 1125.6618650.02 | 1125.8  |          |      |          |      |          |      |
| 18712.82               | 1125.4218730.78 | 1125.5218795.31 | 1127.0418810.33 | 1126.9218831.47 | 1120.43 |          |      |          |      |          |      |
| 18835.93               | 1119.3218838.89 | 1119.218857.05  | 1116.4718866.76 | 1116.3118868.51 | 1116.72 |          |      |          |      |          |      |
| 18877.42               | 1121.0218880.85 | 1121.118881.54  | 1120.4718887.17 | 1120.5618910.52 | 1125.26 |          |      |          |      |          |      |
| 18920.95               | 1124.3218941.87 | 1128.4118947.26 | 1128.7718960.51 | 1130.64 18981.6 | 1134.82 |          |      |          |      |          |      |
| 18994.16               | 1134.6219018.91 | 1134.5419050.87 | 1140.9319159.68 | 1160.5319182.71 | 1160.32 |          |      |          |      |          |      |
| 19323.86               | 1159.62 19325   | 1159.1219327.65 | 1156.6919344.49 | 1150.0219382.47 | 1135.77 |          |      |          |      |          |      |
| 19388.43               | 1135.8219432.59 | 1135.3919466.14 | 1135.219479.04  | 1135.7519487.75 | 1131.17 |          |      |          |      |          |      |
| 19501.3                | 1123.2219510.55 | 1123.719534.34  | 1111.2 19551.4  | 1110.5119665.81 | 1108.91 |          |      |          |      |          |      |
| 19705.17               | 1108.3219721.96 | 1108.2619884.09 | 1109.3319912.48 | 1109.5520050.27 | 1109.87 |          |      |          |      |          |      |
| 20057.61               | 1109.92 20166.9 | 1108.3120204.03 | 1106.5520244.72 | 1104.9620285.16 | 1103.49 |          |      |          |      |          |      |
| 20301.5                | 1103.7220369.81 | 1106.7620374.23 | 1107.1220394.86 | 1107.820436.47  | 1109.09 |          |      |          |      |          |      |
| 20477.38               | 1109.1220481.03 | 1111.7620496.77 | 1122.5320506.37 | 1123.0120538.63 | 1139.16 |          |      |          |      |          |      |
| 20553.62               | 1133.8220591.55 | 1121.8620594.81 | 1120.820613.68  | 1117.0320635.98 | 1114.74 |          |      |          |      |          |      |
| 20675.54               | 1101.8220678.64 | 1101.1520682.23 | 1101.1420739.38 | 1099.2720788.35 | 1099.88 |          |      |          |      |          |      |
| 20801.92               | 1100.1220829.02 | 1103.3420859.02 | 1105.4520894.78 | 1104.93 20900.6 | 1105.37 |          |      |          |      |          |      |
| 20903.68               | 1105.8220932.83 | 1110.8120940.53 | 1110.9420991.79 | 1114.2121058.92 | 1120.42 |          |      |          |      |          |      |
| 21085.19               | 1120.0221088.69 | 1119.5421095.04 | 1118.3321131.47 | 1119.1521156.06 | 1119.39 |          |      |          |      |          |      |
| 21195.65               | 1119.2221219.18 | 1119.1321276.88 | 1118.26 21291.3 | 1118.19 21338.7 | 1123.97 |          |      |          |      |          |      |
| 21356.23               | 1126.3221399.91 | 1132.9121407.41 | 1132.9121452.82 | 1134.2721536.82 | 1134.02 |          |      |          |      |          |      |
| 21555.83               | 1134.0221588.13 | 1134.0921636.88 | 1134.1221650.96 | 1134.0821685.86 | 1134.47 |          |      |          |      |          |      |
| 21690.23               | 1134.4221700.14 | 1134.3821733.05 | 1134.6221757.59 | 1134.8821778.07 | 1135.92 |          |      |          |      |          |      |
| 21802.82               | 1139.7221804.23 | 1139.7121846.73 | 1139.3721857.32 | 1138.2721880.77 | 1133.22 |          |      |          |      |          |      |
| 21896.4                | 1129.7221903.63 | 1128.6521921.13 | 1128.6721933.54 | 1127.3621956.75 | 1126.54 |          |      |          |      |          |      |
| 21973.29               | 1125.3222020.69 | 1124.2922035.17 | 1124.05 22056.8 | 1130.5922089.51 | 1139.03 |          |      |          |      |          |      |
| 22103.55               | 1138.0222107.83 | 1137.9922119.52 | 1138.6222126.06 | 1137.28 22163.1 | 1128.8  |          |      |          |      |          |      |
| 22182.81               | 1133.1222194.22 | 1136.0222210.19 | 1136.8222244.21 | 1136.9622256.17 | 1136.55 |          |      |          |      |          |      |
| 22267.18               | 1131.1222274.88 | 1128.65 22290.5 | 1128.0322312.48 | 1127.8922319.59 | 1124.32 |          |      |          |      |          |      |
| 22323.34               | 1121.8222374.63 | 1120.8922379.21 | 1120.7522386.82 | 1120.1722403.27 | 1125.88 |          |      |          |      |          |      |
| 22410.86               | 1127.7222415.81 | 1128.222424.66  | 1128.2122436.88 | 1122.7622441.79 | 1121.25 |          |      |          |      |          |      |
| 22453.68               | 1121.4222527.01 | 1123.8322532.78 | 1123.6722534.67 | 1122.4722554.12 | 1124.9  |          |      |          |      |          |      |
| 22567.56               | 1127.1222589.46 | 1125.7722635.82 | 1125.9922659.76 | 1124.7922672.91 | 1124.08 |          |      |          |      |          |      |
| 22677.08               | 1124.1222703.59 | 1125.4322710.13 | 1128.19 22728.4 | 1133.4622748.95 | 1133.27 |          |      |          |      |          |      |
| 22794.47               | 1132.1222834.69 | 1132.022844.73  | 1131.9122923.99 | 1133.3222935.86 | 1133.42 |          |      |          |      |          |      |
| 22965.43               | 1133.2222981.01 | 1133.5323053.43 | 1134.0823080.08 | 1134.23100.03   | 1132.76 |          |      |          |      |          |      |
| 23174.29               | 1132.5223197.67 | 1132.4923225.76 | 1131.9223498.31 | 1128.6323522.66 | 1129.33 |          |      |          |      |          |      |
| 23529.18               | 1129.0223544.73 | 1128.6123582.11 | 1128.7623598.43 | 1128.9323711.29 | 1130.42 |          |      |          |      |          |      |
| 23742.87               | 1130.82 23753.9 | 1131.23845.68   | 1132.4123893.22 | 1129.9323934.64 | 1130.54 |          |      |          |      |          |      |
| 23960.7                | 1131.2224032.63 | 1132.7924099.62 | 1134.6124106.15 | 1134.5224183.48 | 1133.65 |          |      |          |      |          |      |
| 24227.48               | 1133.7224250.72 | 1133.3424308.44 | 1131.8924349.13 | 1131.2724384.59 | 1130.69 |          |      |          |      |          |      |
| 24410.64               | 1130.6224453.99 | 1131.5424470.86 | 1131.7724490.94 | 1131.9724539.99 | 1132.05 |          |      |          |      |          |      |
| 24662.52               | 1132.6224667.04 | 1132.5924710.85 | 1132.0124728.61 | 1132.1124749.63 | 1129.03 |          |      |          |      |          |      |
| 24760.99               | 1129.5224799.79 | 1131.2624828.87 | 1133.5824914.09 | 1134.2824924.15 | 1134.17 |          |      |          |      |          |      |
| 24953                  | 1133.4224972.86 | 1133.7424988.29 | 1133.8125008.74 | 1134.3925053.34 | 1134.45 |          |      |          |      |          |      |
| 25062.05               | 1134.2225126.76 | 1134.84 25187.6 | 1134.72 25219.2 | 1134.2825232.25 | 1133.77 |          |      |          |      |          |      |
| 25245.66               | 1133.1225279.69 | 1133.8325286.23 | 1134.1625289.47 | 1134.1225314.49 | 1134.36 |          |      |          |      |          |      |
| 25348.03               | 1137.3225375.67 | 1136.9925378.89 | 1136.8725383.39 | 1137.0925408.48 | 1136.77 |          |      |          |      |          |      |
| 25435.96               | 1135.62 25444.9 | 1135.9625468.99 | 1136.3525552.04 | 1135.9125558.09 | 1135.84 |          |      |          |      |          |      |

25566.36 1135.52 25567.2 1135.7525571.42 Corr\_Effective\_SkyHarbor.rep  
1135.9

Manning's n Values num= 3  
Sta n Val Sta n Val Sta n Val  
13520.55 .0519487.75 .03520553.62 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
19487.7520553.62 520 496.02 460 .1 .3  
Ineffective Flow num= 2  
Sta L Sta R Elev Permanent  
13520.5519487.75 1131.17 F  
20553.6225571.42 1133.82 F

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 218.42

INPUT  
Description:

| Station Elevation Data |                 | num= 280        |                 |                 |         |         |      |
|------------------------|-----------------|-----------------|-----------------|-----------------|---------|---------|------|
| Sta                    | Elev            | Sta             | Elev            | Sta             | Elev    | Sta     | Elev |
| 13775.01               | 1137.2214010.58 | 1137.114024.29  | 1137.1314476.92 | 1135.73         | 14664.6 | 1134.85 |      |
| 15249.61               | 1131.2215272.55 | 1131.0915497.69 | 1130.3615619.78 | 1130.3415827.23 | 1131.14 |         |      |
| 16085.44               | 1132.0216488.61 | 1133.3916651.78 | 1133.8916720.37 | 1133.8216732.64 | 1133.89 |         |      |
| 16747.49               | 1133.8217267.73 | 1132.3117278.36 | 1132.0317295.48 | 1131.4517322.39 | 1130.42 |         |      |
| 17469.28               | 1124.5217486.47 | 1124.76 17548.9 | 112617669.09    | 1122.4717792.62 | 1132.08 |         |      |
| 17835.52               | 1132.5217876.22 | 1133.4717910.24 | 1143.9417925.46 | 1148.4817942.58 | 1152.59 |         |      |
| 17951.24               | 1153.6217959.47 | 1151.2917971.21 | 1149.5418007.39 | 1149.6118021.48 | 1149.6  |         |      |
| 18076.85               | 1149.7218098.93 | 1149.7218120.08 | 1149.8218230.52 | 1150.8118247.11 | 1150.89 |         |      |
| 18361.71               | 1152.1218371.34 | 1152.0918405.87 | 1152.718450.66  | 1139.7518465.78 | 1135.22 |         |      |
| 18474.03               | 1135.8218490.29 | 1137.5618519.06 | 1129.6218528.95 | 1126.9618568.93 | 1125.33 |         |      |
| 18584.02               | 1129.4218596.35 | 1129.1518661.21 | 1127.7718663.21 | 1128.5318720.01 | 1148.29 |         |      |
| 18757.32               | 1160.0218760.54 | 1159.9618779.39 | 1159.2718835.55 | 1159.3918916.49 | 1159.03 |         |      |
| 19045.66               | 1158.7219319.48 | 1157.9719374.57 | 1157.9319417.64 | 1139.4919430.47 | 1133.85 |         |      |
| 19443.1                | 1132.8219449.06 | 1133.1619466.92 | 1133.7419480.61 | 1133.619502.37  | 1124.26 |         |      |
| 19524.32               | 1114.6219564.21 | 1110.08 19571.3 | 1109.5119585.69 | 1109.3819627.57 | 1109.84 |         |      |
| 19738.83               | 1108.3219816.62 | 1107.6619875.67 | 1108.4419888.83 | 1108.4319942.45 | 1109.14 |         |      |
| 20038.66               | 1110.2220092.59 | 1108.8220123.26 | 1108.0920163.88 | 1107.0520218.93 | 1105.9  |         |      |
| 20266.68               | 1105.1220272.84 | 1103.6820385.12 | 1105.7520394.06 | 1106.1620401.77 | 1105.88 |         |      |
| 20412.72               | 1106.5220467.02 | 1108.1220482.46 | 1107.8620499.22 | 1119.1520502.07 | 1121.19 |         |      |
| 20512.29               | 1121.5220536.34 | 1129.9320543.39 | 1132.320557.73  | 1133.0420566.34 | 1130.17 |         |      |
| 20582.27               | 1126.6220585.48 | 1125.6420594.97 | 1124.3220621.82 | 1119.5 20631.3  | 1121.63 |         |      |
| 20652.33               | 1124.8220668.26 | 1125.3820702.27 | 1129.4920710.06 | 1130.7520732.51 | 1133.52 |         |      |
| 20758.16               | 1133.6220795.49 | 1134.2820806.82 | 1131.2420847.88 | 1120.4520864.52 | 1116.87 |         |      |
| 20898.27               | 1116.7220944.31 | 1130.3420955.86 | 1130.0420972.57 | 1129.8421005.35 | 1120.26 |         |      |
| 21017.74               | 1115.6221036.21 | 1115.6621093.74 | 1131.4621102.08 | 1133.9221107.21 | 1133.89 |         |      |
| 21139.91               | 1133.5221173.22 | 1132.821186.04  | 1132.7221251.13 | 1132.96 21275.6 | 1132.63 |         |      |
| 21298.56               | 1132.6221347.39 | 1132.6721368.37 | 1132.6721373.25 | 1132.0621378.56 | 1131.81 |         |      |
| 21406.12               | 1131.6221442.19 | 1131.6121465.44 | 1129.7621476.37 | 1128.7321490.38 | 1129.27 |         |      |
| 21525.98               | 1130.7221556.47 | 1131.3921651.65 | 1133.2821678.33 | 1133.4621733.77 | 1133.91 |         |      |
| 21746.38               | 1133.9221762.15 | 1134.1321788.93 | 1133.7821846.42 | 1133.921880.42  | 1133.38 |         |      |
| 21911.5                | 1131.9221973.41 | 1131.3521986.11 | 1130.8222032.49 | 1131.82 22039.2 | 1130.95 |         |      |
| 22056.94               | 1128.1222063.39 | 1128.4922071.03 | 1127.4622087.39 | 1127.7422100.05 | 1125.79 |         |      |
| 22130.04               | 1119.3222141.04 | 1120.9722154.83 | 1120.9322204.54 | 1119.1622224.25 | 1120.37 |         |      |
| 22232.98               | 1120.2222247.02 | 1119.5222266.11 | 1120.37 22310   | 1107.6322315.56 | 1107.43 |         |      |
| 22357.67               | 1107.1222362.33 | 1107.1822383.86 | 1112.122420.72  | 1120.0722423.69 | 1120.21 |         |      |
| 22446.86               | 1119.02 22480   | 1119.322481.83  | 1119.25 22486.8 | 1126.1922500.99 | 1130.02 |         |      |
| 22531.09               | 1119.4222533.46 | 1119.3822556.26 | 1118.0822566.75 | 1116.8822569.13 | 1117.47 |         |      |
| 22577.1                | 1116.8222588.06 | 1119.0222596.98 | 1120.5722609.35 | 1122.4122621.47 | 1126.2  |         |      |
| 22640.38               | 1126.2222662.28 | 1123.5522713.76 | 1122.7622722.87 | 1123.2222742.51 | 1124.99 |         |      |
| 22748.68               | 1124.3222764.92 | 1122.6322801.71 | 1125.1622827.81 | 1124.5322857.28 | 1123.7  |         |      |
| 22879.07               | 1133.02 22884.7 | 1135.4922887.08 | 1135.3622893.55 | 1134.522908.19  | 1134.48 |         |      |
| 22913.5                | 1134.4223065.86 | 1133.723176.13  | 1132.08 23301.7 | 1132.0123359.12 | 1132.08 |         |      |
| 23409.31               | 1131.3223692.08 | 1129.8923732.77 | 1127.7623760.65 | 1126.9523763.49 | 1126.75 |         |      |
| 23786.32               | 1127.2223812.67 | 1128.7823836.06 | 1129.623846.11  | 1129.823930.48  | 1131.22 |         |      |
| 23972.68               | 1131.4224063.93 | 1132.1324113.45 | 1132.64 24141.3 | 1133.124223.71  | 1134.03 |         |      |
| 24249.38               | 1134.1224295.28 | 1134.0224327.93 | 1134.124404.92  | 1134.6924410.12 | 1134.55 |         |      |
| 24465.19               | 1132.7224471.68 | 1132.6724546.64 | 1131.31 24597.6 | 1130.9524622.78 | 1130.8  |         |      |
| 24686.97               | 1131.5224688.17 | 1131.5924758.56 | 1131.2724761.02 | 1131.2424913.06 | 1131.74 |         |      |
| 24922.11               | 1131.6224944.11 | 1130.4324988.23 | 1131.2625003.98 | 1131.2625033.94 | 1131.67 |         |      |
| 25070.29               | 1132.5225102.72 | 1132.9725114.57 | 1132.6425116.25 | 1133.1825122.69 | 1131.96 |         |      |
| 25127.81               | 1131.6225153.98 | 1131.5325177.68 | 1131.2625187.58 | 1131.2525234.01 | 1131.35 |         |      |
| 25282.86               | 1131.3225300.51 | 1132.0325358.34 | 1132.1925365.57 | 1131.8725404.43 | 1133.73 |         |      |
| 25414.9                | 1133.8225448.77 | 1133.6925457.29 | 1133.825468.39  | 1133.625513.33  | 1133.53 |         |      |
| 25547.39               | 1136.8225565.27 | 1136.9225590.42 | 1135.7725626.59 | 1132.57 25655.8 | 1134.35 |         |      |
| 25661.35               | 1134.4225709.11 | 1134.9525724.62 | 1134.6625726.43 | 1133.47 25730.8 | 1134.24 |         |      |
| 25743.2                | 1133.7225745.24 | 1134.425797.56  | 1136.2725803.07 | 1137.0425849.59 | 1136.86 |         |      |

Manning's n Values num= 3  
Sta n Val Sta n Val Sta n Val  
13775.01 .0519480.61 .03520557.73 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
19480.6120557.73 520 502.97 490 .1 .3  
Ineffective Flow num= 2  
Sta L Sta R Elev Permanent

13775.0119480.61 1133.6 F  
20557.7325849.59 1133.04 F

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 218.33

INPUT

Description:

| Station Elevation Data |                 | num= 44         |                 | Sta Elev        |         | Sta Elev |                 | Sta Elev        |                 | Sta Elev        |                 |
|------------------------|-----------------|-----------------|-----------------|-----------------|---------|----------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Sta                    | Elev            | Sta             | Elev            | Sta             | Elev    | Sta      | Elev            | Sta             | Elev            | Sta             | Elev            |
| 19387.78               | 1146.2219429.55 | 1126.8319449.63 | 1128.2219472.34 | 1129.6919492.02 | 1120.71 | 19511.87 | 1112.1219534.79 | 1110.5219542.81 | 1110.06         | 19578.9         | 1110.6319663.53 |
| 19764.35               | 1108.4219769.36 | 1108.3119825.17 | 1106.9419868.37 | 1106.9219892.81 | 1105.66 | 19948.78 | 1102.2219973.71 | 1102.8619988.39 | 1103.1320011.72 | 1106.6820091.58 | 1103.83         |
| 20153.7                | 1101.4220209.26 | 1102.9820254.62 | 1104.0620337.67 | 1104.7320362.43 | 1105.03 | 20378.77 | 1105.1220387.77 | 1105.3520508.48 | 1107.7520514.91 | 1111.5520529.36 | 1121.06         |
| 20540.63               | 1121.3220571.05 | 1131.3320584.85 | 1132.8620606.94 | 1126.0220614.38 | 1128.78 | 20618.72 | 1129.9220652.72 | 1129.4720707.48 | 1129.120729.09  | 1129.5420739.18 | 1128.36         |
| 20744.96               | 1127.9220766.02 | 1129.220810.51  | 1129.6220886.12 | 1130.13         |         |          |                 |                 |                 |                 |                 |

| Manning's n Values |             | num= 3       |       | Sta n Val |       | Sta n Val |       |
|--------------------|-------------|--------------|-------|-----------|-------|-----------|-------|
| Sta                | n Val       | Sta          | n Val | Sta       | n Val | Sta       | n Val |
| 19387.78           | .0519472.34 | .03520584.85 | .05   |           |       |           |       |

| Bank Sta:        | Left     | Right    | Lengths:  | Left | Channel | Right | Coeff | Contr. | Expan. |  |
|------------------|----------|----------|-----------|------|---------|-------|-------|--------|--------|--|
|                  | 19472.34 | 20584.85 |           | 540  | 490.24  | 430   | .1    |        | .3     |  |
| Ineffective Flow | num= 2   |          | Permanent |      |         |       |       |        |        |  |
| Sta L            | Sta R    | Elev     |           |      |         |       |       |        |        |  |
| 19387.78         | 19472.34 | 1129.69  | F         |      |         |       |       |        |        |  |
| 20584.85         | 20886.12 | 1132.86  | F         |      |         |       |       |        |        |  |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 218.24

INPUT

Description:

| Station Elevation Data |                 | num= 324        |                 | Sta Elev        |                 | Sta Elev |                 | Sta Elev        |                 | Sta Elev        |                 |
|------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Sta                    | Elev            | Sta             | Elev            | Sta             | Elev            | Sta      | Elev            | Sta             | Elev            | Sta             | Elev            |
| 14281.15               | 1134.4214294.13 | 1134.3414327.07 | 1134.7514444.34 | 1134.41         | 14473.6         | 1134.16  | 14812.04        | 1133.02         | 14850.4         | 1132.6814891.53 | 1132.5114908.34 |
| 14933.22               | 1131.4214941.85 | 1131.5714974.01 | 1132.4515003.74 | 1130.7415020.27 | 1129.88         | 15079.03 | 1130.1215088.04 | 1130.3715242.58 | 1129.6215489.93 | 1128.3715549.45 | 1129.47         |
| 15564.61               | 1129.4215608.44 | 1128.3915682.97 | 1126.8515687.27 | 1127.5115695.05 | 1129.23         | 15710.18 | 1129.1215715.16 | 1126.3215719.03 | 1126.2715721.97 | 1129.4115752.54 | 1129.77         |
| 15752.69               | 1128.7215758.62 | 1128.9515770.79 | 1129.9115776.01 | 1128.5          | 15788.1         | 1126.41  | 15819.42        | 1125.1215835.05 | 1126.9815867.55 | 1125.6315876.02 | 1125.9          |
| 15954.59               | 1126.6215982.54 | 1126.6415994.01 | 1127.9116063.25 | 1127.916151.28  | 1128.28         | 16207.83 | 1128.1216278.28 | 1128.7316282.62 | 1128.7516355.64 | 1129.4316388.04 | 1129.7          |
| 16531.67               | 1129.3216541.91 | 1129.2816583.04 | 1129.1616727.63 | 1129.4816824.43 | 1130.12         | 17061.82 | 1131.1217085.46 | 1131.1217100.15 | 1131.4117106.77 | 1128.9617117.12 | 1132.68         |
| 17126.18               | 1132.5217134.91 | 1130.9117146.65 | 1130.4717165.73 | 1129.9517174.12 | 1130.04         | 17185.89 | 1129.7217191.97 | 1130.0617318.87 | 1130.9617332.85 | 1128.0617334.08 | 1127.74         |
| 17402.7                | 1128.0217412.17 | 1127.5817472.29 | 1127.92         | 17497.5         | 1127.8217532.13 | 1127.79  | 17545.25        | 1128.1217566.52 | 1127.9317671.52 | 1127.47         | 17788.5         |
| 17823.82               | 1127.1217839.63 | 1127.2117863.14 | 1127.1417870.61 | 1127.2817934.37 | 1126.39         | 18023.41 | 1125.2218035.66 | 1124.6518059.85 | 1124.1418125.47 | 1124.2518138.27 | 1124.1          |
| 18168.78               | 1123.7218186.76 | 1123.8518198.69 | 1123.5718233.59 | 1125.2218242.95 | 1124.89         | 18246.99 | 1125.4218267.59 | 1126.35         | 18314.4         | 1145.0518321.06 | 1147.2318345.79 |
| 18349.32               | 1147.1218373.63 | 1157.6418376.41 | 1158.94         | 18433.9         | 1158.9418630.99 | 1159.16  | 18777.37        | 1158.2218818.63 | 1147.1218867.89 | 1134.02         | 18880.1         |
| 18901.85               | 1130.7218916.95 | 1127.9918935.45 | 1124.1518951.27 | 1121.3918982.36 | 1121.13         | 19005.36 | 1123.6219011.28 | 1124.1719015.06 | 1124.3119031.88 | 1124.6219106.52 | 1150.26         |
| 19125.17               | 1148.9219181.33 | 1150.4619228.76 | 1151.1219283.57 | 1152.1319313.78 | 1138.07         | 19331.42 | 1129.12         | 19342.2         | 1129.5219354.24 | 1128.11         | 19367.3         |
| 19402.58               | 1126.3219443.72 | 1110.4919471.62 | 1108.9619480.14 | 1108.7219516.23 | 1108.61         | 19589.68 | 1108.5219697.03 | 1107.7819730.91 | 1107.4619746.01 | 1107.4519769.76 | 1106.83         |
| 19868.35               | 1104.8219883.89 | 1104.3819931.39 | 1103.7119957.76 | 1102.9420042.64 | 1100.09         | 20126.23 | 1102.4220176.46 | 1104.7120207.92 | 1105.8220250.28 | 1104.9620326.23 | 1105.85         |
| 20432.28               | 1111.4220433.99 | 1111.5720471.71 | 1128.9120485.96 | 1129.2620523.63 | 1130.32         | 20544.5  | 1131.4220568.69 | 1131.7220603.51 | 1130.0620701.54 | 1126.7520702.21 | 1126.74         |
| 20813.09               | 1128.3220826.16 | 1129.0120863.31 | 1130.4720894.59 | 1131.8620903.36 | 1131.83         | 20970.77 | 1131.9220996.41 | 1131.7421048.71 | 1131.6921056.52 | 1131.321080.73  | 1129.75         |
| 21108.17               | 1129.2221228.87 | 1126.3821241.08 | 1126.2821263.84 | 1125.0521272.69 | 1126.12         | 21322.72 | 1128.6221331.62 | 1129.1521340.68 | 1129.2521364.71 | 1129.2521401.73 | 1130.43         |
| 21452.16               | 1131.7221476.08 | 1131.5521492.69 | 1130.9521504.29 | 1130.8121528.64 | 1130.78         | 21545.85 | 1130.8221577.95 | 1131.0921623.11 | 1131.9421660.11 | 1132.6621702.15 | 1133.07         |
| 21744.94               | 1133.22         | 21774.1         | 1132.7721789.64 | 1132.4121839.52 | 1132.82         | 21913.79 | 1133.3222022.05 | 1134.08         | 22073           | 1134.5222076.85 | 1134.5922200.69 |
| 22214.11               | 1135.9222287.79 | 1136.4622314.82 | 1136.49         | 22325.6         | 1136.9422363.39 | 1126.35  | 22406.05        | 1116.2222426.12 | 1115.8422470.29 | 1118.6922488.42 | 1121.2922498.19 |
| 22507.98               | 1123.0222525.74 | 1126.1322567.51 | 1124.522578.13  | 1125.0122586.38 | 1124.21         | 22647.15 | 1122.6222666.66 | 1122.8422681.19 | 1122.9322705.18 | 1121.8722736.27 | 1123.46         |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |                 |                 |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 22749.25 | 1121.9222756.63 | 1121.1922784.53 | 1118.1722790.26 | 1117.74         | 22815.2         | 1117.21         |
| 22841.03 | 1117.4222876.59 | 1137.0822878.62 | 1137.8522910.16 | 1137.0122922.83 |                 | 1136.98         |
| 23114.14 | 1135.6223169.47 | 1135.12         | 23215.7         | 1134.5123407.55 | 1133.5323450.64 | 1133.54         |
| 23490.55 | 1133.3223528.56 | 1132.9923563.62 | 1132.5823799.81 | 1134.0223848.96 |                 | 1134.2          |
| 23871.12 | 1133.62         | 23921.1         | 1132.8123993.48 | 1129.5624002.94 | 1129.1924049.87 | 1127.72         |
| 24092.02 | 1130.3224104.78 | 1131.224133.99  | 1131.4824163.13 | 1131.8124173.94 |                 | 1131.87         |
| 24244.74 | 1129.2224277.59 | 1128.6924286.89 | 1128.5824303.01 | 1128.6324345.78 |                 | 1128.87         |
| 24387.44 | 1130.0224411.12 | 1130.6524423.87 | 1131.11         | 24460.4         | 1132.6624490.97 | 1133.13         |
| 24506.05 | 1133.5224531.86 | 1133.7424575.75 | 1134.2424649.38 | 1133.5124700.08 |                 | 1131.91         |
| 24754.03 | 1131.0224776.59 | 1130.6824817.88 | 1128.7824822.08 | 1128.5624842.73 |                 | 1128.7          |
| 24894.53 | 1129.5224961.15 | 1130.59         | 24972.7         | 1130.6925001.71 | 1130.2825084.39 | 1128.84         |
| 25096.93 | 1130.3225109.76 | 1133.3225129.07 | 1131.1825136.25 | 1130.5425145.94 |                 | 1130.84         |
| 25171.53 | 1132.02         | 25181.2         | 1129.0925186.07 | 1130.6125187.12 | 1131.1625249.47 | 1130.57         |
| 25258.1  | 1130.5225264.74 | 1130.6225299.93 | 1130.4725328.56 | 1129.525343.06  |                 | 1129.19         |
| 25363.92 | 1129.4225309.79 | 1129.5825409.45 | 1130.0825420.07 | 1130.2125436.16 |                 | 1131.43         |
| 25469.58 | 1131.0225521.34 | 1131.0325613.95 | 1130.7225666.19 | 1131.225710.72  |                 | 1130.91         |
| 25731.38 | 1132.1225741.87 | 1131.3725760.39 | 1129.625768.13  | 1131.0725782.49 |                 | 1134.11         |
| 25787.4  | 1133.9225792.25 | 1134.1525810.17 | 1131.5825817.06 | 1130.6925835.57 |                 | 1134.69         |
| 25872.44 | 1129.82         | 25891.8         | 1131.54         | 25901.1         | 1132.8225922.95 | 1131.4925964.82 |
| 25969.18 | 1131.0225975.96 | 1130.2225978.38 | 1130.0625982.79 | 1130.6925987.59 |                 | 1130.5          |
| 25991.84 | 1131.9226007.52 | 1132.4526009.17 | 1132.6826057.44 |                 |                 | 1132.49         |

Manning's n Values

|          |             |     |              |   |     |       |
|----------|-------------|-----|--------------|---|-----|-------|
| Sta      | n Val       | Sta | num=         | 3 | Sta | n Val |
| 14281.15 | .0519402.58 |     | .03520471.71 |   |     | .05   |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

|          |          |     |       |     |    |    |
|----------|----------|-----|-------|-----|----|----|
| 19402.58 | 20471.71 | 530 | 499.8 | 460 | .1 | .3 |
|----------|----------|-----|-------|-----|----|----|

Ineffective Flow num= 2

|          |           |         |           |
|----------|-----------|---------|-----------|
| Sta L    | Sta R     | Elev    | Permanent |
| 14281.15 | 19402.58  | 1126.32 | F         |
| 20471.71 | 216057.44 | 1128.91 | F         |

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 218.14

INPUT

Description:

Station Elevation Data num= 318

| Sta      | Elev    | Sta | Elev |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|-----|------|
| 14350.76 | 1133.52 | 14360.5  | 1133.31 | 14380.3  | 1133.11 | 14402.86 | 1132.43 | 14523.31 | 1132.52 |     |      |
| 14558.91 | 1132.62 | 14601.58 | 1133.64 | 14607.6  | 1132.87 | 14614.45 | 1132.83 | 14640.8  | 1133.49 |     |      |
| 14643.11 | 1133.52 | 14662.14 | 1130.74 | 14674.8  | 1130.19 | 14682.93 | 1129.34 | 14744.46 | 1128.81 |     |      |
| 14768.12 | 1128.32 | 14773.04 | 1129.1  | 14787.2  | 1129.84 | 14806.51 | 1131.36 | 14824.82 | 1131.2  |     |      |
| 14866.74 | 1131.62 | 14881.86 | 1131.71 | 14910.06 | 1131.56 | 14927.4  | 1131.55 | 14943.48 | 1133.02 |     |      |
| 14952.89 | 1132.82 | 14977.11 | 1132.26 | 14989.12 | 1132.21 | 15017.11 | 1132.28 | 15033.54 | 1130.96 |     |      |
| 15048.73 | 1129.62 | 15056.11 | 1129.41 | 15085.71 | 1129.28 | 15209.5  | 1128.49 | 15261.62 | 1128.47 |     |      |
| 15295.84 | 1127.72 | 15419.85 | 1127.05 | 15690.95 | 1125.35 | 15720.15 | 1125.07 | 15785.69 | 1124.2  |     |      |
| 15800.05 | 1124.12 | 15804.38 | 1124.95 | 15816.3  | 1126.69 | 15819.09 | 1127.78 | 15835.48 | 1127.64 |     |      |
| 15874.31 | 1128.12 | 15894.58 | 1127.03 | 15895.96 | 1127.06 | 15900.13 | 1126.43 | 15906.72 | 1125.7  |     |      |
| 15930.36 | 1123.52 | 15936.63 | 1123.93 | 15947.56 | 1124.02 | 15974.16 | 1124.07 | 16016.36 | 1123.95 |     |      |
| 16077.77 | 1124.92 | 16092.84 | 1125.18 | 16119.47 | 1125.22 | 16337.61 | 1126.48 | 16489.75 | 1127.5  |     |      |
| 16571.31 | 1128.02 | 16583.51 | 1128.83 | 16603.58 | 1128.65 | 16652.76 | 1127.91 | 16711.29 | 1129.82 |     |      |
| 16721.78 | 1129.82 | 16820.47 | 1128.96 | 16870.62 | 1129.35 | 17155.31 | 1129.66 | 17209.46 | 1129.76 |     |      |
| 17241.33 | 1130.12 | 17289.47 | 1128.77 | 17295.26 | 1128.57 | 17420.9  | 1129.31 | 17443.24 | 1129.34 |     |      |
| 17523.36 | 1127.92 | 17640.8  | 1126.95 | 17661.78 | 1126.63 | 17675.93 | 1127.61 | 17683.63 | 1126.09 |     |      |
| 17705.03 | 1127.42 | 17723.81 | 1128.03 | 17732.55 | 1127.99 | 17905.79 | 1126.41 | 17944.72 | 1126.81 |     |      |
| 17946.94 | 1126.72 | 17957.23 | 1125.42 | 17970.64 | 1125.31 | 17998.24 | 1125.49 | 18014    | 1126.49 |     |      |
| 18044.09 | 1126.32 | 18096.7  | 1125.48 | 18131.43 | 1124.99 | 18157.23 | 1124.72 | 18197.27 | 1124.16 |     |      |
| 18331.89 | 1122.32 | 18345.39 | 1125.11 | 18370.13 | 1127.71 | 18378.71 | 1127.44 | 18383.68 | 1128.51 |     |      |
| 18385.72 | 1128.72 | 18396.44 | 1128.58 | 18430.4  | 1139.94 | 18473.63 | 1148.58 | 18488.54 | 1149.32 |     |      |
| 18500.26 | 1149.12 | 18510.1  | 1149.01 | 18524.49 | 1152.44 | 18537.76 | 1154.09 | 18547.33 | 1153.73 |     |      |
| 18562.12 | 1152.62 | 18577.7  | 1151.15 | 18587.35 | 1150.32 | 18612.13 | 1148.66 | 18643.16 | 1147.19 |     |      |
| 18662.15 | 1147.12 | 18718.32 | 1147.52 | 18740.77 | 1148.62 | 18765.55 | 1147.68 | 18774.7  | 1147.03 |     |      |
| 18811.46 | 1144.02 | 18825.91 | 1142.15 | 18866.94 | 1139.52 | 18884.39 | 1138.06 | 18897.58 | 1135.82 |     |      |
| 18937.82 | 1128.12 | 18957.94 | 1128.18 | 18969.28 | 1127.73 | 18988    | 1128.74 | 19020.92 | 1129.31 |     |      |
| 19025.1  | 1129.82 | 19059.91 | 1121.53 | 19064.89 | 1121.44 | 19147    | 1120.85 | 19196.03 | 1121.23 |     |      |
| 19302.51 | 1121.72 | 19337.55 | 1125.89 | 19356.32 | 1126.22 | 19371.2  | 1126.78 | 19394.21 | 1117.47 |     |      |
| 19415.94 | 1108.82 | 19425.04 | 1108.42 | 19434.74 | 1108.15 | 19498.22 | 1108.21 | 19552.71 | 1108.84 |     |      |
| 19581.09 | 1109.12 | 19629.75 | 1109.07 | 19660.81 | 1109.44 | 19690.23 | 1105.95 | 19697.76 | 1105.12 |     |      |
| 19716.45 | 1104.72 | 19829.2  | 1100.97 | 19866.79 | 1099.92 | 19909.76 | 1099.56 | 19995.42 | 1098.7  |     |      |
| 20006.26 | 1098.92 | 20023.96 | 1099.36 | 20085.84 | 1101.27 | 20115.65 | 1102.09 | 20182.6  | 1104.08 |     |      |
| 20283    | 1105.72 | 20349.46 | 1106.85 | 20371.68 | 1107.34 | 20380.43 | 1107.61 | 20405.54 | 1109.69 |     |      |
| 20407.13 | 1110.52 | 20439.17 | 1129.71 | 20443.28 | 1129.52 | 20479.36 | 1127.37 | 20486.53 | 1127.57 |     |      |
| 20510.81 | 1128.42 | 20537.57 | 1128.81 | 20540.25 | 1128.69 | 20544.23 | 1128.91 | 20562.34 | 1129.39 |     |      |
| 20603.9  | 1129.82 | 20612.27 | 1129.92 | 20633.08 | 1130.35 | 20685.44 | 1130.69 | 20713.21 | 1130.99 |     |      |
| 20724.9  | 1131.02 | 20808.95 | 1130.41 | 20843.53 | 1130.69 | 20884.76 | 1130.91 | 20923.99 | 1131.18 |     |      |
| 21008.49 | 1132.42 | 21041.05 | 1132.68 | 21067.09 | 1133.18 | 21146.87 | 1133.31 | 21252.16 | 1130.74 |     |      |
| 21277.89 | 1130.72 | 21308.89 | 1130.52 | 21329.11 | 1130.78 | 21348.83 | 1130.67 | 21371.59 | 1130.9  |     |      |
| 21421.52 | 1131.92 | 21460.12 | 1132.64 | 21478.73 | 1133.11 | 21495.99 | 1132.73 | 21545.78 | 1130.83 |     |      |
| 21560.66 | 1130.62 | 21593.98 | 1129.71 | 21596.07 | 1129.85 | 21611.54 | 1129.69 | 21667.83 | 1130.7  |     |      |
| 21730.45 | 1132.42 | 21779.03 | 1133.32 | 21797.76 | 1133.62 | 21816.59 | 1133.56 | 21855.31 | 1133.1  |     |      |
| 22073.65 | 1134.92 | 22372.55 | 1137.33 | 22384.75 | 1137.42 | 22428.62 | 1135.42 | 22438.48 | 1134.84 |     |      |
| 22443.59 | 1134.92 | 22447.83 | 1134.09 | 22490.73 | 1119.32 | 22493.13 | 1118.34 | 22529.32 | 1119    |     |      |
| 22536.55 | 1119.72 | 22574.86 | 1118.84 | 22618.58 | 1120.46 | 22640.82 | 1119.51 | 22645.3  | 1119.16 |     |      |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 22669.98 | 1116.8222675.32 | 1116.4722697.34 | 1115.9622704.24 | 1116.49 22721.9 | 1116.02 |
| 22722.46 | 1116.12 22765.5 | 1118.13 22773.6 | 1117.7822832.46 | 1117.2422868.61 | 1116.84 |
| 22882.99 | 1117.2222920.52 | 1118.622958.38  | 1134.0822995.46 | 1137.623196.44  | 1137.29 |
| 23243.36 | 1137.3223337.14 | 1137.2323455.35 | 1136.1423586.54 | 1135.5423625.18 | 1135.23 |
| 23674.29 | 1135.2223740.74 | 1135.1723928.91 | 1134.723999.09  | 1134.1924023.54 | 1133.17 |
| 24073.23 | 1130.9224088.58 | 1130.3324125.81 | 1128.4624169.63 | 1130.9724178.41 | 1131.35 |
| 24251.68 | 1132.8224280.87 | 1131.7624321.48 | 1130.1524333.82 | 1129.7724363.84 | 1128.95 |
| 24421.49 | 1129.8224483.92 | 1130.2124515.57 | 1131.3824532.73 | 1132.0724581.95 | 1133.28 |
| 24615.01 | 1133.22 24653.2 | 1133.29 24709.3 | 1132.71 24725.8 | 1132.6224735.01 | 1132.43 |
| 24777.12 | 1132.0224856.35 | 1130.24 24865.8 | 1130.0624907.23 | 1127.8224920.27 | 1127.91 |
| 24973.31 | 1128.8225051.33 | 1129.1925079.85 | 1129.19 25153.6 | 1128.725188.05  | 1131.06 |
| 25223.43 | 1131.1225254.08 | 1132.3625269.45 | 1132.4525273.77 | 1132.0525317.22 | 1130    |
| 25328.61 | 1129.5225354.49 | 1129.5725380.43 | 1128.82 25385.4 | 1128.74 25436.9 | 1129.24 |
| 25502.21 | 1129.8225527.97 | 1129.1825535.81 | 1129.1225554.55 | 1129.67 25570.5 | 1129.47 |
| 25633.81 | 1130.4225699.62 | 1130.7925742.65 | 1131.27 25771.9 | 1131.4925792.08 | 1130.79 |
| 25835.89 | 1129.9225850.73 | 1133.9525853.04 | 1134.425866.15  | 1135.3325876.19 | 1133.97 |
| 25898.18 | 1132.5225909.01 | 1133.8125913.03 | 1133.7325938.93 | 1132.7125954.13 | 1130.96 |
| 25961.67 | 1130.0225966.17 | 1129.9725975.16 | 1130.526017.24  | 1130.5526055.88 | 1130.81 |
| 26064.78 | 1130.9226071.65 | 1130.6526202.12 | 1130.14         |                 |         |

|                    |       |         |              |
|--------------------|-------|---------|--------------|
| Manning's n Values |       | num=    | 3            |
| Sta                | n Val | Sta     | n Val        |
| 14350.76           | .05   | 19371.2 | .03520439.17 |

|                  |          |           |           |      |         |       |       |        |        |
|------------------|----------|-----------|-----------|------|---------|-------|-------|--------|--------|
| Bank Sta:        | Left     | Right     | Lengths:  | Left | Channel | Right | Coeff | Contr. | Expan. |
|                  | 19371.2  | 220439.17 |           | 570  | 508.89  | 460   |       | .1     | .3     |
| Ineffective Flow | num=     |           | 2         |      |         |       |       |        |        |
| Sta L            | Sta R    | Elev      | Permanent |      |         |       |       |        |        |
| 14350.76         | 19371.2  | 1126.78   | F         |      |         |       |       |        |        |
| 20439.17         | 26202.12 | 1129.71   | F         |      |         |       |       |        |        |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 218.04

INPUT  
Description:

|                        |                 |                 |                 |                 |         |     |      |     |      |
|------------------------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|
| Station Elevation Data | num=            | 130             |                 |                 |         |     |      |     |      |
| Sta                    | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev |
| 17025.05               | 1128.8217046.46 | 1128.7817139.85 | 1128.8 17265.6  | 1129.1 17285.3  | 1129.11 |     |      |     |      |
| 17339.8                | 1129.2217368.81 | 1129.8317375.93 | 1130.0817387.18 | 1130.2917399.25 | 1129.96 |     |      |     |      |
| 17425.14               | 1128.8217437.07 | 1128.61 17443.1 | 1127.7817467.12 | 1125.8717508.82 | 1124.67 |     |      |     |      |
| 17536.65               | 1125.1217568.13 | 1125.1317580.98 | 1124.517590.29  | 1124.5517737.66 | 1125.57 |     |      |     |      |
| 17892.94               | 1126.7217942.04 | 1126.7917951.06 | 1125.8318005.77 | 1121.79 18021   | 1121.66 |     |      |     |      |
| 18108.49               | 1120.6218113.14 | 1120.6818129.44 | 1120.4218131.07 | 1120.7418140.77 | 1121.48 |     |      |     |      |
| 18159.33               | 1120.9218165.64 | 1120.9318293.58 | 1121.6318321.22 | 1121.6618390.72 | 1123.39 |     |      |     |      |
| 18439.76               | 1124.22 18441.1 | 1123.8318457.03 | 1124.7718466.03 | 1123.99 18467.4 | 1123.29 |     |      |     |      |
| 18470.13               | 1122.82 18474.7 | 1123.0918485.79 | 1123.118515.24  | 1118.94 18517.3 | 1118.75 |     |      |     |      |
| 18549.38               | 1121.0218564.81 | 1121.4318595.58 | 1122.1718630.98 | 1123.4418644.41 | 1123.73 |     |      |     |      |
| 18659.16               | 1123.8218670.18 | 1128.4418672.29 | 1128.8418689.39 | 1128.1518707.18 | 1127.89 |     |      |     |      |
| 18714.82               | 1127.8218750.94 | 1127.6118765.73 | 1126.93 18771.4 | 1126.5618787.46 | 1125.68 |     |      |     |      |
| 18862.77               | 1124.3218887.84 | 1123.7918909.59 | 1123.6419049.37 | 1123.0519094.29 | 1124.08 |     |      |     |      |
| 19129.54               | 1123.1219132.79 | 1123.0419136.43 | 1129.5819145.96 | 1129.6219158.33 | 1128.81 |     |      |     |      |
| 19170.06               | 1129.02 19198.7 | 1124.119200.91  | 1123.8919219.25 | 1122.8719316.08 | 1122.24 |     |      |     |      |
| 19340.27               | 1125.6219351.62 | 1125.3119368.53 | 1125.7219373.14 | 1125.71 19383   | 1121.39 |     |      |     |      |
| 19413.55               | 1108.5219423.75 | 1108.27 19454.2 | 1108.1919510.81 | 1109.0419515.21 | 1108.94 |     |      |     |      |
| 19530.82               | 1108.8219539.61 | 1108.219596.44  | 1106.7619612.21 | 1106.619614.42  | 1106.13 |     |      |     |      |
| 19628.94               | 1102.3219678.34 | 1101.85 19708.5 | 1101.9819778.52 | 1100.0219799.29 | 1099.3  |     |      |     |      |
| 19818.75               | 1099.0219885.99 | 1097.6319934.83 | 1098.72 19989.8 | 1100.0320057.89 | 1100.96 |     |      |     |      |
| 20096.88               | 1101.9220130.66 | 1102.7620148.07 | 1103.0820181.53 | 1103.8920219.75 | 1104.45 |     |      |     |      |
| 20259.67               | 1105.3220339.61 | 1107.0420350.78 | 1107.2820367.87 | 1107.4720406.19 | 1107.97 |     |      |     |      |
| 20408.5                | 1108.02 20411.5 | 1109.6520446.86 | 1127.51 20467.7 | 1126.3120481.88 | 1125.45 |     |      |     |      |
| 20490.04               | 1125.9220513.05 | 1127.3920532.42 | 1127.6320536.37 | 1127.76 20537.8 | 1127.52 |     |      |     |      |
| 20549.12               | 1126.7220567.27 | 1127.7820581.06 | 1128.1920588.15 | 1127.8420618.54 | 1128.18 |     |      |     |      |
| 20620.89               | 1128.3220648.58 | 1128.45 20670.2 | 1129.9720705.59 | 1130.6120744.91 | 1131.56 |     |      |     |      |

|                    |              |              |       |
|--------------------|--------------|--------------|-------|
| Manning's n Values |              | num=         | 3     |
| Sta                | n Val        | Sta          | n Val |
| 17025.05           | .03519373.14 | .03520446.86 | .035  |

|                  |          |           |           |      |         |       |       |        |        |
|------------------|----------|-----------|-----------|------|---------|-------|-------|--------|--------|
| Bank Sta:        | Left     | Right     | Lengths:  | Left | Channel | Right | Coeff | Contr. | Expan. |
|                  | 19373.14 | 240446.86 |           | 540  | 508.91  | 460   |       | .1     | .3     |
| Ineffective Flow | num=     |           | 2         |      |         |       |       |        |        |
| Sta L            | Sta R    | Elev      | Permanent |      |         |       |       |        |        |
| 17025.05         | 19373.14 | 1125.71   | F         |      |         |       |       |        |        |
| 20446.86         | 20744.91 | 1127.51   | F         |      |         |       |       |        |        |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 217.95

INPUT  
Description:

|                        |      |     |
|------------------------|------|-----|
| Station Elevation Data | num= | 119 |
|------------------------|------|-----|

Corr\_Effective\_SkyHarbor.rep

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev |
|----------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|
| 17269.81 | 1127.2217273.65 | 1127.4317289.07 | 1128.9717434.97 | 1129.0217475.06 | 1129.01 |     |      |     |      |
| 17493.89 | 1129.02 17506.3 | 1127.78 17546.6 | 1127.1617678.95 | 1126.8817692.55 | 1126.87 |     |      |     |      |
| 17751.24 | 1126.1217816.86 | 1126.05 17839.6 | 1125.8617848.23 | 112317852.14    | 1121.54 |     |      |     |      |
| 17876.17 | 1121.6217936.73 | 1121.8217973.64 | 1121.58 18018.6 | 1121.2118087.43 | 1121.2  |     |      |     |      |
| 18147.97 | 1121.5218189.16 | 1121.5618196.58 | 1121.6718235.93 | 1120.6618249.03 | 1120.42 |     |      |     |      |
| 18334.83 | 1121.3218407.85 | 1121.7 18448.5  | 1122.09 18467.9 | 1122.3318500.62 | 1122.58 |     |      |     |      |
| 18563.9  | 1122.4218638.14 | 1122.6318712.75 | 1122.64 18765.5 | 1122.5118793.15 | 1122.56 |     |      |     |      |
| 18809.28 | 1122.82 18831   | 1122.8218971.29 | 1122.3719017.17 | 1122.3119080.19 | 1121.83 |     |      |     |      |
| 19143.83 | 1120.92 19163.6 | 1120.8719200.56 | 1120.1519203.44 | 1120.0319216.64 | 1119.87 |     |      |     |      |
| 19241.81 | 1120.1219247.01 | 1119.9219304.49 | 1119.8519309.51 | 1119.7119327.42 | 1121.53 |     |      |     |      |
| 19336.96 | 1120.5219344.65 | 1121.9319356.41 | 1121.7619373.44 | 1121.64 19392   | 1125.64 |     |      |     |      |
| 19396.21 | 1126.3219414.44 | 1125.8119423.35 | 1125.4419457.46 | 1107.04 19459.3 | 1106.46 |     |      |     |      |
| 19465.43 | 1105.3219478.29 | 1104.8319502.95 | 1103.2219508.31 | 1102.7319520.09 | 1101.41 |     |      |     |      |
| 19534.74 | 1102.4219561.92 | 1102.1119566.24 | 1102.119579.98  | 1101.2519594.74 | 1102.16 |     |      |     |      |
| 19601.92 | 1102.1219624.85 | 1103.3119633.23 | 1104.1519644.34 | 1104.1619679.09 | 1101.74 |     |      |     |      |
| 19718.32 | 1098.8219722.87 | 1098.6119748.34 | 1097.9219755.07 | 1097.1419785.83 | 1095.74 |     |      |     |      |
| 19850.29 | 1094.7219835.21 | 1094.59 19858.9 | 1095.3819871.17 | 1095.9419898.88 | 1096.54 |     |      |     |      |
| 19903.64 | 1096.5219955.08 | 1097.7120015.76 | 1099.53 20028.6 | 1099.6420053.19 | 1098.98 |     |      |     |      |
| 20096.73 | 1100.02 20112.7 | 1100.1120160.62 | 1104.7920177.69 | 1106.4220185.65 | 1106.31 |     |      |     |      |
| 20231.67 | 1105.8220255.62 | 1105.8520324.77 | 1105.9720340.48 | 1106.0720344.93 | 1106.18 |     |      |     |      |
| 20373.56 | 1106.62 20423.2 | 1107.3420458.01 | 1107.3420489.12 | 1122.0620495.39 | 1125.22 |     |      |     |      |
| 20526.71 | 1124.0220546.88 | 1124.9520551.73 | 1125.0420575.75 | 1127.6520590.74 | 1125.49 |     |      |     |      |
| 20615.29 | 1126.4220618.98 | 1126.4320712.77 | 1128.3820722.68 | 1128.54 20743.4 | 1128.19 |     |      |     |      |
| 20762.2  | 1129.4220768.52 | 1129.2920797.01 | 1129.2920837.27 | 1129.7          |         |     |      |     |      |

Manning's n Values num= 3

| Sta      | n Val        | Sta | n Val        | Sta | n Val |
|----------|--------------|-----|--------------|-----|-------|
| 17269.81 | .03519423.35 |     | .03520495.39 |     | .035  |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

| Left     | Right    | Left | Channel | Right  | Coeff | Contr. | Expan. |
|----------|----------|------|---------|--------|-------|--------|--------|
| 19423.35 | 20495.39 | 480  | 489.76  | 489.76 | .1    |        | .3     |

Ineffective Flow num= 2

| Sta L    | Sta R    | Elev    | Permanent |
|----------|----------|---------|-----------|
| 17269.81 | 19423.35 | 1125.44 | F         |
| 20495.39 | 20837.27 | 1125.22 | F         |

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 217.86

INPUT Description:

Station Elevation Data num= 171

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev |
|----------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|
| 17078.98 | 1129.1617117.34 | 1128.7217131.91 | 1128.8417144.52 | 1128.6517172.48 | 1128.67 |     |      |     |      |
| 17204.49 | 1128.6317221.97 | 1128.5217304.37 | 1127.4817352.83 | 1127.4417367.66 | 1127.6  |     |      |     |      |
| 17411.95 | 1127.22 17436.4 | 1127.1217508.42 | 1127.1417590.84 | 1127.2717616.69 | 1127.28 |     |      |     |      |
| 17630.56 | 1126.4717685.03 | 1126.2217785.59 | 1125.7117806.54 | 1125.5917906.06 | 1124.87 |     |      |     |      |
| 17936.31 | 1123.0917943.18 | 1123.0217953.79 | 1122.19 17954.8 | 1120.517967.12  | 1119.8  |     |      |     |      |
| 18025.43 | 1120.3818041.07 | 1121.02 18057.5 | 1120.5718082.12 | 1120.0418101.97 | 1120.43 |     |      |     |      |
| 18116.81 | 1120.6218227.91 | 1120.8218336.13 | 1120.2918346.49 | 1121.1718368.76 | 1121.13 |     |      |     |      |
| 18438.69 | 1121.1718469.08 | 1121.2218483.98 | 1121.4518499.75 | 1124.4918501.49 | 1123.7  |     |      |     |      |
| 18541.4  | 1106.6418551.36 | 1106.6218573.43 | 1106.7718605.75 | 1106.8318623.04 | 1106.91 |     |      |     |      |
| 18627.6  | 1106.8718659.96 | 1106.9218660.85 | 1106.8818684.48 | 1119.0518693.71 | 1123.94 |     |      |     |      |
| 18696.44 | 1123.7518728.94 | 1119.9218748.07 | 1119.81 18750.8 | 1119.7618782.11 | 1120.21 |     |      |     |      |
| 18823.37 | 1120.9818877.62 | 1121.9218882.44 | 1122.1218890.83 | 1122.0318957.44 | 1121.81 |     |      |     |      |
| 18998.75 | 1121.0519031.46 | 1120.22 19046.7 | 1120.0619060.05 | 1119.99 19070.2 | 1119.78 |     |      |     |      |
| 19085.41 | 1119.9719151.43 | 1119.3219186.68 | 1121.0219207.55 | 1121.2419307.48 | 1122.12 |     |      |     |      |
| 19373.63 | 1122.4219381.44 | 1122.0219403.68 | 1121.8619413.37 | 1124.2119416.58 | 1125.13 |     |      |     |      |
| 19437.06 | 1125.919456.28  | 1125.3219458.45 | 1124.7419462.82 | 1125.0119480.48 | 1124.01 |     |      |     |      |
| 19494.97 | 1118.0319522.47 | 1105.7219564.08 | 1105.2419596.01 | 1105.5 19619    | 1105.86 |     |      |     |      |
| 19653.41 | 1106.8119666.21 | 1106.6219676.03 | 1106.87 19701.3 | 1105.82 19726.7 | 1105.85 |     |      |     |      |
| 19734.12 | 1105.6319745.14 | 1104.3219761.36 | 1102.2619825.98 | 1090.7719847.42 | 1090.72 |     |      |     |      |
| 19875.54 | 1091.19884.18   | 1091.2219899.82 | 1091.319960.22  | 1094.7819992.54 | 1095.73 |     |      |     |      |
| 20002.61 | 1095.1520021.16 | 1095.12 20090.5 | 1095.2220097.42 | 1095.1720133.52 | 1096.34 |     |      |     |      |
| 20163.22 | 1097.09 20169.4 | 1097.9220205.62 | 1104.7320222.55 | 1104.8920273.85 | 1105.19 |     |      |     |      |
| 20306.43 | 1105.0420371.13 | 1105.2220392.57 | 1105.0920410.69 | 1105.3920522.58 | 1106.06 |     |      |     |      |
| 20553.05 | 1123.8320583.17 | 1124.5220601.67 | 1125.420605.56  | 1125.43 20611.6 | 1125.98 |     |      |     |      |
| 20620.46 | 1125.820636.41  | 1125.8220653.03 | 1124.3420660.32 | 1125.0320684.42 | 1127.63 |     |      |     |      |
| 20713.5  | 1127.5520806.16 | 1127.6220839.53 | 1127.7420853.48 | 1128.6420864.06 | 1129.41 |     |      |     |      |
| 20898.25 | 1128.8420935.28 | 1129.52 20984.1 | 1128.5721010.78 | 1127.0621020.26 | 1126.58 |     |      |     |      |
| 21043.59 | 1126.4121090.25 | 1126.2221109.74 | 1126.3521156.37 | 1126.4821174.01 | 1126.98 |     |      |     |      |
| 21207.33 | 1128.4421217.88 | 1128.8221250.75 | 1129.9521284.09 | 1129.921338.59  | 1130    |     |      |     |      |
| 21413.84 | 1129.5221436.95 | 1129.1221478.69 | 1128.3521507.42 | 1126.821525.41  | 1125.79 |     |      |     |      |
| 21549.84 | 1125.4321583.05 | 1125.5221640.05 | 1127.7621645.23 | 1127.921650.27  | 1128.28 |     |      |     |      |
| 21656.45 | 1128.3221740.28 | 1129.1221808.21 | 1128.1121821.16 | 1127.7621841.85 | 1126.86 |     |      |     |      |
| 21864.8  | 1126.0621904.39 | 1127.7221994.14 | 1129.3722058.96 | 1130.1122079.42 | 1130.45 |     |      |     |      |
| 22139.44 | 1130.9122161.17 | 1130.8222263.41 | 1131.9922295.96 | 1132.26 22396.5 | 1132.69 |     |      |     |      |
| 22411.39 | 1132.84         |                 |                 |                 |         |     |      |     |      |

Manning's n Values num= 3

| Sta      | n Val        | Sta | n Val        | Sta | n Val |
|----------|--------------|-----|--------------|-----|-------|
| 17078.98 | .03519437.06 |     | .035 20611.6 |     | .035  |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

19437.06 20611.6 470 512.67 540 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 17078.9819437.06 1125.9 F  
 20611.622411.39 1125.98 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 217.76

INPUT Description:

Station Elevation Data num= 105

| Sta      | Elev    |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| 18696.26 | 1133.62 | 18704.4  | 1131.36 | 18708.16 | 1128.66 | 18723.72 | 1115.16 | 18733.67 | 1115.16 |
| 18747.99 | 1114.92 | 18761.93 | 1120.84 | 18768.63 | 1123.83 | 18787.92 | 1123.12 | 18800.11 | 1122.57 |
| 18804.79 | 1123.82 | 18811.76 | 1125.39 | 18842.98 | 1130.54 | 18872.95 | 1133.48 | 18874.31 | 1133.67 |
| 18898.39 | 1129.72 | 18914.36 | 1125.42 | 18942.8  | 1125.77 | 18946.55 | 1125.91 | 18977.23 | 1119.74 |
| 18985.07 | 1119.72 | 18988.68 | 1118.71 | 18996.3  | 1118.62 | 19048.98 | 1119.27 | 19075.91 | 1119.48 |
| 19118.51 | 1116.42 | 19121.71 | 1116.32 | 19125.71 | 1116.19 | 19140.48 | 1116.58 | 19194.3  | 1117.82 |
| 19209.65 | 1118.41 | 19251.27 | 1118.32 | 19260.11 | 1116.38 | 19269.27 | 1116.19 | 19287.02 | 1115.61 |
| 19302.34 | 1116.09 | 19320.61 | 1116.82 | 19328.5  | 1117.51 | 19416.97 | 1119.36 | 19447.56 | 1118.84 |
| 19454.34 | 1118.98 | 19460.63 | 1119.72 | 19468.83 | 1121.82 | 19475.55 | 1123.71 | 19478.28 | 1123.78 |
| 19491.87 | 1124.73 | 19506.5  | 1124.92 | 19527.24 | 1124.11 | 19532.35 | 1123.83 | 19549.15 | 1116.68 |
| 19560.66 | 1111.67 | 19566.72 | 1108.72 | 19595.17 | 1107.52 | 19607.57 | 1107.59 | 19620.51 | 1107.36 |
| 19694.19 | 1105.72 | 19703.83 | 1105.62 | 19713.94 | 1105.73 | 19716.38 | 1105.56 | 19746.13 | 1105.67 |
| 19754.83 | 1105.77 | 19810.5  | 1106.02 | 19814.58 | 1104.44 | 19822.14 | 1101.99 | 19840.89 | 1095.76 |
| 19881.09 | 1096.19 | 19929.82 | 1095.12 | 19952.35 | 1094.83 | 19954.71 | 1094.62 | 20010.46 | 1094.31 |
| 20012.53 | 1094.52 | 20048.72 | 1094.32 | 20135.92 | 1095.17 | 20155.3  | 1095.17 | 20177.38 | 1094.66 |
| 20185.54 | 1095.54 | 20204.39 | 1096.92 | 20219.2  | 1096.59 | 20233.32 | 1097.18 | 20239.91 | 1097.12 |
| 20262.89 | 1097.73 | 20311.58 | 1100.42 | 20347.84 | 1103.64 | 20357.92 | 1104.72 | 20392.73 | 1119.5  |
| 20401.2  | 1123.24 | 20415.35 | 1123.72 | 20425.11 | 1123.29 | 20435.31 | 1123.26 | 20492.9  | 1123.25 |
| 20502.18 | 1123.32 | 20533.15 | 1123.42 | 20548.06 | 1123.20 | 20573.49 | 1122.93 | 20606.3  | 1122.75 |
| 20642.39 | 1123.09 | 20658.83 | 1124.32 | 20679.17 | 1124.59 | 20706.16 | 1125.02 | 20712.94 | 1124.83 |
| 20757.82 | 1125.82 | 20875.26 | 1126.12 | 20913.28 | 1126.11 | 20925.68 | 1126.18 | 20967.17 | 1127.11 |

Manning's n Values num= 3

| Sta      | n Val | Sta      | n Val | Sta     | n Val |
|----------|-------|----------|-------|---------|-------|
| 18696.26 | .035  | 19532.35 | .035  | 20401.2 | .035  |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

|          |         |     |        |     |    |    |
|----------|---------|-----|--------|-----|----|----|
| 19532.35 | 20401.2 | 440 | 496.98 | 560 | .1 | .3 |
|----------|---------|-----|--------|-----|----|----|

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 217.66

INPUT Description:

Station Elevation Data num= 372

| Sta      | Elev    |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| 13410.42 | 1125.22 | 13473.99 | 1125.03 | 13516.62 | 1133.25 | 13543.66 | 1139.63 | 13584.78 | 1136.76 |
| 13596.45 | 1136.02 | 13619.3  | 1138.61 | 13626.52 | 1137.81 | 13677.48 | 1132.79 | 13717.14 | 1130.46 |
| 13776.9  | 1128.92 | 13804.61 | 1128.29 | 13834.66 | 1128.25 | 13859.65 | 1129.03 | 13882.59 | 1129.32 |
| 13906.27 | 1124.42 | 13927    | 1118.07 | 13935.96 | 1118.05 | 13966.69 | 1126.11 | 13988.92 | 1126.15 |
| 14057.49 | 1126.22 | 14168.71 | 1126.09 | 14185.98 | 1124.75 | 14226.67 | 1134.14 | 14260.04 | 1141    |
| 14284.22 | 1141.32 | 14296.65 | 1141.49 | 14303.35 | 1135.95 | 14318.65 | 1125.28 | 14381.69 | 1125.14 |
| 14395.23 | 1126.02 | 14409.22 | 1125.81 | 14451.38 | 1124.97 | 14468.66 | 1125.52 | 14708.91 | 1125.6  |
| 14720.56 | 1125.62 | 14771.92 | 1125.82 | 14775.61 | 1126.19 | 14783.01 | 1126.43 | 14893.4  | 1126.53 |
| 15021.73 | 1126.42 | 15065.51 | 1126.41 | 15152.12 | 1126.54 | 15166.47 | 1127.57 | 15169.36 | 1126.59 |
| 15173.39 | 1124.42 | 15184.39 | 1127.43 | 15197.33 | 1123.97 | 15209.72 | 1124.21 | 15221.25 | 1124.22 |
| 15261.61 | 1124.32 | 15273.44 | 1124.27 | 15273.44 | 1123.97 | 15273.44 | 1123.86 | 15273.44 | 1124.48 |
| 15687.14 | 1124.72 | 15694.72 | 1122.57 | 15705.26 | 1122.71 | 15708.14 | 1122.61 | 15711.1  | 1121.35 |
| 15718.06 | 1117.82 | 15726.44 | 1114.26 | 15731.84 | 1117.15 | 15735.56 | 1118.44 | 15745.42 | 1121.99 |
| 15759.29 | 1122.72 | 15775.81 | 1123.17 | 15818.82 | 1122.72 | 15838.97 | 1122.71 | 15981.18 | 1122.7  |
| 16009.13 | 1122.62 | 16051.3  | 1123.08 | 16054.83 | 1123.06 | 16081.64 | 1123.26 | 16107.61 | 1123.64 |
| 16133.09 | 1123.62 | 16284    | 1123.43 | 16355.84 | 1123.59 | 16362.6  | 1123.57 | 16455.75 | 1123.81 |
| 16494.23 | 1123.72 | 16511.76 | 1123.81 | 16682.87 | 1123.76 | 16751.88 | 1123.82 | 16772.61 | 1124.22 |
| 16856.98 | 1124.52 | 16986.6  | 1124.87 | 16993.55 | 1122.11 | 16999.97 | 1119.13 | 17006.97 | 1121.98 |
| 17011.4  | 1123.52 | 17068.59 | 1123.74 | 17330.83 | 1125.17 | 17336.66 | 1124.89 | 17342.37 | 1124.35 |
| 17471.22 | 1124.12 | 17523.38 | 1123.95 | 17537.29 | 1123.87 | 17706.17 | 1122.68 | 17757.42 | 1122.27 |
| 17772.44 | 1121.82 | 17797.8  | 1122.14 | 17843.85 | 1122.14 | 17846.29 | 1122.11 | 17904.52 | 1122.49 |
| 17932.13 | 1122.12 | 17961.76 | 1121.64 | 18098.62 | 1119.16 | 18120.45 | 1119.38 | 18141.36 | 1116.65 |
| 18192.83 | 1117.92 | 18212.37 | 1118.47 | 18246.14 | 1117.11 | 18265.67 | 1117.92 | 18279.11 | 1118.82 |
| 18285.4  | 1118.82 | 18475.61 | 1118.09 | 18517.59 | 1117.91 | 18527.31 | 1117.47 | 18537.22 | 1117.52 |
| 18634.69 | 1117.22 | 18636.28 | 1117.17 | 18651.27 | 1117.83 | 18681.6  | 1117.77 | 18721.36 | 1117.35 |
| 18732.89 | 1121.62 | 18751.61 | 1128.04 | 18796.59 | 1126.84 | 18810.83 | 1126.53 | 18813.56 | 1125.44 |
| 18833.84 | 1116.62 | 18876.74 | 1116.05 | 18884.46 | 1120.14 | 18910.38 | 1115.88 | 18939.94 | 1115.85 |
| 18961.41 | 1115.52 | 19001.48 | 1115.23 | 19015.49 | 1114.81 | 19023.38 | 1114.91 | 19039.73 | 1116.1  |
| 19069.1  | 1118.42 | 19093.22 | 1118.52 | 19130.33 | 1118.26 | 19141.7  | 1118.02 | 19265.87 | 1123.41 |
| 19293.94 | 1126.72 | 19334.5  | 1126.45 | 19354.4  | 1126.27 | 19356.6  | 1125.91 | 19410.55 | 1116.47 |
| 19414.17 | 1115.92 | 19433.06 | 1113.65 | 19441.8  | 1113.65 | 19450.12 | 1117.14 | 19466.46 | 1124.6  |
| 19494.33 | 1124.22 | 19515.26 | 1123.93 | 19539.84 | 1123.28 | 19580.79 | 1110.19 | 19594.81 | 1105.07 |
| 19596.51 | 1105.12 | 19600.29 | 1104.31 | 19636.62 | 1104.57 | 19670.06 | 1104.43 | 19693.25 | 1104.22 |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 19724.56 | 1104.1219758.95 | 1104.4519793.46 | 1103.9219828.27 | 1103.3119869.42 | 1096.65 |
| 19875.54 | 1095.5219881.49 | 1095.519915.76  | 1094.46 19935.3 | 1094.4320012.91 | 1094.09 |
| 20134.14 | 1092.2220186.97 | 1091.5720267.56 | 1090.520280.62  | 1090.2620300.88 | 1090.68 |
| 20321.71 | 1090.7220370.15 | 1102.9220444.71 | 1104.0920457.16 | 1104.1820496.87 | 1104.89 |
| 20570.08 | 1104.5220595.78 | 1115.8220611.59 | 1123.0320626.26 | 1123.0920681.12 | 1123.32 |
| 20719.24 | 1124.1220730.66 | 1123.6620748.21 | 1118.19 20772.6 | 1120.0120794.31 | 1120.29 |
| 20806.14 | 1120.82 20820   | 1120.88 20835.7 | 1118.8920852.57 | 1117.8820859.93 | 1118.41 |
| 20897.72 | 1121.52 20914.2 | 1122.5120936.74 | 1123.08 21040   | 1125.1421080.02 | 1126.47 |
| 21118.54 | 1126.62 21153.4 | 1127.2721172.76 | 1127.3821190.21 | 1127.3921198.03 | 1127.2  |
| 21227.59 | 1125.8221237.84 | 1124.8721258.59 | 1123.5421286.08 | 1122.6621298.81 | 1122.32 |
| 21344.09 | 1123.1221362.52 | 1123.3721389.25 | 1124.0921423.61 | 1125.0921444.34 | 1125.81 |
| 21482.28 | 1127.0221551.91 | 1127.0921630.03 | 1127.6121686.22 | 1125.9721730.36 | 1124.62 |
| 21772.83 | 1122.9221807.93 | 1121.121829.36  | 1122.0221889.27 | 1126.0121908.41 | 1126.73 |
| 21957.53 | 1127.42 22029   | 1126.8222046.76 | 1126.2422096.45 | 1124.422107.92  | 1124.64 |
| 22134.75 | 1125.3222175.16 | 1126.04 22212.1 | 1126.7922282.56 | 1126.6422301.52 | 1126.64 |
| 22313.23 | 1126.5222360.42 | 1126.0822453.56 | 1126.23 22499.1 | 1125.8922568.82 | 1124.97 |
| 22600.22 | 1125.3222760.33 | 1125.6422795.48 | 1125.4122946.59 | 1126.9322961.54 | 1127.03 |
| 22973.66 | 1115.5222976.98 | 1112.9523014.87 | 1113.8223021.87 | 1113.92 23026.6 | 1114.35 |
| 23036.03 | 1115.4223084.59 | 1115.6723126.41 | 1114.8623160.75 | 1114.6823187.77 | 1117.22 |
| 23284.7  | 1114.8223287.36 | 1114.7823310.27 | 1113.4323319.93 | 1115.2123326.38 | 1114.53 |
| 23354.29 | 1113.3223358.17 | 1113.27 23362.3 | 1112.9523376.07 | 1112.8323397.66 | 1113.58 |
| 23413.46 | 1114.0223416.02 | 1126.9223422.05 | 1130.9323434.88 | 1129.3223444.61 | 1133.57 |
| 23449.55 | 1132.2223467.88 | 1128.7723476.08 | 1126.8523480.33 | 1126.0723513.25 | 1125.89 |
| 23526.72 | 1125.2223588.94 | 1124.43 23609.4 | 1124.4423623.44 | 1123.6923644.03 | 1123.23 |
| 23660.06 | 1123.2223672.26 | 1122.9923719.12 | 1123.2223727.25 | 1123.0523783.98 | 1122.31 |
| 23804.35 | 1122.6223833.72 | 1122.5523868.86 | 1122.33 23940.8 | 1121.5624000.97 | 1121.57 |
| 24011.32 | 1121.42 24030.5 | 1120.77 24034.9 | 1120.4224049.97 | 1120.8624086.64 | 1121.83 |
| 24097.36 | 1122.6224121.77 | 1125.1524250.12 | 1124.2824286.75 | 1124.1324299.77 | 1124.18 |
| 24318.71 | 1124.3224326.95 | 1125.1324337.31 | 1126.4924362.95 | 1126.5124415.05 | 1126.75 |
| 24453.48 | 1127.0224487.85 | 1127.3124508.31 | 1126.8624563.28 | 1125.8324611.54 | 1123.42 |
| 24670.84 | 1125.8224744.16 | 1127.1624817.27 | 1126.3424851.05 | 1125.9324875.81 | 1125.84 |
| 24908.85 | 1125.1224938.38 | 1124.3624984.44 | 1124.6724988.71 | 1124.6725017.47 | 1125.05 |
| 25071.65 | 1126.8225147.19 | 1128.3225219.12 | 1127.7325231.11 | 1127.2925271.87 | 1125.64 |
| 25310.51 | 1124.6225363.56 | 1122.9725398.47 | 1121.825417.31  | 1121.9525485.13 | 1122.59 |
| 25492.62 | 1123.1225553.87 | 1123.4925595.25 | 1123.33 25608.8 | 1122.8225616.61 | 1122.45 |
| 25621.07 | 1122.9225635.19 | 1124.5425679.65 | 1124.1225700.64 | 1123.4925714.87 | 1123.82 |
| 25764.3  | 1124.3225797.69 | 1124.39 25803.4 | 1124.8625840.75 | 1125.8725861.23 | 1124.39 |
| 25899.09 | 1123.1225943.38 | 1123.2325965.86 | 1123.0425997.55 | 1123.1526027.88 | 1123.15 |
| 26193.91 | 1123.5226231.58 | 1123.0726242.65 | 1122.7726261.99 | 1123.5426317.07 | 1125.66 |
| 26345.09 | 1125.9226357.86 | 1126.17 26374.6 | 1126.726383.03  | 1126.8226400.99 | 1126.52 |
| 26432.91 | 1122.7226436.28 | 1122.326439.46  | 1122.3526507.57 | 1124.68 26523.1 | 1123.63 |
| 26559.65 | 1122.9226568.23 | 1122.51         |                 |                 |         |

Manning's n Values num= 3

| Sta      | n Val        | Sta | n Val        | Sta | n Val |
|----------|--------------|-----|--------------|-----|-------|
| 13410.42 | .03519539.84 |     | .03520611.59 |     | .035  |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

|          |          |     |        |     |    |    |
|----------|----------|-----|--------|-----|----|----|
| 19539.84 | 20611.59 | 450 | 512.72 | 610 | .1 | .3 |
|----------|----------|-----|--------|-----|----|----|

Ineffective Flow num= 2

| Sta L    | Sta R    | Elev    | Permanent |
|----------|----------|---------|-----------|
| 13410.42 | 19539.84 | 1123.28 | F         |
| 20611.59 | 26568.23 | 1123.03 | F         |

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 217.57

INPUT  
 Description:

Station Elevation Data num= 105

| Sta      | Elev    |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| 18013.92 | 1118.82 | 18030.44 | 1118.89 | 18050.63 | 1118.72 | 18124.33 | 1117.99 | 18144.5  | 1117.76 |
| 18154.92 | 1116.53 | 18158.3  | 1115.91 | 18171.62 | 1115.52 | 18200.22 | 1115.9  | 18249.2  | 1116.88 |
| 18266.95 | 1117.81 | 18280.84 | 1116.88 | 18429.88 | 1115.92 | 18454.55 | 1115.74 | 18487.31 | 1115.78 |
| 18545.3  | 1115.72 | 18565.51 | 1116.81 | 18581.96 | 1118.72 | 18605.39 | 1118.36 | 18683.97 | 1118.03 |
| 18713.94 | 1118.14 | 18721    | 1118.07 | 18738.56 | 1118.02 | 18756.25 | 1118.27 | 18765.47 | 1118.83 |
| 18771.16 | 1118.83 | 18776.2  | 1118.57 | 18778.79 | 1118.12 | 18796.35 | 1117.21 | 18813.36 | 1114.46 |
| 18835.01 | 1114.55 | 18860.91 | 1115.29 | 18921.01 | 1115.32 | 18979.66 | 1115.36 | 19077.95 | 1115.21 |
| 19108.89 | 1115.21 | 19154.6  | 1115.79 | 19331.07 | 1115.82 | 19363.04 | 1115.85 | 19368.48 | 1113.11 |
| 19386.38 | 1118.53 | 19390.31 | 1118.98 | 19399.78 | 1123.42 | 19441.79 | 1122.38 | 19485.2  | 1121.37 |
| 19501.28 | 1121.55 | 19517.83 | 1114.08 | 19542.42 | 1102.92 | 19562.16 | 1102.63 | 19573.71 | 1102.55 |
| 19641.56 | 1102.27 | 19684.46 | 1102.39 | 19701.88 | 1103.42 | 19744.82 | 1103.27 | 19760.44 | 1105.17 |
| 19763.19 | 1105.38 | 19765.82 | 1104.87 | 19813.71 | 1097.12 | 19882.78 | 1096.07 | 19949.38 | 1095.98 |
| 20056.13 | 1094.01 | 20072.3  | 1093.63 | 20084.44 | 1093.72 | 20107.99 | 1093.75 | 20116.34 | 1093.84 |
| 20137.39 | 1093.55 | 20220.85 | 1092.96 | 20249.2  | 1092.02 | 20340.4  | 1094.46 | 20349.92 | 1094.74 |
| 20392.31 | 1101.37 | 20465.11 | 1101.45 | 20495.23 | 1101.22 | 20519.8  | 1101.74 | 20539.7  | 1102.27 |
| 20581.07 | 1120.66 | 20584.26 | 1122.13 | 20585.96 | 1122.12 | 20610.43 | 1120.97 | 20619.07 | 1120.84 |
| 20644.43 | 1120.05 | 20682.45 | 1118.51 | 20683.6  | 1119.52 | 20692.98 | 1119.04 | 20718.89 | 1121.75 |
| 20724.51 | 1121.74 | 20786.53 | 1121.83 | 20817.17 | 1121.42 | 20836.38 | 1121.07 | 20871.36 | 1121.06 |
| 20876.01 | 1120.48 | 20886.18 | 1120.22 | 20897.97 | 1119.22 | 20918.52 | 1119.58 | 20923.93 | 1119.54 |
| 20943.41 | 1120.20 | 20969.17 | 1120.56 | 20995.25 | 1120.62 | 21016.21 | 1120.86 | 21157.2  | 1123.11 |
| 21158.67 | 1123.34 | 21198.38 | 1124.49 | 21205.2  | 1124.62 | 21244.33 | 1125.17 | 21283.18 | 1126.52 |

Manning's n Values num= 3

| Sta | n Val | Sta | n Val | Sta | n Val |
|-----|-------|-----|-------|-----|-------|
|-----|-------|-----|-------|-----|-------|

18013.92 .03519501.28 .03520584.26 .035

|                  |          |               |           |       |       |        |        |
|------------------|----------|---------------|-----------|-------|-------|--------|--------|
| Bank Sta: Left   | Right    | Lengths: Left | Channel   | Right | Coeff | Contr. | Expan. |
| 19501.28         | 20584.26 | 440           | 481.39    | 550   | .1    | .3     |        |
| Ineffective Flow | num=     |               |           |       |       |        |        |
| Sta L            | Sta R    | Elev          | Permanent |       |       |        |        |
| 18013.92         | 19501.28 | 1121.55       | F         |       |       |        |        |
| 20584.26         | 21283.18 | 1122.13       | F         |       |       |        |        |

CROSS SECTION

RIVER: Salt REACH: 1 RS: 217.48

INPUT Description:

|  |                 |                 |                 |                 |         |         |  |  |  |
|--|-----------------|-----------------|-----------------|-----------------|---------|---------|--|--|--|
| Station Elevation Data                       | num=            | 97              |                 |                 |         |         |  |  |  |
| Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev |                 |                 |                 |                 |         |         |  |  |  |
| 18236.01 1117.1718272.78                     | 1116            | 18299.5         | 1115.8218461.95 | 1116.28         | 18582.8 | 1115.79 |  |  |  |
| 18624.01 1115.4218715.24                     | 1115.2918745.54 | 1115.0218823.91 | 1114.8318846.96 | 1114.69         |         |         |  |  |  |
| 18909.1 1114.1118953.02                      | 1113.93         | 18967.9         | 1113.7218979.02 | 1113.7619012.67 | 1114.37 |         |  |  |  |
| 19020.47 1114.5519161.51                     | 1114.5819286.59 | 1114.9219289.43 | 1112.719291.33  | 1110.35         |         |         |  |  |  |
| 19313.73 1109.6119325.12                     | 1109.6719339.03 | 1110.8219355.96 | 1110.9119373.28 | 1116.96         |         |         |  |  |  |
| 19386.09 1121.6119400.18                     | 1121.7419414.72 | 1121.6219455.38 | 1102.7419458.49 | 1101.34         |         |         |  |  |  |
| 19474.03 1101.12 19563.4                     | 1100.919603.52  | 1099.4219638.95 | 1099.0619660.85 | 1099.69         |         |         |  |  |  |
| 19768.13 1097.8619800.17                     | 1097.34 19882.6 | 1096.3219956.71 | 1095.0720030.08 | 1094.15         |         |         |  |  |  |
| 20076.99 1093.7720113.27                     | 1093.4120220.52 | 1092.9220232.88 | 1093.1420294.34 | 1094.58         |         |         |  |  |  |
| 20300.97 1095.1920325.41                     | 1095.3720377.34 | 1095.9220417.34 | 1095.8420445.53 | 1095.97         |         |         |  |  |  |
| 20450.8 1095.8920491.19                      | 1116.0320498.98 | 1119.8220513.25 | 1120.5620542.36 | 1116.8          |         |         |  |  |  |
| 20544.57 1117.120555.29                      | 1120.1720575.97 | 1109.2220599.36 | 1099.0520605.23 | 1099.14         |         |         |  |  |  |
| 20634.43 1098.820651.66                      | 1098.2720664.64 | 1098.6220666.24 | 1098.820691.83  | 1100.17         |         |         |  |  |  |
| 20706.82 1101.5820720.66                     | 1101.620742.45  | 1103.0220758.79 | 1101.3120801.19 | 1098.91         |         |         |  |  |  |
| 20811.68 1098.6120830.24                     | 1100.5220839.88 | 1102.0220864.97 | 1101.4120911.54 | 1097.43         |         |         |  |  |  |
| 20913.45 1097.3920932.99                     | 1099.0320934.71 | 1100.0220962.36 | 1105.9820964.19 | 1106.64         |         |         |  |  |  |
| 20985.71 1112.5820988.58                     | 1113.0121014.49 | 1118.9221030.88 | 1123.1521042.74 | 1123.16         |         |         |  |  |  |
| 21077.31 1123.56 21112.3                     | 1123.1421119.26 | 1123.1221131.41 | 1122.9321157.18 | 1124.31         |         |         |  |  |  |
| 21160.98 1124.6321216.92                     | 1124.321234.98  | 1124.4221275.95 | 1125.0321296.32 | 1125.12         |         |         |  |  |  |
| 21355.12 1125.6621359.24                     | 1125.76         |                 |                 |                 |         |         |  |  |  |

|                       |              |      |  |  |
|-----------------------|--------------|------|--|--|
| Manning's n Values    | num=         | 3    |  |  |
| Sta n Val Sta n Val   | Sta n Val    |      |  |  |
| 18236.01 .03519400.18 | .03520513.25 | .035 |  |  |

|                  |          |               |           |       |       |        |        |
|------------------|----------|---------------|-----------|-------|-------|--------|--------|
| Bank Sta: Left   | Right    | Lengths: Left | Channel   | Right | Coeff | Contr. | Expan. |
| 19400.18         | 20513.25 | 440           | 502.74    | 570   | .1    | .3     |        |
| Ineffective Flow | num=     |               |           |       |       |        |        |
| Sta L            | Sta R    | Elev          | Permanent |       |       |        |        |
| 18236.01         | 19400.18 | 1121.74       | F         |       |       |        |        |
| 20513.25         | 21359.24 | 1120.56       | F         |       |       |        |        |

CROSS SECTION

RIVER: Salt REACH: 1 RS: 217.38

INPUT Description:

|  |                 |                 |                 |         |  |  |  |  |  |
|--|-----------------|-----------------|-----------------|---------|--|--|--|--|--|
| Station Elevation Data                       | num=            | 79              |                 |         |  |  |  |  |  |
| Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev |                 |                 |                 |         |  |  |  |  |  |
| 18086.73 1114.1718126.89                     | 1114.5418150.62 | 1114.2118201.77 | 1115.7218220.17 | 1116.12 |  |  |  |  |  |
| 18237.96 1117.5318287.77                     | 1113.818344.46  | 1114.1918357.62 | 1114.2218382.37 | 1114.62 |  |  |  |  |  |
| 18426.79 1114.8118439.52                     | 1114.6818457.61 | 1114.7418702.97 | 1113.9218907.87 | 1113.26 |  |  |  |  |  |
| 19011.51 1113.2419178.13                     | 1113.8119301.14 | 1114.22 19317.4 | 1107.2219320.63 | 1105.88 |  |  |  |  |  |
| 19335.04 1105.5519351.16                     | 1105.3819358.14 | 1106.4719370.25 | 1109.3219381.46 | 1112.13 |  |  |  |  |  |
| 19395.65 1117.7919402.86                     | 1120.4119431.07 | 1120.8319439.66 | 1120.72 19442.3 | 1119.74 |  |  |  |  |  |
| 19484.06 1101.0719540.04                     | 1099.4319613.99 | 1097.1719621.74 | 1094.8219630.27 | 1095.17 |  |  |  |  |  |
| 19693.84 1097.4619708.66                     | 1097.619797.26  | 1097.5919890.58 | 1097.1219950.72 | 1096.27 |  |  |  |  |  |
| 19986.47 1096.1220001.92                     | 1096.6720006.51 | 1096.4420014.34 | 1094.1220017.76 | 1093.25 |  |  |  |  |  |
| 20122.42 1093.720137.88                      | 1093.6420199.08 | 1093.1120247.14 | 1092.8220266.57 | 1092.84 |  |  |  |  |  |
| 20284.24 1092.9320369.63                     | 1092.9520388.79 | 1093.1620435.65 | 1093.9220464.45 | 1094.4  |  |  |  |  |  |
| 20482.16 1102.9320517.96                     | 1120.5820522.43 | 1120.820533.82  | 1121.9220551.54 | 1118.89 |  |  |  |  |  |
| 20563.25 1117.120578.85                      | 1120.4720607.13 | 111920613.72    | 1117.3220625.52 | 1117.44 |  |  |  |  |  |
| 20699.29 1115.0220784.31                     | 1116.4520858.69 | 1116.6320942.13 | 1117.3220971.88 | 1117.58 |  |  |  |  |  |
| 20986.64 1117.7420994.77                     | 1117.9221006.23 | 1117.8521029.87 | 1118.7221038.75 | 1119.59 |  |  |  |  |  |
| 21069.36 1120.4221124.54                     | 1120.0321131.75 | 1120.3921141.23 | 1122.22         |         |  |  |  |  |  |

|                       |              |      |  |  |
|-----------------------|--------------|------|--|--|
| Manning's n Values    | num=         | 3    |  |  |
| Sta n Val Sta n Val   | Sta n Val    |      |  |  |
| 18086.73 .03519431.07 | .03520533.82 | .035 |  |  |

|                  |          |               |           |       |       |        |        |
|------------------|----------|---------------|-----------|-------|-------|--------|--------|
| Bank Sta: Left   | Right    | Lengths: Left | Channel   | Right | Coeff | Contr. | Expan. |
| 19431.07         | 20533.82 | 480           | 491.58    | 500   | .1    | .3     |        |
| Ineffective Flow | num=     |               |           |       |       |        |        |
| Sta L            | Sta R    | Elev          | Permanent |       |       |        |        |
| 18086.73         | 19431.07 | 1120.83       | F         |       |       |        |        |
| 20533.82         | 21141.23 | 1121.92       | F         |       |       |        |        |

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 217.29

INPUT  
 Description:

| Station Elevation Data num= 116 |                 |                 |                 |                 |         |     |      |     |      |     |      |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|-----|------|
| Sta                             | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev | Sta | Elev |
| 17592.29                        | 1113.8217614.88 | 1113.9217664.02 | 1113.8317752.58 | 1114.0317843.08 | 1114.2  |     |      |     |      |     |      |
| 17920.11                        | 1114.217944.56  | 1114.5217982.64 | 1114.8418013.13 | 1114.0618087.65 | 1115.07 |     |      |     |      |     |      |
| 18090.45                        | 1115.1818114.24 | 1116.52 18124.9 | 1113.97 18131.2 | 1114.2918155.06 | 1114.62 |     |      |     |      |     |      |
| 18189.89                        | 1115.4418274.36 | 1114.6218291.98 | 1114.3818333.14 | 1114.0318344.34 | 1113.23 |     |      |     |      |     |      |
| 18371.02                        | 1113.4618421.76 | 1113.4218427.34 | 1113.7918444.57 | 1115.2418462.13 | 1114.79 |     |      |     |      |     |      |
| 18497.57                        | 1114.1118551.54 | 1114.1218610.97 | 1113.7918621.63 | 1113.718633.54  | 1113.06 |     |      |     |      |     |      |
| 18648.88                        | 1112.5418657.86 | 1113.0218672.68 | 1112.1418687.43 | 1111.5918708.66 | 1111.91 |     |      |     |      |     |      |
| 18717.04                        | 1111.7818753.11 | 1111.8218807.22 | 1112.1318812.62 | 1112.1918948.31 | 1112.14 |     |      |     |      |     |      |
| 19090.58                        | 1113.2219120.56 | 1113.12 19190.9 | 1113.4219226.21 | 1099.5419258.62 | 1086.27 |     |      |     |      |     |      |
| 19290.38                        | 1085.9719300.61 | 1085.6219302.57 | 1085.1919307.96 | 1085.5119316.86 | 1086.81 |     |      |     |      |     |      |
| 19331.74                        | 1086.3519344.83 | 1086.0219422.26 | 1110.1719444.61 | 1117.3319452.65 | 1119.67 |     |      |     |      |     |      |
| 19462.9                         | 1120.07 19477.1 | 1120.4219486.17 | 1121.0119496.87 | 1116.1919531.51 | 1098.74 |     |      |     |      |     |      |
| 19546.03                        | 1099.4519548.73 | 1099.3219558.04 | 1099.619574.74  | 1099.7319591.87 | 1094.33 |     |      |     |      |     |      |
| 19597.05                        | 1092.4119618.15 | 1093.3219660.06 | 1093.9819673.55 | 1095.0519739.34 | 1096.79 |     |      |     |      |     |      |
| 19756.1                         | 1097.2919763.03 | 1097.4219792.66 | 1097.22 19850.8 | 1097.0519903.19 | 1097.18 |     |      |     |      |     |      |
| 19913.69                        | 1092.4819933.59 | 1094.02 19946   | 1094.7920049.21 | 1094.9620056.98 | 1094.95 |     |      |     |      |     |      |
| 20077.25                        | 1094.5220174.92 | 1092.6220182.61 | 1092.6620238.41 | 1092.8620250.25 | 1092.81 |     |      |     |      |     |      |
| 20267.27                        | 1092.4720365.21 | 1091.8220386.55 | 1092.2320473.48 | 1093.1820479.07 | 1093.26 |     |      |     |      |     |      |
| 20481.6                         | 1094.5320527.91 | 1118.6220544.71 | 1119.720551.28  | 1118.9120580.82 | 1116.22 |     |      |     |      |     |      |
| 20586.62                        | 1117.3420592.95 | 1118.22 20623.3 | 1118.120635.89  | 1118.3720639.82 | 1118.19 |     |      |     |      |     |      |
| 20646.67                        | 1118.1520655.38 | 1118.3220712.57 | 1118.1520739.26 | 1118.1220740.92 | 1118.19 |     |      |     |      |     |      |
| 20762.38                        | 1117.420774.06  | 1117.4220779.97 | 1117.36 20786.6 | 1117.4620835.43 | 1118.58 |     |      |     |      |     |      |
| 20846.42                        | 1123.6720850.12 | 1123.4220857.54 | 1121.9920878.44 | 1118.6520941.72 | 1118.65 |     |      |     |      |     |      |
| 20982.95                        | 1118.6          |                 |                 |                 |         |     |      |     |      |     |      |

| Manning's n Values num= 3 |              |     |              |     |       |
|---------------------------|--------------|-----|--------------|-----|-------|
| Sta                       | n Val        | Sta | n Val        | Sta | n Val |
| 17592.29                  | .03519486.17 |     | .03520544.71 |     | .035  |

| Bank Sta: Left          | Right    | Lengths: Left | Channel Right | Coeff | Contr. | Expan. |
|-------------------------|----------|---------------|---------------|-------|--------|--------|
| 19486.17                | 20544.71 | 511.81        | 511.81        | 520   | .1     | .3     |
| Ineffective Flow num= 2 |          |               |               |       |        |        |
| Sta L                   | Sta R    | Elev          | Permanent     |       |        |        |
| 17592.29                | 19486.17 | 1121.01       | F             |       |        |        |
| 20544.71                | 20982.95 | 1119.7        | F             |       |        |        |

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 217.19

INPUT  
 Description:

| Station Elevation Data num= 131 |                 |                 |                 |                 |         |     |      |     |      |     |      |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|-----|------|
| Sta                             | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev | Sta | Elev |
| 17868.47                        | 1115.1217872.22 | 1115.08 17878.5 | 1114.5517906.06 | 1114.3217937.27 | 1114.27 |     |      |     |      |     |      |
| 17948.67                        | 1114.1317971.46 | 1113.9817986.85 | 1114.3618013.53 | 1114.3218096.19 | 1113.24 |     |      |     |      |     |      |
| 18102.73                        | 1113.3418134.04 | 1114.1718142.05 | 1114.2218145.04 | 1113.8218154.15 | 1113.37 |     |      |     |      |     |      |
| 18183.36                        | 1112.63 18196.9 | 1112.4918225.44 | 1112.8618234.36 | 1112.6218292.49 | 1112.96 |     |      |     |      |     |      |
| 18353.78                        | 1112.27 18501.8 | 1112.0818642.55 | 1112.37 18712.4 | 1112.8218716.06 | 1113.08 |     |      |     |      |     |      |
| 18719.43                        | 1112.818726.98  | 1112.5618788.74 | 1109.9918797.78 | 1109.7218833.04 | 1110.63 |     |      |     |      |     |      |
| 18848.04                        | 1111.1318870.09 | 1111.3718889.15 | 1111.6318904.84 | 1112.0218911.41 | 1112.38 |     |      |     |      |     |      |
| 19029.77                        | 1113.47 19032.7 | 1113.5119104.02 | 1084.0519114.16 | 1083.4219134.01 | 1082.21 |     |      |     |      |     |      |
| 19183.28                        | 1049.91 19188.4 | 1046.7319195.79 | 1046.719307.62  | 1046.5219372.04 | 1086.52 |     |      |     |      |     |      |
| 19396.15                        | 1085.4119410.84 | 1089.8319457.52 | 1104.9819482.12 | 1112.1219487.07 | 1114.35 |     |      |     |      |     |      |
| 19503.99                        | 112019535.55    | 1120.3519580.46 | 1098.1219594.73 | 1097.7219603.61 | 1095.97 |     |      |     |      |     |      |
| 19631.85                        | 1089.59 19672.7 | 1089.2319678.04 | 1089.2819701.97 | 1090.0219714.89 | 1092.8  |     |      |     |      |     |      |
| 19726.52                        | 1094.8619728.93 | 1095.05 19733.6 | 1092.819748.63  | 1094.4219756.06 | 1092.39 |     |      |     |      |     |      |
| 19770.57                        | 1088.5519789.83 | 1091.9819799.13 | 1093.9119815.12 | 1094.3219846.41 | 1095.87 |     |      |     |      |     |      |
| 19880.57                        | 1095.9519923.81 | 1095.9619958.55 | 1095.9319993.29 | 1096.2220012.94 | 1096.12 |     |      |     |      |     |      |
| 20084.62                        | 1096.0420119.46 | 1095.8820130.95 | 1095.5520162.91 | 1094.5220224.37 | 1091.91 |     |      |     |      |     |      |
| 20233.29                        | 1091.8820242.06 | 1091.4620265.26 | 1091.2620296.53 | 1090.7220367.15 | 1091.23 |     |      |     |      |     |      |
| 20390.04                        | 1091.3820427.85 | 1091.6820481.37 | 1092.6520522.87 | 1112.8220530.53 | 1116.47 |     |      |     |      |     |      |
| 20543.32                        | 1117.2620548.79 | 1117.6920580.16 | 1115.7520596.01 | 1114.6220606.62 | 1117.54 |     |      |     |      |     |      |
| 20633.35                        | 1117.9720642.78 | 1118.1920682.36 | 1117.7820749.89 | 1116.6220800.98 | 1116.43 |     |      |     |      |     |      |
| 20808.82                        | 1117.1220811.14 | 1116.2420857.81 | 1116.220970.04  | 1115.6220977.08 | 1115.64 |     |      |     |      |     |      |
| 20981.42                        | 1116.4420985.68 | 1116.921028.25  | 1117.0821044.92 | 1116.7221070.55 | 1117.36 |     |      |     |      |     |      |
| 21135.67                        | 1117.9621210.52 | 1117.17 21233.2 | 1117.0621353.11 | 1117.0221435.26 | 1117.65 |     |      |     |      |     |      |
| 21438.1                         | 1117.7621457.55 | 1117.821487.41  | 1117.621498.25  | 1117.5221529.39 | 1116.9  |     |      |     |      |     |      |
| 21567.97                        | 1117.2421595.46 | 1116.9221620.49 | 1116.9821704.77 | 1117.4221785.89 | 1117.89 |     |      |     |      |     |      |
| 21855.84                        | 1119.121950.96  | 1119.9621962.58 | 1119.6321980.48 | 1119.4222033.04 | 1120.09 |     |      |     |      |     |      |
| 22041.35                        | 1120.24         |                 |                 |                 |         |     |      |     |      |     |      |

| Manning's n Values num= 3 |              |     |              |     |       |
|---------------------------|--------------|-----|--------------|-----|-------|
| Sta                       | n Val        | Sta | n Val        | Sta | n Val |
| 17868.47                  | .03519535.55 |     | .03520548.79 |     | .035  |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19535.5520548.79 490 502.45 520 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 17868.4719535.55 1120.35 F  
 20548.7922041.35 1117.69 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 217.10

INPUT

Description:

Station Elevation Data num= 138

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev    | Sta      | Elev            | Sta             | Elev            |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 17600.59 | 1115.0917620.68 | 1114.4617646.86 | 1114.1517688.41 | 1113.8617704.24 | 1114.22 | 17719.14 | 1114.3 17741.7  | 1113.8 17756.4  | 1113.1917848.24 | 1113.08 18074.7 | 1113.42 |
| 18124.9  | 1113.3518130.99 | 1112.7418263.83 | 1112.118349.69  | 1111.7718551.23 | 1112.12 | 18587.18 | 1112.0118617.17 | 1111.8818679.02 | 1111.6818790.59 | 1111.3618799.21 | 1111.32 |
| 18826.91 | 1111.518858.24  | 1110.4818865.89 | 1110.32 18871.8 | 1111.1418888.69 | 1113.82 | 18924.73 | 1096.3818950.29 | 1083.58 18981.7 | 1082.8319039.03 | 1047.17 19290.6 | 1047.52 |
| 19355.94 | 1047.5919360.51 | 1050.6619414.92 | 1087.7219438.51 | 1086.619442.09  | 1087.52 | 19479.15 | 1097.6819513.38 | 1109.919519.12  | 1112.1319523.16 | 1113.2319527.72 | 1114.12 |
| 19543.34 | 1118.7119557.04 | 1119.5819576.88 | 1120.1719625.46 | 1099.119630.49  | 1097.02 | 19636.74 | 1086.719656.27  | 1085.74 19664   | 1085.319707.71  | 1085.84 19719.1 | 1086.92 |
| 19752.09 | 1090.5519764.19 | 1091.6519778.39 | 1092.7 19819.8  | 1094.319851.38  | 1096.12 | 19859.54 | 1091.5819866.15 | 1087.52 19901.3 | 1087.1919960.76 | 1085.8719990.62 | 1085.12 |
| 20044.95 | 1085.2220059.64 | 1085.1920069.32 | 1085.7320085.24 | 1086.3520093.93 | 1090.42 | 20100.95 | 1093.4420119.63 | 1092.6620142.57 | 1091.8520157.78 | 1091.2220182.35 | 1090.42 |
| 20238.55 | 1088.9520252.74 | 1088.6720296.58 | 1088.1420303.64 | 1088.3520311.45 | 1087.82 | 20323.94 | 1087.4920342.66 | 1087.0620355.06 | 1087.0720378.95 | 1087.9420390.46 | 1087.72 |
| 20408.3  | 1088.05 20431.7 | 1087.620467.32  | 1087.8920478.03 | 1087.9220495.77 | 1096.72 | 20534.13 | 1115.0820539.41 | 1115.2720545.86 | 1115.2820551.73 | 1115.4620608.55 | 1112.22 |
| 20612.3  | 1113.3620622.42 | 1115.7320630.42 | 1115.7620660.12 | 1115.71 20683.8 | 1116.32 | 20797.02 | 1118.5720802.59 | 1118.620819.36  | 1116.0220973.36 | 1116.2420993.05 | 1116.32 |
| 21007.1  | 1117.1721015.63 | 1117.0521024.21 | 1116.2621047.61 | 1116.3 21063.7  | 1116.42 | 21091.99 | 1116.721217.52  | 1116.8221282.21 | 1116.5621373.52 | 1116.6521392.21 | 1117.12 |
| 21246    | 1116.3621435.77 | 1116.2921463.99 | 1116.9521517.28 | 1116.8921539.61 | 1116.72 | 21542.9  | 1116.8421602.03 | 1116.6821650.05 | 1116.6521747.34 | 1116.7821788.15 | 1116.92 |
| 21843.92 | 1116.1821877.29 | 1115.8921888.46 | 1115.8921906.58 | 1115.5621918.44 | 1115.72 | 21977.61 | 1116.3921997.78 | 1116.2422002.26 | 1116.3122004.64 | 1115.9622112.68 | 1115.72 |
| 22115.58 | 1116.9922134.58 | 1118.27 22165.7 | 1117.9922209.46 | 1116.7922245.06 | 1116.82 | 22272.55 | 1116.1522349.62 | 1116.822409.32  | 1116.53         |                 |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 17600.59 .03519576.88 .03520551.73 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19576.8820551.73 481.37 481.37 481.37 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 17600.5919576.88 1120.17 F  
 20551.7322409.32 1115.46 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 217.00

INPUT

Description:

Station Elevation Data num= 226

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev    | Sta      | Elev            | Sta             | Elev            |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 14098.54 | 1122.6214128.08 | 1122.26 14198.7 | 1122.1314421.36 | 1121.414431.34  | 1121.96 | 14448.43 | 1121.4214456.42 | 1121.4614471.01 | 1121.1814490.05 | 1121.14516.45   | 1121.65 |
| 14537.44 | 1121.8214554.43 | 1121.714617.79  | 1122.0214660.16 | 1121.7714666.56 | 1121.5  | 14787.23 | 1121.0214878.68 | 1121.914889.68  | 1120.9914909.73 | 1121.7214913.37 | 1121.68 |
| 14934.09 | 1122.2215004.13 | 1122.1415086.65 | 1122.95 15149.1 | 1121.8415170.02 | 1122.01 | 15211.59 | 1122.5215214.69 | 1121.2 15221    | 1119.2515223.38 | 1119.5315231.65 | 1121.21 |
| 15369.53 | 1120.5215529.51 | 1119.715568.29  | 1119.7715589.35 | 1119.8515625.57 | 1119.31 | 15713.69 | 1119.3215728.81 | 1119.5115756.29 | 1119.4215778.83 | 1121.1115786.84 | 1121.11 |
| 15860.73 | 1120.7215896.88 | 1120.516022.87  | 1120.1216123.06 | 1118.8416218.41 | 1118.37 | 16287.25 | 1117.9216300.33 | 1119.8616307.46 | 1120.04 16312.8 | 1119.89 16334   | 1110.75 |
| 16334.91 | 1111.1216352.76 | 1119.6916359.24 | 1119.6716368.86 | 1119.0716396.58 | 1119.04 | 16404.96 | 1118.7216496.79 | 1117.716509.53  | 1117.8616540.83 | 1117.65 16545.1 | 1117.68 |
| 16719.07 | 1118.7216790.96 | 1118.6916831.51 | 1118.7316898.02 | 1118.9616936.04 | 1118.98 | 16953.66 | 1118.8216979.21 | 111917023.76    | 1119.8117046.68 | 1120.0517068.68 | 1120.24 |
| 17072.78 | 1120.3217080.88 | 1116.2417095.31 | 1121.2617112.28 | 1120.9617122.51 | 1119.8  | 17124.11 | 1119.8217151.42 | 1116.5217210.52 | 1109.4517265.35 | 1111.7217279.62 | 1112.34 |
| 17323.85 | 1112.8217327.55 | 1112.9117339.24 | 1112.83 17455.2 | 1112.817513.41  | 1112.7  | 17539.87 | 1112.6217573.18 | 1113.1617591.05 | 1113.3117607.24 | 1112.7317633.85 | 1112.99 |
| 17658.39 | 1111.5217668.45 | 1111.5917742.89 | 1111.8717841.92 | 1112.4717990.57 | 1112.41 | 18050.32 | 1112.52 18104.4 | 1113.0118111.39 | 1113.0318127.89 | 1112.8318160.16 | 1113.26 |

Corr\_Effective\_SkyHarbor.rep

|          |                 |                 |                 |                 |         |
|----------|-----------------|-----------------|-----------------|-----------------|---------|
| 18166.69 | 1113.3218319.16 | 1112.1318410.48 | 1112.118426.92  | 1111.9318479.03 | 1111.45 |
| 18518.93 | 1111.7218557.34 | 1112.0318562.47 | 1112.04 18596.5 | 1111.7918602.19 | 1111.8  |
| 18677.67 | 1111.3218690.17 | 1111.1118715.41 | 1110.9118722.39 | 1111.4818734.94 | 1112.32 |
| 18740.09 | 1112.9218780.12 | 1093.2818802.42 | 1083.0418813.26 | 1083.1218834.72 | 1082.67 |
| 18889.72 | 1053.7218903.97 | 1046.5319200.31 | 1047.3619354.64 | 1048.2519368.47 | 1048.3  |
| 19370.82 | 1049.9219425.74 | 1086.319443.19  | 1085.6119485.52 | 1096.319493.29  | 1098.98 |
| 19532.95 | 1112.0219544.05 | 1115.9419551.29 | 1118.4119560.29 | 1118.2419574.59 | 1118.9  |
| 19584.47 | 1119.6219632.35 | 1096.8519637.36 | 1094.419648.07  | 1094.5419657.88 | 1089.93 |
| 19670.13 | 1087.7219677.79 | 1087.0119724.59 | 1085.119785.99  | 1085.3519801.01 | 1085.18 |
| 19819.83 | 1085.3219833.32 | 1085.3619843.23 | 1085.1819893.28 | 1084.1119914.53 | 1083.5  |
| 19934.85 | 1083.4219942.34 | 1083.9519970.45 | 1084.9619973.18 | 1084.5520001.14 | 1085.15 |
| 20034.89 | 1086.9220050.24 | 1086.8620065.58 | 1086.9520068.23 | 1086.7920103.24 | 1086.26 |
| 20131.69 | 1084.8220143.96 | 1087.4820148.75 | 1090.720176.06  | 1089.9820181.16 | 1089.96 |
| 20214.08 | 1090.3220228.34 | 1089.78 20255.4 | 1089.8720266.51 | 1090.6620293.74 | 1090.76 |
| 20315.95 | 1091.0220340.21 | 109120357.96    | 1090.820368.51  | 1090.4420383.76 | 1090.18 |
| 20393.33 | 1089.3220428.08 | 1088.5820448.71 | 1089.0820485.81 | 1091.1220518.72 | 1106.99 |
| 20535.78 | 1115.4220540.04 | 1115.5620551.23 | 1115.2820580.83 | 1113.9620589.82 | 1114.36 |
| 20600.75 | 1113.7220615.43 | 1112.6120646.56 | 1112.7820697.83 | 1112.05 20706   | 1112.79 |
| 20707.21 | 1112.2220715.01 | 1118.0320728.15 | 1120.7520730.93 | 1122.7820743.72 | 1117.05 |
| 20745.4  | 1116.5220785.35 | 1117.0620789.93 | 1118.95 20809.4 | 1124.7720837.73 | 1124.19 |
| 20861.48 | 1116.5220900.21 | 1116.420939.63  | 1116.1320945.97 | 1115.8320974.02 | 1113.99 |
| 20982.49 | 1114.3220990.46 | 1115.4 21006    | 1115.2721055.12 | 1115.9421160.88 | 1116.53 |
| 21227.71 | 1116.5221317.97 | 1115.7721340.57 | 1115.7821367.07 | 1115.9521407.84 | 1115.95 |
| 21455.78 | 1115.5221480.61 | 1115.6821489.69 | 1115.5221551.01 | 1115.0721621.93 | 1114.73 |
| 21681.36 | 1114.9221734.31 | 1114.7421813.77 | 1114.3921854.83 | 1114.2521976.67 | 1113.99 |
| 22006.05 | 1113.92         |                 |                 |                 |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 14098.54 .03519584.47 .03520540.04 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19584.4720540.04 510 506.49 506.49 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 14098.5419584.47 1119.62 F  
 20540.0422006.05 1115.56 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 216.91

INPUT

Description:

| Station Elevation Data |                 | num= 211        |                 |                 |         |     |      |     |      |     |      |
|------------------------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|-----|------|
| Sta                    | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev | Sta | Elev |
| 14099.2                | 1121.8214559.42 | 1120.614566.97  | 1120.6314578.11 | 1121.5814593.53 | 1121.21 |     |      |     |      |     |      |
| 14601.62               | 1120.9214746.19 | 1121.2314854.73 | 1120.814937.59  | 1120.5514951.24 | 1119.67 |     |      |     |      |     |      |
| 14966.68               | 1119.5214990.32 | 1120.215006.25  | 1120.4815033.56 | 1120.3915048.46 | 1120.37 |     |      |     |      |     |      |
| 15062.29               | 1120.12 15083.6 | 1122.5315093.56 | 1122.4115108.89 | 1121.8515234.76 | 1122.89 |     |      |     |      |     |      |
| 15337.22               | 1121.1215374.11 | 1121.215404.53  | 1121.0115474.81 | 1120.4115587.87 | 1119.65 |     |      |     |      |     |      |
| 15589.63               | 1119.7215604.39 | 1121.115646.54  | 1121.3215679.98 | 1121.4115705.15 | 1120.64 |     |      |     |      |     |      |
| 15713.71               | 1120.6215778.73 | 1121.1715798.21 | 1121.1115827.48 | 1120.37 15897.7 | 1120.03 |     |      |     |      |     |      |
| 15921.07               | 1119.5215929.28 | 1118.815931.21  | 1118.1215949.88 | 1117.8815973.81 | 1117.83 |     |      |     |      |     |      |
| 15991.09               | 1118.9216180.68 | 1117.8716274.57 | 1116.8716288.72 | 1116.816314.26  | 1116.57 |     |      |     |      |     |      |
| 16402.38               | 1116.1216429.73 | 1115.9716441.14 | 1118.7416451.87 | 1118.4516458.12 | 1115.31 |     |      |     |      |     |      |
| 16470.06               | 1109.1216487.19 | 1117.1616491.62 | 1118.9316504.46 | 1119.0216509.38 | 1117.95 |     |      |     |      |     |      |
| 16514.62               | 1117.6216530.29 | 1118.0816543.87 | 1118.0516636.54 | 1118.0616757.34 | 1117.77 |     |      |     |      |     |      |
| 16760.46               | 1118.1216771.55 | 1117.6116775.94 | 1117.3216794.31 | 1117.5816813.69 | 1118.2  |     |      |     |      |     |      |
| 16944.03               | 1117.5216966.49 | 1117.2816976.03 | 1116.7816993.21 | 1116.0617023.17 | 1115.67 |     |      |     |      |     |      |
| 17058.98               | 1115.02 17099.6 | 1113.7817134.49 | 1111.28 17172.2 | 1111.1917315.71 | 1111    |     |      |     |      |     |      |
| 17381.63               | 1111.0217422.97 | 1111.4217426.29 | 1111.1717446.84 | 1109.9917498.83 | 1111.61 |     |      |     |      |     |      |
| 17518.15               | 1112.3217530.75 | 1113.23 17545.5 | 1112.917557.96  | 1113.117596.95  | 1113.16 |     |      |     |      |     |      |
| 17620.83               | 1112.7217686.59 | 1112.6217707.19 | 1112.6617803.03 | 1112.6117862.12 | 1112.14 |     |      |     |      |     |      |
| 17903.23               | 1112.0217956.17 | 1111.8217992.63 | 1111.64 17999.6 | 1111.6518086.52 | 1111.5  |     |      |     |      |     |      |
| 18347.34               | 1111.1218413.24 | 1111.0718479.03 | 1111.2318494.69 | 1110.0318513.77 | 1111.18 |     |      |     |      |     |      |
| 18550.3                | 1110.3218568.86 | 1111.4118573.12 | 1111.7318584.94 | 1112.0918629.91 | 1091.39 |     |      |     |      |     |      |
| 18649.22               | 1082.2218674.53 | 1082.5518684.62 | 1077.8918751.76 | 1047.9319017.44 | 1047.28 |     |      |     |      |     |      |
| 19362.16               | 1047.6219380.07 | 1059.2219419.67 | 1085.3419469.66 | 1093.319489.79  | 1096.3  |     |      |     |      |     |      |
| 19494.38               | 1097.8219510.69 | 1103.7919550.02 | 1117.3219570.88 | 1118.2119579.12 | 1118.26 |     |      |     |      |     |      |
| 19606.91               | 1104.4219629.92 | 1092.5419637.51 | 1092.2419644.24 | 1091.7419646.83 | 1090.43 |     |      |     |      |     |      |
| 19648.97               | 1089.9219689.66 | 1085.5819695.04 | 1085.2719721.45 | 1084.4419750.64 | 1086.39 |     |      |     |      |     |      |
| 19792.85               | 1086.6219827.51 | 1085.5219875.56 | 1085.619883.38  | 1085.6419904.38 | 1085.39 |     |      |     |      |     |      |
| 19946.63               | 1085.2219996.87 | 1084.8520001.81 | 1084.820066.92  | 1086.6820106.23 | 1085.21 |     |      |     |      |     |      |
| 20115.87               | 1085.1220146.21 | 1085.2220171.89 | 1085.11 20203.8 | 1085.0820223.46 | 1084.89 |     |      |     |      |     |      |
| 20228.02               | 1088.4220238.83 | 1094.820243.18  | 1092.7620250.58 | 1092.3820284.19 | 1092.3  |     |      |     |      |     |      |
| 20308.83               | 1092.5220319.78 | 1091.9220333.36 | 1092.0320356.79 | 1091.0320391.15 | 1091.13 |     |      |     |      |     |      |
| 20399.3                | 1091.3220411.96 | 1091.7920446.41 | 1092.9120468.88 | 1093.6820484.39 | 1094.02 |     |      |     |      |     |      |
| 20494.43               | 1097.8220506.88 | 1104.2820525.95 | 1113.1720542.47 | 1114.4720588.08 | 1113.94 |     |      |     |      |     |      |
| 20603.92               | 1114.0220609.85 | 1115.5120614.96 | 1115.2720669.51 | 1114.1620688.84 | 1113.61 |     |      |     |      |     |      |
| 20707                  | 1113.3220734.16 | 1113.3420793.21 | 1112.720809.02  | 1112.4820829.83 | 1113.04 |     |      |     |      |     |      |
| 20852.41               | 1114.5220876.38 | 1114.8720906.45 | 1114.94 20937.2 | 1115.5620983.26 | 1116.18 |     |      |     |      |     |      |
| 21016.37               | 1115.4221024.58 | 1115.4521034.96 | 1115.321053.76  | 1114.7521074.52 | 1113.96 |     |      |     |      |     |      |
| 21094.09               | 1113.72 21101.4 | 1113.2621111.91 | 1112.2521123.63 | 1112.4421142.99 | 1113.01 |     |      |     |      |     |      |
| 21181.47               | 1113.9221203.41 | 1114.3221254.24 | 1114.3321300.76 | 1113.2821318.07 | 1114.18 |     |      |     |      |     |      |
| 21404.77               | 1114.1221588.54 | 1114.2521607.47 | 1113.8921651.58 | 1114.0921678.44 | 1114.18 |     |      |     |      |     |      |

21691.4 1112.4221706.27 1114.5721782.41 1114.1721815.83 1113.7321896.63 1113.58  
 21901.86 1113.6221931.58 1114.4722003.66 1114.69 22039.7 1114.6222465.13 1112.83  
 22514.01 1112.72

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 14099.2 .03519579.12 .03520542.47 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19579.1220542.47 503.44 503.44 503.44 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 14099.219579.12 1118.26 F  
 20542.4722514.01 1114.47 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 216.81

INPUT

Description:

Station Elevation Data num= 207  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 14826.86 1119.4215074.81 1119.4415121.98 1119.5215234.89 1119.2815368.88 1118.95  
 15374.04 1119.9215395.67 1124.5115417.92 1124.2315421.66 1124.1215554.53 1120.57  
 15577.36 1121.4215719.49 1117.0215731.96 1116.0115742.84 1115.27 15776.7 1117.83  
 15945.17 1117.6215966.24 1117.6616005.02 1117.54 16009.4 1118.916018.59 1120.88  
 16025.55 1118.8216031.99 1117.616122.77 1117.7316131.04 1119.4416147.34 1122.22  
 16169.01 1116.7216180.01 1116.6716219.77 1116.2816225.87 1116.2816240.21 1115.3  
 16284.9 1115.8216305.02 1115.8616452.71 1116.0516465.24 1117.3516478.67 1117.09  
 16487.9 1111.5216495.05 1107.7916508.62 1114.13 16516.7 1117.5116523.38 1117.42  
 16535.02 1117.8216550.34 1117.4616563.07 1116.8616568.64 1116.9116577.33 1117.29  
 16611.89 1115.9216622.88 1115.7616644.22 1115.7516652.51 1115.8416696.87 1116.07  
 16728.68 1116.0216734.43 1116.2316808.69 1117.5616840.78 1117.8116894.19 1117.19  
 16942.9 1117.1216958.95 1117.1116986.36 1116.5316994.93 1116.4317000.64 1115.71  
 17007.03 1115.2217010.39 1115.26 17020.3 1116.32 17069.5 1115.5617090.81 1115.55  
 17110.64 1115.1217117.84 1114.3617147.92 1113.3817188.49 1113.1217209.44 1112.65  
 17256.88 1111.9217282.12 1112.0817305.71 1111.9617331.56 1111.7717372.28 1112.44  
 17373.99 1112.6217384.34 1112.5217469.49 1112.2617509.83 1111.3517519.01 1111.04  
 17551.66 1110.3217578.56 1110.1717626.01 1110.7517667.54 1110.4 17898 1111.2  
 17920.34 1111.3217956.23 1111.4318005.24 1111.1818161.61 1110.718331.29 1110.13  
 18351.89 1111.0218392.86 1109.7718423.28 1110.3118577.84 1109.7318586.22 1109.71  
 18602.22 1111.5218613.37 1111.8718642.23 1101.8618702.44 1083.1918721.85 1083.41  
 18788.63 1057.1218812.86 1047.42 18834.8 1047.2518883.55 1047.4418988.23 1046.86  
 19257.63 1047.02 19316.1 1047.0319372.68 1074.3719385.55 1082.5219393.08 1082.45  
 19411.19 1082.6219434.69 1088.5519442.05 1090.2519453.88 1093.6319464.06 1096.3  
 19490.85 1106.9219511.71 1115.7819532.66 1113.9419548.98 1114.2419557.65 1114.57  
 19562.91 1115.7219565.56 1115.63 19577.4 1115.7219622.58 1098.819646.03 1089.74  
 19658.12 1089.3219664.26 1087.6819691.93 1086.2619727.69 1084.2519753.37 1084.11  
 19779.03 1084.6219789.25 1084.6619834.99 1082.2119890.35 1083.7219933.18 1085.53  
 19935.92 1085.62 19961.9 1085.3919980.83 1085.1519995.55 1085.3520005.99 1085.03  
 20022.31 1084.7220040.29 1084.4120080.75 1083.9320099.51 1084.2520130.96 1083.44  
 20144.15 1084.42 20145 1084.920156.68 1088.6220163.67 1091.4220168.14 1092.5  
 20179.75 1093.9220183.35 1092.8720194.66 1088.4320205.53 1084.4220214.36 1084.42  
 20220.69 1085.8220229.44 1089.4820251.13 1086.6120262.14 1087.1520271.54 1082.86  
 20280.37 1082.02 20287.7 1081.6720300.81 1086.5820358.85 1086.5420381.15 1086.32  
 20397.02 1086.6220467.37 1088.2220517.23 1112.5720533.96 1112.820570.19 1112.76  
 20594.26 1112.4220610.59 1112.5220632.61 1112.3820674.67 1112.5520701.11 1112.69  
 21037.42 1113.12 21124.1 1113.0821136.91 1113.2521179.36 1113.4221182.02 1113.39  
 21202.46 1112.8221219.63 1114.7521221.91 1114.7421258.72 1113.7321333.79 1112.03  
 21340.19 1111.8221388.49 1111.7921725.44 1112.2521891.54 1112.4421894.05 1112.41  
 21912.43 1111.7221938.45 1111.5121983.98 1111.3922000.48 1110.6322023.47 1112.01  
 22041.79 1112.1222072.76 1112.0922184.77 1112.24 22202.1 1112.3222227.52 1112.78  
 22237.06 1112.9222260.98 1112.68 22301.5 1112.71 22873.9 1111.1922942.44 1110.63  
 22955.28 1109.4222990.05 1109.48

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 14826.86 .035 19577.4 .03520517.23 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19577.420517.23 498.18 498.18 498.18 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 14826.86 19577.4 1115.72 F  
 20517.2322990.05 1112.57 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 216.72

INPUT

Description:

Station Elevation Data num= 166

Corr\_Effective\_SkyHarbor.rep

| Sta      | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev |
|----------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|
| 15417.47 | 1118.2215474.29 | 1118.0715547.94 | 1118.3315569.22 | 1118.3415709.49 | 1117.43 |     |      |     |      |
| 15721.83 | 1117.32 15778.3 | 1123.9315787.24 | 1124.4715809.79 | 1125.6815819.12 | 1125.51 |     |      |     |      |
| 15850.98 | 1125.9215869.71 | 1124.8615892.68 | 1121.06 15909.8 | 1121.2815995.41 | 1118.91 |     |      |     |      |
| 16017.62 | 1118.2216022.65 | 1118.5616051.43 | 1119.8716149.15 | 1117.1516186.44 | 1116.08 |     |      |     |      |
| 16270.13 | 1127.02 16273.2 | 1127.516279.29  | 1127.5716347.32 | 1127.916403.26  | 1124.06 |     |      |     |      |
| 16454.9  | 1118.0216501.53 | 1113.2316536.68 | 1115.21 16550.6 | 1115.7216579.09 | 1115.16 |     |      |     |      |
| 16613.89 | 1109.1216634.61 | 1105.6216695.61 | 1105.6316721.07 | 1105.6916737.76 | 1108.47 |     |      |     |      |
| 16753.95 | 1110.3216757.65 | 1115.716777.91  | 1119.8316820.39 | 1128.8116841.31 | 1131.95 |     |      |     |      |
| 16928.63 | 1129.7216931.47 | 1129.716943.11  | 1126.9516992.13 | 1115.6617010.85 | 1115.77 |     |      |     |      |
| 17025.38 | 1115.7217038.21 | 1113.817047.17  | 1112.5617055.95 | 1112.5717114.12 | 1112.4  |     |      |     |      |
| 17234.89 | 1111.9217512.57 | 1110.3117553.86 | 1109.9417598.86 | 1109.6917670.56 | 1109.48 |     |      |     |      |
| 17804.97 | 1109.1217971.68 | 1108.6518088.71 | 1108.1618104.41 | 1108.1418131.14 | 1108.31 |     |      |     |      |
| 18186.07 | 1108.9218266.13 | 1108.66 18254.5 | 1108.5218266.22 | 1109.0618292.31 | 1109.1  |     |      |     |      |
| 18329.34 | 1108.8218362.99 | 1108.75 18447.6 | 1108.8818532.58 | 1109.0818584.51 | 1109.21 |     |      |     |      |
| 18595.09 | 1109.4218662.68 | 1109.8318794.66 | 1110.118892.55  | 1110.218911.03  | 1110.08 |     |      |     |      |
| 18975.29 | 1110.0219003.02 | 1109.9719134.52 | 1109.919170.42  | 1110.0819188.23 | 1110.07 |     |      |     |      |
| 19344.38 | 1110.6219404.19 | 1110.6619546.41 | 1110.9919550.04 | 1110.9719559.44 | 1113.3  |     |      |     |      |
| 19569.21 | 1114.2219622.28 | 1095.39 19646.4 | 1086.7419714.35 | 1085.8819737.49 | 1085.86 |     |      |     |      |
| 19767.27 | 1084.82 19787   | 1084.2319845.37 | 1082.7719898.93 | 1082.4519903.45 | 1082.62 |     |      |     |      |
| 19973.17 | 1084.8219976.11 | 1084.8620043.38 | 1083.1620055.06 | 1082.9120118.31 | 1082.29 |     |      |     |      |
| 20136.87 | 1082.5220206.06 | 1082.61 20212.4 | 1082.9 20218.2  | 1084.2220260.96 | 1083.01 |     |      |     |      |
| 20269.28 | 1082.7220271.57 | 1083.0820312.74 | 1087.8520378.18 | 1084.6920456.41 | 1087.36 |     |      |     |      |
| 20460.07 | 1087.4220509.38 | 1111.5520523.78 | 1112.720530.13  | 1112.6320589.99 | 1110.96 |     |      |     |      |
| 20604.23 | 1111.0220617.71 | 1111.6420684.05 | 1111.4620695.96 | 1111.3920804.74 | 1111.58 |     |      |     |      |
| 20942.06 | 1111.9221026.78 | 1111.9521215.57 | 1112.2821268.95 | 1112.5821380.55 | 1112.88 |     |      |     |      |
| 21406.78 | 1113.1221446.98 | 1112.9121469.18 | 1112.1121509.85 | 1112.0721547.67 | 1112.13 |     |      |     |      |
| 21601.77 | 1111.9221625.14 | 1111.9721630.48 | 1111.9321645.52 | 1110.6221701.95 | 1109.99 |     |      |     |      |
| 21919.77 | 1109.3221953.35 | 1109.3521977.46 | 1109.322192.68  | 1109.4322212.18 | 1109.1  |     |      |     |      |
| 22273.96 | 1109.5222285.04 | 1108.7622291.96 | 1108.1622333.53 | 1108.5922352.34 | 1108.86 |     |      |     |      |
| 22365.19 | 1109.12 22371.8 | 1109.1622376.74 | 1109.3922381.57 | 1109.8822404.63 | 1110.13 |     |      |     |      |
| 22415.5  | 1110.7222426.85 | 1111.2122439.42 | 1111.2222503.13 | 1111.3522771.44 | 1111.02 |     |      |     |      |
| 22782.52 | 1111.0222824.21 | 1110.8222825.73 | 1110.2622838.66 | 1106.8622874.12 | 1106.77 |     |      |     |      |
| 22891.81 | 1106.82 22901.3 | 1106.66 22905   | 1108.0422919.78 | 1111.5722988.94 | 1111.24 |     |      |     |      |
| 23211.3  | 1110.02         |                 |                 |                 |         |     |      |     |      |

Manning's n Values num= 3

| Sta      | n Val        | Sta | n Val        |
|----------|--------------|-----|--------------|
| 15417.47 | .03519569.21 |     | .03520523.78 |

| Bank Sta:        | Left     | Right    | Lengths: | Left      | Channel | Right | Coeff | Contr. | Expan. |
|------------------|----------|----------|----------|-----------|---------|-------|-------|--------|--------|
|                  | 19569.21 | 20523.78 |          | 500       | 508.39  | 520   |       | .1     | .3     |
| Ineffective Flow | num= 2   |          |          |           |         |       |       |        |        |
|                  | Sta L    | Sta R    | Elev     | Permanent |         |       |       |        |        |
|                  | 15417.47 | 19569.21 | 1114.22  | F         |         |       |       |        |        |
|                  | 20523.78 | 23211.3  | 1112.7   | F         |         |       |       |        |        |

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 216.62

INPUT

Description:

| Station Elevation Data |                 | num= 128        |                 |                 |         |     |      |     |      |     |      |
|------------------------|-----------------|-----------------|-----------------|-----------------|---------|-----|------|-----|------|-----|------|
| Sta                    | Elev            | Sta             | Elev            | Sta             | Elev    | Sta | Elev | Sta | Elev | Sta | Elev |
| 17142.5                | 1117.9217184.69 | 1111.8917189.53 | 1111.4417259.99 | 1110.5417304.26 | 1109.78 |     |      |     |      |     |      |
| 17319.68               | 1107.8217329.73 | 1106.4317375.77 | 1100.2717385.87 | 1100.117407.25  | 1100.19 |     |      |     |      |     |      |
| 17460.95               | 1108.7217479.37 | 1111.5917507.52 | 1111.96 17512   | 1111.5117534.88 | 1109.81 |     |      |     |      |     |      |
| 17543.2                | 1108.8217614.91 | 1108.5917685.22 | 1108.3117854.67 | 1108.0317959.61 | 1107.95 |     |      |     |      |     |      |
| 18032.1                | 1108.1218093.53 | 1108.1518105.57 | 1107.7218236.52 | 1108.1518340.33 | 1108    |     |      |     |      |     |      |
| 18462.7                | 1107.6218594.48 | 1107.7118709.29 | 1107.7918762.77 | 1107.8818765.56 | 1107.79 |     |      |     |      |     |      |
| 18934.43               | 1108.4218943.81 | 1108.4818965.82 | 1110.0218972.63 | 1110.7419018.75 | 1111.31 |     |      |     |      |     |      |
| 19055.14               | 1111.1219116.38 | 1110.9119165.03 | 1113.3919184.54 | 1113.2619250.11 | 1112.7  |     |      |     |      |     |      |
| 19257.95               | 1111.72 19289.7 | 1108.719307.87  | 1109.4319324.83 | 1109.9719342.73 | 1105.63 |     |      |     |      |     |      |
| 19352.54               | 1103.1219369.09 | 1103.0219452.78 | 1108.99 19464.6 | 1110.7119499.01 | 1110.97 |     |      |     |      |     |      |
| 19522.86               | 1110.9219525.52 | 1110.7419538.92 | 1110.719547.37  | 1110.819548.15  | 1110.96 |     |      |     |      |     |      |
| 19553.43               | 1113.3219564.56 | 1113.1719584.87 | 1106.0119632.28 | 1088.7419639.92 | 1086.02 |     |      |     |      |     |      |
| 19641.78               | 1086.1219679.02 | 1086.1119738.88 | 1085.319788.98  | 1085.4419815.96 | 1084.71 |     |      |     |      |     |      |
| 19863.35               | 1083.8219910.35 | 1083.1319945.76 | 1082.7819965.57 | 1082.7520021.96 | 1083.23 |     |      |     |      |     |      |
| 20032.29               | 1083.3220047.02 | 1084.03 20104.6 | 1086.3820150.01 | 1085.0420158.64 | 1084.9  |     |      |     |      |     |      |
| 20177.75               | 1086.3220227.23 | 1080.8120234.38 | 1081.0320239.96 | 1081.3520257.65 | 1081.6  |     |      |     |      |     |      |
| 20264.91               | 1081.6220285.15 | 1082.4 20290.2  | 1081.8220299.23 | 1080.4520302.46 | 1080.51 |     |      |     |      |     |      |
| 20306.78               | 1081.3220322.87 | 1085.0620358.89 | 1085.48 20360.7 | 1085.6320396.11 | 1090.1  |     |      |     |      |     |      |
| 20423.78               | 1090.42 20458.1 | 1090.6720465.44 | 1092.520499.35  | 1101.6520505.64 | 1103.4  |     |      |     |      |     |      |
| 20513.86               | 1103.5220540.01 | 1103.5320577.65 | 1103.8820608.55 | 1104.4120649.81 | 1103.69 |     |      |     |      |     |      |
| 20650.06               | 1106.4220671.03 | 1106.3820754.59 | 1105.8920804.75 | 1107.5520840.84 | 1108.45 |     |      |     |      |     |      |
| 20844.54               | 1108.62 20876   | 1111.0420900.25 | 1110.4220930.29 | 1110.1920960.84 | 1110.19 |     |      |     |      |     |      |
| 21408.47               | 1111.4221426.76 | 1111.3821613.71 | 1111.1221660.45 | 1110.7321671.94 | 1109.89 |     |      |     |      |     |      |
| 21675.14               | 1109.5221683.28 | 1111.5421699.37 | 1111.02 21726.2 | 1110.5621746.45 | 1110.96 |     |      |     |      |     |      |
| 21896.19               | 1110.7221910.62 | 1110.1521920.67 | 1109.9621941.45 | 1109.9922118.94 | 1110.61 |     |      |     |      |     |      |
| 22492.85               | 1109.7222533.76 | 1110.46 22583.5 | 1111.11         |                 |         |     |      |     |      |     |      |

Manning's n Values num= 3

| Sta     | n Val        | Sta | n Val           |
|---------|--------------|-----|-----------------|
| 17142.5 | .03519564.56 |     | .035 20876 .035 |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19564.56 20876 470 499.71 570 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 17142.519564.56 1113.17 F  
 20876 22583.5 1111.04 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 216.52

INPUT  
 Description: Upstream face of I-10 bridge

Station Elevation Data num= 34  

| Sta      | Elev    |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| 18100    | 1122.12 | 19233.73 | 1126.12 | 19487.43 | 1125.21 | 19487.53 | 1118.12 | 19521.34 | 1101.62 |
| 19587.97 | 1100.22 | 19618.9  | 1089.87 | 19624.77 | 1089.87 | 19641.67 | 1085.32 | 19664.55 | 1085.32 |
| 19753.06 | 1086.57 | 19759.02 | 1086.62 | 19822.18 | 1085.32 | 19887.31 | 1085.32 | 19893.28 | 1085.32 |
| 19956.43 | 1085.32 | 20021.57 | 1085.32 | 20027.54 | 1085.32 | 20090.69 | 1085.32 | 20155.83 | 1085.32 |
| 20161.8  | 1085.32 | 20224.95 | 1085.32 | 20290.09 | 1085.32 | 20296.05 | 1085.32 | 20359.21 | 1085.32 |
| 20424.34 | 1085.32 | 20430.31 | 1085.32 | 20441.25 | 1085.32 | 20486    | 1099.42 | 20515.84 | 1100.32 |
| 20545.67 | 1116.12 | 20561.59 | 1117.42 | 20561.69 | 1124.52 | 21103.4  | 1122.12 |          |         |

Manning's n Values num= 3  

| Sta   | n Val | Sta      | n Val | Sta      | n Val |
|-------|-------|----------|-------|----------|-------|
| 18100 | .04   | 19487.53 | .03   | 20561.59 | .04   |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19487.5320561.59 256.5 256.5 256.5 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 1810019487.53 1118.12 F  
 20561.59 21103.4 1117.42 F

BRIDGE

RIVER: Salt  
 REACH: 1 RS: 216.505

INPUT  
 Description: I-10 Bridge  
 Distance from Upstream XS = 23.5  
 Deck/Roadway Width = 210  
 Weir Coefficient = 2.6  
 Upstream Deck/Roadway Coordinates

num= 12  

| Sta      | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord |
|----------|---------|---------|----------|---------|---------|----------|---------|---------|
| 18100    | 1122.12 | 1122.12 | 19233.73 | 1126.12 | 1126.12 | 19487.43 | 1125.2  | 1125.2  |
| 19487.53 | 1125.2  | 1118.12 | 19618.9  | 1125.54 | 1118.46 | 19753.06 | 1125.6  | 1118.52 |
| 19887.31 | 1125.65 | 1118.57 | 20027.54 | 1125.61 | 1118.53 | 20161.8  | 1125.38 | 1118.31 |
| 20296.05 | 1125.14 | 1118.05 | 20430.31 | 1124.81 | 1117.72 | 20561.59 | 1124.57 | 1117.49 |

Upstream Bridge Cross Section Data  
 Station Elevation Data num= 34  

| Sta      | Elev    |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| 18100    | 1122.12 | 19233.73 | 1126.12 | 19487.43 | 1125.21 | 19487.53 | 1118.12 | 19521.34 | 1101.62 |
| 19587.97 | 1100.22 | 19618.9  | 1089.87 | 19624.77 | 1089.87 | 19641.67 | 1085.32 | 19664.55 | 1085.32 |
| 19753.06 | 1086.57 | 19759.02 | 1086.62 | 19822.18 | 1085.32 | 19887.31 | 1085.32 | 19893.28 | 1085.32 |
| 19956.43 | 1085.32 | 20021.57 | 1085.32 | 20027.54 | 1085.32 | 20090.69 | 1085.32 | 20155.83 | 1085.32 |
| 20161.8  | 1085.32 | 20224.95 | 1085.32 | 20290.09 | 1085.32 | 20296.05 | 1085.32 | 20359.21 | 1085.32 |
| 20424.34 | 1085.32 | 20430.31 | 1085.32 | 20441.25 | 1085.32 | 20486    | 1099.42 | 20515.84 | 1100.32 |
| 20545.67 | 1116.12 | 20561.59 | 1117.42 | 20561.69 | 1124.52 | 21103.4  | 1122.12 |          |         |

Manning's n Values num= 3  

| Sta   | n Val | Sta      | n Val | Sta      | n Val |
|-------|-------|----------|-------|----------|-------|
| 18100 | .04   | 19487.53 | .03   | 20561.59 | .04   |

Bank Sta: Left Right Coeff Contr. Expan.  
 19487.5320561.59 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 1810019487.53 1118.12 F  
 20561.59 21103.4 1117.42 F

Downstream Deck/Roadway Coordinates  
 num= 12  

| Sta      | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord |
|----------|---------|---------|----------|---------|---------|----------|---------|---------|
| 18100    | 1122.12 | 1122.12 | 19233.73 | 1126.12 | 1126.12 | 19487.43 | 1125.2  | 1125.2  |
| 19487.53 | 1125.2  | 1118.12 | 19618.9  | 1125.54 | 1118.46 | 19753.06 | 1125.6  | 1118.52 |
| 19887.31 | 1125.65 | 1118.57 | 20027.54 | 1125.61 | 1118.53 | 20161.8  | 1125.38 | 1118.31 |
| 20296.05 | 1125.14 | 1118.05 | 20430.31 | 1124.81 | 1117.72 | 20561.59 | 1124.57 | 1117.49 |

Downstream Bridge Cross Section Data

| Station  | Elevation | Data     | num=    | 34       | Sta     | Elev     | Sta     | Elev     | Sta     | Elev | Sta | Elev |
|----------|-----------|----------|---------|----------|---------|----------|---------|----------|---------|------|-----|------|
| 18100    | 1122.12   | 19233.73 | 1126.12 | 19487.43 | 1125.21 | 19487.53 | 1118.12 | 19521.34 | 1101.62 |      |     |      |
| 19587.97 | 1100.22   | 19618.9  | 1089.87 | 19624.77 | 1089.87 | 19641.67 | 1085.32 | 19664.55 | 1085.32 |      |     |      |
| 19753.06 | 1086.57   | 19759.02 | 1086.62 | 19822.18 | 1085.32 | 19887.31 | 1085.32 | 19893.28 | 1085.32 |      |     |      |
| 19956.43 | 1085.32   | 20021.57 | 1085.32 | 20027.54 | 1085.32 | 20090.69 | 1085.32 | 20155.83 | 1085.32 |      |     |      |
| 20161.8  | 1085.32   | 20224.95 | 1085.32 | 20290.09 | 1085.32 | 20296.05 | 1085.32 | 20359.21 | 1085.32 |      |     |      |
| 20424.34 | 1085.32   | 20430.31 | 1085.32 | 20441.25 | 1085.32 | 20486    | 1099.42 | 20515.84 | 1100.32 |      |     |      |
| 20545.67 | 1116.12   | 20561.59 | 1117.42 | 20561.69 | 1124.52 | 21103.4  | 1122.12 |          |         |      |     |      |

Manning's n Values num= 3

| Sta   | n Val | Sta      | n Val | Sta      | n Val |
|-------|-------|----------|-------|----------|-------|
| 18100 | .04   | 19487.53 | .03   | 20561.59 | .04   |

Bank Sta: Left Right Coeff Contr. Expan.

19487.53 20561.59 .1 .3

Ineffective Flow num= 2

Sta L Sta R Elev Permanent

18100 19487.53 1118.12 F

20561.59 21103.4 1117.42 F

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .95  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Piers = 7

Pier Data

Pier Station Upstream= 19620 Downstream= 19620

Upstream num= 2

width Elev width Elev

6 1082.12 6 1121.12

Downstream num= 2

width Elev width Elev

6 1082.12 6 1121.12

Pier Data

Pier Station Upstream= 19755 Downstream= 19755

Upstream num= 2

width Elev width Elev

6 1082.12 6 1121.12

Downstream num= 2

width Elev width Elev

6 1082.12 6 1121.12

Pier Data

Pier Station Upstream= 19890 Downstream= 19890

Upstream num= 2

width Elev width Elev

6 1082.12 6 1121.12

Downstream num= 2

width Elev width Elev

6 1082.12 6 1121.12

Pier Data

Pier Station Upstream= 20025 Downstream= 20025

Upstream num= 2

width Elev width Elev

6 1082.12 6 1121.12

Downstream num= 2

width Elev width Elev

6 1082.12 6 1121.12

Pier Data

Pier Station Upstream= 20160 Downstream= 20160

Upstream num= 2

width Elev width Elev

6 1082.12 6 1121.12

Downstream num= 2

width Elev width Elev

6 1082.12 6 1121.12

Pier Data

Pier Station Upstream= 20295 Downstream= 20295

Upstream num= 2

width Elev width Elev

6 1082.12 6 1121.12

Downstream num= 2

width Elev width Elev

6 1082.12 6 1121.12

Pier Data

Pier Station Upstream= 20430 Downstream= 20430

Upstream num= 2  
width Elev width Elev  
6 1082.12 6 1121.12  
Downstream num= 2  
width Elev width Elev  
6 1082.12 6 1121.12

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy  
Momentum Cd = 1.2  
Yarnell KVal = 1.05

Selected Low Flow Methods = Energy

High Flow Method  
Energy Only

Additional Bridge Parameters

Add Friction component to Momentum  
Do not add Weight component to Momentum  
Class B flow critical depth computations use critical depth  
inside the bridge at the upstream end  
Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 216.49

INPUT  
Description: Downstream face of I-10 bridge

| Station Elevation Data |                 | num= 34         |                 |
|------------------------|-----------------|-----------------|-----------------|
| Sta                    | Elev            | Sta             | Elev            |
| 18100                  | 1122.1219233.73 | 1126.1219487.43 | 1125.219487.53  |
| 19587.97               | 1100.22 19618.9 | 1089.8719624.77 | 1089.8719641.67 |
| 19753.06               | 1086.5719759.02 | 1086.6219822.18 | 1085.3219887.31 |
| 19956.43               | 1085.3220021.57 | 1085.3220027.54 | 1085.3220090.69 |
| 20161.8                | 1085.3220224.95 | 1085.3220290.09 | 1085.3220296.05 |
| 20424.34               | 1085.3220430.31 | 1085.3220441.25 | 1085.32 20486   |
| 20545.67               | 1116.1220561.59 | 1117.4220561.69 | 1124.52 21103.4 |

| Manning's n Values |             | num= 3          |       |
|--------------------|-------------|-----------------|-------|
| Sta                | n Val       | Sta             | n Val |
| 18100              | .0419487.53 | 1126.1220561.59 | .04   |

| Bank Sta:        | Left     | Right   | Lengths:  | Left Channel | Right  | Coeff Contr. | Expan. |
|------------------|----------|---------|-----------|--------------|--------|--------------|--------|
| 19487.5320561.59 |          |         | 323.25    | 323.25       | 323.25 | .1           | .3     |
| Ineffective Flow |          | num= 2  |           |              |        |              |        |
| Sta L            | Sta R    | Elev    | Permanent |              |        |              |        |
| 18100            | 19487.53 | 1118.12 | F         |              |        |              |        |
| 20561.59         | 21103.4  | 1117.42 | F         |              |        |              |        |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 216.42

INPUT  
Description:

| Station Elevation Data |                 | num= 72         |                 |
|------------------------|-----------------|-----------------|-----------------|
| Sta                    | Elev            | Sta             | Elev            |
| 15777.7                | 1114.22 15814.7 | 1113.82 15831.8 | 1112.72 15875.7 |
| 15893.7                | 1113.02 16065.1 | 1112.92 16181.6 | 1112.52 16240.1 |
| 16549.8                | 1111.02 16759.7 | 1111.82 16884.3 | 1113.32 16896.3 |
| 16913.6                | 1113.12 16927.7 | 1112.82 16938.6 | 1111.42 17091.4 |
| 17272                  | 1106.82 17353.3 | 1108.22 17450   | 1108.32 17489   |
| 17504.8                | 1109.32 17515.4 | 1107.82 17645.7 | 1107.52 17957.8 |
| 18179.4                | 1106.92 18216.5 | 1107.12 18243.2 | 1106.62 18287   |
| 18318                  | 1107.32 18344.5 | 1105.42 18351.5 | 1104.12 18404.5 |
| 18570.3                | 1101.62 18605.7 | 1101.02 18636.3 | 1101.12 18687.6 |
| 18726.1                | 1103.72 18730.1 | 1102.72 18787.2 | 1103.02 18803.2 |
| 18886.8                | 1102.42 18910.6 | 1101.82 18933   | 1100.82 18949.5 |
| 19069.8                | 1102.12 19105.6 | 1103.82 19140.3 | 1104.72 19190.3 |
| 19263.1                | 1104.82 19282   | 1101.62 19320.5 | 1101.72 19503   |
| 19593                  | 1084.82 20065.5 | 1084.42 20416.4 | 1084.12 20517.4 |
| 21279.3                | 1110.52 21332.3 | 1119.42         | 1110.02 20540.4 |

| Manning's n Values |             | num= 3          |       |
|--------------------|-------------|-----------------|-------|
| Sta                | n Val       | Sta             | n Val |
| 15777.7            | .04 19535.3 | 1101.12 19535.3 | .04   |

| Bank Sta: | Left | Right | Lengths: | Left Channel | Right | Coeff Contr. | Expan. |
|-----------|------|-------|----------|--------------|-------|--------------|--------|
|-----------|------|-------|----------|--------------|-------|--------------|--------|

19355.3 20517.4 510  
Ineffective Flow num= 2  
Sta L Sta R Elev Permanent  
15777.7 19238.1 1108.72 F  
20517.4 21332.3 1110.02 F

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 216.33

INPUT

Description:

Station Elevation Data num= 74  
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
16758.3 1110.62 16790.3 1109.82 16915.7 1109.62 16918.4 1110.02 16967.4 1109.52  
17088.3 1109.32 17177.1 1108.32 17230.7 1106.22 17307.8 1105.32 17334.2 1107.02  
17463 1106.02 17551.9 1104.92 17622.5 1104.82 17630 1104.22 17648.2 1105.12  
17795.3 1105.42 17860 1105.32 17891.3 1104.32 17916.7 1104.52 17965.2 1104.02  
18006.5 1103.12 18033.6 1105.02 18180.2 1104.62 18367.3 1104.12 18378.1 1103.42  
18378.9 1103.62 18394.8 1103.32 18436.8 1103.62 18455.1 1102.32 18456.6 1101.22  
18460.2 1100.62 18515.1 1098.72 18522 1101.92 18679.4 1100.42 18698.7 1107.42  
18708.3 1108.12 18720.5 1105.92 18776.6 1100.82 18854.4 1100.12 18903.5 1097.42  
18944.6 1097.62 19011.4 1103.52 19047.5 1103.62 19084.2 1100.42 19216.8 1100.02  
19269.7 1100.02 19277.9 1099.82 19340.8 1108.62 19365.5 1109.22 19449.3 1087.92  
19464.7 1084.32 19617.8 1083.62 19658.8 1083.22 20011.3 1082.92 20067.2 1083.12  
20260.4 1083.62 20350 1083.62 20372.7 1084.32 20453.9 1108.82 20475 1109.62  
21204.4 1109.62 21217.8 1105.42 21250.9 1106.32 21299.5 1105.42 21362.4 1104.92  
21472.6 1105.02 21493.1 1105.02 21553.9 1105.82 21577.9 1105.62 21604.5 1104.52  
21612.7 1103.72 21638.7 1103.42 21661.9 1097.62 21751.1 1115.02

Manning's n Values num= 3  
Sta n Val Sta n Val Sta n Val  
16758.3 .04 19365.5 .035 20453.9 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
19365.5 20453.9 600 490.24 380 .1 .3

Ineffective Flow num= 2  
Sta L Sta R Elev Permanent  
16758.3 19365.5 1109.22 F  
20453.9 21751.1 1108.82 F

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 216.23

INPUT

Description:

Station Elevation Data num= 79  
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
16307.2 1108.92 16347.4 1108.42 16584.4 1108.72 16655.9 1108.82 16722.9 1107.12  
16805.1 1106.92 16843.8 1107.52 16940.7 1107.22 17025.5 1105.82 17072.4 1106.42  
17106.6 1106.02 17271.4 1107.22 17286.3 1107.32 17300.1 1105.12 17309.7 1105.22  
17479.7 1105.42 17486.2 1105.42 17748.9 1105.22 17792.4 1105.12 17807.8 1103.92  
17964.2 1103.32 18041.5 1103.02 18063.2 1103.62 18221.3 1103.22 18316.7 1099.72  
18393.9 1102.32 18494.3 1101.82 18526.6 1102.62 18534.7 1102.02 18548.2 1099.12  
18576.9 1102.22 18638.8 1101.52 18676.7 1098.72 18856.1 1096.42 18888.6 1094.72  
18923.6 1107.82 18937.2 1107.52 18965.6 1096.02 18973.7 1093.32 18983.9 1093.22  
19024.1 1098.32 19175.7 1099.82 19329.5 1099.42 19356.4 1095.12 19372.4 1093.82  
19394.5 1093.02 19443.1 1086.92 19458.8 1085.92 19477 1085.92 19514.7 1082.62  
19554.9 1080.62 19707.6 1080.92 19807 1080.82 19970 1080.82 20101 1081.22  
20257.8 1081.32 20360.8 1081.42 20429.8 1106.02 20444.5 1105.92 21274.9 1105.92  
21292.4 1108.22 21298.1 1108.42 21304.5 1105.92 21313.9 1103.82 21457.4 1103.52  
21690 1103.32 21797.9 1103.82 21816.8 1105.82 21840.4 1104.32 21943.8 1104.22  
21957.3 1104.92 21973.7 1103.62 22038.8 1103.12 22065.3 1104.52 22088.6 1103.12  
22106 1100.12 22140.9 1106.22 22146.7 1106.62 22197.5 1116.12

Manning's n Values num= 3  
Sta n Val Sta n Val Sta n Val  
16307.2 .04 19329.5 .035 20429.8 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
19329.5 20429.8 590 517.61 450 .1 .3

Ineffective Flow num= 2  
Sta L Sta R Elev Permanent  
16307.2 19329.5 1107.12 F  
20429.8 22197.5 1107.12 F

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 216.13

INPUT

Description:

| Station Elevation Data num= 67 |         |         |         |         |         |         |         |         |         |     |      |
|--------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-----|------|
| Sta                            | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta | Elev |
| 16426.6                        | 1108.02 | 16587.5 | 1106.82 | 16635.7 | 1104.72 | 16819.4 | 1105.42 | 16993.1 | 1105.02 |     |      |
| 17098.1                        | 1104.92 | 17115.4 | 1102.62 | 17132.4 | 1102.72 | 17142   | 1104.92 | 17188.2 | 1104.42 |     |      |
| 17212.9                        | 1105.42 | 17259.7 | 1104.82 | 17444   | 1105.12 | 17594.1 | 1104.82 | 17626.7 | 1104.42 |     |      |
| 17648.9                        | 1102.92 | 17726.6 | 1102.92 | 17763   | 1104.32 | 17831.1 | 1104.22 | 17922.1 | 1105.62 |     |      |
| 17930.8                        | 1104.02 | 17948.1 | 1105.92 | 17970.1 | 1103.02 | 18007   | 1103.02 | 18014.4 | 1097.82 |     |      |
| 18705.2                        | 1097.82 | 18812.9 | 1098.72 | 18825.4 | 1097.92 | 18974.2 | 1099.02 | 19012   | 1098.72 |     |      |
| 19022.3                        | 1100.22 | 19071.7 | 1099.82 | 19097.3 | 1100.92 | 19117.4 | 1100.92 | 19143.8 | 1103.22 |     |      |
| 19154.2                        | 1105.72 | 19166   | 1105.72 | 19179.4 | 1101.72 | 19318.1 | 1101.52 | 19345.1 | 1093.42 |     |      |
| 19390.3                        | 1089.12 | 19444.1 | 1084.92 | 19458.1 | 1085.12 | 19534.5 | 1082.12 | 19580.9 | 1084.42 |     |      |
| 19595.2                        | 1080.32 | 19849.2 | 1080.52 | 19937.8 | 1080.32 | 20155.1 | 1080.12 | 20385   | 1080.72 |     |      |
| 20445.7                        | 1102.42 | 21392   | 1102.42 | 21412.6 | 1106.62 | 21436   | 1100.72 | 21594.6 | 1101.42 |     |      |
| 21748.3                        | 1102.42 | 21786.3 | 1101.92 | 21807.4 | 1100.72 | 21868.2 | 1102.12 | 21940   | 1102.62 |     |      |
| 22096.1                        | 1103.52 | 22142.8 | 1103.42 | 22335.7 | 1102.12 | 22363.4 | 1101.02 | 22490.9 | 1102.52 |     |      |
| 22516.1                        | 1098.82 | 22597.4 | 1117.22 |         |         |         |         |         |         |     |      |

| Manning's n Values num= 3 |       |         |       |         |       |
|---------------------------|-------|---------|-------|---------|-------|
| Sta                       | n Val | Sta     | n Val | Sta     | n Val |
| 16426.6                   | .04   | 19318.1 | .035  | 20445.7 | .04   |

| Bank Sta:               | Left    | Right   | Lengths:  | Left | Channel | Right | Coeff | Contr. | Expan. |
|-------------------------|---------|---------|-----------|------|---------|-------|-------|--------|--------|
|                         | 19318.1 | 20445.7 |           | 550  | 500.46  | 390   |       | .1     | .3     |
| Ineffective Flow num= 2 |         |         |           |      |         |       |       |        |        |
| Sta L                   | Sta R   | Elev    | Permanent |      |         |       |       |        |        |
| 16426.6                 | 19318.1 | 1101.52 | F         |      |         |       |       |        |        |
| 20445.7                 | 22597.4 | 1102.42 | F         |      |         |       |       |        |        |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 216.04

INPUT

Description:

| Station Elevation Data num= 63 |         |         |         |         |         |         |         |         |         |     |      |
|--------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-----|------|
| Sta                            | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta | Elev |
| 17056.9                        | 1106.92 | 17064.5 | 1106.82 | 17069.2 | 1101.92 | 17072   | 1104.02 | 17078.9 | 1107.12 |     |      |
| 17149.1                        | 1105.52 | 17162.9 | 1104.02 | 17281   | 1102.12 | 17549.7 | 1101.52 | 17599.6 | 1102.92 |     |      |
| 17818.3                        | 1101.92 | 17961.6 | 1103.92 | 18091.7 | 1103.82 | 18098   | 1101.92 | 18798.9 | 1101.92 |     |      |
| 18807.5                        | 1096.92 | 18960.8 | 1096.92 | 19054.4 | 1096.82 | 19081.9 | 1097.62 | 19098   | 1095.62 |     |      |
| 19151.6                        | 1096.42 | 19175.6 | 1097.12 | 19188.4 | 1100.62 | 19201   | 1102.12 | 19214.9 | 1100.52 |     |      |
| 19219.3                        | 1101.22 | 19227.7 | 1105.32 | 19386.1 | 1103.72 | 19417.8 | 1091.12 | 19500.7 | 1082.72 |     |      |
| 19516.7                        | 1082.32 | 19531.5 | 1080.52 | 19608.3 | 1079.62 | 19724.9 | 1083.82 | 19739.1 | 1082.52 |     |      |
| 19758.6                        | 1083.22 | 19770   | 1079.92 | 19800   | 1079.92 | 20231.5 | 1080.52 | 20418.1 | 1080.42 |     |      |
| 20424.4                        | 1080.32 | 20473.4 | 1101.52 | 20478   | 1101.12 | 21487.5 | 1101.12 | 21501.9 | 1101.02 |     |      |
| 21528.7                        | 1106.32 | 21544.2 | 1101.82 | 21573.3 | 1101.32 | 21582.6 | 1102.52 | 21586.2 | 1104.32 |     |      |
| 21768                          | 1101.92 | 21775.2 | 1101.12 | 21961   | 1100.82 | 21988.6 | 1101.82 | 22183.1 | 1101.52 |     |      |
| 22224.8                        | 1102.62 | 22465.8 | 1102.12 | 22481.3 | 1100.52 | 22530.7 | 1100.82 | 22555.3 | 1102.92 |     |      |
| 22840.9                        | 1102.52 | 22866.7 | 1100.02 | 22941.8 | 1119.22 |         |         |         |         |     |      |

| Manning's n Values num= 3 |       |         |       |         |       |
|---------------------------|-------|---------|-------|---------|-------|
| Sta                       | n Val | Sta     | n Val | Sta     | n Val |
| 17056.9                   | .04   | 19386.1 | .035  | 20473.4 | .04   |

| Bank Sta:               | Left    | Right   | Lengths:  | Left | Channel | Right | Coeff | Contr. | Expan. |
|-------------------------|---------|---------|-----------|------|---------|-------|-------|--------|--------|
|                         | 19386.1 | 20473.4 |           | 540  | 507.78  | 500   |       | .1     | .3     |
| Ineffective Flow num= 2 |         |         |           |      |         |       |       |        |        |
| Sta L                   | Sta R   | Elev    | Permanent |      |         |       |       |        |        |
| 17056.9                 | 19386.1 | 1103.72 | F         |      |         |       |       |        |        |
| 20473.4                 | 22941.8 | 1101.52 | F         |      |         |       |       |        |        |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 215.94

INPUT

Description:

| Station Elevation Data num= 65 |         |         |         |         |         |         |         |         |         |     |      |
|--------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-----|------|
| Sta                            | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta | Elev |
| 17234.9                        | 1105.72 | 17416.5 | 1101.42 | 17481.8 | 1101.72 | 17669.1 | 1100.52 | 17750   | 1101.22 |     |      |
| 17946.3                        | 1101.42 | 18106.7 | 1101.92 | 18125.7 | 1104.62 | 18151.3 | 1096.72 | 18167.9 | 1096.72 |     |      |
| 18209                          | 1092.82 | 18234.4 | 1101.22 | 18274.9 | 1094.82 | 18296.5 | 1094.62 | 18324.6 | 1098.52 |     |      |
| 18363.1                        | 1102.12 | 18415   | 1108.82 | 18417.8 | 1109.92 | 18426.6 | 1105.52 | 19038.8 | 1105.52 |     |      |
| 19077.4                        | 1105.62 | 19085.3 | 1103.52 | 19097.5 | 1106.22 | 19147.9 | 1105.52 | 19268.7 | 1106.72 |     |      |
| 19306.1                        | 1106.62 | 19526.4 | 1109.62 | 19620.3 | 1081.42 | 19632.6 | 1081.62 | 19650.2 | 1079.92 |     |      |
| 19673.9                        | 1079.92 | 20074   | 1080.52 | 20226   | 1080.52 | 20242.2 | 1084.72 | 20312.6 | 1084.92 |     |      |
| 20361.4                        | 1088.02 | 20380.6 | 1091.22 | 20408   | 1092.22 | 20426   | 1095.42 | 20477.9 | 1095.52 |     |      |
| 20496.8                        | 1100.62 | 20512.7 | 1100.12 | 20521.3 | 1096.42 | 20544.4 | 1096.32 | 20552.5 | 1098.52 |     |      |
| 21573.5                        | 1098.52 | 21577.1 | 1102.32 | 21638.8 | 1101.82 | 21664.8 | 1105.82 | 21680.7 | 1102.52 |     |      |
| 21856.5                        | 1101.42 | 22065   | 1100.92 | 22070.7 | 1100.92 | 22073.1 | 1099.92 | 22355.6 | 1101.62 |     |      |
| 22366.6                        | 1101.92 | 22599.5 | 1101.32 | 22620.8 | 1100.22 | 22669.8 | 1100.12 | 22679.1 | 1101.62 |     |      |
| 22906.4                        | 1100.92 | 23101.2 | 1103.02 | 23111.4 | 1101.62 | 23139.6 | 1108.42 | 23179.1 | 1119.92 |     |      |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 17234.9 .04 19526.4 .035 20496.8 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19526.4 20496.8 560 540.02 520 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 17234.9 19526.4 1109.62 F  
 20496.8 23179.1 1100.62 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 215.84

INPUT

Description:

Station Elevation Data num= 55

| Sta     | Elev    |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 17657.2 | 1103.72 | 17764.4 | 1103.22 | 17778.7 | 1101.72 | 17915.7 | 1098.22 | 18947   | 1098.22 |
| 18949.6 | 1100.92 | 18966   | 1097.92 | 19012.5 | 1098.42 | 19065.4 | 1101.72 | 19087.3 | 1101.92 |
| 19091.9 | 1099.52 | 19117.9 | 1101.12 | 19128.4 | 1102.92 | 19135.6 | 1100.02 | 19142.8 | 1100.02 |
| 19299.1 | 1100.62 | 19370.8 | 1100.52 | 19556.3 | 1103.02 | 19597.1 | 1079.12 | 19685.5 | 1079.32 |
| 19875.2 | 1079.62 | 19951   | 1079.82 | 19963.2 | 1082.72 | 19989.6 | 1082.22 | 19999.6 | 1079.82 |
| 20186.5 | 1080.02 | 20315.6 | 1080.42 | 20324.3 | 1077.92 | 20340   | 1078.12 | 20351.9 | 1081.72 |
| 20416.4 | 1081.12 | 20443.6 | 1094.22 | 20461.6 | 1100.32 | 20612.7 | 1098.92 | 20680.5 | 1099.52 |
| 21713   | 1099.52 | 21721.9 | 1100.12 | 21747.8 | 1104.42 | 21761.3 | 1100.62 | 21898.1 | 1100.22 |
| 22152.1 | 1099.42 | 22203.5 | 1099.02 | 22219.4 | 1100.02 | 22403   | 1101.22 | 22420.2 | 1099.82 |
| 22434.6 | 1100.82 | 22545.4 | 1100.52 | 22704   | 1101.32 | 22777.7 | 1099.92 | 22788.5 | 1102.22 |
| 22799.7 | 1099.72 | 22986.5 | 1099.92 | 23064   | 1101.72 | 23323.1 | 1100.52 | 23377.2 | 1119.32 |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 17657.2 .04 19556.3 .035 20461.6 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19556.3 20461.6 120 123.82 130 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 17657.2 19556.3 1103.02 F  
 20461.6 23377.2 1100.32 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 215.82

INPUT

Description: Upstream Face of 24th St. Bridge

Station Elevation Data num= 15

| Sta     | Elev    |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 18260   | 1098.12 | 18620   | 1096.82 | 19170   | 1098.12 | 19549.9 | 1099.83 | 19550   | 1096.62 |
| 19550.1 | 1090.22 | 19553.1 | 1090.22 | 19587.4 | 1078.12 | 20384.4 | 1078.12 | 20407.9 | 1087.82 |
| 20410.9 | 1087.82 | 20410.9 | 1096.82 | 20411   | 1099.92 | 21080   | 1099.52 | 21490   | 1102.12 |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 18260 .04 19550 .035 20410.9 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19550 20410.9 115.96 115.96 115.96 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 18260 19550 1096.62 F  
 20410.9 21490 1087.82 F

BRIDGE

RIVER: Salt  
 REACH: 1 RS: 215.815

INPUT

Description: 24th Street

Distance from Upstream XS = 25.98  
 Deck/Roadway Width = 64  
 Weir Coefficient = 2.6  
 Upstream Deck/Roadway Coordinates

num= 13

| Sta     | Hi      | Cord    | Lo      | Cord    | Sta     | Hi      | Cord    | Lo      | Cord | Sta | Hi | Cord | Lo | Cord |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|------|-----|----|------|----|------|
| 19550   | 1099.83 | 1096.66 | 19618.9 | 1100.17 | 1096.99 | 19690.9 | 1100.57 | 1097.39 |      |     |    |      |    |      |
| 19762.9 | 1100.78 | 1097.6  | 19837.9 | 1100.79 | 1097.62 | 19906.9 | 1101.05 | 1097.88 |      |     |    |      |    |      |
| 19978.9 | 1101.05 | 1097.88 | 20053.9 | 1101.06 | 1097.89 | 20125.9 | 1100.95 | 1097.78 |      |     |    |      |    |      |
| 20197.9 | 1100.81 | 1097.63 | 20269.9 | 1100.59 | 1097.42 | 20341.9 | 1100.31 | 1097.13 |      |     |    |      |    |      |
| 20410.9 | 1099.97 | 1096.8  |         |         |         |         |         |         |      |     |    |      |    |      |

Upstream Bridge Cross Section Data

| Station Elevation Data num= 15 |         |         |         |         |         |         |         |         |         |
|--------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Sta                            | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    |
| 18260                          | 1098.12 | 18620   | 1096.82 | 19170   | 1098.12 | 19549.9 | 1099.83 | 19550   | 1096.62 |
| 19550.1                        | 1090.22 | 19553.1 | 1090.22 | 19587.4 | 1078.12 | 20384.4 | 1078.12 | 20407.9 | 1087.82 |
| 20410.9                        | 1087.82 | 20410.9 | 1096.82 | 20411   | 1099.92 | 21080   | 1099.52 | 21490   | 1102.12 |

| Manning's n Values num= 3 |       |       |       |         |       |
|---------------------------|-------|-------|-------|---------|-------|
| Sta                       | n Val | Sta   | n Val | Sta     | n Val |
| 18260                     | .04   | 19550 | .035  | 20410.9 | .04   |

Bank Sta: Left Right Coeff Contr. Expan.  
 19550 20410.9 .1 .3

| Ineffective Flow num= 2 |       |         |           |  |
|-------------------------|-------|---------|-----------|--|
| Sta L                   | Sta R | Elev    | Permanent |  |
| 18260                   | 19550 | 1096.62 | F         |  |
| 20410.9                 | 21490 | 1087.82 | F         |  |

Downstream Deck/Roadway Coordinates

| num= 13 |         |         |         |         |         |         |         |         |  |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|--|
| Sta     | Hi Cord | Lo Cord | Sta     | Hi Cord | Lo Cord | Sta     | Hi Cord | Lo Cord |  |
| 19550   | 1099.83 | 1096.66 | 19618.9 | 1100.17 | 1096.99 | 19690.9 | 1100.57 | 1097.39 |  |
| 19762.9 | 1100.78 | 1097.6  | 19837.9 | 1100.79 | 1097.62 | 19906.9 | 1101.05 | 1097.88 |  |
| 19978.9 | 1101.05 | 1097.88 | 20053.9 | 1101.06 | 1097.89 | 20125.9 | 1100.95 | 1097.78 |  |
| 20197.9 | 1100.81 | 1097.63 | 20269.9 | 1100.59 | 1097.42 | 20341.9 | 1100.31 | 1097.13 |  |
| 20410.9 | 1099.97 | 1096.8  |         |         |         |         |         |         |  |

Downstream Bridge Cross Section Data

| Station Elevation Data num= 15 |         |         |         |         |         |         |         |         |         |
|--------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Sta                            | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    |
| 18260                          | 1098.12 | 18620   | 1096.82 | 19170   | 1098.12 | 19549.9 | 1099.83 | 19550   | 1096.62 |
| 19550.1                        | 1090.22 | 19553.1 | 1090.22 | 19587.4 | 1078.12 | 20384.4 | 1078.12 | 20407.9 | 1087.82 |
| 20410.9                        | 1087.82 | 20410.9 | 1096.82 | 20411   | 1099.92 | 21080   | 1099.52 | 21490   | 1102.12 |

| Manning's n Values num= 3 |       |       |       |         |       |
|---------------------------|-------|-------|-------|---------|-------|
| Sta                       | n Val | Sta   | n Val | Sta     | n Val |
| 18260                     | .04   | 19550 | .035  | 20410.9 | .04   |

Bank Sta: Left Right Coeff Contr. Expan.  
 19550 20410.9 .1 .3

| Ineffective Flow num= 2 |       |         |           |  |
|-------------------------|-------|---------|-----------|--|
| Sta L                   | Sta R | Elev    | Permanent |  |
| 18260                   | 19550 | 1096.62 | F         |  |
| 20410.9                 | 21490 | 1087.82 | F         |  |

Upstream Embankment side slope = horiz. to 1.0 vertical  
 Downstream Embankment side slope = horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .95  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Piers = 11

| Pier Data         |           |             |         |  |  |
|-------------------|-----------|-------------|---------|--|--|
| Pier Station      | Upstream= | Downstream= |         |  |  |
| 19620.4           | 19620.4   | 19620.4     |         |  |  |
| Upstream num= 2   |           |             |         |  |  |
| width             | Elev      | width       | Elev    |  |  |
| 3                 | 1078.12   | 3           | 1096.92 |  |  |
| Downstream num= 2 |           |             |         |  |  |
| width             | Elev      | width       | Elev    |  |  |
| 3                 | 1078.12   | 3           | 1096.92 |  |  |

| Pier Data         |           |             |         |  |  |
|-------------------|-----------|-------------|---------|--|--|
| Pier Station      | Upstream= | Downstream= |         |  |  |
| 19692.4           | 19692.4   | 19692.4     |         |  |  |
| Upstream num= 2   |           |             |         |  |  |
| width             | Elev      | width       | Elev    |  |  |
| 3                 | 1078.12   | 3           | 1097.39 |  |  |
| Downstream num= 2 |           |             |         |  |  |
| width             | Elev      | width       | Elev    |  |  |
| 3                 | 1078.12   | 3           | 1097.39 |  |  |

| Pier Data         |           |             |        |  |  |
|-------------------|-----------|-------------|--------|--|--|
| Pier Station      | Upstream= | Downstream= |        |  |  |
| 19764.4           | 19764.4   | 19764.4     |        |  |  |
| Upstream num= 2   |           |             |        |  |  |
| width             | Elev      | width       | Elev   |  |  |
| 3                 | 1078.12   | 3           | 1097.6 |  |  |
| Downstream num= 2 |           |             |        |  |  |
| width             | Elev      | width       | Elev   |  |  |
| 3                 | 1078.12   | 3           | 1097.6 |  |  |

| Pier Data       |           |             |         |  |  |
|-----------------|-----------|-------------|---------|--|--|
| Pier Station    | Upstream= | Downstream= |         |  |  |
| 19836.4         | 19836.4   | 19836.4     |         |  |  |
| Upstream num= 2 |           |             |         |  |  |
| width           | Elev      | width       | Elev    |  |  |
| 3               | 1078.12   | 3           | 1097.62 |  |  |

Downstream num= 2  
 width Elev width Elev  
 3 1078.12 3 1097.62

Pier Data  
 Pier Station Upstream= 19908.4 Downstream= 19908.4  
 Upstream num= 2  
 width Elev width Elev  
 3 1078.12 3 1097.82  
 Downstream num= 2  
 width Elev width Elev  
 3 1078.12 3 1097.82

Pier Data  
 Pier Station Upstream= 19980.4 Downstream= 19980.4  
 Upstream num= 2  
 width Elev width Elev  
 3 1078.12 3 1097.82  
 Downstream num= 2  
 width Elev width Elev  
 3 1078.12 3 1097.82

Pier Data  
 Pier Station Upstream= 20052.4 Downstream= 20052.4  
 Upstream num= 2  
 width Elev width Elev  
 3 1078.12 3 1097.82  
 Downstream num= 2  
 width Elev width Elev  
 3 1078.12 3 1097.82

Pier Data  
 Pier Station Upstream= 20124.4 Downstream= 20124.4  
 Upstream num= 2  
 width Elev width Elev  
 3 1078.12 3 1097.72  
 Downstream num= 2  
 width Elev width Elev  
 3 1078.12 3 1097.72

Pier Data  
 Pier Station Upstream= 20196.4 Downstream= 20196.4  
 Upstream num= 2  
 width Elev width Elev  
 3 1078.12 3 1097.62  
 Downstream num= 2  
 width Elev width Elev  
 3 1078.12 3 1097.62

Pier Data  
 Pier Station Upstream= 20268.4 Downstream= 20268.4  
 Upstream num= 2  
 width Elev width Elev  
 3 1078.12 3 1097.42  
 Downstream num= 2  
 width Elev width Elev  
 3 1078.12 3 1097.42

Pier Data  
 Pier Station Upstream= 20340.4 Downstream= 20340.4  
 Upstream num= 2  
 width Elev width Elev  
 3 1078.12 3 1097.12  
 Downstream num= 2  
 width Elev width Elev  
 3 1078.12 3 1097.12

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy  
 Momentum Cd = 1.2  
 Yarnell KVal = 1.05

Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Energy Only

Additional Bridge Parameters

Add Friction component to Momentum  
 Do not add Weight component to Momentum  
 Class B flow critical depth computations use critical depth  
 inside the bridge at the upstream end  
 Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Salt  
REACH: 1

RS: 215.81

INPUT

Description: Downstream Face of 24th St. Bridge

| Station Elevation Data |         | num= 15 |         | Sta     |         | Elev    |         | Sta     |         | Elev |      |
|------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|------|------|
| Sta                    | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta  | Elev |
| 18260                  | 1098.12 | 18620   | 1096.82 | 19170   | 1098.12 | 19549.9 | 1099.83 | 19550   | 1096.62 |      |      |
| 19550.1                | 1090.22 | 19553.1 | 1090.22 | 19587.4 | 1078.12 | 20384.4 | 1078.12 | 20407.9 | 1087.82 |      |      |
| 20410.9                | 1087.82 | 20410.9 | 1096.82 | 20411   | 1099.92 | 21080   | 1099.52 | 21490   | 1102.12 |      |      |

| Manning's n Values |       | num= 3 |       | Sta     |       | n Val |       |
|--------------------|-------|--------|-------|---------|-------|-------|-------|
| Sta                | n Val | Sta    | n Val | Sta     | n Val | Sta   | n Val |
| 18260              | .04   | 19550  | .035  | 20410.9 | .04   |       |       |

| Bank Sta: | Left  | Right   | Lengths: | Left Channel | Right  | Coeff Contr. | Expan. |
|-----------|-------|---------|----------|--------------|--------|--------------|--------|
|           | 19550 | 20410.9 |          | 300          | 264.36 | .1           | .3     |

| Ineffective Flow |       | num= 2  |           | Sta |      | Elev |      | Permanent |      |
|------------------|-------|---------|-----------|-----|------|------|------|-----------|------|
| Sta L            | Sta R | Elev    | Permanent | Sta | Elev | Sta  | Elev | Sta       | Elev |
| 18260            | 19550 | 1096.62 | F         |     |      |      |      |           |      |
| 20410.9          | 21490 | 1087.82 | F         |     |      |      |      |           |      |

CROSS SECTION

RIVER: Salt  
REACH: 1

RS: 215.75

INPUT

Description:

| Station Elevation Data |         | num= 56 |         | Sta     |         | Elev    |         | Sta     |         | Elev |      |
|------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|------|------|
| Sta                    | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta  | Elev |
| 17125.3                | 1102.22 | 17248.5 | 1101.92 | 17267.3 | 1102.92 | 17468.2 | 1102.22 | 17719.4 | 1101.82 |      |      |
| 17947.7                | 1099.92 | 18060.6 | 1101.42 | 18081.3 | 1098.82 | 18136.4 | 1099.52 | 19508   | 1099.82 |      |      |
| 19508.1                | 1099.72 | 19524   | 1099.52 | 19542.9 | 1097.22 | 19551.7 | 1097.82 | 19565.8 | 1093.02 |      |      |
| 19639.9                | 1076.32 | 19781.5 | 1075.72 | 19800.3 | 1077.12 | 20035.2 | 1076.62 | 20197.2 | 1077.22 |      |      |
| 20278.8                | 1078.92 | 20300   | 1076.82 | 20349.4 | 1081.42 | 20362   | 1085.02 | 20390.2 | 1085.72 |      |      |
| 20417.4                | 1089.42 | 20492.6 | 1095.52 | 20522.5 | 1096.72 | 21418.5 | 1096.72 | 21459.6 | 1098.22 |      |      |
| 21491.5                | 1098.42 | 21500.1 | 1099.32 | 21614.1 | 1096.62 | 21671.6 | 1100.22 | 21725.1 | 1104.12 |      |      |
| 21736.3                | 1100.32 | 21746.9 | 1100.42 | 21761.2 | 1098.02 | 21937.7 | 1097.92 | 22101   | 1097.82 |      |      |
| 22107.9                | 1099.22 | 22124.7 | 1096.02 | 22195.8 | 1096.72 | 22429.3 | 1097.02 | 22460.5 | 1097.02 |      |      |
| 22651.2                | 1096.32 | 22731.5 | 1096.72 | 22743.8 | 1098.32 | 22841.4 | 1097.92 | 22852.4 | 1099.42 |      |      |
| 23039.9                | 1099.72 | 23152.1 | 1099.52 | 23353.9 | 1098.72 | 23520.2 | 1099.62 | 23562   | 1099.52 |      |      |
| 23577.6                | 1112.82 |         |         |         |         |         |         |         |         |      |      |

| Manning's n Values |       | num= 3  |       | Sta     |       | n Val |       |
|--------------------|-------|---------|-------|---------|-------|-------|-------|
| Sta                | n Val | Sta     | n Val | Sta     | n Val | Sta   | n Val |
| 17125.3            | .04   | 19508.1 | .035  | 20522.5 | .04   |       |       |

| Bank Sta: | Left    | Right   | Lengths: | Left Channel | Right  | Coeff Contr. | Expan. |
|-----------|---------|---------|----------|--------------|--------|--------------|--------|
|           | 19508.1 | 20522.5 |          | 520          | 500.69 | .1           | .3     |

| Ineffective Flow |         | num= 2  |           | Sta |      | Elev |      | Permanent |      |
|------------------|---------|---------|-----------|-----|------|------|------|-----------|------|
| Sta L            | Sta R   | Elev    | Permanent | Sta | Elev | Sta  | Elev | Sta       | Elev |
| 17125.3          | 19508.1 | 1099.72 | F         |     |      |      |      |           |      |
| 20522.5          | 23577.6 | 1096.72 | F         |     |      |      |      |           |      |

CROSS SECTION

RIVER: Salt  
REACH: 1

RS: 215.65

INPUT

Description:

| Station Elevation Data |         | num= 61 |         | Sta     |         | Elev    |         | Sta     |         | Elev |      |
|------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|------|------|
| Sta                    | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta  | Elev |
| 17237.9                | 1102.12 | 17294.9 | 1098.52 | 17506.5 | 1100.12 | 17570   | 1099.22 | 17577.1 | 1097.22 |      |      |
| 17602.5                | 1099.02 | 17605.7 | 1098.22 | 17674.7 | 1098.22 | 17931.2 | 1099.52 | 17961.2 | 1101.82 |      |      |
| 18192.8                | 1101.22 | 18200.6 | 1099.02 | 18232.2 | 1098.32 | 18235   | 1097.52 | 19571.5 | 1097.52 |      |      |
| 19624.9                | 1081.22 | 19666.3 | 1073.42 | 19745.1 | 1073.12 | 19765.3 | 1071.72 | 19937   | 1076.52 |      |      |
| 19947.9                | 1076.92 | 19985.2 | 1071.92 | 20174.6 | 1074.22 | 20310.4 | 1073.42 | 20317.9 | 1071.22 |      |      |
| 20354.5                | 1071.72 | 20364.9 | 1070.42 | 20392.2 | 1071.22 | 20433.1 | 1072.82 | 20501.7 | 1096.12 |      |      |
| 20596.4                | 1096.32 | 20609.1 | 1098.22 | 21422   | 1098.22 | 21423.7 | 1098.52 | 21575   | 1100.12 |      |      |
| 21679                  | 1099.22 | 21682   | 1102.82 | 21704.4 | 1102.82 | 21722.1 | 1096.02 | 21744.5 | 1096.72 |      |      |
| 21842.9                | 1095.82 | 22013.6 | 1095.62 | 22043.6 | 1095.62 | 22083.7 | 1093.92 | 22095.5 | 1092.32 |      |      |
| 22108.8                | 1094.42 | 22174.7 | 1095.32 | 22431   | 1096.42 | 22454   | 1094.92 | 22649.2 | 1094.52 |      |      |
| 22655.2                | 1093.82 | 22737.1 | 1095.52 | 22922.4 | 1095.62 | 23042.9 | 1095.32 | 23072.9 | 1094.02 |      |      |
| 23243.1                | 1093.92 | 23338.1 | 1094.12 | 23510.7 | 1095.82 | 23552.2 | 1095.72 | 23611.8 | 1097.32 |      |      |
| 23634.8                | 1119.32 |         |         |         |         |         |         |         |         |      |      |

| Manning's n Values |       | num= 3  |       | Sta     |       | n Val |       |
|--------------------|-------|---------|-------|---------|-------|-------|-------|
| Sta                | n Val | Sta     | n Val | Sta     | n Val | Sta   | n Val |
| 17237.9            | .04   | 19571.5 | .035  | 20501.7 | .04   |       |       |

| Bank Sta: | Left    | Right   | Lengths: | Left Channel | Right  | Coeff Contr. | Expan. |
|-----------|---------|---------|----------|--------------|--------|--------------|--------|
|           | 19571.5 | 20501.7 |          | 500          | 495.44 | .1           | .3     |

| Ineffective Flow |       | num= 2 |           | Sta |      | Elev |      | Permanent |      |
|------------------|-------|--------|-----------|-----|------|------|------|-----------|------|
| Sta L            | Sta R | Elev   | Permanent | Sta | Elev | Sta  | Elev | Sta       | Elev |
|                  |       |        |           |     |      |      |      |           |      |

17237.9 19571.5 1097.52 F  
20501.7 23634.8 1096.12 F

CROSS SECTION

RIVER: salt  
REACH: 1 RS: 215.56

INPUT

Description:

| Station Elevation Data |         | num= 59 |         |         |         |         |         |         |         |     |      |
|------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-----|------|
| Sta                    | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta | Elev |
| 17244.5                | 1100.22 | 17272.8 | 1098.12 | 17490.4 | 1098.82 | 17563.5 | 1097.32 | 17636   | 1097.22 |     |      |
| 17908.7                | 1097.02 | 17949.5 | 1096.92 | 18148.7 | 1097.32 | 18255.9 | 1097.42 | 18329.2 | 1095.42 |     |      |
| 18342.1                | 1095.62 | 18349   | 1093.62 | 19576.8 | 1093.62 | 19646   | 1070.62 | 19758.9 | 1070.82 |     |      |
| 19783.4                | 1072.42 | 19891.8 | 1073.22 | 19918.1 | 1071.62 | 19960.4 | 1068.22 | 19980   | 1068.22 |     |      |
| 20229.6                | 1068.72 | 20268.2 | 1069.02 | 20299.5 | 1070.72 | 20316.3 | 1070.92 | 20323.7 | 1068.62 |     |      |
| 20361                  | 1069.22 | 20366.3 | 1070.32 | 20406.8 | 1073.02 | 20445.6 | 1073.62 | 20469   | 1081.72 |     |      |
| 20510                  | 1094.82 | 20617   | 1093.62 | 20632.4 | 1097.22 | 21437.6 | 1097.22 | 21444   | 1101.52 |     |      |
| 21597.8                | 1099.02 | 21664.2 | 1098.22 | 21674.8 | 1101.72 | 21689.5 | 1102.02 | 21706.3 | 1094.92 |     |      |
| 21832.1                | 1094.32 | 22077.5 | 1094.02 | 22106.9 | 1092.82 | 22148.1 | 1093.92 | 22286.4 | 1094.12 |     |      |
| 22419.1                | 1094.72 | 22464.2 | 1093.52 | 22630.1 | 1093.22 | 22636.8 | 1092.72 | 22754   | 1093.52 |     |      |
| 22759.4                | 1094.32 | 22832.1 | 1093.82 | 22984   | 1093.52 | 23017.5 | 1093.52 | 23054.9 | 1095.12 |     |      |
| 23104                  | 1094.52 | 23477.4 | 1094.42 | 23608.9 | 1096.02 | 23646   | 1113.62 |         |         |     |      |

| Manning's n Values |       | num= 3  |       |       |       |
|--------------------|-------|---------|-------|-------|-------|
| Sta                | n Val | Sta     | n Val | Sta   | n Val |
| 17244.5            | .04   | 19576.8 | .035  | 20510 | .04   |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19576.8 20510 500 498.23 500 .1 .3

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 17244.5 19576.8 1093.62 F  
 20510 23646 1094.82 F

CROSS SECTION

RIVER: salt  
REACH: 1 RS: 215.46

INPUT

Description:

| Station Elevation Data |         | num= 64 |         |         |         |         |         |         |         |     |      |
|------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-----|------|
| Sta                    | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta | Elev |
| 17157.6                | 1099.12 | 17197.5 | 1098.72 | 17218.9 | 1097.52 | 17367.9 | 1097.82 | 17545.9 | 1096.72 |     |      |
| 17740.4                | 1096.42 | 17965.1 | 1096.52 | 18148.7 | 1096.02 | 18153.7 | 1095.82 | 18356.5 | 1096.52 |     |      |
| 18485.3                | 1097.62 | 18487.7 | 1096.82 | 18549.4 | 1096.92 | 18565.7 | 1100.82 | 18592.7 | 1097.52 |     |      |
| 18606.4                | 1089.82 | 18625.8 | 1096.82 | 18648.9 | 1095.52 | 18656.9 | 1093.62 | 18657.5 | 1092.92 |     |      |
| 19591                  | 1092.92 | 19645.5 | 1072.12 | 19690.6 | 1070.62 | 19884.9 | 1070.12 | 19970.8 | 1069.82 |     |      |
| 20003.1                | 1066.72 | 20025.6 | 1066.72 | 20257.6 | 1067.22 | 20338.3 | 1067.42 | 20360.8 | 1071.12 |     |      |
| 20415.1                | 1070.42 | 20460.8 | 1068.22 | 20521.1 | 1091.62 | 20665.6 | 1092.72 | 20667   | 1091.12 |     |      |
| 21339.6                | 1091.12 | 21437   | 1090.82 | 21480.8 | 1091.62 | 21632.1 | 1089.82 | 21658.8 | 1100.42 |     |      |
| 21669                  | 1100.22 | 21686   | 1093.42 | 21692.6 | 1094.52 | 21873.1 | 1092.22 | 21942.8 | 1092.22 |     |      |
| 21975.7                | 1093.52 | 22045.5 | 1092.52 | 22054.9 | 1093.02 | 22073.1 | 1092.12 | 22126.3 | 1091.92 |     |      |
| 22139.4                | 1093.32 | 22375.5 | 1092.12 | 22396.5 | 1091.92 | 22591.1 | 1090.92 | 22602.5 | 1090.82 |     |      |
| 22603.9                | 1091.62 | 22794   | 1092.22 | 22983.8 | 1092.92 | 23032.5 | 1094.82 | 23062.2 | 1094.72 |     |      |
| 23377                  | 1093.22 | 23496.3 | 1093.22 | 23528.4 | 1094.02 | 23621.3 | 1107.42 |         |         |     |      |

| Manning's n Values |       | num= 3 |       |         |       |
|--------------------|-------|--------|-------|---------|-------|
| Sta                | n Val | Sta    | n Val | Sta     | n Val |
| 17157.6            | .04   | 19591  | .035  | 20521.1 | .04   |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19591 20521.1 510 519.75 530 .1 .3

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 17157.6 19591 1092.92 F  
 20521.1 23621.3 1091.62 F

CROSS SECTION

RIVER: salt  
REACH: 1 RS: 215.36

INPUT

Description:

| Station Elevation Data |         | num= 64 |         |         |         |         |         |         |         |     |      |
|------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-----|------|
| Sta                    | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta | Elev |
| 17106.4                | 1097.52 | 17213.1 | 1095.52 | 17305.8 | 1095.12 | 17386.4 | 1096.02 | 17614.5 | 1095.02 |     |      |
| 17741.1                | 1095.32 | 17826.6 | 1094.02 | 17953.5 | 1094.32 | 17968   | 1093.62 | 17977.8 | 1094.82 |     |      |
| 18139.6                | 1093.92 | 18170.3 | 1093.32 | 18258.3 | 1095.22 | 18362.4 | 1093.42 | 18522.8 | 1094.22 |     |      |
| 18599.4                | 1095.02 | 18641.9 | 1096.22 | 18654.3 | 1089.22 | 19618   | 1089.22 | 19693.8 | 1068.92 |     |      |
| 19739.6                | 1068.72 | 19764.2 | 1066.92 | 19975   | 1065.32 | 20080.9 | 1065.12 | 20309.6 | 1066.12 |     |      |
| 20382.2                | 1066.92 | 20413.8 | 1068.02 | 20478.9 | 1067.62 | 20537   | 1088.92 | 21350.7 | 1088.92 |     |      |

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|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 21356.2 | 1091.62 | 21442.6 | 1089.02 | 21548.9 | 1088.12 | 21595   | 1090.42 | 21621.4 | 1090.82 |
| 21647.6 | 1096.92 | 21684.8 | 1090.42 | 21717.1 | 1092.22 | 21875.2 | 1091.02 | 21917   | 1091.32 |
| 22096.8 | 1091.22 | 22215.6 | 1088.22 | 22360.8 | 1087.92 | 22395.8 | 1087.92 | 22542   | 1088.72 |
| 22595.4 | 1087.82 | 22650.1 | 1088.62 | 22655.9 | 1089.32 | 22804.8 | 1088.72 | 22841.4 | 1088.82 |
| 22875   | 1088.52 | 22885   | 1090.22 | 22968.8 | 1089.82 | 23111.1 | 1089.72 | 23285.5 | 1089.52 |
| 23328.3 | 1090.02 | 23371.5 | 1089.62 | 23577   | 1089.72 | 23593.2 | 1092.32 | 23609.1 | 1091.02 |
| 23648.3 | 1099.42 | 23658.9 | 1098.12 | 23675.8 | 1092.72 | 23715.5 | 1103.72 |         |         |

Manning's n Values num= 3

| Sta     | n Val | Sta   | n Val | Sta   | n Val |
|---------|-------|-------|-------|-------|-------|
| 17106.4 | .04   | 19618 | .035  | 20537 | .04   |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

|       |       |     |        |     |    |    |
|-------|-------|-----|--------|-----|----|----|
| 19618 | 20537 | 500 | 489.19 | 470 | .1 | .3 |
|-------|-------|-----|--------|-----|----|----|

Ineffective Flow num= 2

| Sta L   | Sta R   | Elev    | Permanent |
|---------|---------|---------|-----------|
| 17106.4 | 19618   | 1102.12 | F         |
| 20537   | 23715.5 | 1102.12 | F         |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 215.27

INPUT  
Description:

Station Elevation Data num= 77

| Sta     | Elev    |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 17090.5 | 1094.62 | 17125.9 | 1093.92 | 17271.2 | 1093.12 | 17438.5 | 1091.32 | 17533.4 | 1091.02 |
| 17640   | 1092.02 | 17664.2 | 1091.32 | 17876.8 | 1091.12 | 17899.3 | 1091.32 | 18048.7 | 1092.92 |
| 18192.2 | 1094.32 | 18319.4 | 1094.72 | 18358.5 | 1093.62 | 18364.6 | 1094.12 | 18578.6 | 1093.82 |
| 18646.5 | 1093.82 | 18655.9 | 1093.42 | 18680.5 | 1099.02 | 18688.1 | 1096.42 | 18692.1 | 1094.02 |
| 18696.3 | 1092.72 | 18744.7 | 1091.12 | 18753.3 | 1085.52 | 19610.6 | 1085.52 | 19638.3 | 1084.02 |
| 19658.6 | 1084.12 | 19664.5 | 1080.52 | 19689.8 | 1076.62 | 19734.4 | 1074.52 | 19788.6 | 1070.22 |
| 19800.7 | 1066.62 | 19816.1 | 1065.62 | 19988.7 | 1065.82 | 20291.3 | 1066.12 | 20359.1 | 1066.92 |
| 20485.4 | 1066.12 | 20492.7 | 1066.62 | 20543.3 | 1087.02 | 20553.9 | 1087.42 | 20674.7 | 1086.22 |
| 20741.1 | 1084.82 | 20810.5 | 1086.02 | 20988.4 | 1086.82 | 21096.9 | 1087.42 | 21291.5 | 1088.42 |
| 21372.9 | 1088.72 | 21433.7 | 1089.52 | 21444.6 | 1090.52 | 21500.3 | 1092.12 | 21568.4 | 1092.12 |
| 21595.8 | 1090.12 | 21615.4 | 1090.22 | 21621.3 | 1088.62 | 21640.8 | 1088.42 | 21657.4 | 1089.72 |
| 21816   | 1089.82 | 21877.8 | 1089.82 | 22012.9 | 1088.92 | 22120.8 | 1088.22 | 22257   | 1088.42 |
| 22398.5 | 1087.82 | 22567.9 | 1087.42 | 22633.4 | 1087.22 | 22673   | 1088.12 | 22821.6 | 1088.22 |
| 22954.1 | 1088.82 | 22955.4 | 1088.82 | 23113.9 | 1088.42 | 23261   | 1088.42 | 23311.5 | 1088.32 |
| 23360.5 | 1090.32 | 23492.9 | 1091.12 | 23595.2 | 1091.52 | 23637   | 1096.32 | 23668.2 | 1092.12 |
| 23685.9 | 1090.52 | 23765.1 | 1106.82 |         |         |         |         |         |         |

Manning's n Values num= 3

| Sta     | n Val | Sta     | n Val | Sta     | n Val |
|---------|-------|---------|-------|---------|-------|
| 17090.5 | .04   | 19610.6 | .035  | 20553.9 | .04   |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

|         |         |     |        |     |    |    |
|---------|---------|-----|--------|-----|----|----|
| 19610.6 | 20553.9 | 550 | 493.27 | 420 | .1 | .3 |
|---------|---------|-----|--------|-----|----|----|

Ineffective Flow num= 2

| Sta L   | Sta R   | Elev    | Permanent |
|---------|---------|---------|-----------|
| 17090.5 | 19610.6 | 1102.12 | F         |
| 20553.9 | 23765.1 | 1102.12 | F         |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 215.18

INPUT  
Description:

Station Elevation Data num= 82

| Sta     | Elev    |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 17264.2 | 1092.92 | 17267.2 | 1091.42 | 17273   | 1089.42 | 17291.3 | 1092.32 | 17304   | 1092.42 |
| 17325   | 1090.82 | 17458.3 | 1090.12 | 17486.9 | 1088.92 | 17535   | 1088.52 | 17628.8 | 1090.02 |
| 17696.9 | 1092.22 | 17830.5 | 1091.82 | 17979.7 | 1091.82 | 18157.5 | 1093.02 | 18287.9 | 1093.42 |
| 18300.1 | 1092.82 | 18347.7 | 1093.42 | 18585.6 | 1092.22 | 18646.8 | 1092.42 | 18667.5 | 1092.02 |
| 18679.9 | 1094.62 | 18692.8 | 1098.32 | 18714.9 | 1091.52 | 18737.9 | 1091.32 | 18743.1 | 1087.72 |
| 19632.1 | 1087.72 | 19675.5 | 1086.52 | 19680.3 | 1084.72 | 19742.5 | 1069.22 | 19752.8 | 1069.32 |
| 19761.7 | 1070.02 | 19783.3 | 1069.52 | 19806.4 | 1064.32 | 19944.1 | 1064.82 | 20163.9 | 1065.62 |
| 20177.3 | 1065.62 | 20291.4 | 1086.62 | 20332.7 | 1090.52 | 20361.5 | 1082.42 | 20367.6 | 1080.02 |
| 20376.7 | 1080.72 | 20417.9 | 1081.72 | 20435.7 | 1086.72 | 20442.6 | 1087.62 | 20492.9 | 1086.22 |
| 20569.6 | 1086.42 | 20749.1 | 1086.72 | 20914.6 | 1086.62 | 21029.5 | 1085.82 | 21215.8 | 1085.72 |
| 21233.3 | 1085.72 | 21261.9 | 1090.52 | 21398.3 | 1091.92 | 21450.7 | 1093.72 | 21475.8 | 1081.72 |
| 21498.2 | 1084.52 | 21659.9 | 1086.62 | 21881.6 | 1086.82 | 22049.7 | 1087.32 | 22106.3 | 1087.52 |
| 22138.4 | 1088.12 | 22270.3 | 1088.32 | 22336.5 | 1088.82 | 22396.7 | 1087.52 | 22535.4 | 1087.72 |
| 22591.4 | 1088.12 | 22633   | 1089.12 | 22652.7 | 1090.42 | 22794.6 | 1090.62 | 23004.1 | 1090.92 |
| 23096.1 | 1090.32 | 23105.4 | 1091.42 | 23217.9 | 1090.82 | 23251.2 | 1089.32 | 23262.6 | 1089.62 |
| 23297   | 1088.82 | 23345.6 | 1089.92 | 23359.3 | 1090.72 | 23512.7 | 1090.32 | 23575.8 | 1089.82 |
| 23635.4 | 1090.32 | 23708.6 | 1105.42 |         |         |         |         |         |         |

Manning's n Values num= 3

| Sta     | n Val | Sta     | n Val | Sta     | n Val |
|---------|-------|---------|-------|---------|-------|
| 17264.2 | .04   | 19632.1 | .035  | 20332.7 | .04   |

Corr\_Effective\_SkyHarbor.rep

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19632.1 20332.7 560 481.96 420 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 17264.2 19632.1 1087.72 F  
 20332.7 23708.6 1090.52 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 215.09

INPUT

Description:

Station Elevation Data num= 85  

| Sta     | Elev    |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 17408.5 | 1093.02 | 17416.6 | 1090.32 | 17421.3 | 1088.12 | 17442.5 | 1091.22 | 17476.3 | 1091.32 |
| 17546   | 1090.22 | 17558.7 | 1088.62 | 17572.7 | 1087.42 | 17703.3 | 1088.12 | 17806.6 | 1087.62 |
| 17909.6 | 1088.92 | 17924.4 | 1089.92 | 17983.8 | 1091.02 | 18162.6 | 1091.32 | 18175.2 | 1091.32 |
| 18515.9 | 1090.32 | 18545.9 | 1090.22 | 18607.3 | 1090.72 | 18713.9 | 1090.62 | 18807.7 | 1089.52 |
| 18955   | 1089.22 | 18958.8 | 1089.22 | 18981.5 | 1090.72 | 18992.5 | 1091.02 | 19625.7 | 1091.02 |
| 19652.2 | 1092.22 | 19661.5 | 1093.02 | 19663   | 1090.72 | 19671.4 | 1084.52 | 19701.2 | 1070.62 |
| 19706.6 | 1067.32 | 19710.4 | 1065.92 | 19728.4 | 1064.32 | 19740   | 1063.82 | 19850.6 | 1063.82 |
| 20037.2 | 1064.52 | 20199.1 | 1065.12 | 20266.5 | 1065.32 | 20300.4 | 1088.02 | 20376.8 | 1087.12 |
| 20573.3 | 1086.32 | 20754.5 | 1086.52 | 20797.5 | 1086.62 | 20844   | 1090.52 | 20895.9 | 1098.72 |
| 20944   | 1102.12 | 20968.9 | 1101.92 | 21092.4 | 1087.22 | 21164.6 | 1087.22 | 21295.4 | 1087.92 |
| 21349.7 | 1089.42 | 21430.1 | 1091.12 | 21447.6 | 1085.02 | 21471.4 | 1085.02 | 21513.2 | 1086.22 |
| 21561.7 | 1086.12 | 21748.6 | 1087.72 | 21846.1 | 1088.62 | 22044.7 | 1087.22 | 22068.2 | 1087.22 |
| 22104.8 | 1088.32 | 22198.3 | 1087.52 | 22331   | 1088.72 | 22392.4 | 1087.62 | 22427.1 | 1087.82 |
| 22569.2 | 1088.32 | 22579.3 | 1088.22 | 22596.4 | 1088.62 | 22617.4 | 1088.52 | 22634.7 | 1089.62 |
| 22750   | 1090.02 | 22789.2 | 1089.42 | 22835.4 | 1089.92 | 22986   | 1089.82 | 23133.3 | 1090.32 |
| 23240.2 | 1089.42 | 23275.3 | 1088.52 | 23337   | 1088.82 | 23342.5 | 1089.42 | 23353.1 | 1089.92 |
| 23397.8 | 1089.92 | 23559.8 | 1089.02 | 23602   | 1088.92 | 23694.4 | 1092.22 | 23776.7 | 1109.22 |

Manning's n Values num= 3  

| Sta     | n Val | Sta     | n Val | Sta     | n Val |
|---------|-------|---------|-------|---------|-------|
| 17408.5 | .04   | 19661.5 | .035  | 20300.4 | .04   |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19661.5 20300.4 510 506.22 510 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 17408.5 19661.5 1093.02 F  
 20300.4 23776.7 1088.02 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 214.99

INPUT

Description:

Station Elevation Data num= 83  

| Sta     | Elev    |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 17407.8 | 1091.62 | 17423.9 | 1091.32 | 17429.3 | 1090.02 | 17485.8 | 1088.52 | 17505.6 | 1088.52 |
| 17523   | 1087.82 | 17609.3 | 1087.82 | 17618.9 | 1087.52 | 17743   | 1086.72 | 17878.9 | 1088.42 |
| 18005.4 | 1089.32 | 18122.3 | 1089.62 | 18136.6 | 1089.42 | 18144.6 | 1090.52 | 18167.8 | 1089.32 |
| 18307.7 | 1089.52 | 18356.8 | 1089.52 | 18518.3 | 1089.32 | 18532.6 | 1089.32 | 18670.1 | 1089.52 |
| 18800.7 | 1089.12 | 18814.1 | 1089.42 | 18841.1 | 1089.12 | 18876.6 | 1090.72 | 19535   | 1090.72 |
| 19537.3 | 1091.52 | 19576.5 | 1092.12 | 19647.7 | 1063.42 | 19774.3 | 1063.72 | 19811   | 1065.62 |
| 19862.3 | 1064.42 | 19880.7 | 1063.52 | 20041   | 1065.32 | 20098.1 | 1069.92 | 20122.6 | 1072.82 |
| 20129.8 | 1069.72 | 20144.8 | 1065.32 | 20173.6 | 1065.22 | 20299.7 | 1065.12 | 20317   | 1074.92 |
| 20339.8 | 1088.32 | 20525.1 | 1088.32 | 20650.8 | 1087.82 | 20674.7 | 1087.72 | 20699.2 | 1088.62 |
| 20716.1 | 1088.72 | 20846.1 | 1090.22 | 20861.2 | 1090.42 | 20978.5 | 1089.72 | 21008   | 1086.32 |
| 21091.3 | 1085.62 | 21285.7 | 1086.02 | 21419.6 | 1086.42 | 21479.2 | 1086.92 | 21650.3 | 1087.72 |
| 22046   | 1087.62 | 22169.3 | 1087.02 | 22233.7 | 1087.62 | 22353.8 | 1087.42 | 22372.2 | 1087.42 |
| 22392.8 | 1086.52 | 22402.3 | 1087.12 | 22421.9 | 1087.02 | 22433.5 | 1087.32 | 22439.7 | 1087.92 |
| 22461.8 | 1087.52 | 22651.2 | 1087.52 | 22691.6 | 1087.62 | 22821.4 | 1088.22 | 22866.5 | 1088.52 |
| 22987.8 | 1088.82 | 23105.7 | 1089.02 | 23132.5 | 1087.12 | 23156.1 | 1086.62 | 23177.8 | 1089.12 |
| 23227.7 | 1088.42 | 23297   | 1088.12 | 23335.6 | 1088.72 | 23474.8 | 1088.42 | 23490.7 | 1090.62 |
| 23517.5 | 1090.32 | 23570.5 | 1091.92 | 23652.7 | 1109.22 |         |         |         |         |

Manning's n Values num= 3  

| Sta     | n Val | Sta     | n Val | Sta     | n Val |
|---------|-------|---------|-------|---------|-------|
| 17407.8 | .04   | 19576.5 | .035  | 20339.8 | .04   |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19576.5 20339.8 480 505.18 530 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 17407.8 19576.5 1092.12 F  
 20339.8 23652.7 1088.32 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 214.9

INPUT

Description:

| Station Elevation Data num= 90 |         |         |         |         |         |         |         |         |         |     |      |
|--------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-----|------|
| Sta                            | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta | Elev |
| 17273.7                        | 1093.02 | 17286.3 | 1087.02 | 17295.6 | 1088.82 | 17304.6 | 1091.12 | 17343.3 | 1089.32 |     |      |
| 17361                          | 1088.92 | 17420   | 1088.92 | 17464   | 1088.52 | 17476.4 | 1087.62 | 17563.2 | 1087.22 |     |      |
| 17570.1                        | 1087.62 | 17695.7 | 1087.32 | 17812.7 | 1087.32 | 17858   | 1087.72 | 18002.1 | 1088.62 |     |      |
| 18035.5                        | 1088.72 | 18055.5 | 1089.22 | 18135.4 | 1088.62 | 18262.5 | 1088.12 | 18362.4 | 1088.12 |     |      |
| 18497.3                        | 1088.22 | 18624.5 | 1088.22 | 18665   | 1088.22 | 18714.4 | 1088.92 | 19289   | 1088.92 |     |      |
| 19292                          | 1090.12 | 19353.9 | 1090.62 | 19494.2 | 1090.22 | 19537.4 | 1090.12 | 19609.3 | 1063.32 |     |      |
| 19764.9                        | 1063.52 | 19806   | 1064.52 | 19829   | 1063.52 | 20013.5 | 1064.72 | 20062.9 | 1064.92 |     |      |
| 20089.1                        | 1070.62 | 20158.2 | 1068.92 | 20297.6 | 1064.92 | 20315.9 | 1064.52 | 20373.4 | 1080.02 |     |      |
| 20419                          | 1090.72 | 20423.3 | 1091.12 | 20466.5 | 1105.72 | 20501.8 | 1106.32 | 20532.8 | 1104.52 |     |      |
| 20550.3                        | 1106.82 | 20579.1 | 1101.52 | 20585.2 | 1098.72 | 20607.1 | 1087.02 | 20640.5 | 1086.42 |     |      |
| 20667.3                        | 1085.12 | 20680.5 | 1080.72 | 20687.2 | 1080.12 | 20808.2 | 1080.02 | 20840   | 1084.82 |     |      |
| 20852.6                        | 1087.62 | 20855.2 | 1086.62 | 20889.3 | 1086.32 | 20907.9 | 1085.72 | 20920.2 | 1084.22 |     |      |
| 20931.6                        | 1083.32 | 21060.7 | 1083.32 | 21142.3 | 1083.52 | 21160.5 | 1084.82 | 21218.3 | 1085.42 |     |      |
| 21443.8                        | 1086.32 | 21688.5 | 1085.92 | 21722.5 | 1085.92 | 21848.4 | 1085.72 | 21865.2 | 1086.32 |     |      |
| 22041                          | 1086.42 | 22200.7 | 1087.32 | 22219.2 | 1087.12 | 22278.4 | 1088.12 | 22363   | 1087.12 |     |      |
| 22451.4                        | 1087.52 | 22567.2 | 1088.72 | 22662.3 | 1088.32 | 22753.5 | 1088.32 | 22924.8 | 1087.12 |     |      |
| 22954.2                        | 1087.22 | 22991.2 | 1086.52 | 22997.7 | 1087.22 | 23004.4 | 1089.02 | 23029.6 | 1088.52 |     |      |
| 23200.8                        | 1090.82 | 23354.3 | 1092.32 | 23416.1 | 1092.22 | 23433.4 | 1091.82 | 23466.2 | 1101.02 |     |      |

| Manning's n Values num= 3 |       |         |       |         |       |
|---------------------------|-------|---------|-------|---------|-------|
| Sta                       | n Val | Sta     | n Val | Sta     | n Val |
| 17273.7                   | .04   | 19537.4 | .035  | 20466.5 | .04   |

| Bank Sta:        | Left    | Right   | Lengths: | Left | Channel   | Right | Coeff | Contr. | Expan. |
|------------------|---------|---------|----------|------|-----------|-------|-------|--------|--------|
|                  | 19537.4 | 20466.5 |          | 340  | 568.44    | 730   |       | .1     | .3     |
| Ineffective Flow | num=    |         | 2        |      |           |       |       |        |        |
|                  | Sta L   | Sta R   | Elev     |      | Permanent |       |       |        |        |
|                  | 17273.7 | 19537.4 | 1090.12  |      | F         |       |       |        |        |
|                  | 20466.5 | 23466.2 | 1105.72  |      | F         |       |       |        |        |

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 214.79

INPUT

Description: Upstream Face of 16th St. Bridge

| Station Elevation Data num= 44 |         |          |         |          |         |          |         |          |         |     |      |
|--------------------------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|-----|------|
| Sta                            | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta | Elev |
| 18602                          | 1088.62 | 19189.33 | 1090.12 | 19457.59 | 1095.17 | 19457.68 | 1082.46 | 19457.78 | 1080.96 |     |      |
| 19460.58                       | 1080.92 | 19510.81 | 1062.97 | 19571.38 | 1060.92 | 19576.21 | 1061.12 | 19603.16 | 1061.12 |     |      |
| 19676.68                       | 1061.12 | 19690.2  | 1061.12 | 19695.03 | 1059.72 | 19728.16 | 1062.02 | 19809.02 | 1060.97 |     |      |
| 19813.85                       | 1061.12 | 19875    | 1061.72 | 19927.64 | 1062.42 | 19932.47 | 1062.42 | 19991.88 | 1062.82 |     |      |
| 20046.65                       | 1061.97 | 20051.48 | 1061.97 | 20100.07 | 1062.72 | 20148.37 | 1061.12 | 20165.47 | 1064.62 |     |      |
| 20170.3                        | 1064.62 | 20230.48 | 1065.57 | 20284.29 | 1065.07 | 20289.12 | 1065.07 | 20312.59 | 1065.82 |     |      |
| 20346.4                        | 1066.27 | 20403.11 | 1066.02 | 20407.94 | 1066.07 | 20471.98 | 1066.32 | 20518.83 | 1080.72 |     |      |
| 20521.63                       | 1080.72 | 20521.73 | 1082.24 | 20521.83 | 1094.95 | 20590.03 | 1090.12 | 20744.59 | 1086.12 |     |      |
| 20957.11                       | 1082.12 | 21227.59 | 1082.12 | 21923.11 | 1086.12 | 22261.21 | 1088.62 |          |         |     |      |

| Manning's n Values num= 3 |       |          |       |          |       |
|---------------------------|-------|----------|-------|----------|-------|
| Sta                       | n Val | Sta      | n Val | Sta      | n Val |
| 18602                     | .04   | 19457.68 | .035  | 20521.73 | .04   |

| Bank Sta:        | Left     | Right    | Lengths: | Left   | Channel   | Right  | Coeff | Contr. | Expan. |
|------------------|----------|----------|----------|--------|-----------|--------|-------|--------|--------|
|                  | 19457.68 | 20521.73 |          | 116.34 | 116.34    | 116.34 |       | .1     | .3     |
| Ineffective Flow | num=     |          | 2        |        |           |        |       |        |        |
|                  | Sta L    | Sta R    | Elev     |        | Permanent |        |       |        |        |
|                  | 18602    | 19457.68 | 1082.46  |        | F         |        |       |        |        |
|                  | 20521.73 | 22261.21 | 1082.24  |        | F         |        |       |        |        |

BRIDGE

RIVER: Salt  
 REACH: 1 RS: 214.785

INPUT

Description: 16th Street

Distance from Upstream XS = 26.17  
 Deck/Roadway width = 64  
 weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

| num= 13  |         |         |          |         |         |          |         |         |     |         |         |
|----------|---------|---------|----------|---------|---------|----------|---------|---------|-----|---------|---------|
| Sta      | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord | Sta | Hi Cord | Lo Cord |
| 18602    | 1088.62 | 1088.62 | 19189.33 | 1090.12 | 1090.12 | 19457.59 | 1095.17 | 1095.17 |     |         |         |
| 19457.68 | 1095.17 | 1082.46 | 19571.38 | 1097.3  | 1084.55 | 19690.2  | 1098.88 | 1086.14 |     |         |         |
| 19809.02 | 1100    | 1087.27 | 19927.64 | 1100.44 | 1087.75 | 20051.48 | 1100.44 | 1087.72 |     |         |         |
| 20170.3  | 1099.82 | 1087.15 | 20289.12 | 1098.71 | 1085.98 | 20407.94 | 1097.11 | 1084.36 |     |         |         |
| 20521.73 | 1094.92 | 1082.24 |          |         |         |          |         |         |     |         |         |

Upstream Bridge Cross Section Data

| Station Elevation Data num= 44 |         |          |         |          |         |          |         |          |         |
|--------------------------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| Sta                            | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    |
| 18602                          | 1088.62 | 19189.33 | 1090.12 | 19457.59 | 1095.17 | 19457.68 | 1082.46 | 19457.78 | 1080.96 |
| 19460.58                       | 1080.92 | 19510.81 | 1062.97 | 19571.38 | 1060.92 | 19576.21 | 1061.12 | 19603.16 | 1061.12 |
| 19676.68                       | 1061.12 | 19690.2  | 1061.12 | 19695.03 | 1059.72 | 19728.16 | 1062.02 | 19809.02 | 1060.97 |
| 19813.85                       | 1061.12 | 19875    | 1061.72 | 19927.64 | 1062.42 | 19932.47 | 1062.42 | 19991.88 | 1062.82 |
| 20046.65                       | 1061.97 | 20051.48 | 1061.97 | 20100.07 | 1062.72 | 20148.37 | 1061.12 | 20165.47 | 1064.62 |
| 20170.3                        | 1064.62 | 20230.48 | 1065.57 | 20284.29 | 1065.07 | 20289.12 | 1065.07 | 20312.59 | 1065.82 |
| 20346.4                        | 1066.27 | 20403.11 | 1066.02 | 20407.94 | 1066.07 | 20471.98 | 1066.32 | 20518.83 | 1080.72 |
| 20521.63                       | 1080.72 | 20521.73 | 1082.24 | 20521.83 | 1094.95 | 20590.03 | 1090.12 | 20744.59 | 1086.12 |
| 20957.11                       | 1082.12 | 21227.59 | 1082.12 | 21923.11 | 1086.12 | 22261.21 | 1088.62 |          |         |

| Manning's n Values num= 3 |       |          |       |          |       |
|---------------------------|-------|----------|-------|----------|-------|
| Sta                       | n Val | Sta      | n Val | Sta      | n Val |
| 18602                     | .04   | 19457.68 | .03   | 20521.73 | .04   |

| Bank Sta: | Left     | Right    | Coeff | Contr. | Expan. |
|-----------|----------|----------|-------|--------|--------|
|           | 19457.68 | 20521.73 | .1    |        | .3     |

| Ineffective Flow num= 2 |          |         |           |  |
|-------------------------|----------|---------|-----------|--|
| Sta L                   | Sta R    | Elev    | Permanent |  |
| 18602                   | 19457.68 | 1082.46 | F         |  |
| 20521.73                | 22261.21 | 1082.24 | F         |  |

Downstream Deck/Roadway Coordinates

| num= 13  |         |         |          |         |         |          |         |         |         |
|----------|---------|---------|----------|---------|---------|----------|---------|---------|---------|
| Sta      | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord | Sta      | Hi Cord | Lo Cord | Sta     |
| 18602    | 1088.62 | 1088.62 | 19189.33 | 1090.12 | 1090.12 | 19457.59 | 1095.17 | 1095.17 | 1095.17 |
| 19457.68 | 1095.17 | 1082.46 | 19571.38 | 1097.3  | 1084.55 | 19690.2  | 1098.88 | 1086.14 | 1098.88 |
| 19809.02 | 1100    | 1087.27 | 19927.64 | 1100.44 | 1087.75 | 20051.48 | 1100.44 | 1087.72 | 1087.72 |
| 20170.3  | 1099.82 | 1087.15 | 20289.12 | 1098.71 | 1085.98 | 20407.94 | 1097.11 | 1084.36 | 1084.36 |
| 20521.73 | 1094.92 | 1082.24 |          |         |         |          |         |         |         |

Downstream Bridge Cross Section Data

| Station Elevation Data num= 44 |         |          |         |          |         |          |         |          |         |
|--------------------------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| Sta                            | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    |
| 18602                          | 1088.62 | 19189.33 | 1090.12 | 19457.59 | 1095.17 | 19457.68 | 1082.46 | 19457.78 | 1080.96 |
| 19460.58                       | 1080.92 | 19510.81 | 1062.97 | 19571.38 | 1060.92 | 19576.21 | 1061.12 | 19603.16 | 1061.12 |
| 19676.68                       | 1061.12 | 19690.2  | 1061.12 | 19695.03 | 1061.12 | 19728.16 | 1062.02 | 19809.02 | 1060.97 |
| 19813.85                       | 1060.97 | 19875    | 1061.72 | 19927.64 | 1062.42 | 19932.47 | 1062.42 | 19991.88 | 1062.82 |
| 20046.65                       | 1061.97 | 20051.48 | 1061.97 | 20100.07 | 1062.72 | 20148.37 | 1061.12 | 20165.47 | 1064.62 |
| 20170.3                        | 1064.62 | 20230.48 | 1065.57 | 20284.29 | 1065.07 | 20289.12 | 1065.07 | 20312.59 | 1065.82 |
| 20346.4                        | 1066.27 | 20403.11 | 1066.02 | 20407.94 | 1066.07 | 20471.98 | 1066.32 | 20518.83 | 1080.72 |
| 20521.63                       | 1080.72 | 20521.73 | 1082.24 | 20521.83 | 1094.95 | 20590.03 | 1090.12 | 20744.59 | 1086.12 |
| 20957.11                       | 1082.12 | 21227.59 | 1082.12 | 21923.11 | 1086.12 | 22261.21 | 1088.62 |          |         |

| Manning's n Values num= 3 |       |          |       |          |       |
|---------------------------|-------|----------|-------|----------|-------|
| Sta                       | n Val | Sta      | n Val | Sta      | n Val |
| 18602                     | .04   | 19457.68 | .03   | 20521.73 | .04   |

| Bank Sta: | Left     | Right    | Coeff | Contr. | Expan. |
|-----------|----------|----------|-------|--------|--------|
|           | 19457.68 | 20521.73 | .1    |        | .3     |

| Ineffective Flow num= 2 |          |         |           |  |
|-------------------------|----------|---------|-----------|--|
| Sta L                   | Sta R    | Elev    | Permanent |  |
| 18602                   | 19457.68 | 1082.46 | F         |  |
| 20521.73                | 22261.21 | 1082.24 | F         |  |

Upstream Embankment side slope = horiz. to 1.0 vertical  
 Downstream Embankment side slope = horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .95  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Piers = 8

Pier Data

Pier Station Upstream= 19574.1 Downstream= 19574.1

| Upstream num= 2 |         |       |         |
|-----------------|---------|-------|---------|
| Width           | Elev    | Width | Elev    |
| 4.83            | 1060.92 | 4.83  | 1084.63 |

| Downstream num= 2 |         |       |         |
|-------------------|---------|-------|---------|
| Width             | Elev    | Width | Elev    |
| 4.83              | 1060.92 | 4.83  | 1084.63 |

Pier Data

Pier Station Upstream= 19692.8 Downstream= 19692.8

| Upstream num= 2 |         |       |         |
|-----------------|---------|-------|---------|
| Width           | Elev    | Width | Elev    |
| 4.83            | 1059.72 | 4.83  | 1086.22 |

| Downstream num= 2 |         |       |         |
|-------------------|---------|-------|---------|
| Width             | Elev    | Width | Elev    |
| 4.83              | 1059.72 | 4.83  | 1086.22 |

Pier Data

Pier Station Upstream= 19811.6 Downstream= 19811.6

Upstream num= 2  
 width Elev width Elev  
 4.83 1060.97 4.83 1087.32  
 Downstream num= 2  
 width Elev width Elev  
 4.83 1060.97 4.83 1087.32

Pier Data  
 Pier Station Upstream= 19930.5 Downstream= 19930.5  
 Upstream num= 2  
 width Elev width Elev  
 4.83 1062.42 4.83 1087.72  
 Downstream num= 2  
 width Elev width Elev  
 4.83 1062.42 4.83 1087.72

Pier Data  
 Pier Station Upstream= 20049.5 Downstream= 20049.5  
 Upstream num= 2  
 width Elev width Elev  
 4.83 1061.97 4.83 1087.72  
 Downstream num= 2  
 width Elev width Elev  
 4.83 1061.97 4.83 1087.72

Pier Data  
 Pier Station Upstream= 20167.6 Downstream= 20167.6  
 Upstream num= 2  
 width Elev width Elev  
 4.83 1064.62 4.83 1087.22  
 Downstream num= 2  
 width Elev width Elev  
 4.83 1064.62 4.83 1087.22

Pier Data  
 Pier Station Upstream= 20286.4 Downstream= 20286.4  
 Upstream num= 2  
 width Elev width Elev  
 4.83 1065.07 4.83 1086.02  
 Downstream num= 2  
 width Elev width Elev  
 4.83 1065.07 4.83 1086.02

Pier Data  
 Pier Station Upstream= 20405.8 Downstream= 20405.8  
 Upstream num= 2  
 width Elev width Elev  
 4.83 1066.02 4.83 1084.42  
 Downstream num= 2  
 width Elev width Elev  
 4.83 1066.02 4.83 1084.42

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy  
 Momentum Cd = 1.2  
 Yarnell Kval = 1.05

Selected Low Flow Methods = Highest Energy Answer

High Flow Method  
 Energy Only

Additional Bridge Parameters

Add Friction component to Momentum  
 Do not add weight component to Momentum  
 Class B flow critical depth computations use critical depth  
 inside the bridge at the upstream end  
 Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 214.78

INPUT

Description: Downstream Face of 16th St. Bridge

| Station Elevation Data |                 | num= 44         |                 | Sta Elev        |         | Sta Elev |      | Sta Elev |      | Sta Elev |      |
|------------------------|-----------------|-----------------|-----------------|-----------------|---------|----------|------|----------|------|----------|------|
| Sta                    | Elev            | Sta             | Elev            | Sta             | Elev    | Sta      | Elev | Sta      | Elev | Sta      | Elev |
| 18602                  | 1088.6219189.33 | 1090.1219457.59 | 1095.1719457.68 | 1082.4619457.78 | 1080.96 |          |      |          |      |          |      |
| 19460.58               | 1080.9219510.81 | 1062.9719571.38 | 1060.9219576.21 | 1061.1219603.16 | 1061.12 |          |      |          |      |          |      |
| 19676.68               | 1061.12 19690.2 | 1061.1219695.03 | 1061.1219728.16 | 1062.0219809.02 | 1060.97 |          |      |          |      |          |      |
| 19813.85               | 1060.97 19875   | 1061.7219927.64 | 1062.4219932.47 | 1062.4219991.88 | 1062.82 |          |      |          |      |          |      |
| 20046.65               | 1061.9720051.48 | 1061.9720100.07 | 1062.7220148.37 | 1061.1220165.47 | 1064.62 |          |      |          |      |          |      |
| 20170.3                | 1064.6220230.48 | 1065.5720284.29 | 1065.0720289.12 | 1065.0720312.59 | 1065.82 |          |      |          |      |          |      |
| 20346.4                | 1066.2720403.11 | 1066.0220407.94 | 1066.0720471.98 | 1066.3220518.83 | 1080.72 |          |      |          |      |          |      |
| 20521.63               | 1080.7220521.73 | 1082.2420521.83 | 1094.9520590.03 | 1090.1220744.59 | 1086.12 |          |      |          |      |          |      |

20957.11 1082.1221227.59 1082.1221923.11 1086.1222261.21 1088.62

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
18602 .0419457.68 .03520521.73 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19457.6820521.73 520 310.05 80 .1 .3
Ineffective Flow num= 2
Sta L Sta R Elev Permanent
1860219457.68 1082.46 F
20521.7322261.21 1082.24 F

CROSS SECTION

RIVER: Salt
REACH: 1 RS: 214.71

INPUT

Description:

Station Elevation Data num= 96
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
16537.2 1090.42 16558.9 1088.02 16592.9 1088.02 16763.8 1088.32 16859.7 1088.62
16868.8 1089.12 17046.9 1089.22 17161.4 1090.32 17171.7 1084.22 17181.2 1088.22
17183.9 1088.82 17186.7 1090.02 17200.4 1090.22 17218.3 1088.52 17227.2 1089.22
17278.8 1088.82 17455.3 1088.52 17496.2 1087.52 17655 1087.02 17741.4 1085.52
17806.6 1086.02 18000.9 1086.42 18157.7 1085.82 18217.1 1087.62 18338.5 1086.92
18351.8 1086.22 18406.2 1085.62 18423.6 1084.82 18570.8 1085.52 18631.7 1084.42
18689.9 1084.32 18730.4 1085.12 18877.7 1086.42 18897.5 1086.32 18913.9 1087.82
19052.5 1087.92 19136.3 1088.42 19280 1087.62 19302.7 1087.42 19375.5 1088.62
19516.2 1087.42 19591.2 1087.32 19613 1089.02 19679.3 1066.12 19710.2 1057.42
19776.6 1059.22 19789.2 1057.72 19878.5 1057.22 19950.4 1060.22 19985.7 1060.92
20217.6 1060.92 20282.8 1060.52 20409.7 1061.62 20459.9 1064.22 20501.3 1065.62
20513.5 1069.52 20556 1084.62 20564.1 1084.12 20574.4 1084.42 20578.1 1081.82
20580.1 1081.32 20718.7 1082.72 20735 1085.82 20810.9 1085.22 21042.8 1084.72
21165.2 1085.22 21184.4 1082.62 21197 1082.02 21225.3 1084.92 21322.8 1084.72
21486.4 1084.32 21544.2 1084.12 21551.3 1083.22 21570.6 1086.92 21585.1 1086.72
21759.9 1085.22 21812.7 1085.92 21931.7 1086.42 22062.2 1087.52 22077.8 1087.52
22114.7 1088.72 22227.5 1088.22 22315.6 1088.92 22453.6 1089.32 22491.4 1089.32
22621.3 1089.72 22727.1 1090.62 22765.4 1090.32 22839.8 1090.62 23019.9 1091.22
23040.6 1091.52 23089.5 1090.12 23154 1091.32 23157.8 1092.22 23161.9 1092.02
23206.9 1109.82

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
16537.2 .04 19613 .035 20556 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19613 20556 500 508.55 450 .1 .3
Ineffective Flow num= 2
Sta L Sta R Elev Permanent
16537.2 19613 1089.02 F
20556 23206.9 1084.62 F

CROSS SECTION

RIVER: Salt
REACH: 1 RS: 214.61

INPUT

Description:

Station Elevation Data num= 96
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
19556.5 1092.82 19575.8 1085.82 19604 1085.12 19610.6 1085.02 19612.9 1085.02
19644.9 1085.22 19651.7 1085.62 19652 1085.42 19667.4 1084.52 19671.3 1084.22
19705.3 1072.32 19734.4 1062.02 19741.4 1061.42 19748 1060.92 19778 1054.22
19779.3 1054.02 19816.2 1053.92 20190.1 1052.82 20241.7 1052.52 20265.2 1053.22
20282.3 1053.82 20311.7 1054.02 20401.7 1055.22 20478.1 1079.52 20490.2 1083.42
20493 1083.32 20569.1 1083.42 20872.2 1083.82 21019.6 1083.92 21020.5 1083.02
21033.8 1083.72 21035.8 1083.62 21050.2 1083.62 21050.8 1084.32 21072 1083.72
21073.4 1084.12 21087.1 1083.92 21155 1083.72 21337.9 1083.12 21391.3 1082.92
21411.1 1082.52 21430.2 1084.12 21430.6 1084.12 21445.5 1084.82 21446.6 1085.02
21449.3 1085.02 21454.5 1084.92 21492.8 1085.32 21525.4 1085.92 21540.7 1085.92
21548.1 1085.92 21644.1 1086.62 21661.2 1086.82 21670.8 1086.82 21686.1 1087.02
21694.5 1087.62 21699.7 1088.12 21770.9 1087.82 21773.6 1087.82 21783.8 1087.72
21878 1087.22 21882 1087.32 21936.8 1088.32 21960.9 1087.82 21970.7 1087.62
21971.9 1087.92 21979.1 1088.12 21982.1 1088.32 21983.3 1088.52 22095.3 1087.82
22108.3 1087.62 22121.6 1088.62 22244.5 1087.72 22270 1087.72 22368.7 1087.62
22494.6 1087.72 22513.4 1087.72 22576.4 1088.02 22577.8 1088.02 22583 1088.22
22584.3 1088.22 22587.2 1088.32 22590.7 1088.32 22623.8 1088.72 22635.7 1088.72
22658.8 1088.82 22665.4 1088.82 22764.4 1089.12 22889.6 1089.62 22950.3 1088.82
22951.2 1088.62 22992.3 1089.52 22996.7 1089.62 22998 1089.62 23025.3 1089.92
23027 1091.42

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val

19556.5 .04 19651.7 .035 20490.2 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19651.7 20490.2 480 493.82 490 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 19556.5 19651.7 1085.62 F  
 20490.2 23027 1083.42 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 214.52

INPUT

Description:

| Station | Elevation | Data    | num=    | 96      | Sta     | Elev    | Sta     | Elev    | Sta     | Elev | Sta | Elev |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|------|-----|------|
| 18720.8 | 1091.02   | 18742   | 1090.92 | 18817.1 | 1089.32 | 18852.5 | 1087.72 | 18880.5 | 1087.32 |      |     |      |
| 18899.4 | 1087.12   | 18968.6 | 1086.52 | 18992.4 | 1086.22 | 19069.7 | 1085.22 | 19080.7 | 1085.22 |      |     |      |
| 19124.1 | 1085.52   | 19129.6 | 1085.52 | 19171.3 | 1085.62 | 19252.9 | 1085.02 | 19307.3 | 1084.52 |      |     |      |
| 19347.5 | 1084.32   | 19395   | 1082.12 | 19410   | 1080.72 | 19468.6 | 1080.42 | 19471.7 | 1080.42 |      |     |      |
| 19472.1 | 1080.52   | 19502.5 | 1084.22 | 19512.6 | 1084.02 | 19530.4 | 1077.62 | 19587.6 | 1060.42 |      |     |      |
| 19588.4 | 1060.32   | 19631.6 | 1051.22 | 19632.2 | 1051.12 | 19654.8 | 1051.02 | 20209.9 | 1050.12 |      |     |      |
| 20236.1 | 1051.12   | 20250.8 | 1052.12 | 20271.2 | 1052.02 | 20335.4 | 1052.92 | 20343.6 | 1052.72 |      |     |      |
| 20369.5 | 1061.22   | 20388.5 | 1062.32 | 20436.1 | 1074.92 | 20461.7 | 1081.62 | 20551.8 | 1081.52 |      |     |      |
| 20611.2 | 1081.72   | 20954.9 | 1082.12 | 20964   | 1082.12 | 20970.6 | 1082.22 | 20974.1 | 1082.82 |      |     |      |
| 20989.2 | 1084.02   | 20999.7 | 1083.22 | 21003   | 1082.62 | 21009.8 | 1083.12 | 21042.5 | 1083.62 |      |     |      |
| 21050.5 | 1083.92   | 21079.1 | 1085.42 | 21085.5 | 1085.62 | 21116.9 | 1084.22 | 21130.4 | 1083.62 |      |     |      |
| 21219.7 | 1084.52   | 21240.1 | 1084.72 | 21282.6 | 1086.52 | 21286   | 1085.62 | 21288.4 | 1084.42 |      |     |      |
| 21332.6 | 1084.22   | 21387.4 | 1084.72 | 21392.5 | 1084.52 | 21406.8 | 1083.62 | 21439.6 | 1085.92 |      |     |      |
| 21439.8 | 1085.92   | 21481   | 1085.12 | 21531.4 | 1085.62 | 21564.3 | 1085.72 | 21583   | 1085.72 |      |     |      |
| 21641   | 1085.72   | 21706.4 | 1086.12 | 21785.5 | 1087.02 | 21787.2 | 1086.92 | 21792.9 | 1086.82 |      |     |      |
| 21803.4 | 1086.92   | 21839.8 | 1086.52 | 21972.1 | 1086.22 | 21979.9 | 1086.22 | 22043.3 | 1086.32 |      |     |      |
| 22124   | 1086.22   | 22153.7 | 1086.22 | 22249.3 | 1086.32 | 22303.8 | 1086.22 | 22323.8 | 1086.32 |      |     |      |
| 22426.9 | 1086.22   | 22443.4 | 1087.12 | 22456.6 | 1087.32 | 22483.5 | 1087.52 | 22648.6 | 1087.82 |      |     |      |
| 22681.1 | 1087.82   | 22718.5 | 1087.72 | 22853.3 | 1087.22 | 22877.5 | 1087.72 | 22879.9 | 1089.42 |      |     |      |
| 22883.2 | 1091.62   |         |         |         |         |         |         |         |         |      |     |      |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 18720.8 .04 19502.5 .035 20461.7 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19502.5 20461.7 470 500.39 530 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 18720.8 19502.5 1084.22 F  
 20461.7 22883.2 1081.62 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 214.42

INPUT

Description:

| Station | Elevation | Data    | num=    | 96      | Sta     | Elev    | Sta     | Elev    | Sta     | Elev | Sta | Elev |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|------|-----|------|
| 18493.5 | 1091.12   | 18623   | 1090.82 | 18649.2 | 1090.42 | 18719.9 | 1088.82 | 18729.4 | 1088.52 |      |     |      |
| 18866.3 | 1086.72   | 18902.2 | 1086.02 | 18965.6 | 1083.72 | 19017.4 | 1083.42 | 19068.3 | 1083.42 |      |     |      |
| 19082.8 | 1083.22   | 19105.8 | 1082.62 | 19165.7 | 1081.32 | 19179.2 | 1081.22 | 19277.4 | 1081.52 |      |     |      |
| 19283.5 | 1081.62   | 19328.1 | 1081.42 | 19378   | 1080.02 | 19379.9 | 1080.12 | 19421   | 1067.22 |      |     |      |
| 19464.1 | 1054.62   | 19491.1 | 1054.32 | 19495.8 | 1053.32 | 19508.9 | 1051.32 | 20099.7 | 1050.62 |      |     |      |
| 20317.7 | 1050.42   | 20325.7 | 1050.32 | 20347.5 | 1056.82 | 20431.8 | 1081.82 | 20447.5 | 1080.82 |      |     |      |
| 20725.9 | 1081.32   | 20806.7 | 1081.42 | 20820.7 | 1076.12 | 20847.2 | 1079.92 | 20868.3 | 1077.82 |      |     |      |
| 20885.3 | 1076.82   | 20896.5 | 1077.52 | 20920.2 | 1078.52 | 20930.8 | 1078.82 | 20963.3 | 1078.92 |      |     |      |
| 20975   | 1079.62   | 21027   | 1080.62 | 21053   | 1080.62 | 21067.1 | 1080.82 | 21145.4 | 1080.92 |      |     |      |
| 21171.1 | 1080.62   | 21208   | 1081.02 | 21230.1 | 1081.12 | 21334.3 | 1082.52 | 21478.9 | 1082.32 |      |     |      |
| 21530.4 | 1082.22   | 21531.4 | 1082.32 | 21535.5 | 1082.32 | 21625.6 | 1083.52 | 21660.4 | 1083.62 |      |     |      |
| 21692.6 | 1084.02   | 21702.4 | 1084.52 | 21711.2 | 1085.22 | 21729.2 | 1085.12 | 21737.7 | 1085.32 |      |     |      |
| 21758.6 | 1085.32   | 21952.1 | 1085.92 | 22040.6 | 1085.22 | 22131.3 | 1085.22 | 22152.7 | 1085.82 |      |     |      |
| 22160.1 | 1085.02   | 22166.5 | 1084.82 | 22236.9 | 1084.82 | 22242.2 | 1084.92 | 22242.8 | 1084.82 |      |     |      |
| 22252.8 | 1085.42   | 22275.5 | 1086.42 | 22277.6 | 1085.92 | 22282.4 | 1085.02 | 22284.3 | 1085.02 |      |     |      |
| 22289.4 | 1084.62   | 22385   | 1084.82 | 22412   | 1084.92 | 22425.6 | 1085.42 | 22522.2 | 1085.32 |      |     |      |
| 22566.8 | 1085.62   | 22586.5 | 1085.52 | 22620.8 | 1086.12 | 22647.4 | 1087.02 | 22647.5 | 1087.12 |      |     |      |
| 22651.3 | 1087.12   | 22655.3 | 1086.92 | 22666.5 | 1087.32 | 22711.9 | 1086.92 | 22728.7 | 1086.62 |      |     |      |
| 22764.2 | 1086.42   | 22785.3 | 1086.12 | 22798.5 | 1086.82 | 22805.8 | 1087.52 | 22828.6 | 1087.72 |      |     |      |
| 22834   | 1090.92   |         |         |         |         |         |         |         |         |      |     |      |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 18493.5 .04 19379.9 .035 20431.8 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19379.9 20431.8 510 496.64 480 .1 .3

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 18493.5 19379.9 1080.12 F  
 20431.8 22834 1081.82 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 214.33

INPUT

Description:

Station Elevation Data num= 96  

| Sta     | Elev    |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 19133.3 | 1087.32 | 19150.1 | 1086.92 | 19166.8 | 1085.02 | 19183.1 | 1083.82 | 19209.9 | 1083.42 |
| 19301.3 | 1082.42 | 19344.7 | 1081.52 | 19434.1 | 1080.82 | 19465.4 | 1080.52 | 19483.8 | 1080.62 |
| 19487.4 | 1080.52 | 19523.4 | 1068.82 | 19566.6 | 1054.62 | 19603.1 | 1053.52 | 19616.9 | 1050.92 |
| 19618.9 | 1050.62 | 20162.4 | 1050.62 | 20297.1 | 1050.72 | 20328.4 | 1060.02 | 20398   | 1080.92 |
| 20412.3 | 1079.92 | 20446.7 | 1080.02 | 20657.5 | 1080.72 | 20676   | 1072.42 | 20677.2 | 1072.02 |
| 20699.8 | 1078.12 | 20737.1 | 1076.52 | 20751.7 | 1074.92 | 20760.5 | 1075.52 | 20805.9 | 1076.92 |
| 20836.7 | 1077.62 | 20869.8 | 1078.52 | 20918.3 | 1078.92 | 20949.1 | 1079.02 | 20987.3 | 1078.52 |
| 21007.5 | 1078.12 | 21018.5 | 1078.52 | 21020.1 | 1078.82 | 21036.8 | 1079.02 | 21114   | 1079.72 |
| 21129.5 | 1079.92 | 21152.8 | 1080.52 | 21167.5 | 1081.02 | 21188.3 | 1081.12 | 21274.4 | 1081.12 |
| 21283.2 | 1080.92 | 21287.2 | 1080.92 | 21339.5 | 1080.62 | 21371.1 | 1079.82 | 21383.5 | 1079.32 |
| 21417.4 | 1079.52 | 21422   | 1079.62 | 21453   | 1079.52 | 21457.4 | 1079.72 | 21484.4 | 1080.22 |
| 21507   | 1081.12 | 21536.8 | 1080.82 | 21546.2 | 1080.62 | 21548.8 | 1081.12 | 21562.6 | 1084.72 |
| 21570.5 | 1084.32 | 21584.1 | 1080.82 | 21599.4 | 1082.32 | 21608.1 | 1083.92 | 21609   | 1083.92 |
| 21686.1 | 1083.82 | 21711.3 | 1083.82 | 21759   | 1084.42 | 21794   | 1084.42 | 21961.8 | 1084.02 |
| 22070.5 | 1084.42 | 22107.7 | 1084.62 | 22117.3 | 1084.62 | 22139.1 | 1086.22 | 22245.2 | 1083.82 |
| 22259.2 | 1083.62 | 22311.2 | 1083.62 | 22328.9 | 1084.32 | 22367.6 | 1084.62 | 22412.4 | 1085.12 |
| 22434.9 | 1085.82 | 22480   | 1085.52 | 22488.3 | 1085.62 | 22501.1 | 1085.42 | 22505.8 | 1086.02 |
| 22523   | 1085.92 | 22534.2 | 1086.02 | 22540.3 | 1085.92 | 22556.6 | 1085.32 | 22675.7 | 1085.02 |
| 22714.1 | 1085.02 | 22740.7 | 1086.62 | 22763.1 | 1087.02 | 22765.9 | 1086.82 | 22770.5 | 1089.82 |
| 22776.7 | 1090.12 |         |         |         |         |         |         |         |         |

Manning's n Values num= 3  

| Sta     | n Val | Sta     | n Val | Sta   | n Val |
|---------|-------|---------|-------|-------|-------|
| 19133.3 | .04   | 19483.8 | .035  | 20398 | .04   |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19483.8 20398 440 507.15 560 .1 .3

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 19133.3 19483.8 1080.62 F  
 20398 22776.7 1080.92 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 214.23

INPUT

Description:

Station Elevation Data num= 96  

| Sta     | Elev    |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 18784.1 | 1085.12 | 18804.5 | 1084.82 | 18829.1 | 1084.92 | 18859.6 | 1084.32 | 18872.7 | 1084.22 |
| 18901.7 | 1082.92 | 18937.2 | 1081.22 | 18949.3 | 1080.82 | 18993.6 | 1079.02 | 19014.1 | 1078.32 |
| 19019.1 | 1078.12 | 19059.1 | 1077.42 | 19071.7 | 1077.32 | 19140.8 | 1076.92 | 19164.5 | 1076.42 |
| 19204   | 1076.12 | 19250.8 | 1078.42 | 19289.1 | 1080.92 | 19308.2 | 1081.42 | 19327.2 | 1081.52 |
| 19383.2 | 1081.92 | 19398.8 | 1082.32 | 19482.4 | 1081.52 | 19525.9 | 1080.82 | 19586   | 1080.52 |
| 19602.4 | 1080.12 | 19608.5 | 1080.12 | 19627.1 | 1073.52 | 19679   | 1056.92 | 19716.3 | 1051.22 |
| 19735.4 | 1051.62 | 19750.3 | 1052.22 | 19754.7 | 1052.02 | 19765.5 | 1051.82 | 19776.3 | 1050.82 |
| 19795   | 1050.82 | 20005.3 | 1051.02 | 20084.2 | 1051.12 | 20254.8 | 1051.22 | 20264.9 | 1054.02 |
| 20361.7 | 1080.62 | 20382.3 | 1078.92 | 20444.8 | 1079.62 | 20517.6 | 1079.22 | 20541.3 | 1079.32 |
| 20594   | 1079.12 | 20670.3 | 1078.92 | 20683.5 | 1078.72 | 20732.6 | 1077.82 | 20741.7 | 1078.12 |
| 20744   | 1078.12 | 20815.4 | 1078.22 | 20831.3 | 1078.62 | 20866.2 | 1078.92 | 20912.2 | 1079.22 |
| 20978   | 1079.32 | 20998.8 | 1079.02 | 21008.6 | 1079.12 | 21025.7 | 1078.52 | 21089   | 1078.62 |
| 21093.4 | 1078.62 | 21125.9 | 1080.62 | 21149.4 | 1079.32 | 21195.1 | 1077.42 | 21231.1 | 1076.72 |
| 21239   | 1076.72 | 21282.1 | 1077.42 | 21304.7 | 1077.52 | 21378.1 | 1079.12 | 21396.4 | 1080.72 |
| 21405.7 | 1081.42 | 21416.4 | 1079.82 | 21418.8 | 1079.72 | 21492.6 | 1081.72 | 21526.7 | 1081.92 |
| 21540.8 | 1082.22 | 21640.2 | 1082.62 | 21651.2 | 1079.92 | 21654.9 | 1078.72 | 21672.5 | 1078.62 |
| 21682.8 | 1078.82 | 21695   | 1079.82 | 21718.3 | 1081.92 | 21746.9 | 1082.02 | 21771.5 | 1081.92 |
| 21876.1 | 1082.52 | 21901.8 | 1082.62 | 21957.9 | 1082.52 | 22021.8 | 1082.72 | 22062.3 | 1083.22 |
| 22115.9 | 1083.72 | 22173.3 | 1084.32 | 22270.7 | 1084.92 | 22330.2 | 1084.92 | 22335   | 1085.22 |
| 22345.5 | 1085.42 |         |         |         |         |         |         |         |         |

Manning's n Values num= 3  

| Sta     | n Val | Sta     | n Val | Sta     | n Val |
|---------|-------|---------|-------|---------|-------|
| 18784.1 | .04   | 19608.5 | .035  | 20361.7 | .04   |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 19608.5 20361.7 495 494.49 495 .1 .3

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 18784.1 19608.5 1080.12 F  
 20361.7 22345.5 1080.62 F

CROSS SECTION

RIVER: Salt  
REACH: 1

RS: 214.14

INPUT

Description:

| Station Elevation Data |         | num= 96 |         | Sta Elev |         | Sta Elev |         | Sta Elev |         | Sta Elev |      |
|------------------------|---------|---------|---------|----------|---------|----------|---------|----------|---------|----------|------|
| Sta                    | Elev    | Sta     | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev |
| 18555.4                | 1084.72 | 18577.7 | 1084.62 | 18586.5  | 1084.62 | 18650.6  | 1084.12 | 18678.8  | 1084.22 |          |      |
| 18707.4                | 1083.82 | 18729.5 | 1084.12 | 18771.6  | 1084.22 | 18793.7  | 1083.92 | 18836    | 1083.02 |          |      |
| 18859.7                | 1082.42 | 18935.6 | 1081.02 | 19050.6  | 1079.32 | 19056.7  | 1079.32 | 19059.9  | 1079.22 |          |      |
| 19062.9                | 1079.02 | 19063.3 | 1079.12 | 19067.8  | 1079.22 | 19071.9  | 1079.22 | 19078.2  | 1079.22 |          |      |
| 19188.3                | 1080.22 | 19249.7 | 1081.52 | 19290.2  | 1082.22 | 19298.1  | 1082.32 | 19313.1  | 1082.52 |          |      |
| 19327.5                | 1082.82 | 19358.6 | 1082.72 | 19391.6  | 1082.62 | 19412.8  | 1082.42 | 19520.8  | 1080.02 |          |      |
| 19554.8                | 1079.62 | 19580.2 | 1079.42 | 19610.8  | 1078.62 | 19651.9  | 1078.82 | 19697.7  | 1060.82 |          |      |
| 19715.9                | 1053.82 | 19732.8 | 1052.32 | 19750.7  | 1050.82 | 20032.7  | 1051.12 | 20292.3  | 1051.32 |          |      |
| 20350.9                | 1068.02 | 20388.3 | 1079.62 | 20405.5  | 1077.72 | 20406    | 1077.72 | 20439.7  | 1077.72 |          |      |
| 20637.3                | 1077.62 | 20899.6 | 1077.52 | 20920.6  | 1077.62 | 20941.8  | 1077.52 | 20947.4  | 1077.62 |          |      |
| 20962                  | 1077.62 | 20980   | 1077.52 | 20989.9  | 1077.52 | 21074.1  | 1077.52 | 21119.6  | 1077.82 |          |      |
| 21168.7                | 1078.92 | 21222   | 1078.72 | 21326.8  | 1078.32 | 21327.4  | 1078.32 | 21342.2  | 1077.12 |          |      |
| 21390.6                | 1077.12 | 21428.8 | 1077.12 | 21455.3  | 1077.42 | 21502.1  | 1078.52 | 21502.4  | 1078.32 |          |      |
| 21505.4                | 1078.52 | 21551.9 | 1079.62 | 21591.8  | 1079.72 | 21726.3  | 1080.52 | 21759.2  | 1080.62 |          |      |
| 21766.3                | 1080.42 | 21792.4 | 1080.52 | 21884.6  | 1081.02 | 22013    | 1081.22 | 22034.3  | 1081.62 |          |      |
| 22101.6                | 1081.82 | 22156.1 | 1082.22 | 22201.4  | 1082.12 | 22204.6  | 1082.02 | 22217.3  | 1082.62 |          |      |
| 22235                  | 1083.42 | 22238.1 | 1083.42 | 22264.5  | 1083.12 | 22267.7  | 1083.02 | 22269.4  | 1082.82 |          |      |
| 22269.9                | 1082.72 | 22272.4 | 1082.52 | 22280.3  | 1081.92 | 22341.9  | 1082.32 | 22431    | 1082.72 |          |      |
| 22501.3                | 1083.32 | 22591.2 | 1083.92 | 22602.9  | 1084.12 | 22619.7  | 1085.12 | 22686.6  | 1085.02 |          |      |
| 22710.3                | 1084.62 |         |         |          |         |          |         |          |         |          |      |

| Manning's n Values |       | num= 3  |       | Sta n Val |       | Sta n Val |       |
|--------------------|-------|---------|-------|-----------|-------|-----------|-------|
| Sta                | n Val | Sta     | n Val | Sta       | n Val | Sta       | n Val |
| 18555.4            | .04   | 19651.9 | .035  | 20388.3   | .04   |           |       |

| Bank Sta: | Left    | Right   | Lengths: | Left Channel | Right  | Coeff | Contr. | Expan. |
|-----------|---------|---------|----------|--------------|--------|-------|--------|--------|
|           | 19651.9 | 20388.3 |          | 475          | 510.51 |       | .1     | .3     |

| Ineffective Flow |         | num= 2  |           | Permanent |       |
|------------------|---------|---------|-----------|-----------|-------|
| Sta L            | Sta R   | Elev    | Permanent | Sta L     | Sta R |
| 18555.4          | 19651.9 | 1078.82 | F         |           |       |
| 20388.3          | 22710.3 | 1079.62 | F         |           |       |

SUMMARY OF MANNING'S N VALUES

River:Salt

| Reach | River Sta. | n1     | n2   | n3   |
|-------|------------|--------|------|------|
| 1     | 225.30     | .025   | .03  | .03  |
| 1     | 225.19     | .025   | .03  | .031 |
| 1     | 225.11     | .025   | .03  | .03  |
| 1     | 225        | .025   | .03  | .031 |
| 1     | 224.90     | .025   | .03  | .031 |
| 1     | 224.82     | .05    | .035 | .05  |
| 1     | 224.71     | .05    | .035 | .05  |
| 1     | 224.62     | .05    | .035 | .05  |
| 1     | 224.52     | .05    | .035 | .05  |
| 1     | 224.42     | .05    | .035 | .05  |
| 1     | 224.31     | .05    | .035 | .05  |
| 1     | 224.22     | .05    | .035 | .05  |
| 1     | 224.21     | Bridge |      |      |
| 1     | 224.20     | .05    | .035 | .05  |
| 1     | 224.19     | .05    | .035 | .05  |
| 1     | 224.175    | Bridge |      |      |
| 1     | 224.16     | .05    | .035 | .05  |
| 1     | 224.14     | .05    | .035 | .05  |
| 1     | 224.13     | Bridge |      |      |
| 1     | 224.12     | .05    | .035 | .05  |
| 1     | 224.06     | .05    | .035 | .05  |
| 1     | 223.96     | .05    | .03  | .05  |
| 1     | 223.86     | .05    | .03  | .05  |
| 1     | 223.77     | .05    | .03  | .05  |
| 1     | 223.67     | .05    | .035 | .05  |
| 1     | 223.58     | .05    | .035 | .05  |
| 1     | 223.48     | .05    | .035 | .05  |
| 1     | 223.38     | .05    | .035 | .05  |
| 1     | 223.29     | .05    | .035 | .05  |
| 1     | 223.19     | .05    | .035 | .05  |
| 1     | 223.09     | .05    | .035 | .05  |
| 1     | 223.085    | Bridge |      |      |
| 1     | 223.08     | .05    | .035 | .05  |
| 1     | 223.02     | .05    | .035 | .05  |
| 1     | 222.93     | .05    | .035 | .05  |
| 1     | 222.83     | .05    | .035 | .05  |
| 1     | 222.74     | .05    | .035 | .05  |

Corr\_Effective\_SkyHarbor.rep

|   |         |        |      |      |      |
|---|---------|--------|------|------|------|
| 1 | 222.65  | .05    | .035 | .05  |      |
| 1 | 222.55  | .04    | .03  | .04  |      |
| 1 | 222.45  | .04    | .03  | .04  |      |
| 1 | 222.36  | .04    | .03  | .04  |      |
| 1 | 222.27  | .04    | .03  | .04  |      |
| 1 | 222.17  | .04    | .03  | .04  |      |
| 1 | 222.09  | .04    | .03  | .04  |      |
| 1 | 222.085 |        |      |      |      |
| 1 | 222.08  | Bridge | .04  | .03  | .04  |
| 1 | 221.99  |        | .04  | .03  | .04  |
| 1 | 221.89  |        | .04  | .03  | .04  |
| 1 | 221.80  |        | .04  | .03  | .04  |
| 1 | 221.70  |        | .04  | .03  | .04  |
| 1 | 221.61  |        | .04  | .03  | .04  |
| 1 | 221.50  |        | .04  | .03  | .04  |
| 1 | 221.40  |        | .05  | .035 | .05  |
| 1 | 221.31  |        | .05  | .035 | .05  |
| 1 | 221.26  |        | .05  | .035 | .05  |
| 1 | 221.25  | Bridge |      |      |      |
| 1 | 221.24  |        | .05  | .035 | .05  |
| 1 | 221.2   |        | .05  | .035 | .05  |
| 1 | 221.195 | Bridge |      |      |      |
| 1 | 221.19  |        | .05  | .035 | .05  |
| 1 | 221.06  |        | .05  | .035 | .05  |
| 1 | 221.055 | Bridge |      |      |      |
| 1 | 221.05  |        | .035 | .035 | .035 |
| 1 | 221.02  |        | .035 | .035 | .035 |
| 1 | 220.92  |        | .035 | .035 | .035 |
| 1 | 220.82  |        | .035 | .035 | .035 |
| 1 | 220.73  |        | .035 | .035 | .035 |
| 1 | 220.63  |        | .035 | .035 | .035 |
| 1 | 220.54  |        | .035 | .035 | .035 |
| 1 | 220.45  |        | .035 | .035 | .035 |
| 1 | 220.35  |        | .035 | .035 | .035 |
| 1 | 220.25  |        | .035 | .035 | .035 |
| 1 | 220.16  |        | .035 | .035 | .035 |
| 1 | 220.06  |        | .035 | .035 | .035 |
| 1 | 220.05  | Bridge |      |      |      |
| 1 | 220.03  |        | .035 | .035 | .035 |
| 1 | 219.88  |        | .035 | .035 | .035 |
| 1 | 219.79  |        | .035 | .035 | .035 |
| 1 | 219.70  |        | .035 | .035 | .035 |
| 1 | 219.61  |        | .035 | .035 | .035 |
| 1 | 219.51  |        | .035 | .035 | .035 |
| 1 | 219.42  |        | .035 | .035 | .035 |
| 1 | 219.33  |        | .035 | .035 | .035 |
| 1 | 219.24  |        | .035 | .035 | .035 |
| 1 | 219.14  |        | .05  | .035 | .05  |
| 1 | 219.03  |        | .05  | .035 | .05  |
| 1 | 219.02  | Bridge |      |      |      |
| 1 | 219.01  |        | .05  | .035 | .05  |
| 1 | 218.97  |        | .05  | .035 | .05  |
| 1 | 218.965 | Bridge |      |      |      |
| 1 | 218.96  |        | .05  | .035 | .05  |
| 1 | 218.80  |        | .05  | .035 | .05  |
| 1 | 218.71  |        | .05  | .035 | .05  |
| 1 | 218.61  |        | .05  | .035 | .05  |
| 1 | 218.52  |        | .05  | .035 | .05  |
| 1 | 218.42  |        | .05  | .035 | .05  |
| 1 | 218.33  |        | .05  | .035 | .05  |
| 1 | 218.24  |        | .05  | .035 | .05  |
| 1 | 218.14  |        | .05  | .035 | .05  |
| 1 | 218.04  |        | .035 | .035 | .035 |
| 1 | 217.95  |        | .035 | .035 | .035 |
| 1 | 217.86  |        | .035 | .035 | .035 |
| 1 | 217.76  |        | .035 | .035 | .035 |
| 1 | 217.66  |        | .035 | .035 | .035 |
| 1 | 217.57  |        | .035 | .035 | .035 |
| 1 | 217.48  |        | .035 | .035 | .035 |
| 1 | 217.38  |        | .035 | .035 | .035 |
| 1 | 217.29  |        | .035 | .035 | .035 |
| 1 | 217.19  |        | .035 | .035 | .035 |
| 1 | 217.10  |        | .035 | .035 | .035 |
| 1 | 217.00  |        | .035 | .035 | .035 |
| 1 | 216.91  |        | .035 | .035 | .035 |
| 1 | 216.81  |        | .035 | .035 | .035 |
| 1 | 216.72  |        | .035 | .035 | .035 |
| 1 | 216.62  |        | .035 | .035 | .035 |
| 1 | 216.52  |        | .04  | .035 | .04  |
| 1 | 216.505 | Bridge |      |      |      |
| 1 | 216.49  |        | .04  | .035 | .04  |
| 1 | 216.42  |        | .04  | .035 | .04  |
| 1 | 216.33  |        | .04  | .035 | .04  |
| 1 | 216.23  |        | .04  | .035 | .04  |
| 1 | 216.13  |        | .04  | .035 | .04  |
| 1 | 216.04  |        | .04  | .035 | .04  |
| 1 | 215.94  |        | .04  | .035 | .04  |
| 1 | 215.84  |        | .04  | .035 | .04  |

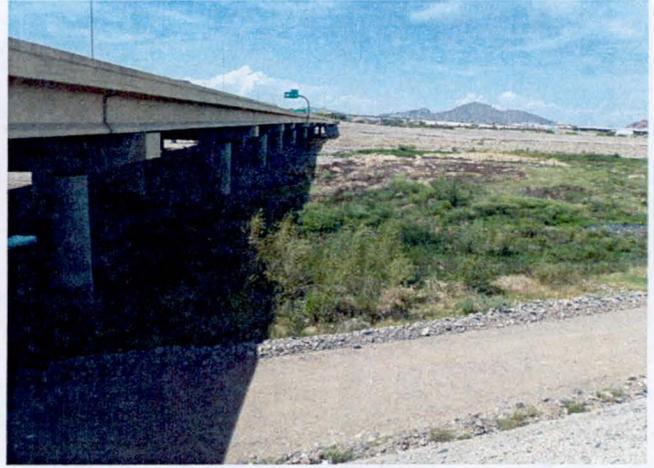
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|   |         |        |      |     |
|---|---------|--------|------|-----|
| 1 | 215.82  | .04    | .035 | .04 |
| 1 | 215.815 | Bridge |      |     |
| 1 | 215.81  | .04    | .035 | .04 |
| 1 | 215.75  | .04    | .035 | .04 |
| 1 | 215.65  | .04    | .035 | .04 |
| 1 | 215.56  | .04    | .035 | .04 |
| 1 | 215.46  | .04    | .035 | .04 |
| 1 | 215.36  | .04    | .035 | .04 |
| 1 | 215.27  | .04    | .035 | .04 |
| 1 | 215.18  | .04    | .035 | .04 |
| 1 | 215.09  | .04    | .035 | .04 |
| 1 | 214.99  | .04    | .035 | .04 |
| 1 | 214.9   | .04    | .035 | .04 |
| 1 | 214.79  | .04    | .035 | .04 |
| 1 | 214.785 | Bridge |      |     |
| 1 | 214.78  | .04    | .035 | .04 |
| 1 | 214.71  | .04    | .035 | .04 |
| 1 | 214.61  | .04    | .035 | .04 |
| 1 | 214.52  | .04    | .035 | .04 |
| 1 | 214.42  | .04    | .035 | .04 |
| 1 | 214.33  | .04    | .035 | .04 |
| 1 | 214.23  | .04    | .035 | .04 |
| 1 | 214.14  | .04    | .035 | .04 |

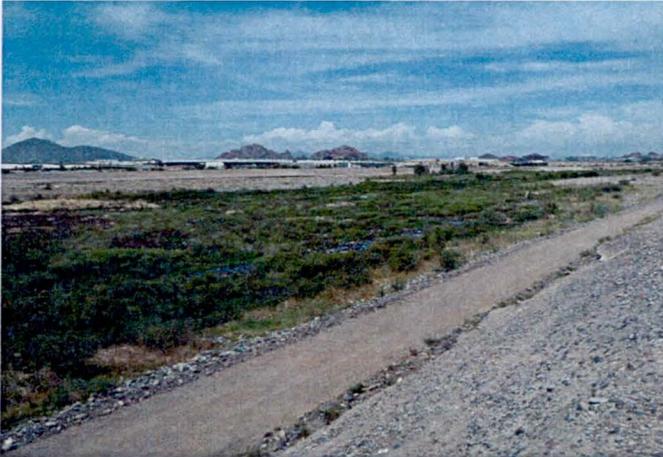
Appendix C.2  
N-VALUE ADJUSTMENTS



Low Flow Channel Under SR-143 Bridge



Reach just upstream of SR-143 Bridge



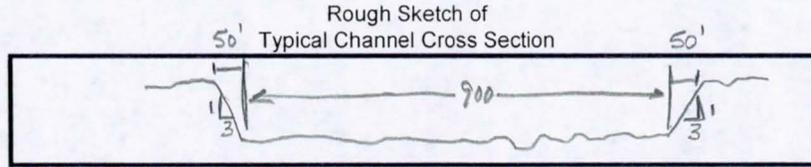
Looking upstream of SR-143 Bridge



Vegetation in Salt River upstream of SR-143 Bridge

Determination of Manning's Roughness Coefficients by FCDMC Method

Project: Salt River Letter of Map Revision  
 Stream: Salt River  
 Job No.: 221722.03  
 Section Description: Reach upstream of SR-143 bridge  
 River Miles: 219.03 to 219.51



| Channel Conditions                      |                            | Manning's n Adjustment | Left Overbank | Main Channel    |              |                  | Right Overbank |
|---|----------------------------|------------------------|---------------|-----------------|--------------|------------------|----------------|
| Area [ft <sup>2</sup> ]<br>% [decimal]  |                            |                        |               | (left bank -A1) | (center -A2) | (right bank -A3) |                |
| Channel Bed Material                    | Concrete                   | 0.012-0.018            |               | 0.018           | 0.80         | 0.10             |                |
|   | Rock Cut                   | 0.025                  |               |                 |              |                  |                |
|   | Firm Soil                  | 0.025-0.032            | 0.032         |                 |              |                  | 0.032          |
|   | Fine Sand                  | 0.023-.026             |               |                 |              |                  |                |
|   | Coarse Sand                | 0.026-0.036            |               |                 | 0.029        |                  |                |
|   | Gravel                     | 0.028-0.035            |               |                 |              |                  |                |
|   | Cobble                     | 0.030-0.050            |               |                 |              |                  |                |
| Degree of Irregularity                  | Boulder                    | 0.040-0.070            |               |                 |              |                  |                |
|   | Smooth                     | 0.000                  |               | 0.000           | 0.000        | 0.000            |                |
|   | Minor                      | 0.001-0.005            |               |                 |              |                  |                |
|   | Moderate                   | 0.006-0.010            |               |                 |              |                  |                |
| Effects of Obstructions                 | Severe                     | 0.011-0.020            |               |                 |              |                  |                |
|   | Negligible                 | 0.000-0.004            | 0.003         | 0.000           | 0.000        | 0.000            | 0.003          |
|   | Minor                      | 0.005-0.015            |               |                 |              |                  |                |
|   | Appreciable                | 0.020-0.030            |               |                 |              |                  |                |
| Vegetation                              | Severe                     | 0.040-0.060            |               |                 |              |                  |                |
|   | Small                      | 0.002-0.010            | 0.005         | 0.000           |              | 0.002            | 0.005          |
|   | Medium                     | 0.01-0.025             |               | 0.018           | 0.013        |                  |                |
|   | Large                      | 0.025-0.050            |               |                 |              |                  |                |
| Variations in the Channel Cross Section | Very Large                 | 0.050-0.100            |               |                 |              |                  |                |
|   | Gradual                    | 0.000                  |               | 0.000           | 0.000        | 0.000            |                |
|   | Alternating (occasionally) | 0.001-0.005            |               |                 |              |                  |                |
| Sum (n0-n4) x (% of Area)               | Alternating (frequently)   | 0.010-0.015            |               |                 |              |                  |                |
|   |                            |                        |               | 0.036           | 0.042        | 0.020            |                |
| Sum (left, right, center)               |                            |                        |               | 0.004           | 0.034        | 0.002            |                |
|   |                            |                        |               |                 | 0.039        |                  |                |
| Degree of Meandering                    | Minor                      | 1.0                    | 1.0           |                 | 1.0          |                  | 1.0            |
|   | Appreciable                | 1.15                   |               |                 |              |                  |                |
|   | Severe                     | 1.3                    |               |                 |              |                  |                |
| n = (n0 + n1 + n2 + n3 + n4)m           |                            |                        | 0.040         | 0.039           |              |                  | 0.040          |

Appendix C.3  
POST PROJECT CONDITIONS MODEL (ASBUILT)

| Reach | River Sta | Profile    | Q Total<br>(cfs) | Min Ch El<br>(ft) | W.S. Elev<br>(ft) | Crit W.S.<br>(ft) | E.G. Elev<br>(ft) | E.G. Slope<br>(ft/ft) | Vel Chnl<br>(ft/s) | Flow Area<br>(sq ft) | Top Width<br>(ft) | Froude # Chl |
|-------|-----------|------------|------------------|-------------------|-------------------|-------------------|-------------------|-----------------------|--------------------|----------------------|-------------------|--------------|
| 1     | 219.51 AT | Floodplain | 169000.00        | 1116.00           | 1134.95           | 1128.58           | 1136.72           | 0.002008              | 10.66              | 15854.90             | 1007.60           | 0.47         |
| 1     | 219.51 AT | Floodway   | 169000.00        | 1116.00           | 1134.95           | 1128.58           | 1136.72           | 0.002008              | 10.66              | 15854.90             | 1007.60           | 0.47         |
| 1     | 219.51 AT | 10 %       | 55000.00         | 1116.00           | 1127.13           | 1123.36           | 1127.84           | 0.001877              | 6.77               | 8120.27              | 973.13            | 0.41         |
| 1     | 219.51 AT | 2 %        | 140000.00        | 1116.00           | 1133.26           | 1127.44           | 1134.78           | 0.001990              | 9.89               | 14159.19             | 1001.58           | 0.46         |
| 1     | 219.51 AT | 0.2 %      | 243000.00        | 1116.00           | 1138.72           | 1131.31           | 1141.09           | 0.002068              | 12.35              | 19677.07             | 1023.32           | 0.50         |
| 1     | 219.46    | Floodplain | 169000.00        | 1115.00           | 1134.52           | 1128.17           | 1136.27           | 0.002004              | 10.63              | 15902.70             | 1013.44           | 0.47         |
| 1     | 219.46    | Floodway   | 169000.00        | 1115.00           | 1134.52           | 1128.17           | 1136.27           | 0.002004              | 10.63              | 15902.70             | 1013.44           | 0.47         |
| 1     | 219.46    | 10 %       | 55000.00         | 1115.00           | 1126.72           | 1122.96           | 1127.43           | 0.001866              | 6.75               | 8152.94              | 978.19            | 0.41         |
| 1     | 219.46    | 2 %        | 140000.00        | 1115.00           | 1132.83           | 1127.00           | 1134.34           | 0.001988              | 9.86               | 14198.95             | 1007.76           | 0.46         |
| 1     | 219.46    | 0.2 %      | 243000.00        | 1115.00           | 1138.27           | 1130.84           | 1140.63           | 0.002060              | 12.31              | 19733.25             | 1026.83           | 0.50         |
| 1     | 219.42    | Floodplain | 169000.00        | 1115.00           | 1133.82           | 1127.86           | 1135.66           | 0.002172              | 10.89              | 15522.39             | 1013.35           | 0.49         |
| 1     | 219.42    | Floodway   | 169000.00        | 1115.00           | 1133.82           | 1127.86           | 1135.66           | 0.002172              | 10.89              | 15522.39             | 1013.35           | 0.49         |
| 1     | 219.42    | 10 %       | 55000.00         | 1115.00           | 1126.08           | 1122.67           | 1126.84           | 0.002147              | 7.03               | 7819.03              | 979.08            | 0.44         |
| 1     | 219.42    | 2 %        | 140000.00        | 1115.00           | 1132.14           | 1126.70           | 1133.73           | 0.002173              | 10.13              | 13826.00             | 1007.57           | 0.48         |
| 1     | 219.42    | 0.2 %      | 243000.00        | 1115.00           | 1137.54           | 1130.57           | 1140.00           | 0.002211              | 12.58              | 19323.90             | 1027.97           | 0.51         |
| 1     | 219.38    | Floodplain | 169000.00        | 1115.00           | 1133.40           | 1127.33           | 1135.18           | 0.002101              | 10.70              | 15791.18             | 1034.31           | 0.48         |
| 1     | 219.38    | Floodway   | 169000.00        | 1115.00           | 1133.40           | 1127.33           | 1135.18           | 0.002101              | 10.70              | 15791.18             | 1034.31           | 0.48         |
| 1     | 219.38    | 10 %       | 55000.00         | 1115.00           | 1125.63           | 1122.20           | 1126.38           | 0.002090              | 6.94               | 7929.77              | 995.09            | 0.43         |
| 1     | 219.38    | 2 %        | 140000.00        | 1115.00           | 1131.71           | 1126.19           | 1133.25           | 0.002105              | 9.96               | 14052.53             | 1026.83           | 0.47         |
| 1     | 219.38    | 0.2 %      | 243000.00        | 1115.00           | 1137.14           | 1129.99           | 1139.50           | 0.002132              | 12.34              | 19690.54             | 1051.33           | 0.50         |
| 1     | 219.33    | Floodplain | 169000.00        | 1114.00           | 1132.72           | 1126.85           | 1134.58           | 0.002252              | 10.92              | 15470.68             | 1033.89           | 0.50         |
| 1     | 219.33    | Floodway   | 169000.00        | 1114.00           | 1132.72           | 1126.85           | 1134.58           | 0.002252              | 10.92              | 15470.68             | 1033.89           | 0.50         |
| 1     | 219.33    | 10 %       | 55000.00         | 1114.00           | 1124.99           | 1121.73           | 1125.78           | 0.002264              | 7.14               | 7699.85              | 980.91            | 0.45         |
| 1     | 219.33    | 2 %        | 140000.00        | 1114.00           | 1131.03           | 1125.71           | 1132.65           | 0.002278              | 10.20              | 13729.44             | 1027.02           | 0.49         |
| 1     | 219.33    | 0.2 %      | 243000.00        | 1114.00           | 1136.45           | 1129.64           | 1138.90           | 0.002259              | 12.56              | 19349.14             | 1049.64           | 0.52         |
| 1     | 219.29    | Floodplain | 169000.00        | 1114.00           | 1132.18           | 1126.46           | 1134.06           | 0.002314              | 11.00              | 15358.44             | 1035.48           | 0.50         |
| 1     | 219.29    | Floodway   | 169000.00        | 1114.00           | 1132.18           | 1126.46           | 1134.06           | 0.002314              | 11.00              | 15358.44             | 1035.48           | 0.50         |
| 1     | 219.29    | 10 %       | 55000.00         | 1114.00           | 1124.44           | 1121.23           | 1125.26           | 0.002366              | 7.25               | 7589.96              | 977.59            | 0.46         |
| 1     | 219.29    | 2 %        | 140000.00        | 1114.00           | 1130.48           | 1125.31           | 1132.12           | 0.002353              | 10.29              | 13604.63             | 1027.83           | 0.50         |
| 1     | 219.29    | 0.2 %      | 243000.00        | 1114.00           | 1135.90           | 1129.23           | 1138.38           | 0.002307              | 12.63              | 19244.99             | 1051.53           | 0.52         |
| 1     | 219.24    | Floodplain | 169000.00        | 1113.00           | 1131.63           | 1125.88           | 1133.51           | 0.002312              | 11.01              | 15350.20             | 1033.63           | 0.50         |
| 1     | 219.24    | Floodway   | 169000.00        | 1113.00           | 1131.63           | 1125.88           | 1133.51           | 0.002312              | 11.01              | 15350.20             | 1033.63           | 0.50         |
| 1     | 219.24    | 10 %       | 55000.00         | 1113.00           | 1123.89           | 1120.68           | 1124.70           | 0.002335              | 7.23               | 7611.11              | 975.42            | 0.46         |
| 1     | 219.24    | 2 %        | 140000.00        | 1113.00           | 1129.92           | 1124.72           | 1131.57           | 0.002353              | 10.30              | 13588.26             | 1024.68           | 0.50         |
| 1     | 219.24    | 0.2 %      | 243000.00        | 1113.00           | 1135.35           | 1128.63           | 1137.83           | 0.002309              | 12.64              | 19230.17             | 1050.35           | 0.52         |
| 1     | 219.19    | Floodplain | 169000.00        | 1113.00           | 1131.07           | 1125.21           | 1132.93           | 0.002258              | 10.95              | 15434.76             | 1030.76           | 0.50         |
| 1     | 219.19    | Floodway   | 169000.00        | 1113.00           | 1131.07           | 1125.21           | 1132.93           | 0.002258              | 10.95              | 15434.76             | 1030.76           | 0.50         |
| 1     | 219.19    | 10 %       | 55000.00         | 1113.00           | 1123.33           | 1120.01           | 1124.12           | 0.002235              | 7.14               | 7706.42              | 974.12            | 0.45         |
| 1     | 219.19    | 2 %        | 140000.00        | 1113.00           | 1129.35           | 1124.07           | 1130.98           | 0.002288              | 10.24              | 13668.61             | 1019.57           | 0.49         |
| 1     | 219.19    | 0.2 %      | 243000.00        | 1113.00           | 1134.79           | 1128.00           | 1137.25           | 0.002269              | 12.59              | 19300.25             | 1047.48           | 0.52         |
| 1     | 219.14    | Floodplain | 169000.00        | 1112.00           | 1130.44           | 1124.77           | 1132.34           | 0.002324              | 11.06              | 15276.24             | 1024.64           | 0.50         |
| 1     | 219.14    | Floodway   | 169000.00        | 1112.00           | 1130.44           | 1124.77           | 1132.34           | 0.002324              | 11.06              | 15276.24             | 1024.64           | 0.50         |
| 1     | 219.14    | 10 %       | 55000.00         | 1112.00           | 1122.69           | 1119.61           | 1123.52           | 0.002443              | 7.31               | 7527.26              | 981.16            | 0.46         |
| 1     | 219.14    | 2 %        | 140000.00        | 1112.00           | 1128.71           | 1123.62           | 1130.38           | 0.002381              | 10.37              | 13506.85             | 1017.97           | 0.50         |
| 1     | 219.14    | 0.2 %      | 243000.00        | 1112.00           | 1134.15           | 1127.47           | 1136.66           | 0.002331              | 12.73              | 19094.56             | 1038.49           | 0.52         |
| 1     | 219.09    | Floodplain | 169000.00        | 1112.00           | 1129.91           | 1124.27           | 1131.80           | 0.002353              | 11.04              | 15311.43             | 1041.21           | 0.51         |
| 1     | 219.09    | Floodway   | 169000.00        | 1112.00           | 1129.91           | 1124.27           | 1131.80           | 0.002353              | 11.04              | 15311.43             | 1041.21           | 0.51         |
| 1     | 219.09    | 10 %       | 55000.00         | 1112.00           | 1122.09           | 1119.13           | 1122.94           | 0.002574              | 7.40               | 7427.68              | 986.71            | 0.48         |
| 1     | 219.09    | 2 %        | 140000.00        | 1112.00           | 1128.15           | 1123.15           | 1129.83           | 0.002435              | 10.38              | 13487.32             | 1032.31           | 0.51         |
| 1     | 219.09    | 0.2 %      | 243000.00        | 1112.00           | 1133.63           | 1126.94           | 1136.11           | 0.002338              | 12.64              | 19219.58             | 1059.41           | 0.52         |
| 1     | 219.03 AS | Floodplain | 169000.00        | 1110.00           | 1129.48           | 1123.02           | 1131.11           | 0.001888              | 10.25              | 16483.37             | 1060.94           | 0.46         |
| 1     | 219.03 AS | Floodway   | 169000.00        | 1110.00           | 1129.48           | 1123.02           | 1131.11           | 0.001888              | 10.25              | 16483.37             | 1060.94           | 0.46         |
| 1     | 219.03 AS | 10 %       | 55000.00         | 1110.00           | 1121.53           | 1118.07           | 1122.24           | 0.002004              | 6.74               | 8159.18              | 1034.15           | 0.42         |
| 1     | 219.03 AS | 2 %        | 140000.00        | 1110.00           | 1127.69           | 1121.94           | 1129.12           | 0.001927              | 9.59               | 14593.16             | 1054.66           | 0.45         |
| 1     | 219.03 AS | 0.2 %      | 243000.00        | 1110.00           | 1133.22           | 1125.66           | 1135.40           | 0.001929              | 11.87              | 20476.54             | 1579.60           | 0.48         |
| 1     | 219.02    | Bridge     |                  |                   |                   |                   |                   |                       |                    |                      |                   |              |
| 1     | 219.01    | Floodplain | 169000.00        | 1109.00           | 1128.78           | 1122.71           | 1130.50           | 0.001645              | 10.54              | 16036.68             | 1051.44           | 0.48         |
| 1     | 219.01    | Floodway   | 169000.00        | 1109.00           | 1128.78           | 1122.71           | 1130.50           | 0.001645              | 10.54              | 16036.68             | 1051.44           | 0.48         |
| 1     | 219.01    | 10 %       | 55000.00         | 1109.00           | 1120.94           | 1117.70           | 1121.70           | 0.001781              | 6.97               | 7895.53              | 1026.67           | 0.44         |
| 1     | 219.01    | 2 %        | 140000.00        | 1109.00           | 1127.01           | 1121.61           | 1128.52           | 0.001686              | 9.87               | 14182.48             | 1045.88           | 0.47         |
| 1     | 219.01    | 0.2 %      | 243000.00        | 1109.00           | 1132.40           | 1125.31           | 1134.72           | 0.001694              | 12.23              | 19870.71             | 1063.45           | 0.50         |
| 1     | 218.99    | Floodplain | 169000.00        | 1109.00           | 1128.73           | 1121.95           | 1130.30           | 0.001432              | 10.04              | 16830.73             | 1068.96           | 0.45         |
| 1     | 218.99    | Floodway   | 169000.00        | 1109.00           | 1128.73           | 1121.95           | 1130.30           | 0.001432              | 10.04              | 16830.73             | 1068.96           | 0.45         |
| 1     | 218.99    | 10 %       | 55000.00         | 1109.00           | 1120.87           | 1116.92           | 1121.51           | 0.001341              | 6.39               | 8613.76              | 1031.23           | 0.39         |
| 1     | 218.99    | 2 %        | 140000.00        | 1109.00           | 1126.96           | 1120.83           | 1128.32           | 0.001425              | 9.36               | 14955.36             | 1052.00           | 0.44         |
| 1     | 218.99    | 0.2 %      | 243000.00        | 1109.00           | 1132.38           | 1124.53           | 1134.51           | 0.001507              | 11.70              | 20766.80             | 1088.06           | 0.47         |
| 1     | 218.975   | Bridge     |                  |                   |                   |                   |                   |                       |                    |                      |                   |              |
| 1     | 218.96    | Floodplain | 169000.00        | 1109.00           | 1127.95           | 1121.69           | 1129.57           | 0.001575              | 10.21              | 16552.82             | 1101.63           | 0.46         |
| 1     | 218.96    | Floodway   | 169000.00        | 1109.00           | 1127.95           | 1121.69           | 1129.57           | 0.001575              | 10.21              | 16552.82             | 1101.63           | 0.46         |

HEC-RAS Plan: Asbuilt2011 River: Salt Reach: 1 (Continued)

| Reach | River Sta | Profile    | Q Total<br>(cfs) | Min Ch El<br>(ft) | W.S. Elev<br>(ft) | Crit W.S.<br>(ft) | E.G. Elev<br>(ft) | E.G. Slope<br>(ft/ft) | Vel Chnl<br>(ft/s) | Flow Area<br>(sq ft) | Top Width<br>(ft) | Froude # Chl |
|-------|-----------|------------|------------------|-------------------|-------------------|-------------------|-------------------|-----------------------|--------------------|----------------------|-------------------|--------------|
| 1     | 218.96    | 10 %       | 55000.00         | 1109.00           | 1120.28           | 1116.85           | 1120.97           | 0.001600              | 6.64               | 8280.22              | 1066.95           | 0.42         |
| 1     | 218.96    | 2 %        | 140000.00        | 1109.00           | 1126.21           | 1120.65           | 1127.63           | 0.001586              | 9.55               | 14660.78             | 1084.91           | 0.46         |
| 1     | 218.96    | 0.2 %      | 243000.00        | 1109.00           | 1132.00           | 1124.29           | 1134.07           | 0.001498              | 11.54              | 21050.16             | 1120.62           | 0.47         |
| 1     | 218.8     | Floodplain | 169000.00        | 1108.00           | 1125.93           | 1120.90           | 1128.02           | 0.002133              | 11.63              | 14536.47             | 997.78            | 0.54         |
| 1     | 218.8     | Floodway   | 169000.00        | 1108.00           | 1125.93           | 1120.90           | 1128.02           | 0.002133              | 11.63              | 14536.47             | 997.78            | 0.54         |
| 1     | 218.8     | 10 %       | 55000.00         | 1108.00           | 1118.50           | 1115.71           | 1119.40           | 0.002256              | 7.63               | 7208.65              | 974.84            | 0.49         |
| 1     | 218.8     | 2 %        | 140000.00        | 1108.00           | 1124.22           | 1119.73           | 1126.07           | 0.002195              | 10.90              | 12839.26             | 992.42            | 0.53         |
| 1     | 218.8     | 0.2 %      | 243000.00        | 1108.00           | 1129.94           | 1123.60           | 1132.59           | 0.002009              | 13.06              | 18612.95             | 1025.05           | 0.54         |
| 1     | 218.77    | Floodplain | 169000.00        | 1108.00           | 1125.42           | 1120.38           | 1127.50           | 0.002129              | 11.58              | 14598.01             | 1007.70           | 0.54         |
| 1     | 218.77    | Floodway   | 169000.00        | 1108.00           | 1125.42           | 1120.38           | 1127.50           | 0.002129              | 11.58              | 14598.01             | 1007.70           | 0.54         |
| 1     | 218.77    | 10 %       | 55000.00         | 1108.00           | 1117.94           | 1115.18           | 1118.85           | 0.002279              | 7.65               | 7193.42              | 977.25            | 0.50         |
| 1     | 218.77    | 2 %        | 140000.00        | 1108.00           | 1123.70           | 1119.22           | 1125.53           | 0.002192              | 10.88              | 12867.75             | 997.40            | 0.53         |
| 1     | 218.77    | 0.2 %      | 243000.00        | 1108.00           | 1129.49           | 1123.05           | 1132.10           | 0.001988              | 12.94              | 18777.87             | 1041.11           | 0.54         |
| 1     | 218.71 AR | Floodplain | 169000.00        | 1107.00           | 1124.82           | 1119.84           | 1126.96           | 0.002195              | 11.74              | 14391.55             | 995.45            | 0.54         |
| 1     | 218.71 AR | Floodway   | 169000.00        | 1107.00           | 1124.82           | 1119.84           | 1126.96           | 0.002195              | 11.74              | 14391.55             | 995.45            | 0.54         |
| 1     | 218.71 AR | 10 %       | 55000.00         | 1107.00           | 1117.36           | 1114.57           | 1118.28           | 0.002273              | 7.71               | 7137.07              | 956.40            | 0.50         |
| 1     | 218.71 AR | 2 %        | 140000.00        | 1107.00           | 1123.08           | 1118.66           | 1124.98           | 0.002254              | 11.04              | 12676.60             | 981.45            | 0.54         |
| 1     | 218.71 AR | 0.2 %      | 243000.00        | 1107.00           | 1128.91           | 1122.57           | 1131.59           | 0.002013              | 13.13              | 18504.88             | 1012.63           | 0.54         |
| 1     | 218.66    | Floodplain | 169000.00        | 1105.19           | 1124.33           | 1119.06           | 1126.41           | 0.002089              | 11.58              | 14599.04             | 993.72            | 0.53         |
| 1     | 218.66    | Floodway   | 169000.00        | 1105.19           | 1124.33           | 1119.06           | 1126.41           | 0.002089              | 11.58              | 14599.04             | 993.72            | 0.53         |
| 1     | 218.66    | 10 %       | 55000.00         | 1105.19           | 1116.87           | 1113.75           | 1117.73           | 0.002005              | 7.44               | 7392.72              | 949.75            | 0.47         |
| 1     | 218.66    | 2 %        | 140000.00        | 1105.19           | 1122.58           | 1117.88           | 1124.41           | 0.002121              | 10.87              | 12879.41             | 974.73            | 0.53         |
| 1     | 218.66    | 0.2 %      | 243000.00        | 1105.19           | 1128.47           | 1121.77           | 1131.07           | 0.001933              | 12.94              | 18785.35             | 1019.71           | 0.53         |
| 1     | 218.61    | Floodplain | 169000.00        | 1104.00           | 1123.75           | 1118.53           | 1125.85           | 0.002146              | 11.64              | 14525.07             | 1000.97           | 0.54         |
| 1     | 218.61    | Floodway   | 169000.00        | 1104.00           | 1123.75           | 1118.53           | 1125.85           | 0.002146              | 11.64              | 14525.07             | 1000.97           | 0.54         |
| 1     | 218.61    | 10 %       | 55000.00         | 1104.00           | 1116.31           | 1113.32           | 1117.19           | 0.002094              | 7.53               | 7307.74              | 953.06            | 0.48         |
| 1     | 218.61    | 2 %        | 140000.00        | 1104.00           | 1121.98           | 1117.42           | 1123.84           | 0.002189              | 10.96              | 12773.69             | 977.63            | 0.53         |
| 1     | 218.61    | 0.2 %      | 243000.00        | 1104.00           | 1127.97           | 1121.34           | 1130.56           | 0.001937              | 12.92              | 18805.65             | 1024.21           | 0.53         |
| 1     | 218.57    | Floodplain | 169000.00        | 1104.00           | 1123.21           | 1118.11           | 1125.31           | 0.002143              | 11.61              | 14552.43             | 1005.72           | 0.54         |
| 1     | 218.57    | Floodway   | 169000.00        | 1104.00           | 1123.21           | 1118.11           | 1125.31           | 0.002143              | 11.61              | 14552.43             | 1005.72           | 0.54         |
| 1     | 218.57    | 10 %       | 55000.00         | 1104.00           | 1115.78           | 1112.83           | 1116.66           | 0.002137              | 7.56               | 7279.63              | 960.09            | 0.48         |
| 1     | 218.57    | 2 %        | 140000.00        | 1104.00           | 1121.42           | 1116.93           | 1123.29           | 0.002222              | 10.96              | 12768.36             | 988.63            | 0.54         |
| 1     | 218.57    | 0.2 %      | 243000.00        | 1104.00           | 1127.51           | 1120.86           | 1130.07           | 0.001906              | 12.84              | 18920.85             | 1028.09           | 0.53         |
| 1     | 218.52    | Floodplain | 169000.00        | 1103.00           | 1122.70           | 1117.53           | 1124.78           | 0.002107              | 11.55              | 14628.68             | 1005.71           | 0.53         |
| 1     | 218.52    | Floodway   | 169000.00        | 1103.00           | 1122.70           | 1117.53           | 1124.78           | 0.002107              | 11.55              | 14628.68             | 1005.71           | 0.53         |
| 1     | 218.52    | 10 %       | 55000.00         | 1103.00           | 1115.27           | 1112.25           | 1116.14           | 0.002078              | 7.48               | 7353.27              | 963.85            | 0.48         |
| 1     | 218.52    | 2 %        | 140000.00        | 1103.00           | 1120.89           | 1116.35           | 1122.74           | 0.002171              | 10.91              | 12828.56             | 982.50            | 0.53         |
| 1     | 218.52    | 0.2 %      | 243000.00        | 1103.00           | 1127.07           | 1120.22           | 1129.59           | 0.001857              | 12.74              | 19079.57             | 1029.02           | 0.52         |
| 1     | 218.47    | Floodplain | 169000.00        | 1101.00           | 1122.38           | 1116.52           | 1124.28           | 0.001815              | 11.04              | 15301.40             | 1007.03           | 0.50         |
| 1     | 218.47    | Floodway   | 169000.00        | 1101.00           | 1122.38           | 1116.52           | 1124.28           | 0.001815              | 11.04              | 15301.40             | 1007.03           | 0.50         |
| 1     | 218.47    | 10 %       | 55000.00         | 1101.00           | 1114.95           | 1111.26           | 1115.69           | 0.001562              | 6.88               | 7998.91              | 960.27            | 0.42         |
| 1     | 218.47    | 2 %        | 140000.00        | 1101.00           | 1120.56           | 1115.36           | 1122.23           | 0.001856              | 10.39              | 13478.44             | 989.51            | 0.50         |
| 1     | 218.47    | 0.2 %      | 243000.00        | 1101.00           | 1126.80           | 1119.22           | 1129.14           | 0.001638              | 12.27              | 19797.30             | 1028.12           | 0.49         |
| 1     | 218.42    | Floodplain | 169000.00        | 1102.00           | 1121.71           | 1116.49           | 1123.74           | 0.002058              | 11.43              | 14787.61             | 1015.18           | 0.53         |
| 1     | 218.42    | Floodway   | 169000.00        | 1102.00           | 1121.71           | 1116.49           | 1123.74           | 0.002058              | 11.43              | 14787.61             | 1015.18           | 0.53         |
| 1     | 218.42    | 10 %       | 55000.00         | 1102.00           | 1114.37           | 1111.21           | 1115.20           | 0.001970              | 7.33               | 7506.10              | 974.28            | 0.47         |
| 1     | 218.42    | 2 %        | 140000.00        | 1102.00           | 1119.85           | 1115.29           | 1121.67           | 0.002168              | 10.85              | 12908.51             | 997.24            | 0.53         |
| 1     | 218.42    | 0.2 %      | 243000.00        | 1102.00           | 1126.25           | 1119.17           | 1128.67           | 0.001762              | 12.50              | 19437.84             | 1036.70           | 0.51         |
| 1     | 218.38    | Floodplain | 169000.00        | 1102.00           | 1121.27           | 1115.92           | 1123.21           | 0.001972              | 11.18              | 15118.82             | 1039.07           | 0.52         |
| 1     | 218.38    | Floodway   | 169000.00        | 1102.00           | 1121.27           | 1115.92           | 1123.21           | 0.001972              | 11.18              | 15118.82             | 1039.07           | 0.52         |
| 1     | 218.38    | 10 %       | 55000.00         | 1102.00           | 1113.90           | 1110.68           | 1114.71           | 0.001932              | 7.21               | 7626.62              | 998.86            | 0.46         |
| 1     | 218.38    | 2 %        | 140000.00        | 1102.00           | 1119.36           | 1114.78           | 1121.12           | 0.002119              | 10.65              | 13140.10             | 1024.66           | 0.52         |
| 1     | 218.38    | 0.2 %      | 243000.00        | 1102.00           | 1125.91           | 1118.55           | 1128.21           | 0.001657              | 12.16              | 19990.30             | 1061.14           | 0.49         |
| 1     | 218.33    | Floodplain | 169000.00        | 1102.00           | 1120.19           | 1116.41           | 1122.58           | 0.002835              | 12.41              | 13622.28             | 1051.35           | 0.61         |
| 1     | 218.33    | Floodway   | 169000.00        | 1102.00           | 1120.19           | 1116.41           | 1122.58           | 0.002835              | 12.41              | 13622.28             | 1051.35           | 0.61         |
| 1     | 218.33    | 10 %       | 55000.00         | 1102.00           | 1111.35           | 1111.35           | 1113.61           | 0.010796              | 12.04              | 4567.04              | 1008.80           | 1.00         |
| 1     | 218.33    | 2 %        | 140000.00        | 1102.00           | 1118.05           | 1115.28           | 1120.39           | 0.003429              | 12.28              | 11405.03             | 1032.21           | 0.65         |
| 1     | 218.33    | 0.2 %      | 243000.00        | 1102.00           | 1125.15           | 1119.02           | 1127.72           | 0.002040              | 12.86              | 18896.65             | 1077.87           | 0.54         |
| 1     | 218.29    | Floodplain | 169000.00        | 1100.28           | 1120.21           | 1113.82           | 1121.90           | 0.001585              | 10.46              | 16163.76             | 1042.19           | 0.47         |
| 1     | 218.29    | Floodway   | 169000.00        | 1100.28           | 1120.21           | 1113.82           | 1121.90           | 0.001585              | 10.46              | 16163.76             | 1042.19           | 0.47         |
| 1     | 218.29    | 10 %       | 55000.00         | 1100.28           | 1110.56           | 1108.29           | 1111.72           | 0.003523              | 8.65               | 6356.07              | 994.79            | 0.60         |
| 1     | 218.29    | 2 %        | 140000.00        | 1100.28           | 1118.06           | 1112.64           | 1119.63           | 0.001762              | 10.05              | 13934.96             | 1033.56           | 0.48         |
| 1     | 218.29    | 0.2 %      | 243000.00        | 1100.28           | 1125.18           | 1116.49           | 1127.19           | 0.001320              | 11.36              | 21398.92             | 1093.64           | 0.45         |
| 1     | 218.24 AQ | Floodplain | 169000.00        | 1098.83           | 1120.11           | 1111.82           | 1121.45           | 0.001078              | 9.31               | 18147.52             | 1043.23           | 0.39         |
| 1     | 218.24 AQ | Floodway   | 169000.00        | 1098.83           | 1120.11           | 1111.82           | 1121.45           | 0.001078              | 9.31               | 18147.52             | 1043.23           | 0.39         |
| 1     | 218.24 AQ | 10 %       | 55000.00         | 1098.83           | 1110.27           | 1105.62           | 1110.99           | 0.001577              | 6.79               | 8100.90              | 999.13            | 0.42         |
| 1     | 218.24 AQ | 2 %        | 140000.00        | 1098.83           | 1117.94           | 1110.65           | 1119.15           | 0.001134              | 8.81               | 15898.62             | 1033.42           | 0.40         |
| 1     | 218.24 AQ | 0.2 %      | 243000.00        | 1098.83           | 1125.11           | 1114.46           | 1126.78           | 0.000978              | 10.38              | 23423.43             | 1099.70           | 0.39         |
| 1     | 218.19    | Floodplain | 169000.00        | 1098.08           | 1119.90           | 1110.87           | 1121.18           | 0.000996              | 9.07               | 18637.31             | 1049.31           | 0.38         |
| 1     | 218.19    | Floodway   | 169000.00        | 1098.08           | 1119.90           | 1110.87           | 1121.18           | 0.000996              | 9.07               | 18637.31             | 1049.31           | 0.38         |

HEC-RAS Plan: Asbuilt2011 River: Salt Reach: 1 (Continued)

| Reach | River Sta | Profile    | Q Total<br>(cfs) | Min Ch El<br>(ft) | W.S. Elev<br>(ft) | Crit W.S.<br>(ft) | E.G. Elev<br>(ft) | E.G. Slope<br>(ft/ft) | Vel Chnl<br>(ft/s) | Flow Area<br>(sq ft) | Top Width<br>(ft) | Froude # Chl |
|-------|-----------|------------|------------------|-------------------|-------------------|-------------------|-------------------|-----------------------|--------------------|----------------------|-------------------|--------------|
| 1     | 218.19    | 10 %       | 55000.00         | 1098.08           | 1109.99           | 1104.66           | 1110.62           | 0.001237              | 6.35               | 8656.08              | 981.25            | 0.38         |
| 1     | 218.19    | 2 %        | 140000.00        | 1098.08           | 1117.73           | 1109.76           | 1118.86           | 0.001007              | 8.54               | 16385.62             | 1018.14           | 0.38         |
| 1     | 218.19    | 0.2 %      | 243000.00        | 1098.08           | 1124.94           | 1113.62           | 1126.53           | 0.000923              | 10.13              | 23996.16             | 1105.73           | 0.38         |
| 1     | 218.14    | Floodplain | 169000.00        | 1097.86           | 1119.51           | 1110.95           | 1120.91           | 0.001081              | 9.50               | 17784.24             | 991.25            | 0.40         |
| 1     | 218.14    | Floodway   | 169000.00        | 1097.86           | 1119.51           | 1110.95           | 1120.91           | 0.001081              | 9.50               | 17784.24             | 991.25            | 0.40         |
| 1     | 218.14    | 10 %       | 55000.00         | 1097.86           | 1109.57           | 1104.58           | 1110.26           | 0.001444              | 6.75               | 8151.49              | 947.28            | 0.41         |
| 1     | 218.14    | 2 %        | 140000.00        | 1097.86           | 1117.35           | 1109.77           | 1118.59           | 0.001120              | 8.94               | 15652.35             | 981.80            | 0.39         |
| 1     | 218.14    | 0.2 %      | 243000.00        | 1097.86           | 1124.65           | 1113.68           | 1126.29           | 0.000947              | 10.38              | 24632.90             | 1540.88           | 0.38         |
| 1     | 218.09    | Floodplain | 169000.00        | 1097.36           | 1118.57           | 1111.57           | 1120.53           | 0.001593              | 11.23              | 15042.63             | 869.20            | 0.48         |
| 1     | 218.09    | Floodway   | 169000.00        | 1097.36           | 1118.57           | 1111.57           | 1120.53           | 0.001593              | 11.23              | 15042.63             | 869.20            | 0.48         |
| 1     | 218.09    | 10 %       | 55000.00         | 1097.36           | 1108.77           | 1104.65           | 1109.80           | 0.002261              | 8.17               | 6734.69              | 819.99            | 0.50         |
| 1     | 218.09    | 2 %        | 140000.00        | 1097.36           | 1116.46           | 1110.27           | 1118.20           | 0.001656              | 10.59              | 13219.16             | 860.12            | 0.48         |
| 1     | 218.09    | 0.2 %      | 243000.00        | 1097.36           | 1123.47           | 1114.59           | 1125.92           | 0.001472              | 12.55              | 19355.17             | 895.51            | 0.47         |
| 1     | 218.04    | Floodplain | 169000.00        | 1094.77           | 1118.28           | 1110.19           | 1120.09           | 0.001338              | 10.79              | 15656.15             | 843.72            | 0.44         |
| 1     | 218.04    | Floodway   | 169000.00        | 1094.77           | 1118.28           | 1110.19           | 1120.09           | 0.001338              | 10.79              | 15656.15             | 843.72            | 0.44         |
| 1     | 218.04    | 10 %       | 55000.00         | 1094.77           | 1108.42           | 1103.13           | 1109.25           | 0.001502              | 7.30               | 7537.89              | 801.15            | 0.42         |
| 1     | 218.04    | 2 %        | 140000.00        | 1094.77           | 1116.17           | 1108.84           | 1117.75           | 0.001349              | 10.08              | 13885.66             | 835.06            | 0.44         |
| 1     | 218.04    | 0.2 %      | 243000.00        | 1094.77           | 1123.24           | 1113.28           | 1125.49           | 0.001265              | 12.10              | 21199.53             | 1783.75           | 0.44         |
| 1     | 218       | Floodplain | 169000.00        | 1094.77           | 1117.98           | 1109.41           | 1119.79           | 0.001289              | 10.80              | 15647.05             | 811.34            | 0.43         |
| 1     | 218       | Floodway   | 169000.00        | 1094.77           | 1117.98           | 1109.41           | 1119.79           | 0.001289              | 10.80              | 15647.05             | 811.34            | 0.43         |
| 1     | 218       | 10 %       | 55000.00         | 1094.77           | 1108.15           | 1102.42           | 1108.91           | 0.001244              | 6.98               | 7876.36              | 768.45            | 0.38         |
| 1     | 218       | 2 %        | 140000.00        | 1094.77           | 1115.88           | 1108.01           | 1117.44           | 0.001275              | 10.03              | 13955.88             | 802.78            | 0.42         |
| 1     | 218       | 0.2 %      | 243000.00        | 1094.77           | 1122.80           | 1112.56           | 1125.18           | 0.001302              | 12.39              | 19630.61             | 904.24            | 0.45         |
| 1     | 217.95    | Floodplain | 169000.00        | 1094.77           | 1116.87           | 1110.12           | 1119.29           | 0.001885              | 12.50              | 13521.26             | 758.56            | 0.52         |
| 1     | 217.95    | Floodway   | 169000.00        | 1094.77           | 1116.87           | 1110.12           | 1119.29           | 0.001885              | 12.50              | 13521.26             | 758.56            | 0.52         |
| 1     | 217.95    | 10 %       | 55000.00         | 1094.77           | 1107.41           | 1102.54           | 1108.47           | 0.001763              | 8.24               | 6675.62              | 668.07            | 0.46         |
| 1     | 217.95    | 2 %        | 140000.00        | 1094.77           | 1114.84           | 1108.66           | 1116.96           | 0.001899              | 11.67              | 11991.71             | 750.12            | 0.51         |
| 1     | 217.95    | 0.2 %      | 243000.00        | 1094.77           | 1121.55           | 1113.66           | 1124.68           | 0.001842              | 14.20              | 17118.25             | 777.68            | 0.53         |
| 1     | 217.91    | Floodplain | 169000.00        | 1094.21           | 1116.46           | 1109.00           | 1118.83           | 0.001696              | 12.36              | 13668.24             | 712.35            | 0.50         |
| 1     | 217.91    | Floodway   | 169000.00        | 1094.21           | 1116.46           | 1109.00           | 1118.83           | 0.001696              | 12.36              | 13668.24             | 712.35            | 0.50         |
| 1     | 217.91    | 10 %       | 55000.00         | 1094.21           | 1107.13           | 1101.64           | 1108.03           | 0.001403              | 7.64               | 7201.25              | 673.82            | 0.41         |
| 1     | 217.91    | 2 %        | 140000.00        | 1094.21           | 1114.46           | 1107.49           | 1116.49           | 0.001647              | 11.42              | 12254.70             | 704.12            | 0.48         |
| 1     | 217.91    | 0.2 %      | 243000.00        | 1094.21           | 1121.04           | 1112.47           | 1124.22           | 0.001769              | 14.31              | 16976.94             | 737.15            | 0.52         |
| 1     | 217.86    | Floodplain | 169000.00        | 1093.60           | 1115.14           | 1109.49           | 1118.27           | 0.002408              | 14.19              | 11911.86             | 657.62            | 0.59         |
| 1     | 217.86    | Floodway   | 169000.00        | 1093.60           | 1115.14           | 1109.49           | 1118.27           | 0.002408              | 14.19              | 11911.86             | 657.62            | 0.59         |
| 1     | 217.86    | 10 %       | 55000.00         | 1093.60           | 1106.45           | 1101.73           | 1107.61           | 0.001909              | 8.66               | 6351.99              | 621.17            | 0.48         |
| 1     | 217.86    | 2 %        | 140000.00        | 1093.60           | 1113.30           | 1107.91           | 1115.96           | 0.002318              | 13.08              | 10706.18             | 649.89            | 0.57         |
| 1     | 217.86    | 0.2 %      | 243000.00        | 1093.60           | 1119.39           | 1113.14           | 1123.61           | 0.002546              | 16.48              | 14740.84             | 675.89            | 0.62         |
| 1     | 217.81    | Floodplain | 169000.00        | 1093.12           | 1113.48           | 1109.76           | 1117.58           | 0.003479              | 16.25              | 10402.00             | 618.17            | 0.70         |
| 1     | 217.81    | Floodway   | 169000.00        | 1093.12           | 1113.48           | 1109.76           | 1117.58           | 0.003479              | 16.25              | 10402.00             | 618.17            | 0.70         |
| 1     | 217.81    | 10 %       | 55000.00         | 1093.12           | 1105.71           | 1101.65           | 1107.14           | 0.002458              | 9.61               | 5725.60              | 579.37            | 0.54         |
| 1     | 217.81    | 2 %        | 140000.00        | 1093.12           | 1111.88           | 1108.04           | 1115.31           | 0.003275              | 14.87              | 9416.36              | 611.55            | 0.67         |
| 1     | 217.81    | 0.2 %      | 243000.00        | 1093.12           | 1117.10           | 1113.51           | 1122.82           | 0.003858              | 19.18              | 12670.38             | 633.06            | 0.76         |
| 1     | 217.76 AP | Floodplain | 169000.00        | 1092.68           | 1112.07           | 1109.19           | 1116.40           | 0.004036              | 16.70              | 10117.75             | 646.86            | 0.74         |
| 1     | 217.76 AP | Floodway   | 169000.00        | 1092.68           | 1112.07           | 1109.19           | 1116.40           | 0.004036              | 16.70              | 10117.75             | 646.86            | 0.74         |
| 1     | 217.76 AP | 10 %       | 55000.00         | 1092.68           | 1104.85           | 1101.23           | 1106.36           | 0.002581              | 9.84               | 5592.19              | 567.76            | 0.55         |
| 1     | 217.76 AP | 2 %        | 140000.00        | 1092.68           | 1110.56           | 1107.55           | 1114.20           | 0.003821              | 15.30              | 9148.21              | 640.72            | 0.71         |
| 1     | 217.76 AP | 0.2 %      | 243000.00        | 1092.68           | 1115.58           | 1112.85           | 1121.53           | 0.004359              | 19.58              | 12412.99             | 661.34            | 0.80         |
| 1     | 217.71    | Floodplain | 169000.00        | 1091.49           | 1111.53           | 1108.12           | 1115.38           | 0.003613              | 15.74              | 10740.05             | 690.77            | 0.70         |
| 1     | 217.71    | Floodway   | 169000.00        | 1091.49           | 1111.53           | 1108.12           | 1115.38           | 0.003613              | 15.74              | 10740.05             | 690.77            | 0.70         |
| 1     | 217.71    | 10 %       | 55000.00         | 1091.49           | 1104.44           | 1100.29           | 1105.74           | 0.002295              | 9.16               | 6004.27              | 620.57            | 0.52         |
| 1     | 217.71    | 2 %        | 140000.00        | 1091.49           | 1110.01           | 1106.55           | 1113.25           | 0.003447              | 14.45              | 9690.43              | 684.43            | 0.68         |
| 1     | 217.71    | 0.2 %      | 243000.00        | 1091.49           | 1115.17           | 1111.65           | 1120.37           | 0.003801              | 18.30              | 13277.37             | 705.68            | 0.74         |
| 1     | 217.66    | Floodplain | 169000.00        | 1093.26           | 1110.56           | 1107.65           | 1114.36           | 0.003875              | 15.63              | 10812.35             | 743.34            | 0.72         |
| 1     | 217.66    | Floodway   | 169000.00        | 1093.26           | 1110.56           | 1107.65           | 1114.36           | 0.003875              | 15.63              | 10812.35             | 743.34            | 0.72         |
| 1     | 217.66    | 10 %       | 55000.00         | 1093.26           | 1103.56           | 1100.60           | 1105.00           | 0.003218              | 9.64               | 5708.23              | 708.04            | 0.60         |
| 1     | 217.66    | 2 %        | 140000.00        | 1093.26           | 1109.02           | 1106.23           | 1112.27           | 0.003810              | 14.48              | 9669.74              | 736.90            | 0.70         |
| 1     | 217.66    | 0.2 %      | 243000.00        | 1093.26           | 1114.35           | 1110.96           | 1119.26           | 0.003794              | 17.79              | 13655.79             | 759.17            | 0.74         |
| 1     | 217.62    | Floodplain | 169000.00        | 1090.00           | 1110.67           | 1105.77           | 1113.28           | 0.002421              | 12.97              | 13033.59             | 831.22            | 0.58         |
| 1     | 217.62    | Floodway   | 169000.00        | 1090.00           | 1110.67           | 1105.77           | 1113.28           | 0.002421              | 12.97              | 13033.59             | 831.22            | 0.58         |
| 1     | 217.62    | 10 %       | 55000.00         | 1090.00           | 1103.30           | 1099.36           | 1104.27           | 0.001971              | 7.88               | 6977.87              | 811.29            | 0.47         |
| 1     | 217.62    | 2 %        | 140000.00        | 1090.00           | 1109.03           | 1104.47           | 1111.26           | 0.002380              | 12.00              | 11669.02             | 827.20            | 0.56         |
| 1     | 217.62    | 0.2 %      | 243000.00        | 1090.00           | 1114.70           | 1108.83           | 1118.11           | 0.002377              | 14.82              | 16398.58             | 840.79            | 0.59         |
| 1     | 217.57    | Floodplain | 169000.00        | 1091.00           | 1110.19           | 1105.43           | 1112.54           | 0.002363              | 12.32              | 13717.42             | 927.48            | 0.56         |
| 1     | 217.57    | Floodway   | 169000.00        | 1091.00           | 1110.19           | 1105.43           | 1112.54           | 0.002363              | 12.32              | 13717.42             | 927.48            | 0.56         |
| 1     | 217.57    | 10 %       | 55000.00         | 1091.00           | 1102.66           | 1099.29           | 1103.67           | 0.002349              | 8.05               | 6833.92              | 877.06            | 0.51         |
| 1     | 217.57    | 2 %        | 140000.00        | 1091.00           | 1108.48           | 1104.22           | 1110.54           | 0.002417              | 11.53              | 12138.23             | 923.02            | 0.56         |
| 1     | 217.57    | 0.2 %      | 243000.00        | 1091.00           | 1114.39           | 1108.26           | 1117.34           | 0.002154              | 13.77              | 17642.13             | 937.92            | 0.56         |
| 1     | 217.53    | Floodplain | 169000.00        | 1091.50           | 1110.10           | 1104.33           | 1111.98           | 0.001809              | 11.01              | 15343.48             | 1008.71           | 0.50         |
| 1     | 217.53    | Floodway   | 169000.00        | 1091.50           | 1110.10           | 1104.33           | 1111.98           | 0.001809              | 11.01              | 15343.48             | 1008.71           | 0.50         |

HEC-RAS Plan: Asbuilt2011 River: Salt Reach: 1 (Continued)

| Reach | River Sta | Profile    | Q Total<br>(cfs) | Min Ch El<br>(ft) | W.S. Elev<br>(ft) | Crit W.S.<br>(ft) | E.G. Elev<br>(ft) | E.G. Slope<br>(ft/ft) | Vel Chnl<br>(ft/s) | Flow Area<br>(sq ft) | Top Width<br>(ft) | Froude # Chl |
|-------|-----------|------------|------------------|-------------------|-------------------|-------------------|-------------------|-----------------------|--------------------|----------------------|-------------------|--------------|
| 1     | 217.53    | 10 %       | 55000.00         | 1091.50           | 1102.37           | 1098.85           | 1103.18           | 0.001883              | 7.20               | 7641.49              | 985.48            | 0.46         |
| 1     | 217.53    | 2 %        | 140000.00        | 1091.50           | 1108.34           | 1103.18           | 1109.99           | 0.001851              | 10.31              | 13575.01             | 1003.51           | 0.49         |
| 1     | 217.53    | 0.2 %      | 243000.00        | 1091.50           | 1114.42           | 1106.99           | 1116.78           | 0.001648              | 12.31              | 19735.43             | 1020.66           | 0.49         |
| 1     | 217.48    | Floodplain | 169000.00        | 1091.00           | 1109.67           | 1104.03           | 1111.51           | 0.001813              | 10.88              | 15532.02             | 1045.77           | 0.50         |
| 1     | 217.48    | Floodway   | 169000.00        | 1091.00           | 1109.67           | 1104.03           | 1111.51           | 0.001813              | 10.88              | 15532.02             | 1045.77           | 0.50         |
| 1     | 217.48    | 10 %       | 55000.00         | 1091.00           | 1101.83           | 1098.76           | 1102.67           | 0.002117              | 7.38               | 7453.80              | 1012.98           | 0.48         |
| 1     | 217.48    | 2 %        | 140000.00        | 1091.00           | 1107.88           | 1102.87           | 1109.51           | 0.001885              | 10.24              | 13668.49             | 1038.48           | 0.50         |
| 1     | 217.48    | 0.2 %      | 243000.00        | 1091.00           | 1114.09           | 1106.65           | 1116.34           | 0.001604              | 12.04              | 20190.25             | 1064.04           | 0.49         |
| 1     | 217.43    | Floodplain | 169000.00        | 1091.00           | 1109.10           | 1103.87           | 1111.04           | 0.001986              | 11.20              | 15090.72             | 1041.52           | 0.52         |
| 1     | 217.43    | Floodway   | 169000.00        | 1091.00           | 1109.10           | 1103.87           | 1111.04           | 0.001986              | 11.20              | 15090.72             | 1041.52           | 0.52         |
| 1     | 217.43    | 10 %       | 55000.00         | 1091.00           | 1101.07           | 1098.69           | 1102.07           | 0.002791              | 8.02               | 6854.92              | 1010.98           | 0.54         |
| 1     | 217.43    | 2 %        | 140000.00        | 1091.00           | 1107.28           | 1102.73           | 1109.02           | 0.002110              | 10.61              | 13199.99             | 1035.22           | 0.52         |
| 1     | 217.43    | 0.2 %      | 243000.00        | 1091.00           | 1113.60           | 1106.48           | 1115.93           | 0.001694              | 12.27              | 19812.44             | 1056.63           | 0.50         |
| 1     | 217.38    | Floodplain | 169000.00        | 1089.00           | 1108.65           | 1102.99           | 1110.50           | 0.001824              | 10.93              | 15463.51             | 1037.82           | 0.50         |
| 1     | 217.38    | Floodway   | 169000.00        | 1089.00           | 1108.65           | 1102.99           | 1110.50           | 0.001824              | 10.93              | 15463.51             | 1037.82           | 0.50         |
| 1     | 217.38    | 10 %       | 55000.00         | 1089.00           | 1100.39           | 1097.87           | 1101.34           | 0.002556              | 7.83               | 7024.95              | 1004.90           | 0.52         |
| 1     | 217.38    | 2 %        | 140000.00        | 1089.00           | 1106.79           | 1101.87           | 1108.45           | 0.001926              | 10.34              | 13546.20             | 1030.35           | 0.50         |
| 1     | 217.38    | 0.2 %      | 243000.00        | 1089.00           | 1113.23           | 1105.65           | 1115.46           | 0.001574              | 11.99              | 20261.40             | 1057.08           | 0.48         |
| 1     | 217.34    | Floodplain | 169000.00        | 1086.21           | 1108.19           | 1102.39           | 1110.04           | 0.001784              | 10.92              | 15478.82             | 1022.45           | 0.49         |
| 1     | 217.34    | Floodway   | 169000.00        | 1086.21           | 1108.19           | 1102.39           | 1110.04           | 0.001784              | 10.92              | 15478.82             | 1022.45           | 0.49         |
| 1     | 217.34    | 10 %       | 55000.00         | 1086.21           | 1099.71           | 1097.18           | 1100.68           | 0.002585              | 7.91               | 6954.74              | 987.91            | 0.53         |
| 1     | 217.34    | 2 %        | 140000.00        | 1086.21           | 1106.31           | 1101.23           | 1107.96           | 0.001880              | 10.32              | 13565.46             | 1014.80           | 0.50         |
| 1     | 217.34    | 0.2 %      | 243000.00        | 1086.21           | 1112.83           | 1105.06           | 1115.06           | 0.001543              | 11.99              | 20269.77             | 1041.68           | 0.48         |
| 1     | 217.29 AO | Floodplain | 169000.00        | 1085.00           | 1107.75           | 1101.80           | 1109.61           | 0.001754              | 10.95              | 15439.97             | 1000.54           | 0.49         |
| 1     | 217.29 AO | Floodway   | 169000.00        | 1085.00           | 1107.75           | 1101.80           | 1109.61           | 0.001754              | 10.95              | 15439.97             | 1000.54           | 0.49         |
| 1     | 217.29 AO | 10 %       | 55000.00         | 1085.00           | 1099.06           | 1096.48           | 1100.05           | 0.002609              | 7.99               | 6885.22              | 967.66            | 0.53         |
| 1     | 217.29 AO | 2 %        | 140000.00        | 1085.00           | 1105.86           | 1100.63           | 1107.51           | 0.001840              | 10.33              | 13552.13             | 993.33            | 0.49         |
| 1     | 217.29 AO | 0.2 %      | 243000.00        | 1085.00           | 1112.43           | 1104.50           | 1114.69           | 0.001530              | 12.05              | 20173.43             | 1091.61           | 0.48         |
| 1     | 217.24    | Floodplain | 169000.00        | 1084.46           | 1107.33           | 1101.07           | 1109.17           | 0.001681              | 10.90              | 15510.49             | 979.68            | 0.48         |
| 1     | 217.24    | Floodway   | 169000.00        | 1084.46           | 1107.33           | 1101.07           | 1109.17           | 0.001681              | 10.90              | 15510.49             | 979.68            | 0.48         |
| 1     | 217.24    | 10 %       | 55000.00         | 1084.46           | 1098.44           | 1095.70           | 1099.41           | 0.002438              | 7.90               | 6958.60              | 943.90            | 0.51         |
| 1     | 217.24    | 2 %        | 140000.00        | 1084.46           | 1105.42           | 1099.83           | 1107.06           | 0.001747              | 10.26              | 13649.11             | 972.13            | 0.48         |
| 1     | 217.24    | 0.2 %      | 243000.00        | 1084.46           | 1112.06           | 1103.84           | 1114.31           | 0.001486              | 12.04              | 20186.89             | 998.75            | 0.47         |
| 1     | 217.19    | Floodplain | 169000.00        | 1085.00           | 1106.79           | 1100.70           | 1108.72           | 0.001756              | 11.16              | 15150.15             | 955.07            | 0.49         |
| 1     | 217.19    | Floodway   | 169000.00        | 1085.00           | 1106.79           | 1100.70           | 1108.72           | 0.001756              | 11.16              | 15150.15             | 955.07            | 0.49         |
| 1     | 217.19    | 10 %       | 55000.00         | 1085.00           | 1097.62           | 1095.28           | 1098.72           | 0.002885              | 8.40               | 6547.73              | 920.68            | 0.56         |
| 1     | 217.19    | 2 %        | 140000.00        | 1085.00           | 1104.88           | 1099.50           | 1106.59           | 0.001827              | 10.50              | 13328.14             | 947.98            | 0.49         |
| 1     | 217.19    | 0.2 %      | 243000.00        | 1085.00           | 1111.55           | 1103.50           | 1113.91           | 0.001546              | 12.31              | 19742.51             | 973.54            | 0.48         |
| 1     | 217.15    | Floodplain | 169000.00        | 1083.72           | 1106.64           | 1099.02           | 1108.30           | 0.001337              | 10.34              | 16340.29             | 935.93            | 0.44         |
| 1     | 217.15    | Floodway   | 169000.00        | 1083.72           | 1106.64           | 1099.02           | 1108.30           | 0.001337              | 10.34              | 16340.29             | 935.93            | 0.44         |
| 1     | 217.15    | 10 %       | 55000.00         | 1083.72           | 1097.39           | 1093.03           | 1098.15           | 0.001544              | 7.01               | 7844.77              | 900.61            | 0.42         |
| 1     | 217.15    | 2 %        | 140000.00        | 1083.72           | 1104.72           | 1097.79           | 1106.16           | 0.001335              | 9.62               | 14552.51             | 928.80            | 0.43         |
| 1     | 217.15    | 0.2 %      | 243000.00        | 1083.72           | 1111.41           | 1101.87           | 1113.52           | 0.001263              | 11.65              | 20851.85             | 954.87            | 0.44         |
| 1     | 217.1     | Floodplain | 169000.00        | 1085.00           | 1106.26           | 1098.37           | 1107.93           | 0.001300              | 10.35              | 16329.61             | 916.89            | 0.43         |
| 1     | 217.1     | Floodway   | 169000.00        | 1085.00           | 1106.26           | 1098.37           | 1107.93           | 0.001300              | 10.35              | 16329.61             | 916.89            | 0.43         |
| 1     | 217.1     | 10 %       | 55000.00         | 1085.00           | 1097.00           | 1092.76           | 1097.73           | 0.001399              | 6.87               | 8000.71              | 881.01            | 0.40         |
| 1     | 217.1     | 2 %        | 140000.00        | 1085.00           | 1104.36           | 1097.15           | 1105.79           | 0.001283              | 9.60               | 14588.87             | 909.24            | 0.42         |
| 1     | 217.1     | 0.2 %      | 243000.00        | 1085.00           | 1111.04           | 1101.30           | 1113.17           | 0.001248              | 11.71              | 20755.09             | 937.28            | 0.44         |
| 1     | 217.05    | Floodplain | 169000.00        | 1085.00           | 1105.84           | 1098.43           | 1107.60           | 0.001415              | 10.64              | 15876.67             | 912.07            | 0.45         |
| 1     | 217.05    | Floodway   | 169000.00        | 1085.00           | 1105.84           | 1098.43           | 1107.60           | 0.001415              | 10.64              | 15876.67             | 912.07            | 0.45         |
| 1     | 217.05    | 10 %       | 55000.00         | 1085.00           | 1096.55           | 1092.81           | 1097.37           | 0.001664              | 7.26               | 7573.07              | 875.35            | 0.44         |
| 1     | 217.05    | 2 %        | 140000.00        | 1085.00           | 1103.95           | 1097.18           | 1105.46           | 0.001407              | 9.89               | 14155.11             | 904.42            | 0.44         |
| 1     | 217.05    | 0.2 %      | 243000.00        | 1085.00           | 1110.63           | 1101.32           | 1112.85           | 0.001334              | 11.98              | 20290.01             | 932.08            | 0.45         |
| 1     | 217       | Floodplain | 169000.00        | 1084.00           | 1105.39           | 1098.39           | 1107.23           | 0.001526              | 10.91              | 15493.22             | 909.76            | 0.47         |
| 1     | 217       | Floodway   | 169000.00        | 1084.00           | 1105.39           | 1098.39           | 1107.23           | 0.001526              | 10.91              | 15493.22             | 909.76            | 0.47         |
| 1     | 217       | 10 %       | 55000.00         | 1084.00           | 1095.98           | 1092.76           | 1096.91           | 0.002029              | 7.73               | 7116.98              | 871.97            | 0.48         |
| 1     | 217       | 2 %        | 140000.00        | 1084.00           | 1103.50           | 1097.12           | 1105.10           | 0.001528              | 10.16              | 13781.71             | 902.08            | 0.46         |
| 1     | 217       | 0.2 %      | 243000.00        | 1084.00           | 1110.20           | 1101.30           | 1112.51           | 0.001408              | 12.20              | 19922.50             | 929.42            | 0.46         |
| 1     | 216.96    | Floodplain | 169000.00        | 1082.60           | 1105.17           | 1097.14           | 1106.83           | 0.001269              | 10.33              | 16359.40             | 906.14            | 0.43         |
| 1     | 216.96    | Floodway   | 169000.00        | 1082.60           | 1105.17           | 1097.14           | 1106.83           | 0.001269              | 10.33              | 16359.40             | 906.14            | 0.43         |
| 1     | 216.96    | 10 %       | 55000.00         | 1082.60           | 1095.69           | 1091.43           | 1096.44           | 0.001405              | 6.93               | 7942.00              | 869.64            | 0.40         |
| 1     | 216.96    | 2 %        | 140000.00        | 1082.60           | 1103.28           | 1095.87           | 1104.70           | 0.001241              | 9.55               | 14654.52             | 898.76            | 0.42         |
| 1     | 216.96    | 0.2 %      | 243000.00        | 1082.60           | 1110.01           | 1100.05           | 1112.13           | 0.001219              | 11.69              | 20790.59             | 926.63            | 0.43         |
| 1     | 216.91    | Floodplain | 169000.00        | 1083.00           | 1104.84           | 1096.78           | 1106.49           | 0.001268              | 10.32              | 16372.64             | 909.25            | 0.43         |
| 1     | 216.91    | Floodway   | 169000.00        | 1083.00           | 1104.84           | 1096.78           | 1106.49           | 0.001268              | 10.32              | 16372.64             | 909.25            | 0.43         |
| 1     | 216.91    | 10 %       | 55000.00         | 1083.00           | 1095.31           | 1090.87           | 1096.06           | 0.001428              | 6.96               | 7899.61              | 869.69            | 0.41         |
| 1     | 216.91    | 2 %        | 140000.00        | 1083.00           | 1102.96           | 1095.54           | 1104.37           | 0.001238              | 9.54               | 14669.71             | 900.84            | 0.42         |
| 1     | 216.91    | 0.2 %      | 243000.00        | 1083.00           | 1109.69           | 1099.73           | 1111.81           | 0.001212              | 11.66              | 20835.67             | 929.09            | 0.43         |
| 1     | 216.86    | Floodplain | 169000.00        | 1082.00           | 1104.62           | 1095.84           | 1106.16           | 0.001118              | 9.95               | 16992.03             | 907.79            | 0.41         |
| 1     | 216.86    | Floodway   | 169000.00        | 1082.00           | 1104.62           | 1095.84           | 1106.16           | 0.001118              | 9.95               | 16992.03             | 907.79            | 0.41         |

HEC-RAS Plan: Asbuilt2011 River: Salt Reach: 1 (Continued)

| Reach | River Sta | Profile       | Q Total<br>(cfs) | Min Ch El<br>(ft) | W.S. Elev<br>(ft) | Crit W.S.<br>(ft) | E.G. Elev<br>(ft) | E.G. Slope<br>(ft/ft) | Vel Chnl<br>(ft/s) | Flow Area<br>(sq ft) | Top Width<br>(ft) | Froude # Chl |
|-------|-----------|---------------|------------------|-------------------|-------------------|-------------------|-------------------|-----------------------|--------------------|----------------------|-------------------|--------------|
| 1     | 216.86    | 10 %          | 55000.00         | 1082.00           | 1095.07           | 1090.13           | 1095.72           | 0.001104              | 6.45               | 8522.36              | 866.97            | 0.36         |
| 1     | 216.86    | 2 %           | 140000.00        | 1082.00           | 1102.75           | 1094.57           | 1104.05           | 0.001073              | 9.15               | 15298.02             | 898.71            | 0.39         |
| 1     | 216.86    | 0.2 %         | 243000.00        | 1082.00           | 1109.49           | 1098.77           | 1111.48           | 0.001098              | 11.32              | 21460.91             | 1268.81           | 0.42         |
| 1     | 216.81    | AN Floodplain | 169000.00        | 1082.00           | 1104.40           | 1095.03           | 1105.87           | 0.001030              | 9.74               | 17349.89             | 898.67            | 0.39         |
| 1     | 216.81    | AN Floodway   | 169000.00        | 1082.00           | 1104.40           | 1095.03           | 1105.87           | 0.001030              | 9.74               | 17349.89             | 898.67            | 0.39         |
| 1     | 216.81    | AN 10 %       | 55000.00         | 1082.00           | 1094.87           | 1089.25           | 1095.45           | 0.000904              | 6.11               | 8999.65              | 854.62            | 0.33         |
| 1     | 216.81    | AN 2 %        | 140000.00        | 1082.00           | 1102.54           | 1093.73           | 1103.77           | 0.000972              | 8.92               | 15686.63             | 888.20            | 0.37         |
| 1     | 216.81    | AN 0.2 %      | 243000.00        | 1082.00           | 1109.26           | 1097.99           | 1111.20           | 0.001035              | 11.16              | 21779.79             | 1087.32           | 0.40         |
| 1     | 216.77    | Floodplain    | 169000.00        | 1081.00           | 1104.20           | 1094.38           | 1105.60           | 0.000958              | 9.50               | 17784.87             | 907.25            | 0.38         |
| 1     | 216.77    | Floodway      | 169000.00        | 1081.00           | 1104.20           | 1094.38           | 1105.60           | 0.000958              | 9.50               | 17784.87             | 907.25            | 0.38         |
| 1     | 216.77    | 10 %          | 55000.00         | 1081.00           | 1094.69           | 1088.61           | 1095.22           | 0.000785              | 5.85               | 9400.02              | 857.91            | 0.31         |
| 1     | 216.77    | 2 %           | 140000.00        | 1081.00           | 1102.35           | 1093.10           | 1103.52           | 0.000898              | 8.69               | 16115.09             | 896.62            | 0.36         |
| 1     | 216.77    | 0.2 %         | 243000.00        | 1081.00           | 1109.07           | 1097.34           | 1110.92           | 0.000970              | 10.92              | 22257.67             | 1125.72           | 0.39         |
| 1     | 216.72    | Floodplain    | 169000.00        | 1081.00           | 1103.92           | 1094.40           | 1105.36           | 0.001002              | 9.63               | 17553.73             | 906.69            | 0.39         |
| 1     | 216.72    | Floodway      | 169000.00        | 1081.00           | 1103.92           | 1094.40           | 1105.36           | 0.001002              | 9.63               | 17553.73             | 906.69            | 0.39         |
| 1     | 216.72    | 10 %          | 55000.00         | 1081.00           | 1094.46           | 1088.67           | 1095.02           | 0.000848              | 5.98               | 9201.48              | 860.85            | 0.32         |
| 1     | 216.72    | 2 %           | 140000.00        | 1081.00           | 1102.09           | 1093.13           | 1103.29           | 0.000942              | 8.80               | 15901.99             | 897.19            | 0.37         |
| 1     | 216.72    | 0.2 %         | 243000.00        | 1081.00           | 1108.79           | 1097.36           | 1110.68           | 0.001007              | 11.04              | 22017.31             | 1120.60           | 0.40         |
| 1     | 216.67    | Floodplain    | 169000.00        | 1081.00           | 1103.37           | 1095.23           | 1105.05           | 0.001275              | 10.41              | 16234.48             | 893.54            | 0.43         |
| 1     | 216.67    | Floodway      | 169000.00        | 1081.00           | 1103.37           | 1095.23           | 1105.05           | 0.001275              | 10.41              | 16234.48             | 893.54            | 0.43         |
| 1     | 216.67    | 10 %          | 55000.00         | 1081.00           | 1094.02           | 1089.45           | 1094.74           | 0.001269              | 6.79               | 8104.44              | 848.16            | 0.39         |
| 1     | 216.67    | 2 %           | 140000.00        | 1081.00           | 1101.58           | 1093.95           | 1103.00           | 0.001214              | 9.56               | 14648.30             | 884.42            | 0.41         |
| 1     | 216.67    | 0.2 %         | 243000.00        | 1081.00           | 1108.21           | 1098.22           | 1110.37           | 0.001232              | 11.79              | 20619.14             | 1464.75           | 0.44         |
| 1     | 216.62    | Floodplain    | 169000.00        | 1082.00           | 1102.95           | 1095.27           | 1104.71           | 0.001380              | 10.64              | 15877.17             | 898.50            | 0.45         |
| 1     | 216.62    | Floodway      | 169000.00        | 1082.00           | 1102.95           | 1095.27           | 1104.71           | 0.001380              | 10.64              | 15877.17             | 898.50            | 0.45         |
| 1     | 216.62    | 10 %          | 55000.00         | 1082.00           | 1093.59           | 1089.48           | 1094.39           | 0.001512              | 7.15               | 7690.59              | 849.82            | 0.42         |
| 1     | 216.62    | 2 %           | 140000.00        | 1082.00           | 1101.19           | 1094.00           | 1102.68           | 0.001323              | 9.79               | 14301.77             | 889.74            | 0.43         |
| 1     | 216.62    | 0.2 %         | 243000.00        | 1082.00           | 1107.82           | 1098.26           | 1110.04           | 0.001301              | 11.97              | 20304.32             | 920.32            | 0.45         |
| 1     | 216.52    | Floodplain    | 169000.00        | 1081.00           | 1102.44           | 1093.78           | 1103.99           | 0.001145              | 9.99               | 17006.67             | 994.29            | 0.41         |
| 1     | 216.52    | Floodway      | 169000.00        | 1081.00           | 1102.44           | 1093.78           | 1103.99           | 0.001145              | 9.99               | 17006.67             | 994.29            | 0.41         |
| 1     | 216.52    | 10 %          | 55000.00         | 1081.00           | 1093.03           | 1087.95           | 1093.68           | 0.001083              | 6.45               | 8528.26              | 856.74            | 0.36         |
| 1     | 216.52    | 2 %           | 140000.00        | 1081.00           | 1100.70           | 1092.47           | 1102.00           | 0.001087              | 9.15               | 15306.28             | 944.04            | 0.39         |
| 1     | 216.52    | 0.2 %         | 243000.00        | 1081.00           | 1107.41           | 1096.73           | 1109.35           | 0.001052              | 11.23              | 22043.81             | 1025.03           | 0.41         |
| 1     | 216.505   | Bridge        |                  |                   |                   |                   |                   |                       |                    |                      |                   |              |
| 1     | 216.49    | Floodplain    | 169000.00        | 1079.00           | 1101.27           | 1093.20           | 1102.92           | 0.001270              | 10.31              | 16454.24             | 1001.34           | 0.43         |
| 1     | 216.49    | Floodway      | 169000.00        | 1079.00           | 1101.27           | 1093.20           | 1102.92           | 0.001270              | 10.31              | 16454.24             | 1001.34           | 0.43         |
| 1     | 216.49    | 10 %          | 55000.00         | 1079.00           | 1092.09           | 1087.48           | 1092.79           | 0.001243              | 6.70               | 8213.59              | 863.72            | 0.38         |
| 1     | 216.49    | 2 %           | 140000.00        | 1079.00           | 1099.60           | 1091.94           | 1100.98           | 0.001201              | 9.42               | 14856.81             | 909.84            | 0.41         |
| 1     | 216.49    | 0.2 %         | 243000.00        | 1079.00           | 1106.20           | 1096.16           | 1108.25           | 0.001149              | 11.53              | 21439.90             | 1019.24           | 0.43         |
| 1     | 216.42    | AM Floodplain | 169000.00        | 1078.00           | 1100.93           | 1092.48           | 1102.46           | 0.001173              | 9.92               | 17053.81             | 985.02            | 0.41         |
| 1     | 216.42    | AM Floodway   | 169000.00        | 1078.00           | 1100.93           | 1092.48           | 1102.46           | 0.001173              | 9.92               | 17053.81             | 985.02            | 0.41         |
| 1     | 216.42    | AM 10 %       | 55000.00         | 1078.00           | 1091.73           | 1086.82           | 1092.37           | 0.001111              | 6.41               | 8578.69              | 885.18            | 0.36         |
| 1     | 216.42    | AM 2 %        | 140000.00        | 1078.00           | 1099.28           | 1091.24           | 1100.55           | 0.001097              | 9.06               | 15459.59             | 939.28            | 0.39         |
| 1     | 216.42    | AM 0.2 %      | 243000.00        | 1078.00           | 1105.95           | 1095.41           | 1107.82           | 0.001070              | 11.02              | 22506.71             | 1104.99           | 0.41         |
| 1     | 216.38    | Floodplain    | 169000.00        | 1078.00           | 1100.76           | 1091.96           | 1102.19           | 0.001074              | 9.59               | 17644.22             | 986.08            | 0.40         |
| 1     | 216.38    | Floodway      | 169000.00        | 1078.00           | 1100.76           | 1091.96           | 1102.19           | 0.001074              | 9.59               | 17644.22             | 986.08            | 0.40         |
| 1     | 216.38    | 10 %          | 55000.00         | 1078.00           | 1091.53           | 1086.38           | 1092.12           | 0.001000              | 6.14               | 8951.55              | 910.17            | 0.35         |
| 1     | 216.38    | 2 %           | 140000.00        | 1078.00           | 1099.11           | 1090.72           | 1100.29           | 0.001002              | 8.73               | 16034.82             | 961.47            | 0.38         |
| 1     | 216.38    | 0.2 %         | 243000.00        | 1078.00           | 1105.77           | 1094.75           | 1107.57           | 0.001000              | 10.77              | 22703.31             | 1028.22           | 0.40         |

HEC-RAS Version 4.0.0 March 2008  
 U.S. Army Corps of Engineers  
 Hydrologic Engineering Center  
 609 Second Street  
 Davis, California

```

X   X   XXXXXX   XXXX   XXXX   XX   XXXX
X   X   X       X   X   X   X   X   X
X   X   X       X   X   X   X   X   X
XXXXXXXX XXXX   X       XXX XXXX   XXXXXX   XXXX
X   X   X       X   X   X   X   X   X
X   X   X       X   X   X   X   X   X
X   X   XXXXXX   XXXX   X   X   X   X   XXXXX
    
```

PROJECT DATA

Project Title: Salt River-Sky Harbor Asbuilt 2011  
 Project File : Proposed\_SkyHarbor.prj  
 Run Date and Time: 8/17/2011 9:05:42 AM

Project in English units

Project Description:

Plan 1. Proposed Conditions Model  
 Plan 2. Post Project Conditions Model based upon ASBUILT "Record Drawings"

PLAN DATA

Plan Title: Asbuilt 2011

Plan File : q:\221722.03 Salt River LOMR\Drainage\HEC-RAS\LOMR\Proposed\_SkyHarbor.p01

Geometry Title: Asbuilt 2011

Geometry File : q:\221722.03 Salt River LOMR\Drainage\HEC-RAS\LOMR\Proposed\_SkyHarbor.g02

Flow Title : Asbuilt 2011

Flow File : q:\221722.03 Salt River LOMR\Drainage\HEC-RAS\LOMR\Proposed\_SkyHarbor.f01

Plan Summary Information:

Number of: Cross Sections = 65 Multiple Openings = 0  
 Culverts = 0 Inline Structures = 0  
 Bridges = 3 Lateral Structures = 0

Computational Information

Water surface calculation tolerance = 0.01  
 Critical depth calculation tolerance = 0.01  
 Maximum number of iterations = 20  
 Maximum difference tolerance = 0.3  
 Flow tolerance factor = 0.001

Computation Options

Critical depth computed only where necessary  
 Conveyance Calculation Method: At breaks in n values only  
 Friction Slope Method: Average Conveyance  
 Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: Asbuilt 2011

Flow File : q:\221722.03 Salt River LOMR\Drainage\HEC-RAS\LOMR\Proposed\_SkyHarbor.f01

Flow Data (cfs)

| River  | Reach | RS     | Floodplain | Floodway | 10 %  | 2 %    |
|--------|-------|--------|------------|----------|-------|--------|
| Salt   | 1     | 219.51 | 169000     | 169000   | 55000 | 140000 |
| 0.2 %  |       |        |            |          |       |        |
| 243000 |       |        |            |          |       |        |

Boundary Conditions

| River | Reach | Profile    | Upstream     | Downstream         |
|-------|-------|------------|--------------|--------------------|
| Salt  | 1     | Floodplain | Known WS = 0 | Known WS = 1100.76 |
| Salt  | 1     | Floodway   | Known WS = 0 | Known WS = 1100.76 |
| Salt  | 1     | 10 %       | Known WS = 0 | Normal S = 0.001   |

Salt 1 2 %  
 Salt 1 0.2 %

Known WS = 0  
 Known WS = 0

Normal S = 0.001  
 Normal S = 0.001

GEOMETRY DATA

Geometry Title: Asbuilt 2011  
 Geometry File : q:\221722.03 Salt River LOMR\Drainage\HEC-RAS\LOMR\Proposed\_SkyHarbor.g02

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 219.51

INPUT

Description:

| Station | Elevation | Data    | num=    | 459     | Station | Elev    | Station | Elev    | Station | Elev |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|------|
| 0       | 1138.42   | 1.11    | 1138.43 | 2.6     | 1138.45 | 4.33    | 1138.49 | 6.22    | 1138.51 |      |
| 9.62    | 1138.59   | 12.84   | 1138.63 | 15.93   | 1138.71 | 17.4    | 1138.73 | 24.13   | 1138.89 |      |
| 24.81   | 1138.91   | 28.82   | 1139    | 122.5   | 1139.35 | 123.11  | 1139.34 | 125.16  | 1139.33 |      |
| 128.78  | 1139.28   | 131     | 1139.34 | 133.4   | 1139.29 | 134.65  | 1139.26 | 135.98  | 1139.22 |      |
| 138.99  | 1139.14   | 145.12  | 1139.04 | 145.32  | 1139.03 | 148.74  | 1138.99 | 150.36  | 1138.96 |      |
| 151.64  | 1138.93   | 165.97  | 1138.53 | 169.16  | 1138.45 | 182.49  | 1138.07 | 182.99  | 1138.05 |      |
| 194.66  | 1137.74   | 199.03  | 1137.64 | 206.63  | 1137.41 | 208.31  | 1137.38 | 209.15  | 1137.36 |      |
| 210.27  | 1137.35   | 210.5   | 1137.34 | 211.12  | 1137.33 | 216.8   | 1137.14 | 217.18  | 1137.13 |      |
| 219.79  | 1137.07   | 220.02  | 1137.06 | 221.89  | 1137    | 223.61  | 1136.99 | 224.94  | 1136.95 |      |
| 227.27  | 1136.87   | 228.44  | 1136.82 | 235.07  | 1136.45 | 238.94  | 1136.26 | 241.35  | 1136.17 |      |
| 241.86  | 1136.18   | 242.12  | 1136.15 | 242.3   | 1136.14 | 242.62  | 1136.12 | 242.98  | 1136.13 |      |
| 243.29  | 1136.11   | 248.19  | 1136.25 | 249.89  | 1136.27 | 250.87  | 1136.33 | 253     | 1136.42 |      |
| 259.1   | 1136.99   | 339.26  | 1137.97 | 340.39  | 1137.98 | 341.2   | 1138    | 365.94  | 1137.86 |      |
| 367.4   | 1137.83   | 398.93  | 1137    | 420.64  | 1136.59 | 430.43  | 1136    | 431.09  | 1135.97 |      |
| 492.43  | 1135      | 508.59  | 1134.57 | 516.72  | 1134.3  | 528.47  | 1134    | 626.06  | 1134.18 |      |
| 652.18  | 1135      | 701.05  | 1137    | 730.92  | 1138    | 743.95  | 1140    | 747.58  | 1141    |      |
| 754.59  | 1143      | 758.86  | 1144    | 766.89  | 1145.8  | 767.77  | 1146    | 772.06  | 1146.96 |      |
| 772.22  | 1147      | 772.76  | 1147.16 | 778.51  | 1148.9  | 778.86  | 1149    | 779.17  | 1149.1  |      |
| 784.65  | 1150.74   | 785.53  | 1151    | 786.55  | 1151.31 | 788.86  | 1152    | 791.14  | 1152.61 |      |
| 792.57  | 1153      | 795.23  | 1153.68 | 804.53  | 1156    | 805     | 1156.11 | 808.55  | 1157    |      |
| 809.31  | 1157.16   | 813.06  | 1158    | 815.14  | 1158.44 | 817.72  | 1159    | 827.07  | 1161    |      |
| 837.72  | 1161.78   | 842.11  | 1162    | 861.85  | 1162.3  | 896.29  | 1162.97 | 896.9   | 1162.98 |      |
| 897.86  | 1163      | 898.06  | 1163.08 | 898.38  | 1163.2  | 904.44  | 1165.58 | 905.53  | 1166    |      |
| 907.57  | 1166.8    | 908.09  | 1167    | 908.64  | 1167.22 | 910.67  | 1168    | 911.44  | 1168.3  |      |
| 915.85  | 1170      | 918.1   | 1170.86 | 918.45  | 1171    | 920.92  | 1172    | 925.31  | 1173.47 |      |
| 926.88  | 1174      | 927.61  | 1174.25 | 932.64  | 1175.95 | 932.96  | 1176.05 | 935.85  | 1177    |      |
| 937.58  | 1177.56   | 938.99  | 1178    | 941.02  | 1178.92 | 941.2   | 1179    | 942.06  | 1179.42 |      |
| 944.67  | 1180.65   | 945.45  | 1181    | 945.94  | 1181.21 | 947.64  | 1182    | 960.78  | 1183    |      |
| 1250.19 | 1182.37   | 1263.45 | 1182    | 1265.57 | 1181.35 | 1266.76 | 1181    | 1269.03 | 1180.27 |      |
| 1269.81 | 1180      | 1271.06 | 1179.62 | 1272.33 | 1179.24 | 1273.61 | 1178.8  | 1278.31 | 1177.23 |      |
| 1278.97 | 1177      | 1281.47 | 1176.08 | 1281.68 | 1176    | 1282.1  | 1175.85 | 1289.81 | 1173    |      |
| 1290.49 | 1172.76   | 1292.6  | 1172    | 1294.44 | 1171.35 | 1295.45 | 1171    | 1298.07 | 1170    |      |
| 1299.7  | 1169.37   | 1300.6  | 1169    | 1301.51 | 1168.61 | 1302.99 | 1168    | 1303.91 | 1167.51 |      |
| 1304.92 | 1167      | 1306.84 | 1166    | 1307.65 | 1165.57 | 1308.71 | 1165    | 1309.98 | 1164.34 |      |
| 1310.65 | 1164      | 1311.07 | 1163.78 | 1312.57 | 1163    | 1313.91 | 1162.28 | 1314.45 | 1162    |      |
| 1367.86 | 1161.19   | 1372.37 | 1161    | 1383.39 | 1160    | 1384.64 | 1159.47 | 1385.78 | 1159    |      |
| 1386.95 | 1158.61   | 1388.71 | 1158    | 1391.77 | 1157.05 | 1391.91 | 1157    | 1398.33 | 1155    |      |
| 1399.23 | 1154.71   | 1401.49 | 1154    | 1402.33 | 1153.73 | 1404.44 | 1153    | 1405.7  | 1152.58 |      |
| 1407.4  | 1152      | 1408.88 | 1151.47 | 1410.14 | 1151    | 1411.86 | 1150.3  | 1412.58 | 1150    |      |
| 1415.05 | 1149      | 1415.76 | 1148.71 | 1417.51 | 1148    | 1419.12 | 1147.36 | 1420    | 1147    |      |
| 1422.74 | 1146      | 1424.55 | 1145.37 | 1425.58 | 1145    | 1427.19 | 1144.4  | 1428.29 | 1144    |      |
| 1428.95 | 1143.74   | 1430.81 | 1143    | 1433.45 | 1142.44 | 1435.57 | 1142    | 1461.98 | 1141.68 |      |
| 1464.2  | 1141      | 1466.22 | 1140.37 | 1467.38 | 1140    | 1468.7  | 1139.57 | 1472.95 | 1138.24 |      |
| 1473.74 | 1138      | 1476.93 | 1137    | 1479.51 | 1136.17 | 1480.03 | 1136    | 1482.75 | 1135    |      |
| 1483.51 | 1134.71   | 1485.4  | 1134    | 1485.99 | 1133.78 | 1488.01 | 1133    | 1488.44 | 1132.81 |      |
| 1490.32 | 1132      | 1492.6  | 1131.73 | 1499.82 | 1131    | 1503.55 | 1130.1  | 1503.94 | 1130    |      |
| 1504.01 | 1129.73   | 1504.18 | 1129    | 1504.61 | 1128.7  | 1505.56 | 1128    | 1505.98 | 1127.58 |      |
| 1506.54 | 1127      | 1506.96 | 1126.57 | 1507.55 | 1126    | 1509.82 | 1125.32 | 1510.83 | 1125    |      |
| 1511.11 | 1124.72   | 1511.68 | 1124    | 1512.62 | 1123.86 | 1516.49 | 1123.27 | 1518.06 | 1123    |      |
| 1546.46 | 1122.4    | 1549.39 | 1122.33 | 1553.85 | 1122.24 | 1563.21 | 1122.02 | 1564.26 | 1122    |      |
| 1781.67 | 1121.89   | 1803.81 | 1121    | 1899.03 | 1120    | 1901.23 | 1119.33 | 1903.31 | 1118.72 |      |
| 1905.73 | 1118      | 1908.93 | 1117    | 1910.39 | 1116.62 | 1912.74 | 1116    | 1965.08 | 1116.08 |      |
| 1988.78 | 1116.35   | 1991.04 | 1116.37 | 1999.41 | 1116.47 | 2001.96 | 1116.49 | 2010.12 | 1116.58 |      |
| 2026.32 | 1116.74   | 2033.83 | 1116.83 | 2062.84 | 1117    | 2249.3  | 1116.85 | 2300.52 | 1116.04 |      |
| 2302.55 | 1116      | 2434.2  | 1116.46 | 2442.65 | 1117    | 2443.3  | 1117.07 | 2443.55 | 1117.09 |      |
| 2447.01 | 1117.42   | 2453.96 | 1118    | 2457.33 | 1118.41 | 2461.32 | 1119    | 2463.69 | 1119.76 |      |
| 2464.64 | 1120      | 2466.81 | 1120.59 | 2468.03 | 1120.97 | 2469.69 | 1121.51 | 2470.75 | 1122    |      |
| 2471.89 | 1122.83   | 2472.12 | 1123    | 2473.5  | 1123.97 | 2473.66 | 1124.05 | 2476.06 | 1125    |      |
| 2477.68 | 1125.96   | 2477.82 | 1126.04 | 2479.34 | 1127    | 2480.01 | 1127.44 | 2481.85 | 1128.61 |      |
| 2482.45 | 1129      | 2483.7  | 1129.79 | 2484.03 | 1130    | 2484.35 | 1130.2  | 2485.66 | 1131    |      |
| 2486.37 | 1131.44   | 2487.29 | 1132    | 2488.22 | 1132.68 | 2488.66 | 1133    | 2489.1  | 1133.47 |      |
| 2489.59 | 1134      | 2490.45 | 1134.92 | 2491.45 | 1136    | 2491.63 | 1136.19 | 2492.88 | 1137.54 |      |
| 2493.3  | 1138      | 2494.69 | 1138.69 | 2495.03 | 1138.86 | 2497.18 | 1139.9  | 2497.39 | 1140    |      |
| 2497.57 | 1140.09   | 2499.46 | 1141    | 2499.7  | 1141.12 | 2501.53 | 1142    | 2502.27 | 1142.35 |      |
| 2503.61 | 1143      | 2505.69 | 1144    | 2519.47 | 1143.69 | 2525.72 | 1143    | 2527.03 | 1142.77 |      |
| 2531.25 | 1142      | 2565.47 | 1140.3  | 2571.15 | 1140    | 2580.06 | 1139.44 | 2587.99 | 1139    |      |
| 2662.98 | 1138.03   | 2663.11 | 1138    | 2663.71 | 1137.88 | 2668.16 | 1137    | 2669.28 | 1136.75 |      |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2672.56 | 1136    | 2673.86 | 1135.67 | 2676.46 | 1135    | 2686.94 | 1135.5  | 2688.39 | 1136    |
| 2689.27 | 1136.13 | 2694.81 | 1137    | 2700.7  | 1138    | 2706.9  | 1139    | 2758.47 | 1139.84 |
| 2766.7  | 1140    | 2781.02 | 1139    | 2791.42 | 1138    | 2793.29 | 1137.68 | 2797.19 | 1137    |
| 2803.05 | 1136    | 2830.09 | 1135    | 2839.92 | 1135.05 | 2841.9  | 1135.34 | 2846.32 | 1136    |
| 2847.07 | 1136.17 | 2850.81 | 1137    | 2857.66 | 1138.86 | 2858.16 | 1139    | 2858.83 | 1139.18 |
| 2861.93 | 1140    | 2868.75 | 1141    | 2883.75 | 1140    | 2891.16 | 1139.77 | 2914.24 | 1139    |
| 2950.91 | 1138.04 | 2957.11 | 1138    | 2960.14 | 1137.94 | 2961.25 | 1137.81 | 2962.27 | 1137.73 |
| 2964.74 | 1137.64 | 2966.61 | 1137.6  | 2967.92 | 1137.59 | 2968.79 | 1137.53 | 2971.49 | 1137.44 |
| 2973.87 | 1137.41 | 2974.84 | 1137.34 | 2976.4  | 1137.28 | 2980.08 | 1137.22 | 2984.74 | 1137.18 |
| 2985.21 | 1137.15 | 2991.1  | 1137.11 | 2991.6  | 1137.09 | 2994.69 | 1137.1  | 2999.97 | 1137.05 |
| 3000.21 | 1137.07 | 3003.77 | 1137.11 | 3004.8  | 1137.26 | 3009.04 | 1137.29 | 3009.15 | 1137.35 |
| 3009.51 | 1137.37 | 3016    | 1137.55 | 3017.61 | 1137.62 | 3020.95 | 1137.79 | 3024.05 | 1138    |
| 3052.71 | 1138.55 | 3055.34 | 1138.62 | 3057.07 | 1138.65 | 3058.11 | 1138.72 | 3058.63 | 1138.74 |
| 3061.2  | 1138.93 | 3062.28 | 1138.98 | 3062.67 | 1139    | 3209.21 | 1138.86 | 3210.31 | 1138.75 |
| 3214    | 1138.4  | 3216.07 | 1138.19 | 3218.36 | 1138    | 3223.79 | 1137.96 | 3225.76 | 1138    |
| 3238.25 | 1138.66 | 3239.41 | 1139    | 3279.86 | 1138.35 | 3280.76 | 1138    | 3292.2  | 1138.24 |
| 3293.64 | 1139    | 3332.36 | 1138.66 | 3333.85 | 1138    | 3340.9  | 1138.83 | 3341.43 | 1139    |
| 3387.96 | 1138.69 | 3389.6  | 1138    | 3390.93 | 1137.45 | 3392    | 1137    | 3397.15 | 1137.44 |
| 3399.17 | 1137.42 | 3400.92 | 1137.57 | 3401.95 | 1137.56 | 3403.13 | 1137.65 | 3404.61 | 1137.62 |
| 3405.42 | 1137.68 | 3405.7  | 1137.67 | 3411.84 | 1137.85 | 3446.3  | 1137.68 | 3450.32 | 1137.71 |
| 3461.11 | 1137.78 | 3480.6  | 1138    | 3513.17 | 1138.17 | 3556.23 | 1138    | 3572.72 | 1138.14 |
| 3595.68 | 1139    | 3617.16 | 1138.63 | 3626.35 | 1138    | 3626.97 | 1137.96 | 3628.6  | 1137.84 |
| 3640.72 | 1137    | 3648.66 | 1136.33 | 3649.91 | 1136.22 | 3652.52 | 1136    | 3656.7  | 1135.53 |
| 3660.48 | 1135.04 | 3660.88 | 1135    | 3668.33 | 1135.06 | 3672.88 | 1136    | 3676.01 | 1136.67 |
| 3676.7  | 1136.82 | 3677.61 | 1137    | 3678.69 | 1137.39 | 3680.33 | 1137.99 |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 1461.98 .039 2505.69 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1461.98 2505.69 214.51 221.54 228.58 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1461.98 1141.68 F  
 2505.69 3680.33 1144 F  
 Left Levee Station= 1461.98 Elevation= 1141.68  
 Right Levee Station= 2505.69 Elevation= 1144

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 219.46

INPUT

Description:

|         |           |         |         |         |         |         |         |         |         |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|
| Station | Elevation | Data    | num=    | 495     |         |         |         |         |         |
| Sta     | Elev      | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    |
| 0       | 1137.18   | 5.74    | 1137.2  | 245.02  | 1136.52 | 270.43  | 1136.57 | 302.6   | 1136.14 |
| 309.21  | 1136.01   | 309.87  | 1136    | 473.42  | 1135.92 | 486.89  | 1135.7  | 495.81  | 1135.6  |
| 500.78  | 1135.52   | 585.88  | 1134.73 | 594.04  | 1134.7  | 598.19  | 1134.65 | 605.23  | 1134.6  |
| 656.98  | 1134      | 674.85  | 1134.01 | 683.26  | 1134.07 | 685.66  | 1134.1  | 686.47  | 1134.12 |
| 692.04  | 1134.17   | 693.36  | 1134.19 | 697.96  | 1134.23 | 704.14  | 1134.34 | 707.52  | 1134.38 |
| 712.83  | 1134.48   | 720.87  | 1134.58 | 740.78  | 1135    | 743.63  | 1135.04 | 744.1   | 1135.05 |
| 826.39  | 1136      | 828.22  | 1136.54 | 829.73  | 1137    | 832.43  | 1137.99 | 835.99  | 1138.2  |
| 839.68  | 1138.36   | 843.72  | 1138.43 | 845.37  | 1138.58 | 846.59  | 1138.62 | 848.73  | 1138.82 |
| 849.17  | 1138.85   | 850.68  | 1139    | 856.43  | 1139.96 | 858.02  | 1140.21 | 859.01  | 1140.34 |
| 859.79  | 1140.47   | 861.15  | 1140.68 | 862.76  | 1141    | 866.2   | 1141.45 | 870.21  | 1142    |
| 872.06  | 1142.24   | 876.45  | 1142.87 | 877.28  | 1143    | 881.91  | 1143.94 | 888.51  | 1145.6  |
| 890.06  | 1146      | 897.27  | 1147.78 | 898.13  | 1148    | 898.58  | 1148.11 | 904.34  | 1149.57 |
| 913.1   | 1151.92   | 918.32  | 1153.31 | 920.97  | 1154    | 924.41  | 1154.88 | 924.86  | 1155    |
| 932.59  | 1157      | 934.29  | 1157.43 | 936.49  | 1158    | 936.94  | 1158.1  | 940.84  | 1159    |
| 945.29  | 1160      | 957.03  | 1160.68 | 963.27  | 1161    | 985.47  | 1160.96 | 990.08  | 1161    |
| 993.13  | 1161.06   | 993.84  | 1161.09 | 1001.96 | 1161.28 | 1004.58 | 1161.39 | 1007.59 | 1161.46 |
| 1010.64 | 1161.6    | 1012.91 | 1161.67 | 1020.42 | 1162    | 1021.59 | 1162.23 | 1035.93 | 1165    |
| 1037.94 | 1165.4    | 1038.73 | 1165.55 | 1041.04 | 1166    | 1041.58 | 1166.11 | 1042.09 | 1166.21 |
| 1045.98 | 1167      | 1048.27 | 1167.48 | 1049.39 | 1167.72 | 1050.74 | 1168    | 1052.22 | 1168.32 |
| 1054.54 | 1168.8    | 1055.09 | 1168.91 | 1055.57 | 1169    | 1057.7  | 1169.39 | 1060.79 | 1169.84 |
| 1061.98 | 1170      | 1065.69 | 1170.41 | 1068.9  | 1170.79 | 1069.79 | 1170.89 | 1070.68 | 1171    |
| 1073.35 | 1171.35   | 1076.48 | 1171.72 | 1077.44 | 1171.84 | 1078.68 | 1171.98 | 1087.09 | 1173    |
| 1088.44 | 1173.17   | 1102.86 | 1174.9  | 1103.75 | 1175    | 1109.07 | 1175.62 | 1110.63 | 1175.81 |
| 1112.34 | 1176      | 1120.2  | 1176.91 | 1120.66 | 1176.96 | 1121.01 | 1177    | 1125.09 | 1177.53 |
| 1126.34 | 1177.68   | 1128.82 | 1178    | 1129.49 | 1178.09 | 1130.68 | 1178.24 | 1139.85 | 1179.44 |
| 1140.58 | 1179.53   | 1144.09 | 1180    | 1145.02 | 1180.13 | 1145.33 | 1180.17 | 1151    | 1181    |
| 1154.14 | 1181.49   | 1157.26 | 1182    | 1176.18 | 1182.1  | 1181.68 | 1182.09 | 1207.52 | 1181.88 |
| 1208.06 | 1181.89   | 1212.37 | 1181.64 | 1217.85 | 1181.49 | 1221.26 | 1181.31 | 1223.05 | 1181.23 |
| 1226.84 | 1181      | 1236.5  | 1180.32 | 1240.2  | 1180    | 1247.64 | 1179.51 | 1251.46 | 1179.21 |
| 1253.5  | 1179      | 1259.61 | 1178.53 | 1265.28 | 1178    | 1288.22 | 1176    | 1301.21 | 1175    |
| 1322.53 | 1173.2    | 1323.85 | 1173    | 1330.36 | 1172.16 | 1331.48 | 1172    | 1335.15 | 1171.03 |
| 1337.57 | 1170.33   | 1338.74 | 1170    | 1340.42 | 1169.51 | 1343.18 | 1168.73 | 1343.95 | 1168.52 |
| 1345.96 | 1168      | 1349.73 | 1167.19 | 1350.47 | 1167    | 1353.28 | 1166.43 | 1360.67 | 1165    |
| 1361.77 | 1164.67   | 1366.2  | 1163.21 | 1366.59 | 1163.08 | 1367.26 | 1162.85 | 1369.77 | 1162    |
| 1371.47 | 1161.59   | 1374.04 | 1161    | 1375.99 | 1160.62 | 1379.04 | 1160    | 1379.52 | 1159.88 |
| 1381.32 | 1159.48   | 1382.84 | 1159.13 | 1383.44 | 1159    | 1385.01 | 1158.53 | 1386.62 | 1158    |
| 1387.33 | 1157.77   | 1388.93 | 1157.24 | 1389.63 | 1157    | 1391.36 | 1156.33 | 1392.35 | 1156    |
| 1394.77 | 1155      | 1396.01 | 1154.5  | 1397.28 | 1154    | 1398.25 | 1153.63 | 1399.75 | 1153    |
| 1400.63 | 1152.77   | 1402.09 | 1152.35 | 1403.28 | 1152    | 1405.53 | 1151.37 | 1406.51 | 1151.1  |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1406.86 | 1151    | 1410.5  | 1150    | 1411.28 | 1149.79 | 1414.31 | 1149    | 1415.59 | 1148.62 |
| 1417.77 | 1148    | 1420.87 | 1147.03 | 1425.85 | 1145.44 | 1427.04 | 1145    | 1430.65 | 1144    |
| 1433.29 | 1143.36 | 1439.02 | 1142    | 1440.16 | 1141.72 | 1441.47 | 1141.47 | 1443.64 | 1141    |
| 1445.57 | 1140.39 | 1446.62 | 1140    | 1449.01 | 1139    | 1463.89 | 1139.9  | 1464.46 | 1140    |
| 1466.44 | 1140.61 | 1471.18 | 1142    | 1486.84 | 1141.94 | 1492.74 | 1140    | 1493.51 | 1139.75 |
| 1495.79 | 1139    | 1496.71 | 1138.69 | 1498.72 | 1138    | 1499.94 | 1137.57 | 1504.08 | 1136.13 |
| 1504.44 | 1136    | 1504.96 | 1135.82 | 1507.23 | 1135    | 1509.52 | 1134.21 | 1510.1  | 1134    |
| 1512.32 | 1133.13 | 1512.66 | 1133    | 1514.84 | 1132    | 1516.75 | 1131.83 | 1527.2  | 1131    |
| 1527.87 | 1130    | 1528.49 | 1129.6  | 1529.44 | 1129    | 1530.82 | 1128    | 1531.42 | 1127.58 |
| 1532.27 | 1127    | 1534.41 | 1126.31 | 1535.35 | 1126    | 1535.56 | 1125.7  | 1535.98 | 1125    |
| 1536.49 | 1124.4  | 1536.84 | 1124    | 1538.53 | 1123.33 | 1539.34 | 1123    | 1542.27 | 1122.75 |
| 1552.17 | 1122    | 1579.7  | 1121.94 | 1582.88 | 1121.91 | 1603.11 | 1121.6  | 1667.12 | 1121.65 |
| 1673.72 | 1121.75 | 1676.25 | 1121.76 | 1687.96 | 1122    | 1735.03 | 1121.73 | 1739.11 | 1121.68 |
| 1740.63 | 1121.67 | 1765.18 | 1121.41 | 1766.46 | 1121.39 | 1807.59 | 1121    | 1825.13 | 1120.53 |
| 1850.12 | 1120    | 1878.55 | 1120.56 | 1881.41 | 1120.6  | 1896.05 | 1120.88 | 1904.1  | 1120.81 |
| 1904.8  | 1120.86 | 1905.21 | 1120.8  | 1906.42 | 1120.89 | 1907.04 | 1120.79 | 1911.57 | 1120    |
| 1912.96 | 1119.67 | 1919.35 | 1118.05 | 1923.75 | 1117    | 1927.78 | 1116    | 1929.08 | 1115.79 |
| 1933.77 | 1115    | 1963.41 | 1115.12 | 1970.44 | 1116    | 2082.7  | 1116.05 | 2175.25 | 1117    |
| 2266.43 | 1116.05 | 2268.73 | 1116.01 | 2269.57 | 1116    | 2464.34 | 1116.35 | 2468.7  | 1117    |
| 2481.18 | 1117.92 | 2497.7  | 1119    | 2498.98 | 1119.5  | 2500.44 | 1120    | 2503.68 | 1122    |
| 2504.86 | 1122.76 | 2505.24 | 1123    | 2506.56 | 1123.79 | 2507.47 | 1124.32 | 2508.61 | 1125    |
| 2510.05 | 1125.87 | 2511.74 | 1127    | 2512.6  | 1127.59 | 2513.23 | 1128    | 2513.81 | 1128.4  |
| 2514.71 | 1129    | 2515.94 | 1129.8  | 2516.25 | 1130    | 2519.63 | 1132    | 2520.08 | 1132.33 |
| 2521.04 | 1133    | 2521.64 | 1133.87 | 2522.4  | 1135    | 2522.93 | 1135.76 | 2523.66 | 1136.84 |
| 2524.43 | 1138    | 2524.75 | 1138.26 | 2525.61 | 1139    | 2529.75 | 1140.88 | 2530.97 | 1141.44 |
| 2534.47 | 1143    | 2558.54 | 1142.34 | 2559.97 | 1142    | 2560.94 | 1141.65 | 2562.68 | 1141    |
| 2565.44 | 1140    | 2567.12 | 1139.38 | 2568.18 | 1139    | 2570.5  | 1138.36 | 2571.55 | 1138    |
| 2579.86 | 1137.25 | 2582.23 | 1137.05 | 2582.92 | 1137    | 2593.46 | 1137.06 | 2596.47 | 1137.16 |
| 2607.08 | 1137.03 | 2607.61 | 1137    | 2611.33 | 1136.83 | 2612.12 | 1136.8  | 2617.62 | 1136.54 |
| 2625.57 | 1136.24 | 2627.15 | 1136.17 | 2631.56 | 1136    | 2639.67 | 1135.9  | 2643.5  | 1135.91 |
| 2643.93 | 1135.92 | 2660.34 | 1136.07 | 2667.11 | 1136.22 | 2680.77 | 1136    | 2695.53 | 1135.41 |
| 2697.42 | 1135    | 2701.46 | 1134    | 2703.88 | 1133.2  | 2704.51 | 1133    | 2715.07 | 1133.01 |
| 2719.11 | 1134    | 2721.94 | 1134.72 | 2723.01 | 1135    | 2726.23 | 1135.82 | 2726.95 | 1136    |
| 2728.05 | 1136.17 | 2733.26 | 1137    | 2735.65 | 1137.37 | 2739.85 | 1138    | 2772.07 | 1139    |
| 2820.66 | 1138.81 | 2824.58 | 1138.51 | 2830.18 | 1138    | 2838.13 | 1138.65 | 2840.26 | 1139    |
| 2844.35 | 1139.7  | 2845.85 | 1140    | 2861.61 | 1139.63 | 2877.5  | 1139    | 2922.44 | 1137    |
| 2927.59 | 1136    | 2928.24 | 1135.88 | 2932.54 | 1135    | 2940.1  | 1133    | 2958.36 | 1133.69 |
| 2960.19 | 1134    | 2961.17 | 1134.18 | 2961.47 | 1134.23 | 2964.64 | 1134.77 | 2965.12 | 1134.86 |
| 2968.74 | 1134.94 | 3027.42 | 1134    | 3035.52 | 1133.67 | 3044.08 | 1133    | 3050.07 | 1131    |
| 3052.16 | 1130.34 | 3053.22 | 1130    | 3056.59 | 1129.07 | 3060.12 | 1128    | 3064.89 | 1128.51 |
| 3066.79 | 1129    | 3070.81 | 1129.98 | 3073.62 | 1131    | 3074.31 | 1131.27 | 3077.17 | 1132.35 |
| 3078.95 | 1133    | 3085.22 | 1134    | 3091.22 | 1135    | 3095.68 | 1136    | 3102.54 | 1138    |
| 3134.07 | 1137.95 | 3135.81 | 1137    | 3147.79 | 1137.17 | 3148.9  | 1138    | 3149.81 | 1138.67 |
| 3150.45 | 1139.15 | 3151.19 | 1139.7  | 3151.59 | 1140    | 3163.09 | 1139.42 | 3163.65 | 1139    |
| 3164.18 | 1138.61 | 3164.98 | 1138    | 3178.04 | 1137    | 3180.24 | 1138    | 3207.02 | 1138.98 |
| 3207.5  | 1139    | 3240.96 | 1138.89 | 3241.34 | 1138.91 | 3245.47 | 1139    | 3264.38 | 1138.63 |
| 3265.97 | 1138    | 3275.1  | 1137.83 | 3276.27 | 1138    | 3277.93 | 1138.06 | 3283.57 | 1138.9  |
| 3284.36 | 1139    | 3300.48 | 1138.86 | 3302.74 | 1138    | 3315.68 | 1138.88 | 3316.1  | 1139    |
| 3355.47 | 1138.59 | 3356.09 | 1138.51 | 3357.16 | 1138.42 | 3358.62 | 1138.35 | 3363.93 | 1138.37 |
| 3364.74 | 1138.32 | 3365.6  | 1138.3  | 3366.22 | 1138.32 | 3366.95 | 1138.48 | 3368.7  | 1139    |
| 3384.51 | 1138.41 | 3385.68 | 1138    | 3408.49 | 1138.57 | 3408.98 | 1138.6  | 3411.07 | 1138.82 |
| 3412.37 | 1138.79 | 3412.89 | 1138.84 | 3414.85 | 1138.82 | 3419.18 | 1138.85 | 3419.74 | 1138.88 |
| 3425.95 | 1138.89 | 3426.49 | 1138.91 | 3426.87 | 1138.92 | 3434.88 | 1138.93 | 3436.38 | 1138.94 |
| 3445.14 | 1138.95 | 3445.59 | 1138.94 | 3453.44 | 1138.95 | 3453.92 | 1138.94 | 3460.97 | 1138.95 |
| 3461.42 | 1138.94 | 3473.33 | 1138.93 | 3473.75 | 1138.92 | 3478.62 | 1138.89 | 3479.75 | 1138.87 |
| 3484.76 | 1138.8  | 3485.79 | 1138.79 | 3490.81 | 1138.69 | 3492.8  | 1138.67 | 3497.4  | 1138.58 |
| 3500.9  | 1138.55 | 3504.85 | 1138.48 | 3509.5  | 1138.45 | 3512.78 | 1138.39 | 3517.39 | 1138.37 |
| 3520.16 | 1138.34 | 3526.06 | 1138.33 | 3535.4  | 1138.39 | 3545.91 | 1138.54 | 3553.65 | 1138.72 |
| 3557.16 | 1138.82 | 3558.54 | 1138.85 | 3562.75 | 1139    | 3646.58 | 1138.56 | 3649.31 | 1138.46 |
| 3652.19 | 1138.38 | 3653.95 | 1138.31 | 3663.07 | 1138.03 | 3664.55 | 1138    | 3666.46 | 1137.87 |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 1486.84 .039 2534.47 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1486.84 2534.47 278.26 289.36 300.46 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1486.84 1141.94 F  
 2534.47 3666.46 1143 F  
 Left Levee Station= 1486.84 Elevation= 1141.94  
 Right Levee Station= 2534.47 Elevation= 1143

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 219.42

INPUT  
 Description:

|         |           |        |         |        |         |        |         |        |         |
|---------|-----------|--------|---------|--------|---------|--------|---------|--------|---------|
| Station | Elevation | Data   | num=    | 483    |         |        |         |        |         |
| Sta     | Elev      | Sta    | Elev    | Sta    | Elev    | Sta    | Elev    | Sta    | Elev    |
| 0       | 1137      | 78.65  | 1137.06 | 144.84 | 1137.35 | 158.94 | 1137.27 | 179.39 | 1137.11 |
| 187.8   | 1137      | 207.84 | 1136.79 | 220.89 | 1136.71 | 243.39 | 1136.45 | 332.69 | 1136.02 |
| 335.7   | 1136      | 350.2  | 1135.98 | 353.37 | 1135.97 | 354.65 | 1135.94 | 361.53 | 1135.85 |
| 364.35  | 1135.83   | 369.07 | 1135.81 | 369.95 | 1135.79 | 370.55 | 1135.78 | 374.75 | 1135.7  |

## Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 376.61  | 1135.69 | 381.59  | 1135.57 | 395.03  | 1135.4  | 405.24  | 1135.21 | 409.2   | 1135.13 |
| 416.55  | 1135    | 435.73  | 1134.83 | 438.13  | 1134.8  | 495.11  | 1134.28 | 500.48  | 1134.24 |
| 519.06  | 1134.33 | 521.66  | 1134.28 | 524.2   | 1134.24 | 524.34  | 1134.25 | 525.91  | 1134.23 |
| 527.76  | 1134.25 | 528.95  | 1134.27 | 531.98  | 1134.31 | 536.03  | 1134.38 | 537.32  | 1134.39 |
| 539.98  | 1134.47 | 542.19  | 1134.48 | 546.04  | 1134.59 | 550.16  | 1134.6  | 554.19  | 1134.7  |
| 559.82  | 1134.71 | 577.01  | 1134.84 | 588.54  | 1134.83 | 589.34  | 1134.85 | 589.96  | 1134.82 |
| 594.27  | 1134.86 | 597.72  | 1134.9  | 598.12  | 1134.89 | 601.31  | 1134.92 | 607.38  | 1135    |
| 757.97  | 1134.08 | 765.11  | 1134    | 792.15  | 1133.61 | 793.79  | 1133    | 795.71  | 1132.26 |
| 796.39  | 1132    | 797.22  | 1131.9  | 805.34  | 1131    | 822.16  | 1131.94 | 822.34  | 1132    |
| 822.45  | 1132.05 | 824.7   | 1133    | 825.68  | 1133.63 | 826.23  | 1134    | 826.72  | 1134.32 |
| 827.77  | 1135    | 990.88  | 1135.31 | 992.33  | 1135.35 | 998.81  | 1135.51 | 1000.96 | 1135.57 |
| 1007.27 | 1135.72 | 1012.35 | 1135.86 | 1013.33 | 1135.88 | 1017.36 | 1136    | 1019.94 | 1136.03 |
| 1025.93 | 1136.09 | 1033.54 | 1136    | 1135.13 | 1135.91 | 1146.22 | 1135.32 | 1151.94 | 1135    |
| 1153.65 | 1134.74 | 1154.47 | 1134.62 | 1169.3  | 1132.59 | 1173.54 | 1132    | 1174.22 | 1131.87 |
| 1174.92 | 1131.72 | 1178.42 | 1131    | 1181.9  | 1130.26 | 1183.05 | 1130    | 1184.36 | 1129.73 |
| 1185.81 | 1129.42 | 1187.85 | 1129    | 1190.99 | 1128.06 | 1191.13 | 1128.02 | 1191.37 | 1127.95 |
| 1194.73 | 1127    | 1196.32 | 1126.42 | 1197.56 | 1126    | 1197.95 | 1125.86 | 1201.13 | 1125    |
| 1201.34 | 1124.93 | 1201.58 | 1124.89 | 1201.8  | 1124.83 | 1204.17 | 1124.24 | 1205.19 | 1124    |
| 1208.71 | 1123.02 | 1208.84 | 1123    | 1210.86 | 1122.57 | 1213.58 | 1122.06 | 1213.79 | 1122.02 |
| 1213.91 | 1122    | 1216.14 | 1121.58 | 1217.59 | 1121.38 | 1219.97 | 1121    | 1295.37 | 1121.89 |
| 1296.39 | 1122    | 1349.93 | 1122.02 | 1358.58 | 1122.06 | 1389.21 | 1122.11 | 1390.59 | 1122.12 |
| 1394.06 | 1122.21 | 1394.98 | 1122.26 | 1396.19 | 1122.33 | 1397.03 | 1122.35 | 1409.65 | 1123    |
| 1414.79 | 1123.71 | 1423.09 | 1124.91 | 1423.69 | 1125    | 1424.65 | 1125.14 | 1430.23 | 1126    |
| 1435.33 | 1126.85 | 1436.19 | 1127    | 1437.11 | 1127.2  | 1443.48 | 1128.63 | 1445.09 | 1129    |
| 1446.45 | 1129.3  | 1449.66 | 1130    | 1453.94 | 1130.9  | 1454.4  | 1131    | 1458.9  | 1131.94 |
| 1459.17 | 1132    | 1459.41 | 1132.06 | 1463.49 | 1133    | 1467.11 | 1133.9  | 1467.5  | 1134    |
| 1467.8  | 1134.07 | 1471.48 | 1135    | 1474.6  | 1135.81 | 1475.34 | 1136    | 1476.05 | 1136.19 |
| 1479.37 | 1137    | 1480.83 | 1137.37 | 1483.3  | 1138    | 1486.79 | 1138.9  | 1487.2  | 1139    |
| 1487.68 | 1139.12 | 1491.27 | 1140    | 1494.77 | 1140.72 | 1496.08 | 1141    | 1514.45 | 1140.92 |
| 1517.32 | 1140    | 1519.3  | 1139.37 | 1521.93 | 1138.54 | 1526.76 | 1137    | 1528.44 | 1136.46 |
| 1529.86 | 1136    | 1532.36 | 1135    | 1534.78 | 1134    | 1536.88 | 1133.12 | 1537.18 | 1133    |
| 1537.43 | 1132.89 | 1539.53 | 1132    | 1540.18 | 1131.71 | 1541.83 | 1131    | 1550.37 | 1130.33 |
| 1554.48 | 1130    | 1554.84 | 1129.16 | 1554.9  | 1129    | 1555.24 | 1128.81 | 1556.8  | 1128    |
| 1557.03 | 1127.44 | 1557.2  | 1127    | 1558.56 | 1126.45 | 1559.68 | 1126    | 1560.62 | 1125.26 |
| 1560.96 | 1125    | 1561.89 | 1124.02 | 1562.5  | 1123    | 1564.55 | 1122.56 | 1565.78 | 1122.29 |
| 1567.41 | 1122    | 1568.03 | 1121.98 | 1605.83 | 1121    | 1754.72 | 1121.3  | 1756.36 | 1121.29 |
| 1762.28 | 1121.28 | 1788.32 | 1121    | 1797.82 | 1120.94 | 1834.02 | 1120.16 | 1835.78 | 1120.12 |
| 1841.63 | 1120    | 1854.39 | 1119.81 | 1856.04 | 1119.78 | 1886.05 | 1119.4  | 1889.43 | 1119.37 |
| 1892.94 | 1119.33 | 1913.52 | 1119    | 1916.88 | 1118.31 | 1918.42 | 1118    | 1919.07 | 1117.86 |
| 1923.04 | 1117    | 1924.62 | 1116.63 | 1927.37 | 1116    | 1932.41 | 1115    | 1965.93 | 1115.39 |
| 1971.94 | 1116    | 1995.44 | 1116.9  | 1998.24 | 1117    | 2124.2  | 1116.9  | 2127.14 | 1116.87 |
| 2203.63 | 1116.33 | 2240    | 1116    | 2463.82 | 1116.02 | 2464.06 | 1116.03 | 2464.61 | 1116.05 |
| 2476.22 | 1116.6  | 2478.68 | 1116.72 | 2480.6  | 1116.82 | 2481.88 | 1116.85 | 2482.39 | 1116.88 |
| 2486.11 | 1116.95 | 2486.43 | 1116.96 | 2487.94 | 1117    | 2515.95 | 1117.9  | 2518.09 | 1118    |
| 2523.14 | 1118.94 | 2523.44 | 1119    | 2523.62 | 1119.03 | 2529.14 | 1120    | 2530.39 | 1120.97 |
| 2530.47 | 1121.04 | 2531.4  | 1121.78 | 2531.68 | 1122    | 2532.53 | 1122.58 | 2533.12 | 1123    |
| 2534.32 | 1123.66 | 2535.34 | 1124.21 | 2536.79 | 1125    | 2537.56 | 1125.46 | 2538.46 | 1126    |
| 2539.42 | 1126.62 | 2540    | 1127    | 2541.08 | 1127.69 | 2541.57 | 1128    | 2541.75 | 1128.11 |
| 2543.16 | 1129    | 2543.28 | 1129.09 | 2544.5  | 1130    | 2545.01 | 1130.48 | 2545.56 | 1131    |
| 2546.09 | 1131.5  | 2546.63 | 1132    | 2547.13 | 1132.46 | 2547.71 | 1133    | 2548.27 | 1133.53 |
| 2548.77 | 1134    | 2549.23 | 1134.44 | 2549.8  | 1135    | 2550.44 | 1135.51 | 2551.05 | 1136    |
| 2551.48 | 1136.34 | 2552.33 | 1137    | 2553.17 | 1137.65 | 2553.62 | 1138    | 2554.57 | 1138.73 |
| 2554.92 | 1139    | 2555.22 | 1139.19 | 2556.48 | 1140    | 2557.97 | 1140.65 | 2558.74 | 1141    |
| 2559.49 | 1141.35 | 2560.28 | 1141.67 | 2560.89 | 1141.77 | 2561.39 | 1141.95 | 2561.84 | 1142    |
| 2588.8  | 1141.16 | 2590.17 | 1141    | 2592.53 | 1140.35 | 2593.87 | 1140    | 2596.98 | 1139.21 |
| 2597.8  | 1139    | 2597.91 | 1138.97 | 2598.01 | 1138.95 | 2600.33 | 1138.45 | 2603.03 | 1137.89 |
| 2603.58 | 1137.78 | 2605.55 | 1137.4  | 2606.6  | 1137.23 | 2613.95 | 1136    | 2614.1  | 1135.98 |
| 2614.33 | 1135.93 | 2616.23 | 1135.56 | 2618.91 | 1135    | 2620.14 | 1134.75 | 2621.02 | 1134.64 |
| 2622.1  | 1134.49 | 2623.67 | 1134.32 | 2626.09 | 1134.05 | 2627.76 | 1133.9  | 2628.35 | 1133.84 |
| 2632.12 | 1133.61 | 2634.88 | 1133.43 | 2636.24 | 1133.35 | 2639.46 | 1133.2  | 2640.22 | 1133.18 |
| 2645.66 | 1133.26 | 2646.42 | 1133.28 | 2648.49 | 1133.39 | 2649.62 | 1133.46 | 2651.14 | 1133.54 |
| 2653.54 | 1133.73 | 2654.3  | 1133.77 | 2657.24 | 1134    | 2657.47 | 1134.02 | 2657.57 | 1134.03 |
| 2660.57 | 1134.3  | 2661.06 | 1134.35 | 2662.67 | 1134.47 | 2664.02 | 1134.59 | 2665.02 | 1134.67 |
| 2668.89 | 1135    | 2669.08 | 1135.02 | 2670.64 | 1135.14 | 2671.67 | 1135.21 | 2675.47 | 1135.53 |
| 2681.14 | 1135.98 | 2681.28 | 1135.99 | 2681.44 | 1136    | 2684.1  | 1136.2  | 2685.16 | 1136.29 |
| 2687.32 | 1136.45 | 2689.03 | 1136.55 | 2690.43 | 1136.64 | 2692.83 | 1136.76 | 2693.56 | 1136.81 |
| 2698.53 | 1136.84 | 2699.29 | 1136.85 | 2699.86 | 1136.84 | 2701.85 | 1136.81 | 2705.04 | 1136.7  |
| 2706.39 | 1136.66 | 2710.18 | 1136.64 | 2712.52 | 1136.66 | 2716.22 | 1136.59 | 2719.01 | 1136.55 |
| 2721.36 | 1136.49 | 2726.72 | 1136.46 | 2729.54 | 1136.42 | 2731.11 | 1136.37 | 2732.63 | 1136.34 |
| 2737.34 | 1136.32 | 2742.88 | 1136.35 | 2744.83 | 1136.33 | 2749.05 | 1136.32 | 2750.24 | 1136.27 |
| 2754.89 | 1136.16 | 2755.68 | 1136.14 | 2760.22 | 1136    | 2761.03 | 1135.98 | 2765.16 | 1135.93 |
| 2767    | 1135.94 | 2767.95 | 1135.97 | 2768.55 | 1136    | 2769.82 | 1136.06 | 2770.09 | 1136.07 |
| 2770.41 | 1136.1  | 2774.32 | 1136.33 | 2775.17 | 1136.42 | 2779.02 | 1137    | 2779.36 | 1137.05 |
| 2784.81 | 1138    | 2785.15 | 1138.05 | 2790.79 | 1138.9  | 2791.46 | 1139    | 2809.66 | 1139.2  |
| 2811.64 | 1139.26 | 2838.14 | 1140    | 2904.69 | 1139.13 | 2908.19 | 1138.94 | 2923.95 | 1138    |
| 2933.88 | 1137.86 | 2939.71 | 1137    | 2943.63 | 1136.06 | 2944.08 | 1135.96 | 2948.02 | 1135    |
| 2948.23 | 1134.95 | 2951.7  | 1134    | 2952.67 | 1133.75 | 2955.43 | 1133    | 2957.02 | 1132.64 |
| 2959.81 | 1132    | 2962.18 | 1131.48 | 2964.26 | 1131    | 2972.32 | 1130.09 | 2973.06 | 1130    |
| 2998.7  | 1130.01 | 3009.97 | 1130.4  | 3031.19 | 1131    | 3035.11 | 1131.03 | 3035.27 | 1131.04 |
| 3035.6  | 1131.07 | 3037.09 | 1131.19 | 3038.78 | 1131.34 | 3048.47 | 1132    | 3048.59 | 1132.01 |
| 3053.27 | 1132.32 | 3055.06 | 1132.33 | 3057.38 | 1132.46 | 3069.25 | 1132.19 | 3070.26 | 1132.2  |
| 3070.97 | 1132    | 3072.14 | 1131.65 | 3074.28 | 1131    | 3077.58 | 1130.01 | 3077.74 | 1129.95 |
| 3080.48 | 1129    | 3080.92 | 1128.85 | 3083.31 | 1128    | 3090.3  | 1128.33 | 3093.2  | 1129    |
| 3095.57 | 1129.58 | 3097.27 | 1130    | 3098.8  | 1130.55 | 3100.08 | 1131    | 3102.87 | 1131.99 |
| 3105.72 | 1133    | 3110.52 | 1133.68 | 3112.6  | 1134    | 3125.35 | 1134.28 | 3133.47 | 1134.44 |
| 3146.85 | 1134.73 | 3161    | 1135    | 3164.26 | 1135.25 | 3169.24 | 1135.66 | 3171.12 | 1135.81 |
| 3173.29 | 1136    | 3179.59 | 1137    | 3189.24 | 1137.93 | 3189.42 | 1137.97 | 3189.59 | 1138    |
| 3189.79 | 1138.02 | 3194.1  | 1138.41 | 3208.4  | 1139    | 3233.29 | 1139.41 | 3243.82 | 1139.74 |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 3251.37 | 1140    | 3272.24 | 1139.2  | 3274.07 | 1139    | 3295.95 | 1138.14 | 3296.48 | 1138.12 |
| 3297.12 | 1138.1  | 3297.28 | 1138.09 | 3297.52 | 1138.08 | 3297.83 | 1138.07 | 3298.16 | 1138.06 |
| 3298.84 | 1138.05 | 3305.81 | 1138.14 | 3306.01 | 1138.13 | 3310.37 | 1138.18 | 3323.19 | 1138.21 |
| 3330.66 | 1138.1  | 3362.11 | 1138    | 3404.86 | 1138.16 | 3407.91 | 1139    | 3409.74 | 1139.59 |
| 3411.09 | 1140    | 3562.55 | 1139.71 | 3567.57 | 1139    |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 1514.45 .039 2561.84 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1514.45 2561.84 208.17 215.71 223.25 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1514.45 1140.92 F  
 2561.84 3567.57 1142 F  
 Left Levee Station= 1514.45 Elevation= 1140.92  
 Right Levee Station= 2561.84 Elevation= 1142

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 219.38

INPUT  
 Description:

| Station | Elevation | Data    | num=    | 471     | Sta     | Elev    | Sta     | Elev    | Sta     | Elev | Sta | Elev |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|------|-----|------|
| 0       | 1136.44   | 1.13    | 1136.43 | 3.64    | 1136.42 | 5.81    | 1136.4  | 9.74    | 1136.38 |      |     |      |
| 12.26   | 1136.39   | 20.91   | 1136.33 | 215.33  | 1136.02 | 349.97  | 1135.51 | 353.4   | 1135.48 |      |     |      |
| 356.33  | 1135.47   | 406.58  | 1135.91 | 406.91  | 1135.93 | 407.07  | 1135.92 | 407.51  | 1135.93 |      |     |      |
| 408.25  | 1135.94   | 408.59  | 1135.93 | 409.66  | 1135.95 | 410     | 1135.94 | 411.22  | 1135.96 |      |     |      |
| 413.18  | 1135.97   | 413.34  | 1135.96 | 419.03  | 1135.94 | 420.14  | 1135.93 | 420.51  | 1135.92 |      |     |      |
| 421.84  | 1135.9    | 425.81  | 1135.78 | 429.28  | 1135.63 | 434.04  | 1135.51 | 435.92  | 1135.44 |      |     |      |
| 436.23  | 1135.42   | 444.77  | 1135.23 | 445.53  | 1135.2  | 455.4   | 1135    | 456.75  | 1134.99 |      |     |      |
| 457.15  | 1134.98   | 464.56  | 1134.91 | 465.61  | 1134.88 | 469.77  | 1134.84 | 471.66  | 1134.81 |      |     |      |
| 474.7   | 1134.74   | 482.84  | 1134.6  | 491.75  | 1134.38 | 498.75  | 1134.24 | 507.36  | 1134    |      |     |      |
| 574.14  | 1133.17   | 576.25  | 1133.08 | 577.15  | 1133.05 | 578.31  | 1133    | 595.86  | 1133.07 |      |     |      |
| 609.25  | 1133.19   | 695.74  | 1134.28 | 697.46  | 1134.29 | 782.57  | 1135    | 833.09  | 1134.8  |      |     |      |
| 833.38  | 1134.79   | 838.64  | 1134.86 | 838.81  | 1134.85 | 839.1   | 1134.84 | 843.53  | 1134.91 |      |     |      |
| 844.13  | 1134.89   | 847.67  | 1134.96 | 849.86  | 1135    | 851.09  | 1135.13 | 851.84  | 1135.18 |      |     |      |
| 854.47  | 1135.41   | 855.17  | 1135.45 | 855.77  | 1135.46 | 856.17  | 1135.42 | 856.54  | 1135.33 |      |     |      |
| 857.04  | 1135.17   | 857.48  | 1135    | 857.71  | 1134.94 | 860.97  | 1135    | 868.08  | 1134.96 |      |     |      |
| 868.58  | 1134.81   | 868.94  | 1134.76 | 870.2   | 1134.47 | 872.07  | 1134    | 875.89  | 1134.73 |      |     |      |
| 876.43  | 1134.94   | 876.66  | 1135    | 878.21  | 1134.95 | 879.61  | 1134.63 | 879.83  | 1134.57 |      |     |      |
| 880.23  | 1134.45   | 881.31  | 1134    | 904.53  | 1133.96 | 905.05  | 1133.81 | 911.26  | 1132    |      |     |      |
| 917.72  | 1131      | 940.34  | 1131.44 | 941.44  | 1131.76 | 941.81  | 1131.86 | 942.62  | 1132    |      |     |      |
| 944.12  | 1132.17   | 944.58  | 1132.19 | 946.75  | 1132.36 | 947.57  | 1132.37 | 949.23  | 1132.47 |      |     |      |
| 950.04  | 1132.45   | 950.43  | 1132.49 | 951.03  | 1132.46 | 952.51  | 1132.58 | 953.69  | 1132.79 |      |     |      |
| 953.93  | 1132.82   | 954.34  | 1132.88 | 954.75  | 1133    | 962.88  | 1133.51 | 965.18  | 1133.63 |      |     |      |
| 969.6   | 1134      | 999.83  | 1135    | 1017.43 | 1135.8  | 1017.76 | 1135.82 | 1021.66 | 1136    |      |     |      |
| 1063.02 | 1136.73   | 1085.07 | 1137.09 | 1088.68 | 1137.21 | 1102.67 | 1137.6  | 1112.81 | 1138    |      |     |      |
| 1149.42 | 1138.8    | 1153.97 | 1138.88 | 1155.5  | 1138.92 | 1161.47 | 1139    | 1187.37 | 1138.96 |      |     |      |
| 1193.67 | 1138.81   | 1195.86 | 1138.74 | 1200.05 | 1138.63 | 1203.49 | 1138.56 | 1207.6  | 1138.41 |      |     |      |
| 1208.6  | 1138.38   | 1218.6  | 1138    | 1219.26 | 1137.97 | 1220.01 | 1137.94 | 1239.69 | 1137    |      |     |      |
| 1252.54 | 1136.01   | 1252.71 | 1135.99 | 1264.27 | 1135    | 1281.38 | 1133    | 1284.69 | 1132.6  |      |     |      |
| 1289.95 | 1132      | 1291.39 | 1131.82 | 1306.29 | 1130.12 | 1306.69 | 1130.07 | 1307.35 | 1130    |      |     |      |
| 1313.51 | 1129.37   | 1316.68 | 1129    | 1321.63 | 1128.29 | 1323.72 | 1128    | 1329.38 | 1127.15 |      |     |      |
| 1330.43 | 1127      | 1335.71 | 1126.33 | 1336.61 | 1126.23 | 1337.26 | 1126.15 | 1338.55 | 1126    |      |     |      |
| 1342.41 | 1125.5    | 1345.89 | 1125    | 1347.75 | 1124.69 | 1351.74 | 1124    | 1361.7  | 1123    |      |     |      |
| 1362.16 | 1122.96   | 1364.89 | 1122.68 | 1371.91 | 1122    | 1433.77 | 1122.26 | 1436.27 | 1122.52 |      |     |      |
| 1440.66 | 1123      | 1442.63 | 1123.34 | 1446.57 | 1124    | 1453.09 | 1125    | 1458.86 | 1126    |      |     |      |
| 1463.79 | 1127      | 1466.84 | 1128    | 1467.18 | 1128.11 | 1469.86 | 1129    | 1471.61 | 1129.53 |      |     |      |
| 1473.03 | 1130      | 1475.96 | 1130.92 | 1476.22 | 1131    | 1476.43 | 1131.05 | 1480.6  | 1132    |      |     |      |
| 1484.48 | 1132.83   | 1485.29 | 1133    | 1488.97 | 1133.93 | 1489.28 | 1134    | 1489.56 | 1134.09 |      |     |      |
| 1492.59 | 1135      | 1493.11 | 1135.15 | 1495.94 | 1136    | 1499.61 | 1137    | 1501.96 | 1137.61 |      |     |      |
| 1506.9  | 1138.91   | 1507.26 | 1139    | 1507.51 | 1139.07 | 1510.93 | 1140    | 1514.47 | 1141    |      |     |      |
| 1532.93 | 1140.33   | 1533.84 | 1140    | 1536.04 | 1139.22 | 1539.53 | 1138.04 | 1539.68 | 1137.98 |      |     |      |
| 1542.39 | 1137      | 1543.32 | 1136.65 | 1545.07 | 1136    | 1547.26 | 1135.2  | 1547.83 | 1135    |      |     |      |
| 1548.49 | 1134.78   | 1550.89 | 1134    | 1553.75 | 1133    | 1558.95 | 1131    | 1571.11 | 1130    |      |     |      |
| 1572.28 | 1129.18   | 1572.56 | 1129    | 1574.29 | 1128.26 | 1574.82 | 1128    | 1575.51 | 1127.61 |      |     |      |
| 1576.53 | 1127      | 1577.4  | 1126.34 | 1577.84 | 1126    | 1578.38 | 1125.59 | 1579.15 | 1125    |      |     |      |
| 1580.38 | 1124.05   | 1581.83 | 1123    | 1583.09 | 1122.18 | 1583.38 | 1122    | 1597.65 | 1121.46 |      |     |      |
| 1645.91 | 1120      | 1795.65 | 1119.66 | 1803.39 | 1119.59 | 1825.77 | 1119.2  | 1834.73 | 1119    |      |     |      |
| 1874.81 | 1118.85   | 1884.16 | 1118.76 | 1884.95 | 1118.74 | 1889.41 | 1118.72 | 1894.15 | 1118.6  |      |     |      |
| 1896.98 | 1118.58   | 1899.32 | 1118.5  | 1907.11 | 1118.26 | 1907.57 | 1118.25 | 1914.73 | 1118    |      |     |      |
| 1918.7  | 1117.47   | 1919.45 | 1117.38 | 1920.51 | 1117.26 | 1922.15 | 1117    | 1925.74 | 1116.18 |      |     |      |
| 1926.51 | 1116      | 1930.62 | 1115    | 1968.93 | 1115.4  | 1974.92 | 1116    | 1999.09 | 1117    |      |     |      |
| 2135.25 | 1116.21   | 2136.73 | 1116.19 | 2141.03 | 1116.15 | 2151.34 | 1116    | 2176.45 | 1115.95 |      |     |      |
| 2180.39 | 1115.91   | 2183.46 | 1115.85 | 2190.53 | 1116    | 2452.06 | 1116.15 | 2484.18 | 1117    |      |     |      |
| 2495.84 | 1117.36   | 2505.19 | 1117.93 | 2505.59 | 1117.95 | 2505.87 | 1117.96 | 2506.4  | 1118    |      |     |      |
| 2532.99 | 1118.85   | 2554.56 | 1119.73 | 2561.77 | 1120    | 2563.19 | 1120.62 | 2566.01 | 1121.71 |      |     |      |
| 2566.8  | 1122      | 2568.89 | 1122.91 | 2569.1  | 1123    | 2570.1  | 1123.61 | 2570.75 | 1124    |      |     |      |
| 2571.19 | 1124.27   | 2572.25 | 1124.91 | 2574.01 | 1126    | 2575.7  | 1127    | 2576.29 | 1127.36 |      |     |      |
| 2577.33 | 1128      | 2579.03 | 1129    | 2579.4  | 1129.2  | 2582.22 | 1130.76 | 2582.65 | 1131    |      |     |      |
| 2583    | 1131.2    | 2584.45 | 1132    | 2585.64 | 1132.67 | 2586.21 | 1133    | 2588    | 1134    |      |     |      |
| 2589.6  | 1134.88   | 2589.81 | 1135    | 2590.34 | 1135.31 | 2591.51 | 1136    | 2592.85 | 1136.83 |      |     |      |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2593.12 | 1137    | 2594.32 | 1137.73 | 2594.75 | 1138    | 2596.12 | 1138.9  | 2596.48 | 1139.14 |
| 2597.76 | 1140    | 2599.23 | 1141    | 2601.11 | 1141.12 | 2619.61 | 1141.7  | 2619.77 | 1141.71 |
| 2621.25 | 1141.61 | 2624.75 | 1141.39 | 2626.93 | 1141.3  | 2630.75 | 1141    | 2631.87 | 1140.68 |
| 2633.26 | 1140.31 | 2633.85 | 1140.17 | 2634.6  | 1140    | 2637.95 | 1139.23 | 2639.01 | 1139    |
| 2641.39 | 1138.46 | 2646.44 | 1137.38 | 2648.17 | 1137    | 2650.69 | 1136.53 | 2653.43 | 1136    |
| 2654.42 | 1135.82 | 2655.81 | 1135.55 | 2659.07 | 1135    | 2660.97 | 1134.66 | 2662.29 | 1134.39 |
| 2666.72 | 1133.45 | 2668.25 | 1133.1  | 2668.78 | 1133    | 2674.71 | 1132.48 | 2679.89 | 1132    |
| 2680.67 | 1131.94 | 2681.03 | 1131.91 | 2683.46 | 1131.72 | 2686.92 | 1131.49 | 2688.6  | 1131.4  |
| 2690.69 | 1131.26 | 2692.66 | 1131.19 | 2693.48 | 1131.15 | 2700.24 | 1131.09 | 2702.83 | 1131    |
| 2708.73 | 1131.02 | 2730.74 | 1132    | 2739.58 | 1132.6  | 2742.46 | 1132.81 | 2744.87 | 1133    |
| 2765.41 | 1135    | 2772.97 | 1135.68 | 2776.36 | 1136    | 2780.29 | 1136.31 | 2788.39 | 1137    |
| 2813.79 | 1138    | 2826    | 1139    | 2830.2  | 1139.62 | 2832.91 | 1140    | 2840.3  | 1141    |
| 2896.64 | 1141.75 | 2910.22 | 1142    | 2933.92 | 1141.8  | 2962.74 | 1141    | 2972    | 1140.79 |
| 2973.52 | 1140.68 | 2982.38 | 1140    | 2985    | 1139.45 | 2987.09 | 1139    | 2988.63 | 1138.56 |
| 2990.65 | 1138    | 2992.94 | 1137.35 | 2994.14 | 1137    | 2996.86 | 1136    | 2998.66 | 1135.33 |
| 3000.28 | 1134.74 | 3002.28 | 1134    | 3002.79 | 1133.83 | 3005.22 | 1133    | 3006.3  | 1132.66 |
| 3014.56 | 1130.15 | 3015.04 | 1130    | 3018.32 | 1129    | 3021.66 | 1128    | 3025.64 | 1127    |
| 3026.95 | 1126.78 | 3037.88 | 1125    | 3055.44 | 1124    | 3109.74 | 1124.08 | 3113.15 | 1124.19 |
| 3115.44 | 1124.24 | 3122.77 | 1124.45 | 3130.59 | 1124.62 | 3134.79 | 1124.73 | 3143.26 | 1124.9  |
| 3143.56 | 1124.91 | 3147.92 | 1125    | 3149.1  | 1125.07 | 3149.33 | 1125.08 | 3155.68 | 1125.45 |
| 3168.48 | 1126.12 | 3169.02 | 1126.16 | 3174.6  | 1126.47 | 3178.37 | 1126.73 | 3178.81 | 1126.75 |
| 3182.67 | 1127    | 3182.95 | 1127.02 | 3190.91 | 1127.41 | 3195.05 | 1127.59 | 3197.01 | 1127.64 |
| 3201.99 | 1127.84 | 3202.88 | 1127.86 | 3204.32 | 1127.81 | 3206.14 | 1127.37 | 3206.3  | 1127.36 |
| 3208.77 | 1126.68 | 3211.14 | 1126    | 3213.17 | 1125.37 | 3214.33 | 1125    | 3215.04 | 1124.7  |
| 3216.83 | 1124    | 3219.26 | 1123    | 3219.86 | 1122.79 | 3222.04 | 1122    | 3224.7  | 1121.22 |
| 3225.47 | 1121    | 3240.83 | 1121.34 | 3243.58 | 1122    | 3248.97 | 1123    | 3250.73 | 1123.49 |
| 3252.5  | 1124    | 3257.96 | 1125.99 | 3260.8  | 1127    | 3263.63 | 1127.76 | 3264.55 | 1128    |
| 3272.57 | 1129.89 | 3273.03 | 1130    | 3277.1  | 1130.93 | 3277.4  | 1131    | 3280.53 | 1131.76 |
| 3281.56 | 1132    | 3282.94 | 1132.46 | 3284.6  | 1133    | 3290.5  | 1135    | 3295.86 | 1136    |
| 3300.17 | 1136.7  | 3302.3  | 1137    | 3302.36 | 1137.37 | 3302.51 | 1138    | 3305.76 | 1138.23 |
| 3310.14 | 1138.35 | 3318.6  | 1138.95 | 3319.12 | 1138.98 | 3319.36 | 1139    | 3341.23 | 1139.07 |
| 3341.82 | 1139    | 3345.56 | 1138.74 | 3346.17 | 1138.72 | 3347.44 | 1138.65 | 3348.54 | 1138.64 |
| 3350.8  | 1138.53 | 3351.37 | 1138.54 | 3363.3  | 1138.87 | 3363.56 | 1138.88 | 3364.92 | 1139    |
| 3391.14 | 1138.11 | 3391.35 | 1138    | 3401.65 | 1138.02 | 3406.67 | 1139    | 3444.14 | 1140    |
| 3544.67 | 1139.82 | 3616.47 | 1139.16 | 3618.55 | 1139.1  | 3623.31 | 1139    | 3626.19 | 1139.03 |
| 3628.43 | 1139.12 |         |         |         |         |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 1532.93 .039 2601.11 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1532.93 2601.11 256.29 272.56 288.82 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1532.93 1140.33 F  
 2601.11 3628.43 1141.12 F  
 Left Levee Station= 1532.93 Elevation= 1140.33  
 Right Levee Station= 2601.11 Elevation= 1141.12

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 219.33

INPUT Description:

| Station | Elevation | Data    | num=    | 479     | Sta     | Elev    | Sta     | Elev    | Sta     | Elev | Sta | Elev |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|------|-----|------|
| 0       | 1136.84   | 257.15  | 1136    | 299.68  | 1136.59 | 314.31  | 1136    | 337.48  | 1136.35 |      |     |      |
| 339.71  | 1137      | 340.39  | 1137.31 | 341.7   | 1138    | 341.91  | 1138.12 | 343.27  | 1139    |      |     |      |
| 344.02  | 1139.31   | 344.62  | 1139.5  | 345.82  | 1139.8  | 346.33  | 1139.95 | 346.75  | 1140    |      |     |      |
| 346.99  | 1140.01   | 348.91  | 1140.02 | 349.21  | 1139.98 | 349.92  | 1139.67 | 351.35  | 1139    |      |     |      |
| 352.26  | 1138.54   | 352.69  | 1138.39 | 353.43  | 1138    | 353.72  | 1137.84 | 354.22  | 1137.59 |      |     |      |
| 355.3   | 1137      | 357.19  | 1136.32 | 357.98  | 1136    | 380.46  | 1135.21 | 387.77  | 1135.03 |      |     |      |
| 388.03  | 1135.02   | 389.06  | 1135    | 481.16  | 1134.55 | 484.22  | 1134.48 | 485.74  | 1134.47 |      |     |      |
| 497.32  | 1134.28   | 501.52  | 1134.24 | 509.22  | 1134.1  | 510.09  | 1134.09 | 514.4   | 1134    |      |     |      |
| 572.49  | 1133.24   | 578.45  | 1133.2  | 579.39  | 1133.19 | 582.06  | 1133.18 | 604.99  | 1133    |      |     |      |
| 679.1   | 1133.56   | 694.58  | 1134    | 711.19  | 1134.32 | 714.03  | 1134.34 | 723     | 1134.5  |      |     |      |
| 728.43  | 1134.53   | 736.34  | 1134.66 | 836.23  | 1135.62 | 836.52  | 1136    | 836.85  | 1136.41 |      |     |      |
| 837.3   | 1137      | 838.07  | 1137.44 | 839.56  | 1137.64 | 841.47  | 1137.61 | 842.83  | 1137.53 |      |     |      |
| 843.23  | 1137.49   | 843.6   | 1137.44 | 844.92  | 1137.36 | 845.28  | 1137.3  | 847.46  | 1137    |      |     |      |
| 849.36  | 1136.37   | 850.09  | 1136    | 851.55  | 1136.68 | 851.83  | 1137    | 863.27  | 1136.09 |      |     |      |
| 863.57  | 1136      | 867.29  | 1136.78 | 867.67  | 1137    | 870.58  | 1137.41 | 871.48  | 1137.51 |      |     |      |
| 871.87  | 1137.64   | 872.41  | 1137.67 | 872.67  | 1137.79 | 872.98  | 1137.78 | 873.28  | 1137.88 |      |     |      |
| 873.48  | 1137.84   | 873.73  | 1137.82 | 874.3   | 1137.55 | 874.56  | 1137.4  | 875.95  | 1136.49 |      |     |      |
| 876.71  | 1136      | 878.32  | 1135.45 | 879.3   | 1135    | 970.79  | 1134.92 | 970.99  | 1134.87 |      |     |      |
| 974.94  | 1133.87   | 975.75  | 1133.71 | 977.02  | 1133.47 | 978.65  | 1133.15 | 981.6   | 1132.63 |      |     |      |
| 985.36  | 1132      | 985.6   | 1131.97 | 985.88  | 1131.93 | 989.5   | 1131.37 | 990.2   | 1131.25 |      |     |      |
| 991.98  | 1131      | 994.15  | 1130.73 | 997.98  | 1130.29 | 1002.4  | 1129.85 | 1005.55 | 1129.42 |      |     |      |
| 1007.77 | 1129      | 1010.2  | 1128.91 | 1010.66 | 1128.88 | 1012.25 | 1128.74 | 1015.99 | 1128.53 |      |     |      |
| 1017.17 | 1128.49   | 1019.87 | 1128.2  | 1020.48 | 1128.16 | 1021.89 | 1128    | 1023.6  | 1127.85 |      |     |      |
| 1024.04 | 1127.82   | 1026.26 | 1127.66 | 1027.1  | 1127.62 | 1029.64 | 1127.47 | 1032.01 | 1127.38 |      |     |      |
| 1033.15 | 1127.35   | 1034.3  | 1127.34 | 1036.19 | 1127.28 | 1037.79 | 1127.32 | 1039.15 | 1127.41 |      |     |      |
| 1042.27 | 1127.42   | 1043.22 | 1127.4  | 1044.06 | 1127.47 | 1044.41 | 1127.48 | 1046.63 | 1127.76 |      |     |      |
| 1047.74 | 1127.89   | 1048.1  | 1127.91 | 1049.02 | 1128    | 1051.32 | 1128.21 | 1051.5  | 1128.23 |      |     |      |
| 1051.76 | 1128.24   | 1053.67 | 1128.39 | 1054.28 | 1128.42 | 1054.77 | 1128.43 | 1056    | 1128.45 |      |     |      |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1060.64 | 1128.44 | 1061.76 | 1128.42 | 1062.42 | 1128.39 | 1063.52 | 1128.36 | 1064.61 | 1128.32 |
| 1065.08 | 1128.28 | 1069.28 | 1128.13 | 1070.03 | 1128.08 | 1075.23 | 1127.89 | 1086.37 | 1128.03 |
| 1086.54 | 1128.04 | 1091.92 | 1128.1  | 1095.76 | 1128.17 | 1096.68 | 1128.18 | 1100.2  | 1128.24 |
| 1101.25 | 1128.25 | 1106.84 | 1128.34 | 1110.26 | 1128.37 | 1111.47 | 1128.39 | 1116.41 | 1128.4  |
| 1122.22 | 1128.36 | 1130.83 | 1128.24 | 1131.95 | 1128.21 | 1138.3  | 1128.1  | 1138.78 | 1128.09 |
| 1151.11 | 1127.87 | 1152.11 | 1127.84 | 1153.06 | 1127.8  | 1155.49 | 1127.71 | 1172.59 | 1127    |
| 1175.45 | 1126.89 | 1196.28 | 1126.01 | 1196.47 | 1126    | 1211.5  | 1125.42 | 1220.47 | 1125.14 |
| 1221.29 | 1125.12 | 1225.32 | 1125    | 1225.62 | 1124.99 | 1245.43 | 1124.34 | 1253.55 | 1124    |
| 1335.06 | 1123.54 | 1361.59 | 1123    | 1455.54 | 1123.24 | 1465.3  | 1124    | 1468.21 | 1124.7  |
| 1469.4  | 1125    | 1473.48 | 1126    | 1479.49 | 1127.63 | 1480.79 | 1128    | 1483.02 | 1128.61 |
| 1484.37 | 1129    | 1488.14 | 1130    | 1491.84 | 1130.94 | 1492.06 | 1131    | 1492.25 | 1131.05 |
| 1495.99 | 1132    | 1499.29 | 1133    | 1500.72 | 1133.44 | 1505.9  | 1135    | 1506.21 | 1135.09 |
| 1508.96 | 1135.91 | 1516.13 | 1138    | 1519.69 | 1139    | 1523.43 | 1140    | 1543.62 | 1139.45 |
| 1545.58 | 1138.71 | 1550.28 | 1137    | 1552.75 | 1136.09 | 1552.98 | 1136    | 1553.33 | 1135.87 |
| 1555.71 | 1135    | 1558.8  | 1134    | 1560.59 | 1133.45 | 1562.02 | 1133    | 1563.25 | 1132.59 |
| 1564.97 | 1132    | 1567.69 | 1131.03 | 1568    | 1130.98 | 1578.45 | 1130    | 1582.3  | 1129    |
| 1583.23 | 1128.34 | 1583.74 | 1128    | 1584.18 | 1127.39 | 1584.46 | 1127    | 1584.81 | 1126.56 |
| 1585.25 | 1126    | 1586    | 1125.6  | 1587.07 | 1125    | 1588.69 | 1124    | 1589.49 | 1123.06 |
| 1590.14 | 1122.08 | 1590.83 | 1121.96 | 1607.07 | 1121    | 1658.28 | 1120    | 1677.18 | 1119.83 |
| 1678.64 | 1119.8  | 1679.43 | 1119.79 | 1687.22 | 1119.64 | 1690.36 | 1119.56 | 1700.1  | 1119.38 |
| 1703.25 | 1119.3  | 1720.37 | 1119    | 1734.08 | 1118.85 | 1737.06 | 1118.83 | 1739.51 | 1118.8  |
| 1768.6  | 1118.66 | 1786.2  | 1118.68 | 1803.97 | 1118.59 | 1875.7  | 1118.1  | 1891.33 | 1117.94 |
| 1891.88 | 1117.91 | 1893.09 | 1117.86 | 1902.81 | 1117.29 | 1903.74 | 1117.23 | 1907.8  | 1117    |
| 1916.39 | 1116    | 1917.74 | 1115.89 | 1918.16 | 1115.86 | 1928.62 | 1115    | 1945.91 | 1114    |
| 1992.78 | 1114.26 | 2022.59 | 1115    | 2124.21 | 1116    | 2401.7  | 1116.14 | 2425.61 | 1116.26 |
| 2428.52 | 1116.3  | 2431.65 | 1116.31 | 2436.74 | 1116.41 | 2438.77 | 1116.44 | 2443.02 | 1116.47 |
| 2445.11 | 1116.51 | 2446.57 | 1116.52 | 2466.41 | 1117    | 2485.4  | 1117.96 | 2486.24 | 1118    |
| 2489.81 | 1119    | 2498.06 | 1118    | 2559    | 1118.77 | 2559.44 | 1118.96 | 2560.83 | 1119.9  |
| 2561.08 | 1120.08 | 2562.43 | 1121    | 2563.58 | 1121.79 | 2563.89 | 1122    | 2564.26 | 1122.27 |
| 2565.29 | 1123    | 2567.66 | 1124.74 | 2568.01 | 1125    | 2568.4  | 1125.28 | 2569.37 | 1126    |
| 2571.34 | 1127.45 | 2572.1  | 1128    | 2590.61 | 1129    | 2591.51 | 1129.43 | 2594.66 | 1131    |
| 2595.54 | 1131.72 | 2595.87 | 1132    | 2597.07 | 1133    | 2598.28 | 1134    | 2598.78 | 1134.42 |
| 2599.08 | 1134.67 | 2599.49 | 1135    | 2599.98 | 1135.38 | 2600.77 | 1136    | 2601.41 | 1136.44 |
| 2602.21 | 1137    | 2603.28 | 1137.73 | 2603.67 | 1138    | 2604.02 | 1138.25 | 2605.1  | 1139    |
| 2606.59 | 1140    | 2609.09 | 1141.71 | 2609.52 | 1142    | 2633.47 | 1141    | 2640.26 | 1139    |
| 2643.53 | 1138.13 | 2644    | 1138    | 2644.31 | 1137.91 | 2647.67 | 1137    | 2651.04 | 1136    |
| 2652.73 | 1135.44 | 2654.02 | 1135    | 2656.33 | 1134.23 | 2657    | 1134    | 2659.24 | 1133.25 |
| 2659.97 | 1133    | 2662.97 | 1132    | 2666.07 | 1131.49 | 2669.15 | 1131    | 2672.83 | 1130.5  |
| 2676.37 | 1130    | 2753.73 | 1130.08 | 2786.34 | 1131    | 2803.43 | 1133    | 2812.61 | 1134    |
| 2823.18 | 1135    | 2835.86 | 1136    | 2837.42 | 1136.14 | 2846.47 | 1137    | 2854.78 | 1138    |
| 2863.13 | 1138.96 | 2863.94 | 1139.05 | 2873.36 | 1140    | 2877.77 | 1140.78 | 2879.09 | 1141    |
| 2884.43 | 1142    | 2889.43 | 1143    | 2897.29 | 1143.95 | 2897.68 | 1144    | 2927.43 | 1144.21 |
| 2973.36 | 1144.99 | 2973.84 | 1145    | 2986.23 | 1144.95 | 2988.46 | 1144.91 | 3031.3  | 1144    |
| 3039.02 | 1143.49 | 3043    | 1143    | 3047.27 | 1142    | 3051.21 | 1141.1  | 3051.64 | 1141    |
| 3056.28 | 1140    | 3061.28 | 1139.03 | 3061.45 | 1139    | 3061.75 | 1138.94 | 3066.66 | 1138    |
| 3071.32 | 1137.33 | 3074.3  | 1137    | 3076.96 | 1136.75 | 3085.41 | 1136.04 | 3085.92 | 1136    |
| 3090.77 | 1135.58 | 3092.42 | 1135.47 | 3097.71 | 1135    | 3100.59 | 1134.65 | 3101.82 | 1134.52 |
| 3108.98 | 1133.74 | 3111.08 | 1133.52 | 3116.75 | 1133.03 | 3116.91 | 1133.02 | 3117.16 | 1133    |
| 3127.31 | 1132.09 | 3127.82 | 1132.04 | 3129.39 | 1131.92 | 3130.82 | 1131.82 | 3136.8  | 1131.46 |
| 3138.16 | 1131.36 | 3143.47 | 1131.05 | 3144.22 | 1131    | 3145.76 | 1130.89 | 3146.56 | 1130.85 |
| 3151.14 | 1130.52 | 3152.56 | 1130.45 | 3160.16 | 1129.97 | 3165.37 | 1129.69 | 3167.17 | 1129.61 |
| 3168.79 | 1129.53 | 3172.84 | 1129.36 | 3174.86 | 1129.26 | 3177.78 | 1129.16 | 3178.61 | 1129.12 |
| 3181.58 | 1129.03 | 3188.27 | 1128.88 | 3189.28 | 1128.84 | 3191.46 | 1128.79 | 3192.84 | 1128.74 |
| 3196.31 | 1128.59 | 3208.45 | 1128    | 3208.63 | 1127.99 | 3215.36 | 1127.72 | 3227.9  | 1127.15 |
| 3230.17 | 1127.04 | 3230.55 | 1127.03 | 3231.12 | 1127    | 3238.59 | 1126.8  | 3242.98 | 1126.71 |
| 3244.4  | 1126.69 | 3249.09 | 1126.65 | 3250.89 | 1126.59 | 3253.37 | 1126.6  | 3254.34 | 1126.56 |
| 3256.64 | 1126.53 | 3257.93 | 1126.52 | 3258.51 | 1126.5  | 3259.18 | 1126.49 | 3259.9  | 1126.47 |
| 3262.02 | 1126.44 | 3270    | 1126    | 3277    | 1125.67 | 3285.94 | 1125    | 3298.1  | 1124.66 |
| 3303.71 | 1124.53 | 3305.28 | 1124.5  | 3308.92 | 1124.4  | 3312.2  | 1124.38 | 3314.01 | 1124.34 |
| 3316.51 | 1124.32 | 3318.08 | 1124.29 | 3320.7  | 1124.27 | 3325.3  | 1124.2  | 3335.87 | 1124    |
| 3336.22 | 1123.99 | 3348.4  | 1123.76 | 3350.32 | 1123.71 | 3354.91 | 1123.61 | 3360.54 | 1123.46 |
| 3365.11 | 1123.36 | 3373.54 | 1123.12 | 3373.97 | 1123.11 | 3374.26 | 1123.1  | 3377.79 | 1123    |
| 3380.89 | 1122.85 | 3381.19 | 1122.84 | 3382.07 | 1122.82 | 3387.3  | 1122.6  | 3389.13 | 1122.55 |
| 3395.72 | 1122.32 | 3406.38 | 1122    | 3407.62 | 1121.8  | 3408.26 | 1121.69 | 3409.51 | 1121.48 |
| 3410.01 | 1121.38 | 3412.82 | 1121    | 3433.19 | 1121.8  | 3434.03 | 1122    | 3462.27 | 1121.92 |
| 3465.19 | 1121.84 | 3472.68 | 1121.87 | 3482.51 | 1121.75 | 3484.13 | 1121.74 | 3488.17 | 1121.69 |
| 3490.59 | 1121.68 | 3503.12 | 1121.53 | 3504.22 | 1121.52 | 3517.36 | 1121.47 | 3518.98 | 1121.45 |
| 3533.88 | 1121.38 | 3535.94 | 1121.36 | 3541.02 | 1121.34 | 3589.22 | 1121    |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .04 1543.62 .039 2609.52 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1543.62 2609.52 218.38 225.8 233.22 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1543.62 1139.45 F  
 2609.52 3589.22 1142 F  
 Left Levee Station= 1543.62 Elevation= 1139.45  
 Right Levee Station= 2609.52 Elevation= 1142

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 219.29

INPUT

Description:

| Station Elevation Data |         | num= 393 |         | Sta Elev |         | Sta Elev |         | Sta Elev |         |
|------------------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| Sta                    | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    |
| 0                      | 1136.98 | 171.26   | 1136.48 | 172.23   | 1136.47 | 182.35   | 1136.45 | 301.33   | 1136    |
| 427.87                 | 1135.32 | 431.34   | 1135.28 | 432.91   | 1135.24 | 434.38   | 1135.23 | 434.96   | 1135.22 |
| 445.68                 | 1135    | 697.86   | 1134.29 | 698.31   | 1134    | 749.27   | 1134.13 | 760.35   | 1134.34 |
| 794.29                 | 1134.87 | 801.32   | 1135    | 904.95   | 1134.33 | 907.79   | 1134    | 911.28   | 1133.07 |
| 911.56                 | 1133    | 912.31   | 1132.9  | 918.87   | 1132    | 919.9    | 1131.32 | 920.37   | 1131    |
| 921.32                 | 1130.37 | 921.88   | 1130    | 922.93   | 1129.32 | 923.43   | 1129    | 923.66   | 1128.85 |
| 924.99                 | 1128    | 925.91   | 1127.62 | 927.31   | 1127    | 928.34   | 1126.6  | 930.1    | 1126    |
| 931.46                 | 1125.46 | 932.25   | 1125.15 | 932.64   | 1125    | 941.09   | 1125.53 | 943.45   | 1126    |
| 944.66                 | 1126.74 | 945.11   | 1127    | 946.34   | 1127.76 | 946.74   | 1128    | 964.71   | 1127.15 |
| 966.04                 | 1127    | 973.57   | 1126.04 | 973.9    | 1126    | 974.17   | 1125.96 | 987.97   | 1124.05 |
| 988.29                 | 1124.01 | 1221.54  | 1123    | 1479.14  | 1123.57 | 1482.35  | 1124    | 1487.02  | 1125    |
| 1488.04                | 1125.22 | 1491.62  | 1126    | 1493.97  | 1126.68 | 1495.04  | 1127    | 1495.77  | 1127.22 |
| 1498.41                | 1128    | 1498.81  | 1128.12 | 1501.77  | 1129    | 1505.04  | 1130    | 1506.49  | 1130.47 |
| 1508.16                | 1131    | 1510.53  | 1131.78 | 1511.23  | 1132    | 1512.76  | 1132.5  | 1514.21  | 1133    |
| 1514.74                | 1133.19 | 1517.11  | 1134    | 1519.82  | 1134.89 | 1520.17  | 1135    | 1520.94  | 1135.26 |
| 1523.19                | 1136    | 1524.9   | 1136.57 | 1526.2   | 1137    | 1528.99  | 1137.93 | 1529.21  | 1138    |
| 1529.58                | 1138.08 | 1534.06  | 1139    | 1535.1   | 1139.22 | 1538.92  | 1140    | 1554.67  | 1139.24 |
| 1555.35                | 1139    | 1558.17  | 1138    | 1560.94  | 1137    | 1561.02  | 1136.97 | 1563.65  | 1136    |
| 1566.1                 | 1135.08 | 1566.32  | 1135    | 1566.61  | 1134.89 | 1569.12  | 1134    | 1571.22  | 1133.37 |
| 1573.4                 | 1132.71 | 1575.71  | 1132    | 1578.26  | 1131.19 | 1578.88  | 1131    | 1580.78  | 1130.37 |
| 1581.91                | 1130    | 1593.9   | 1129    | 1594.37  | 1128.78 | 1595.52  | 1128.22 | 1595.98  | 1128    |
| 1596.17                | 1127.86 | 1596.59  | 1127.54 | 1597.32  | 1127    | 1597.51  | 1126.52 | 1597.72  | 1126    |
| 1598.19                | 1125.36 | 1598.34  | 1125.14 | 1598.44  | 1125    | 1598.57  | 1124.94 | 1600.71  | 1124    |
| 1602                   | 1123.53 | 1602.59  | 1123.32 | 1603.48  | 1123    | 1604.3   | 1122.03 | 1605.13  | 1121    |
| 1610.66                | 1120.46 | 1615     | 1120    | 1625.57  | 1119.19 | 1628.1   | 1119    | 1657.77  | 1118    |
| 1697.15                | 1117.83 | 1698.63  | 1117.82 | 1701.21  | 1117.81 | 1704.5   | 1117.79 | 1707.41  | 1117.74 |
| 1707.59                | 1117.75 | 1742.06  | 1117.69 | 1845.62  | 1117.14 | 1862.11  | 1117    | 1883.76  | 1116.45 |
| 1885.62                | 1116.42 | 1888.6   | 1116.32 | 1889.65  | 1116.3  | 1898.48  | 1115.99 | 1898.89  | 1115.96 |
| 1907.73                | 1115.46 | 1915.31  | 1115    | 1940.02  | 1114    | 2001.69  | 1114.83 | 2004.11  | 1115    |
| 2024.4                 | 1115.23 | 2080.89  | 1116    | 2145.29  | 1115.37 | 2147.97  | 1115.36 | 2160.62  | 1115.35 |
| 2160.84                | 1115.34 | 2222.14  | 1115.44 | 2222.78  | 1115.45 | 2312.05  | 1116    | 2350.81  | 1116.05 |
| 2356.8                 | 1116.57 | 2362.26  | 1117    | 2379.34  | 1117.01 | 2381.14  | 1117.02 | 2382.27  | 1117.03 |
| 2382.86                | 1117.05 | 2383.92  | 1117.07 | 2387.21  | 1117.12 | 2390.83  | 1117.19 | 2394.56  | 1117.28 |
| 2398.62                | 1117.37 | 2423.96  | 1118    | 2516.49  | 1117.87 | 2519.9   | 1117.76 | 2565.19  | 1117.81 |
| 2570.38                | 1117.98 | 2570.82  | 1118    | 2570.92  | 1118.11 | 2571.72  | 1118.95 | 2571.83  | 1119.08 |
| 2572.71                | 1120    | 2572.86  | 1120.16 | 2573.65  | 1121    | 2573.94  | 1121.3  | 2574.59  | 1122    |
| 2575.06                | 1122.51 | 2575.52  | 1123    | 2576.26  | 1123.68 | 2576.62  | 1124    | 2577.71  | 1124.72 |
| 2579.6                 | 1125.98 | 2580.9   | 1126.83 | 2581.15  | 1127    | 2582.31  | 1127.77 | 2582.66  | 1128    |
| 2602.99                | 1128.01 | 2605.2   | 1129    | 2606.66  | 1129.64 | 2607.52  | 1130    | 2608.88  | 1130.86 |
| 2609.1                 | 1131    | 2609.68  | 1131.45 | 2610.94  | 1132.44 | 2611.66  | 1133    | 2612.34  | 1133.52 |
| 2612.98                | 1134    | 2613.67  | 1134.53 | 2614.29  | 1135    | 2615.52  | 1135.97 | 2616.76  | 1137    |
| 2617.95                | 1138    | 2619.15  | 1139    | 2619.64  | 1139.41 | 2620.19  | 1139.86 | 2620.35  | 1140    |
| 2620.45                | 1140.08 | 2621.55  | 1141    | 2642.24  | 1140.54 | 2647.11  | 1139.47 | 2649.19  | 1139    |
| 2651.35                | 1138.5  | 2653.57  | 1138    | 2657.18  | 1137.25 | 2658.42  | 1137    | 2659.72  | 1136.75 |
| 2663.53                | 1136    | 2666.15  | 1135.53 | 2669.07  | 1135    | 2675.18  | 1134.02 | 2675.27  | 1134    |
| 2676.18                | 1133.86 | 2681.62  | 1133    | 2682.15  | 1132.93 | 2688.88  | 1132    | 2698.72  | 1131    |
| 2707.87                | 1130    | 2723.04  | 1129.09 | 2724.64  | 1129    | 2727.99  | 1128.82 | 2738.96  | 1128.21 |
| 2742.62                | 1128    | 2749.83  | 1127.84 | 2755.63  | 1127.73 | 2757.26  | 1127.71 | 2759.2   | 1127.68 |
| 2764.44                | 1127.61 | 2780.94  | 1127.64 | 2794.43  | 1127.85 | 2802.47  | 1127.96 | 2802.56  | 1127.97 |
| 2804.7                 | 1128    | 2809.2   | 1128.1  | 2810.29  | 1128.13 | 2811.5   | 1128.18 | 2813.1   | 1128.22 |
| 2813.88                | 1128.26 | 2817.46  | 1128.41 | 2823.43  | 1128.64 | 2830.46  | 1128.96 | 2830.77  | 1128.98 |
| 2831.24                | 1129    | 2841.9   | 1130    | 2842.85  | 1130.08 | 2848.26  | 1130.58 | 2852.61  | 1131    |
| 2866.53                | 1132.22 | 2873.49  | 1132.8  | 2876.04  | 1133    | 2889.42  | 1134    | 2891.32  | 1134.13 |
| 2903.1                 | 1135    | 2903.99  | 1135.11 | 2911.38  | 1136    | 2917.68  | 1136.85 | 2918.77  | 1137    |
| 2919.93                | 1137.13 | 2927.58  | 1138    | 2931.08  | 1138.48 | 2934.8   | 1139    | 2937.94  | 1139.73 |
| 2939.07                | 1140    | 2943.13  | 1141    | 2944.11  | 1141.25 | 2947.22  | 1142    | 2949.93  | 1142.55 |
| 2952.38                | 1143    | 2977.06  | 1143.53 | 3005.46  | 1144.08 | 3012.77  | 1144.21 | 3067.15  | 1144.15 |
| 3074.31                | 1144    | 3078.62  | 1143.86 | 3103.5   | 1143    | 3109.38  | 1142.03 | 3109.57  | 1142    |
| 3109.71                | 1141.97 | 3119.37  | 1140.02 | 3119.47  | 1140    | 3119.58  | 1139.98 | 3124.43  | 1139    |
| 3124.92                | 1138.95 | 3125.76  | 1138.88 | 3134.82  | 1138.07 | 3135.96  | 1138    | 3176.14  | 1137.7  |
| 3179.77                | 1137.66 | 3209.96  | 1137.49 | 3211.4   | 1137.48 | 3240.11  | 1137.06 | 3243.82  | 1137    |
| 3248.86                | 1136.81 | 3260.92  | 1136.39 | 3272.88  | 1136    | 3274.45  | 1135.84 | 3282.88  | 1135    |
| 3289.31                | 1134.29 | 3292     | 1134    | 3297.03  | 1133.41 | 3300.08  | 1133.06 | 3300.57  | 1133    |
| 3309.13                | 1132.01 | 3309.21  | 1132    | 3309.31  | 1131.99 | 3319.08  | 1131    | 3323.88  | 1130.6  |
| 3331.28                | 1130    | 3344.65  | 1129.58 | 3347.98  | 1129.52 | 3349     | 1129.54 | 3350.09  | 1129.57 |
| 3352.55                | 1129.67 | 3352.68  | 1129.66 | 3353.88  | 1129.7  | 3355.25  | 1129.73 | 3360.54  | 1129.87 |
| 3361.2                 | 1129.89 | 3365.33  | 1130    | 3367.44  | 1130.09 | 3367.97  | 1130.12 | 3369.72  | 1130.19 |
| 3373.21                | 1130.38 | 3375.76  | 1130.54 | 3377.6   | 1130.66 | 3381.63  | 1131    | 3382.05  | 1131.03 |
| 3382.23                | 1131.05 | 3382.87  | 1131.11 | 3388.61  | 1131.58 | 3393.23  | 1132    | 3399.23  | 1132.53 |
| 3403.61                | 1132.86 | 3405.56  | 1133    | 3408.51  | 1133.22 | 3410.04  | 1133.35 | 3412.87  | 1133.56 |
| 3416.96                | 1133.92 | 3417.25  | 1133.94 | 3417.89  | 1134    | 3421.08  | 1134.29 | 3423.15  | 1134.5  |
| 3425.28                | 1134.74 | 3429.48  | 1135.2  | 3431.05  | 1135.38 | 3433.71  | 1135.68 | 3437.38  | 1136    |
| 3438.83                | 1136.13 | 3440.06  | 1136.23 | 3444.22  | 1136.59 | 3451.91  | 1137.32 | 3456.12  | 1137.7  |
| 3461.33                | 1138.24 | 3462.96  | 1138.4  | 3464.23  | 1138.51 | 3466.2   | 1138.66 | 3467.9   | 1138.76 |
| 3471.54                | 1139    | 3471.86  | 1139.02 | 3476.07  | 1139.29 | 3477.7   | 1139.4  | 3480.61  | 1139.62 |
| 3482.89                | 1139.78 | 3487.29  | 1140.12 | 3488.12  | 1140.19 | 3491.39  | 1140.43 | 3493.43  | 1140.56 |
| 3495.19                | 1140.68 | 3497.37  | 1140.8  | 3498.12  | 1140.85 | 3500.74  | 1141    | 3503.71  | 1141.1  |
| 3504.34                | 1141.14 | 3505.32  | 1141.2  | 3510.37  | 1141.42 | 3513.88  | 1141.63 | 3516.18  | 1141.71 |
| 3519.44                | 1141.93 | 3519.81  | 1141.95 | 3521.08  | 1142    |          |         |          |         |

anning's n Values

| Sta | n Val | Sta     | n Val | Sta     | n Val |
|-----|-------|---------|-------|---------|-------|
| 0   | .04   | 1554.67 | .039  | 2621.55 | .04   |

Proposed\_SkyHarbor.rep

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1554.67 2621.55 222.62 237.04 251.46 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1554.67 1139.24 F  
 2621.55 3521.08 1141 F  
 Left Levee Station= 1554.67 Elevation= 1139.24  
 Right Levee Station= 2621.55 Elevation= 1141

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 219.24

INPUT

Description:

| Station | Elevation | Data    | num=    | 427     | Station | Elevation | Station | Elevation | Station | Elevation |
|---------|-----------|---------|---------|---------|---------|-----------|---------|-----------|---------|-----------|
| 0       | 1138.15   | 1.01    | 1138.07 | 1.13    | 1138.06 | 1.78      | 1138    | 81.72     | 1137.84 |           |
| 90.11   | 1137.94   | 90.31   | 1137.91 | 91.06   | 1137.82 | 91.48     | 1137.81 | 94.03     | 1137.67 |           |
| 96.93   | 1137.21   | 97.83   | 1137.13 | 98.34   | 1137    | 99.09     | 1136.86 | 99.37     | 1136.84 |           |
| 102.37  | 1136.41   | 103.68  | 1136.24 | 107.22  | 1137    | 151.06    | 1136.83 | 152.48    | 1136.82 |           |
| 180.14  | 1136.69   | 188.01  | 1136.67 | 238.22  | 1136.46 | 239.47    | 1136.45 | 249.65    | 1136.42 |           |
| 339.92  | 1136.05   | 340.94  | 1136.04 | 350.98  | 1136    | 473.78    | 1135.23 | 524.55    | 1135    |           |
| 637.27  | 1135.14   | 650.89  | 1135.67 | 657.61  | 1136    | 660.94    | 1136.64 | 661.58    | 1137    |           |
| 663.16  | 1137.84   | 663.4   | 1137.99 | 665.34  | 1138.74 | 665.92    | 1139    | 668.47    | 1138.9  |           |
| 668.74  | 1138.89   | 669.9   | 1138.6  | 670.08  | 1138.57 | 672.53    | 1138.68 | 673.47    | 1139    |           |
| 674.81  | 1138.99   | 676.73  | 1138    | 677.87  | 1137.65 | 680.22    | 1137    | 699.07    | 1136.67 |           |
| 699.49  | 1136.34   | 699.97  | 1136    | 712.62  | 1135.53 | 715.34    | 1135.36 | 715.8     | 1135.33 |           |
| 720.23  | 1135      | 870.01  | 1135.24 | 875.27  | 1135.42 | 877.22    | 1135.49 | 891.76    | 1135.98 |           |
| 892.29  | 1136      | 918.48  | 1135.34 | 926.67  | 1135    | 959.59    | 1134.46 | 960.97    | 1134.41 |           |
| 962.96  | 1134.42   | 964.14  | 1134.43 | 969.72  | 1134    | 974.28    | 1133.48 | 977.61    | 1133    |           |
| 979.67  | 1132.54   | 982.51  | 1132    | 985.19  | 1131.4  | 987.02    | 1131    | 992       | 1130.77 |           |
| 992.32  | 1130.74   | 997.77  | 1130.02 | 997.92  | 1130    | 1005.56   | 1129    | 1008.6    | 1128.55 |           |
| 1012    | 1128      | 1012.19 | 1127.97 | 1016.96 | 1127    | 1017.31   | 1126.93 | 1021.63   | 1126    |           |
| 1025.53 | 1125.26   | 1026.92 | 1125    | 1028.2  | 1124.8  | 1033.26   | 1124    | 1061.09   | 1123    |           |
| 1482.5  | 1123.86   | 1501.8  | 1124    | 1524.94 | 1124.31 | 1527.84   | 1124.53 | 1533.87   | 1125    |           |
| 1536.13 | 1125.6    | 1537.67 | 1126    | 1541.35 | 1126.97 | 1541.46   | 1127    | 1545.25   | 1128    |           |
| 1545.94 | 1128.18   | 1549.03 | 1129    | 1552.65 | 1130    | 1555.68   | 1130.85 | 1556.23   | 1131    |           |
| 1559.8  | 1132      | 1559.91 | 1132.03 | 1563.37 | 1133    | 1564.89   | 1133.43 | 1566.89   | 1134    |           |
| 1568.55 | 1134.48   | 1570.32 | 1135    | 1574.09 | 1135.99 | 1574.36   | 1136.06 | 1578.05   | 1137    |           |
| 1580.95 | 1137.73   | 1582    | 1138    | 1583.14 | 1138.29 | 1586.02   | 1139    | 1605.46   | 1138.32 |           |
| 1606.32 | 1138      | 1608    | 1137.41 | 1609.16 | 1137    | 1610.53   | 1136.55 | 1612.16   | 1136    |           |
| 1614.38 | 1135.2    | 1614.95 | 1135    | 1615.46 | 1134.82 | 1617.71   | 1134    | 1620.78   | 1133.07 |           |
| 1621    | 1133      | 1627.61 | 1131.08 | 1627.89 | 1131    | 1628.41   | 1130.85 | 1631.31   | 1130    |           |
| 1643.35 | 1129      | 1644.75 | 1128.29 | 1645.29 | 1128    | 1645.68   | 1127.63 | 1646.3    | 1127    |           |
| 1646.43 | 1126.87   | 1647.26 | 1126    | 1648.19 | 1125.42 | 1648.9    | 1125    | 1650.71   | 1124.09 |           |
| 1650.89 | 1124      | 1651.06 | 1123.88 | 1651.21 | 1123.78 | 1652.34   | 1123    | 1653.15   | 1122.38 |           |
| 1653.63 | 1122      | 1654.7  | 1121.8  | 1658.94 | 1121    | 1667.11   | 1120.05 | 1667.51   | 1120    |           |
| 1668.09 | 1119.93   | 1676.05 | 1119    | 1685.62 | 1118    | 1690.34   | 1117.63 | 1692.03   | 1117.51 |           |
| 1694.84 | 1117.3    | 1699.52 | 1117    | 1711.64 | 1116.84 | 1714.65   | 1116.79 | 1770.68   | 1116    |           |
| 1879.13 | 1115.88   | 1880.44 | 1115.84 | 1900.14 | 1115.15 | 1901.43   | 1115.11 | 1904.4    | 1115    |           |
| 1913.72 | 1114.7    | 1916.7  | 1114.61 | 1935.1  | 1114    | 1938.3    | 1113.97 | 1938.67   | 1113.96 |           |
| 1940.92 | 1113.94   | 2034.61 | 1113    | 2058.93 | 1113.63 | 2062.11   | 1113.87 | 2063.71   | 1114    |           |
| 2068.33 | 1114.18   | 2087.89 | 1115    | 2165    | 1115.44 | 2232.88   | 1116    | 2318.73   | 1116.17 |           |
| 2329.6  | 1116.28   | 2335.77 | 1116.33 | 2341.64 | 1116.39 | 2344.61   | 1116.41 | 2416.24   | 1117.12 |           |
| 2418.3  | 1117.16   | 2422.22 | 1117.26 | 2456.52 | 1118    | 2514.97   | 1117.92 | 2515.61   | 1117.91 |           |
| 2516.41 | 1117.9    | 2517.41 | 1117.89 | 2518.34 | 1117.87 | 2519.48   | 1117.85 | 2521.02   | 1117.83 |           |
| 2522.98 | 1117.79   | 2524.9  | 1117.76 | 2565.09 | 1117    | 2565.92   | 1116.97 | 2574.96   | 1116.6  |           |
| 2606.51 | 1116.61   | 2613.26 | 1116.85 | 2617.27 | 1117    | 2617.83   | 1117.26 | 2619.05   | 1118    |           |
| 2619.85 | 1118.45   | 2620.74 | 1119    | 2621.46 | 1119.54 | 2622.12   | 1120    | 2623.02   | 1120.71 |           |
| 2623.62 | 1121.29   | 2624.36 | 1122    | 2624.83 | 1122.46 | 2625.39   | 1123    | 2626.57   | 1123.97 |           |
| 2626.77 | 1124.11   | 2628.03 | 1125    | 2628.14 | 1125.08 | 2628.97   | 1125.66 | 2629.46   | 1126    |           |
| 2629.67 | 1126.15   | 2630.88 | 1127    | 2631.78 | 1127.64 | 2632.29   | 1128    | 2632.61   | 1128.23 |           |
| 2632.92 | 1128.44   | 2633.71 | 1129    | 2645.7  | 1128.14 | 2645.92   | 1128    | 2646.41   | 1127.67 |           |
| 2647.45 | 1127      | 2653.01 | 1127.74 | 2653.51 | 1128    | 2655.24   | 1128.95 | 2655.33   | 1129    |           |
| 2655.61 | 1129.16   | 2657.13 | 1130    | 2657.57 | 1130.31 | 2658.51   | 1131    | 2659.48   | 1131.73 |           |
| 2659.84 | 1132      | 2660.78 | 1132.71 | 2661.17 | 1133    | 2661.35   | 1133.14 | 2662.49   | 1134    |           |
| 2663.24 | 1134.56   | 2663.82 | 1135    | 2664.07 | 1135.18 | 2665.2    | 1136    | 2666.06   | 1136.58 |           |
| 2666.68 | 1137      | 2667.44 | 1137.53 | 2668.11 | 1138    | 2668.56   | 1138.32 | 2669.52   | 1139    |           |
| 2669.99 | 1139.33   | 2670.93 | 1140    | 2671.65 | 1140.52 | 2672.18   | 1140.9  | 2672.31   | 1141    |           |
| 2690.28 | 1140.05   | 2690.73 | 1140    | 2690.82 | 1139.98 | 2695.16   | 1139    | 2696.5    | 1138.69 |           |
| 2702.53 | 1137.32   | 2703.91 | 1137    | 2708.22 | 1136.07 | 2708.54   | 1136    | 2708.84   | 1135.94 |           |
| 2713.23 | 1135      | 2717.81 | 1134    | 2722.96 | 1133    | 2728.24   | 1132    | 2733.76   | 1131.12 |           |
| 2734.52 | 1131      | 2735.77 | 1130.84 | 2747.65 | 1129.34 | 2750.31   | 1129    | 2765.73   | 1127.35 |           |
| 2769.08 | 1127      | 2783.66 | 1126.23 | 2787.85 | 1126    | 2811.39   | 1126.04 | 2915.58   | 1126.88 |           |
| 2925.57 | 1126.98   | 2927.32 | 1127    | 2935.37 | 1127.53 | 2937.1    | 1127.65 | 2942.35   | 1128    |           |
| 2946.08 | 1128.32   | 2954.64 | 1128.99 | 2954.81 | 1129.01 | 2961.18   | 1130    | 2965.58   | 1130.62 |           |
| 2968.38 | 1131      | 2977.88 | 1131.93 | 2978.51 | 1131.99 | 2978.65   | 1132    | 2978.94   | 1132.03 |           |
| 2989.7  | 1133.07   | 2994.45 | 1133.51 | 3006.34 | 1134.53 | 3012.03   | 1135    | 3016.28   | 1135.3  |           |
| 3022.04 | 1135.63   | 3025.1  | 1135.82 | 3028.61 | 1136    | 3032.34   | 1136.18 | 3037.09   | 1136.39 |           |
| 3038.35 | 1136.47   | 3041.02 | 1136.57 | 3046.84 | 1136.99 | 3047.06   | 1137    | 3050.4    | 1137.24 |           |
| 3052.52 | 1137.36   | 3056.25 | 1137.6  | 3062.72 | 1137.93 | 3063.04   | 1137.95 | 3064.09   | 1138    |           |
| 3080.75 | 1138.3    | 3086.49 | 1138.57 | 3091.17 | 1138.8  | 3095.55   | 1139    | 3110.36   | 1139.62 |           |
| 3118.79 | 1140      | 3120.53 | 1140.06 | 3121.06 | 1140.07 | 3128.25   | 1140.29 | 3130.93   | 1140.32 |           |
| 3142.32 | 1140.54   | 3148.98 | 1140.7  | 3149.76 | 1140.72 | 3152.54   | 1140.78 | 3155.89   | 1140.84 |           |
| 3157.88 | 1140.86   | 3161.79 | 1140.85 | 3162.01 | 1140.84 | 3164.02   | 1140.82 | 3170.38   | 1140.73 |           |

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 3172.15 | 1140.71 | 3176.25 | 1140.63 | 3177.57 | 1140.6  | 3181.61 | 1140.54 | 3183.26 | 1140.51 |
| 3188.93 | 1140.42 | 3220.22 | 1139.72 | 3221.8  | 1139.65 | 3226.45 | 1139.4  | 3233.21 | 1139    |
| 3236.37 | 1138.79 | 3237.44 | 1138.73 | 3239.19 | 1138.62 | 3249.14 | 1138.02 | 3249.28 | 1138.01 |
| 3249.41 | 1138    | 3257.88 | 1137.22 | 3260.18 | 1137    | 3270.93 | 1137.22 | 3273.5  | 1137.37 |
| 3284.53 | 1138    | 3299.59 | 1137.79 | 3302.88 | 1137    | 3306.1  | 1136.88 | 3306.68 | 1136.87 |
| 3311.58 | 1136.7  | 3315.61 | 1136.57 | 3321.21 | 1136.49 | 3339.44 | 1136    | 3438.87 | 1135.63 |
| 3439.81 | 1135.59 | 3443.01 | 1135.46 | 3444.14 | 1135.41 | 3444.81 | 1135.42 | 3447.39 | 1135.29 |
| 3453.2  | 1135.01 | 3453.35 | 1135    | 3455.28 | 1134.86 | 3467.36 | 1134    | 3475.7  | 1133.07 |
| 3476.22 | 1133.02 | 3476.37 | 1133    | 3476.79 | 1132.96 | 3486.1  | 1132    | 3488.73 | 1131.77 |
| 3492.09 | 1131.47 | 3497.22 | 1131    | 3501.3  | 1130.6  | 3507.19 | 1130    | 3510.58 | 1129.61 |
| 3516.13 | 1129    | 3524.68 | 1128    | 3529.1  | 1127.4  | 3532    | 1127    | 3536.99 | 1126.33 |
| 3539.38 | 1126    | 3544    | 1125.38 | 3546.87 | 1125    | 3555.59 | 1124    | 3574.14 | 1122    |
| 3584.71 | 1121.23 | 3588.23 | 1121    | 3595.31 | 1120.59 | 3605.16 | 1120    | 3613.69 | 1119.66 |
| 3629.48 | 1119    | 3656.19 | 1118.46 | 3657.57 | 1118.44 | 3660.7  | 1118.38 | 3663.27 | 1118.35 |
| 3665.91 | 1118.3  | 3668.27 | 1118.26 | 3671.3  | 1118.23 | 3675.19 | 1118.18 | 3675.69 | 1118.17 |
| 3678.1  | 1118.16 | 3678.46 | 1118.15 | 3679.18 | 1118.14 | 3680.14 | 1118.12 | 3680.84 | 1118.11 |
| 3681.88 | 1118.1  | 3684.09 | 1118.09 |         |         |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 1605.46 .039 2672.31 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1605.46 2672.31 250.34 250.34 250.34 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1605.46 1138.32 F  
 2672.31 3684.09 1141 F  
 Left Levee Station= 1605.46 Elevation= 1138.32  
 Right Levee Station= 2672.31 Elevation= 1141

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 219.19

INPUT

Description:  
 Station Elevation Data num= 384

| Sta     | Elev    |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0       | 1136    | 235.12  | 1135.85 | 235.7   | 1135.86 | 237.17  | 1135.8  | 240.93  | 1135.78 |
| 243.54  | 1135.71 | 246.35  | 1135.68 | 249.77  | 1135.59 | 253.8   | 1135.55 | 255.22  | 1135.51 |
| 258.89  | 1135.42 | 273.25  | 1135.26 | 274.42  | 1135.27 | 278.49  | 1135.24 | 279.67  | 1135.25 |
| 283.27  | 1135.24 | 288.72  | 1135.25 | 292.11  | 1135.27 | 309.04  | 1135.4  | 328.1   | 1135.48 |
| 329.97  | 1135.47 | 335.36  | 1135.46 | 337.32  | 1135.45 | 343.82  | 1135.39 | 345.18  | 1135.38 |
| 346.8   | 1135.35 | 354.28  | 1135.28 | 355.98  | 1135.25 | 361.16  | 1135.21 | 365.26  | 1135.15 |
| 379.91  | 1135.06 | 380.8   | 1135.05 | 387.22  | 1135    | 397.72  | 1134.97 | 398.93  | 1134.93 |
| 399.47  | 1135    | 434.94  | 1134.44 | 435.54  | 1134.42 | 436.17  | 1134.41 | 441.61  | 1134.34 |
| 441.85  | 1134.33 | 443.72  | 1134.31 | 452.09  | 1134    | 486.3   | 1134.09 | 488.87  | 1134.11 |
| 499.28  | 1134.24 | 502.79  | 1134.27 | 507.32  | 1134.3  | 555.94  | 1134.74 | 578.73  | 1135    |
| 868.66  | 1134.15 | 882.07  | 1134    | 994.68  | 1134.24 | 1028.2  | 1135    | 1034.06 | 1134.29 |
| 1035.42 | 1134    | 1038.05 | 1133.21 | 1038.73 | 1133    | 1042.03 | 1132    | 1045.18 | 1131.46 |
| 1047.37 | 1131    | 1053.1  | 1130.24 | 1055.05 | 1130    | 1061.6  | 1129.17 | 1065.85 | 1128.65 |
| 1079.17 | 1127    | 1079.51 | 1126.96 | 1080.01 | 1126.9  | 1087.3  | 1126    | 1092.13 | 1125.55 |
| 1098.26 | 1125    | 1117.14 | 1124    | 1122.71 | 1123.83 | 1124.07 | 1123.81 | 1132.08 | 1123.6  |
| 1142.71 | 1123.43 | 1146.65 | 1123.35 | 1152.62 | 1123.24 | 1163.67 | 1123.08 | 1169.8  | 1123.02 |
| 1174.97 | 1123.01 | 1192.88 | 1123.04 | 1200.68 | 1123    | 1307.27 | 1123.13 | 1319.64 | 1123.16 |
| 1320.49 | 1123.17 | 1340.41 | 1123.23 | 1344.33 | 1123.25 | 1355.15 | 1123.27 | 1378.4  | 1123    |
| 1538.85 | 1123.47 | 1544.53 | 1124    | 1551.38 | 1124.68 | 1554.55 | 1125    | 1555.53 | 1125.2  |
| 1558.84 | 1126    | 1561.24 | 1126.6  | 1562.87 | 1127    | 1564.13 | 1127.32 | 1566.86 | 1128    |
| 1570.78 | 1129    | 1574.32 | 1129.98 | 1577.78 | 1131    | 1581.09 | 1131.99 | 1584.3  | 1133    |
| 1587.03 | 1133.87 | 1587.41 | 1134    | 1587.63 | 1134.07 | 1590.47 | 1135    | 1593.56 | 1135.83 |
| 1593.94 | 1135.93 | 1594.21 | 1136    | 1594.39 | 1136.04 | 1598.73 | 1137    | 1599.42 | 1137.15 |
| 1607.63 | 1138.96 | 1607.79 | 1139    | 1622.76 | 1138.57 | 1624.59 | 1138    | 1626.9  | 1137.27 |
| 1627.74 | 1137    | 1628.97 | 1136.58 | 1630.7  | 1136    | 1631.12 | 1135.86 | 1636.38 | 1134.06 |
| 1636.55 | 1134    | 1636.92 | 1133.88 | 1639.51 | 1133    | 1645.67 | 1131    | 1646.36 | 1130.78 |
| 1648.75 | 1130    | 1652.79 | 1129.49 | 1656.59 | 1129    | 1660.35 | 1128.28 | 1661.84 | 1128    |
| 1663.18 | 1127.31 | 1665.15 | 1126.29 | 1665.7  | 1126    | 1666.24 | 1125.72 | 1667.61 | 1125    |
| 1668.55 | 1124.5  | 1669.45 | 1124    | 1670.07 | 1123.66 | 1671.28 | 1123    | 1674.37 | 1121.32 |
| 1674.96 | 1121    | 1675.88 | 1120.46 | 1676.43 | 1120.13 | 1676.67 | 1120    | 1677.76 | 1119.9  |
| 1679.07 | 1119.77 | 1687.07 | 1119    | 1712.83 | 1117    | 1725.7  | 1116.39 | 1735.65 | 1116    |
| 1750.67 | 1115.26 | 1753.44 | 1115.08 | 1754.71 | 1115    | 1773.93 | 1114.37 | 1783.05 | 1114    |
| 1784.31 | 1113.97 | 1795.84 | 1113.8  | 1796.87 | 1113.79 | 1798.92 | 1113.75 | 1834.76 | 1113.53 |
| 1891.33 | 1113.54 | 1930.35 | 1113.21 | 1948.9  | 1113    | 2098.78 | 1113.4  | 2109.67 | 1114    |
| 2137.02 | 1114.82 | 2142.67 | 1115    | 2169.44 | 1115.54 | 2182.35 | 1115.77 | 2183.75 | 1115.79 |
| 2195.83 | 1116    | 2227.42 | 1116.41 | 2229.5  | 1116.44 | 2233.32 | 1116.48 | 2267.67 | 1116.91 |
| 2268.69 | 1116.92 | 2274.35 | 1117    | 2581.39 | 1116.21 | 2582.61 | 1116    | 2632.35 | 1116.72 |
| 2634.46 | 1117    | 2635.12 | 1117.36 | 2636.27 | 1118    | 2637.13 | 1118.49 | 2638.04 | 1119    |
| 2639.78 | 1119.99 | 2641.57 | 1121    | 2642.3  | 1121.51 | 2643.03 | 1122    | 2643.87 | 1122.63 |
| 2644.36 | 1123    | 2644.87 | 1123.39 | 2645.68 | 1124    | 2646.55 | 1124.65 | 2647    | 1125    |
| 2647.63 | 1125.48 | 2648.33 | 1126    | 2649.5  | 1126.88 | 2649.65 | 1127    | 2650.9  | 1127.94 |
| 2664.9  | 1127.05 | 2664.98 | 1127    | 2670.53 | 1127.89 | 2670.76 | 1128    | 2670.91 | 1128.07 |
| 2671.66 | 1128.44 | 2672.81 | 1129    | 2673.2  | 1129.21 | 2674.63 | 1130    | 2675.7  | 1130.72 |
| 2676.11 | 1131    | 2677.08 | 1131.66 | 2677.59 | 1132    | 2677.69 | 1132.07 | 2679.07 | 1133    |
| 2679.44 | 1133.25 | 2680.56 | 1134    | 2681.56 | 1134.68 | 2682.04 | 1135    | 2683.32 | 1135.84 |
| 2683.57 | 1136    | 2685.17 | 1137    | 2685.68 | 1137.32 | 2687.86 | 1138.68 | 2688.38 | 1139    |
| 2688.79 | 1139.25 | 2689.99 | 1140    | 2701.73 | 1139.82 | 2707.45 | 1139    | 2710.08 | 1138.34 |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2717.29 | 1136.51 | 2719.32 | 1136    | 2722.52 | 1135.19 | 2723.26 | 1135    | 2725.32 | 1134.44 |
| 2726.9  | 1134    | 2727.34 | 1133.87 | 2730.34 | 1133    | 2731.5  | 1132.67 | 2733.8  | 1132    |
| 2737.03 | 1131.08 | 2737.3  | 1131    | 2741.25 | 1130.34 | 2743.19 | 1130    | 2807.06 | 1129.87 |
| 2836.31 | 1129    | 2838.11 | 1128.82 | 2839.13 | 1128.71 | 2841.8  | 1128.44 | 2844.7  | 1128.16 |
| 2845.12 | 1128.11 | 2846.26 | 1128    | 2852.43 | 1127.38 | 2856.37 | 1127    | 2858.23 | 1126.81 |
| 2858.68 | 1126.79 | 2860.62 | 1126.7  | 2864.42 | 1126.43 | 2867    | 1126.33 | 2868.73 | 1126.23 |
| 2871.19 | 1126.11 | 2873.29 | 1126    | 3017.82 | 1126.14 | 3018.22 | 1126.16 | 3019.1  | 1126.22 |
| 3023.62 | 1126.25 | 3024.31 | 1126.34 | 3024.91 | 1126.42 | 3026.82 | 1126.45 | 3027.45 | 1126.55 |
| 3028.85 | 1126.52 | 3029.43 | 1126.63 | 3030.02 | 1126.54 | 3030.58 | 1126.65 | 3031    | 1126.54 |
| 3031.94 | 1126.76 | 3032.34 | 1126.59 | 3032.92 | 1126.48 | 3033.73 | 1126    | 3039.01 | 1126.07 |
| 3039.37 | 1126.5  | 3039.79 | 1127    | 3039.92 | 1127.14 | 3040.65 | 1128    | 3041.89 | 1128.25 |
| 3043.6  | 1128.95 | 3043.74 | 1129    | 3051.02 | 1129.62 | 3054.52 | 1130    | 3060.91 | 1130.67 |
| 3062.22 | 1130.81 | 3064.17 | 1131    | 3076.76 | 1131.36 | 3100.63 | 1132    | 3111.47 | 1133    |
| 3115.07 | 1133.57 | 3117.99 | 1134    | 3129.81 | 1134.56 | 3138.57 | 1135    | 3166.14 | 1134.71 |
| 3168.33 | 1134.51 | 3175.33 | 1134.39 | 3177.86 | 1134.49 | 3185.32 | 1134.51 | 3196.4  | 1134.46 |
| 3198.95 | 1134.54 | 3202.72 | 1134.65 | 3209.34 | 1134.83 | 3211.36 | 1134.89 | 3212.3  | 1134.91 |
| 3213.94 | 1134.95 | 3214.8  | 1134.96 | 3215.1  | 1134.97 | 3218.37 | 1135    | 3220.08 | 1135.01 |
| 3229.18 | 1135.09 | 3229.91 | 1135.1  | 3243.1  | 1135.22 | 3251.03 | 1135.17 | 3260.4  | 1135    |
| 3269.16 | 1134.79 | 3272.68 | 1134.65 | 3276.83 | 1134.54 | 3278.68 | 1134.48 | 3290.13 | 1134    |
| 3290.58 | 1133.98 | 3291.67 | 1134    | 3326.7  | 1134.58 | 3328.87 | 1134.84 | 3329.45 | 1135    |
| 3331.06 | 1135.46 | 3332.97 | 1136    | 3333.66 | 1136.21 | 3336.24 | 1137    | 3338.23 | 1137.6  |
| 3339.53 | 1138    | 3353.33 | 1137.06 | 3353.5  | 1137    | 3353.65 | 1136.95 | 3356.25 | 1136    |
| 3386.01 | 1135.39 | 3413.41 | 1135.2  | 3416.64 | 1135.21 | 3439.79 | 1135    | 3492.77 | 1134.84 |
| 3496.07 | 1134.64 | 3498.18 | 1134.49 | 3499.4  | 1134.4  | 3501.4  | 1134.28 | 3502    | 1134.25 |
| 3502.55 | 1134.22 | 3545.67 | 1134    | 3625.2  | 1133.94 | 3625.52 | 1133.93 | 3626.78 | 1133.87 |
| 3627.1  | 1133.85 | 3628.42 | 1133.79 | 3629.68 | 1133.72 | 3642.12 | 1133    | 3654.72 | 1132    |
| 3661.37 | 1131.2  | 3663.07 | 1131    | 3666.17 | 1130.66 | 3671.89 | 1130    | 3674.98 | 1129.68 |
| 3676.65 | 1129.55 | 3679    | 1129.33 | 3681.75 | 1129.12 | 3683.26 | 1129    | 3687.27 | 1128.6  |
| 3692.1  | 1128.21 | 3692.87 | 1128.15 | 3703.54 | 1127.52 | 3707.38 | 1127.32 | 3709.25 | 1127.21 |
| 3713.22 | 1127    | 3715.66 | 1126.86 | 3716.08 | 1126.84 | 3719.69 | 1126.62 |         |         |

|                    |              |             |
|--------------------|--------------|-------------|
| Manning's n Values | num=         | 3           |
| Sta n Val          | Sta n Val    | Sta n Val   |
| 0 .04              | 1622.76 .039 | 2689.99 .04 |

|                  |          |               |            |         |       |        |        |
|------------------|----------|---------------|------------|---------|-------|--------|--------|
| Bank Sta: Left   | Right    | Lengths: Left | Channel    | Right   | Coeff | Contr. | Expan. |
| 1622.76          | 2689.99  | 257.23        | 254.92     | 252.61  | .1    | .3     |        |
| Ineffective Flow | num=     | 2             |            |         |       |        |        |
| Sta L            | Sta R    | Elev          | Permanent  |         |       |        |        |
| 0                | 1622.76  | 1138.57       | F          |         |       |        |        |
| 2689.99          | 3719.69  | 1140          | F          |         |       |        |        |
| Left Levee       | Station= | 1622.76       | Elevation= | 1138.57 |       |        |        |
| Right Levee      | Station= | 2689.99       | Elevation= | 1140    |       |        |        |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 219.14

INPUT  
Description:

|                        |          |          |          |          |         |         |         |         |         |
|------------------------|----------|----------|----------|----------|---------|---------|---------|---------|---------|
| Station Elevation Data | num=     | 492      |          |          |         |         |         |         |         |
| Sta Elev               | Sta Elev | Sta Elev | Sta Elev | Sta Elev |         |         |         |         |         |
| 0                      | 1139.54  | 18.55    | 1139     | 54.21    | 1139.08 | 57.81   | 1139    | 62.62   | 1138.72 |
| 70.5                   | 1138     | 75.57    | 1137.65  | 77.91    | 1137.51 | 88.29   | 1137    | 92.64   | 1136.61 |
| 93.1                   | 1136.59  | 101.42   | 1136     | 104.12   | 1135.74 | 105.72  | 1135.55 | 106.52  | 1135.46 |
| 107                    | 1135.42  | 107.53   | 1135.38  | 108.46   | 1135.3  | 109.4   | 1135.26 | 112.2   | 1135    |
| 174.39                 | 1135.75  | 177      | 1136     | 203.42   | 1136.94 | 204.06  | 1137    | 291.36  | 1138.14 |
| 312.71                 | 1138.39  | 313.98   | 1138.4   | 377.58   | 1138.45 | 379.26  | 1138.38 | 382.08  | 1138.28 |
| 382.37                 | 1138.29  | 384.34   | 1138.21  | 384.57   | 1138.22 | 390.76  | 1138    | 397.67  | 1137.54 |
| 406.39                 | 1137     | 410.8    | 1136.26  | 412.26   | 1136    | 413.44  | 1135.8  | 418.51  | 1135    |
| 427.06                 | 1134     | 440.69   | 1133     | 444.73   | 1132.67 | 446.24  | 1132.58 | 455.27  | 1132    |
| 455.78                 | 1131.94  | 463.59   | 1131.6   | 465.91   | 1131.62 | 466.64  | 1131.63 | 471.36  | 1131.52 |
| 471.95                 | 1131.5   | 472.82   | 1131.46  | 475.18   | 1131.37 | 476.94  | 1131.32 | 477.55  | 1131.31 |
| 478.85                 | 1131.28  | 480.53   | 1131.26  | 486.22   | 1131.16 | 486.58  | 1131.15 | 488.17  | 1131.14 |
| 488.49                 | 1131.13  | 489.89   | 1131.14  | 490.79   | 1131.11 | 499.17  | 1131.15 | 499.39  | 1131.14 |
| 501.92                 | 1131.17  | 502.3    | 1131.15  | 506.31   | 1131.2  | 506.88  | 1131.18 | 514.93  | 1131.23 |
| 517.43                 | 1131.32  | 518.22   | 1131.33  | 522.8    | 1131.41 | 528.02  | 1131.62 | 528.82  | 1131.64 |
| 537.59                 | 1132     | 539.28   | 1132.05  | 562.07   | 1132.83 | 565.38  | 1132.92 | 565.65  | 1132.93 |
| 568.06                 | 1133     | 571.77   | 1133.09  | 599.32   | 1133.29 | 634.44  | 1133    | 708.62  | 1133.4  |
| 711.69                 | 1133.5   | 713.99   | 1133.56  | 727.84   | 1134.03 | 728.04  | 1134.04 | 733.79  | 1134.26 |
| 735.34                 | 1134.3   | 741.58   | 1134.52  | 746.58   | 1134.61 | 754.15  | 1134.69 | 756.21  | 1134.72 |
| 771.3                  | 1134.88  | 772.02   | 1134.89  | 776.59   | 1134.94 | 777.64  | 1134.93 | 784.12  | 1134.89 |
| 784.5                  | 1134.88  | 809.12   | 1134.92  | 811.77   | 1134.98 | 813.41  | 1135    | 816.88  | 1134.96 |
| 821.19                 | 1135     | 985.84   | 1135.89  | 986.24   | 1135.88 | 988.39  | 1135.86 | 989.44  | 1135.84 |
| 995.05                 | 1135.79  | 997.19   | 1135.75  | 1002.57  | 1135.7  | 1003.5  | 1135.68 | 1009.06 | 1135.64 |
| 1011.17                | 1135.59  | 1013.43  | 1135.55  | 1017.38  | 1135.53 | 1021.62 | 1135.63 | 1023.88 | 1135.56 |
| 1024.06                | 1135.55  | 1025.8   | 1135.58  | 1028.53  | 1135.46 | 1029.4  | 1135.45 | 1034.17 | 1135.22 |
| 1035.14                | 1135.18  | 1040.46  | 1134.9   | 1040.87  | 1134.91 | 1044.13 | 1134.78 | 1044.86 | 1134.8  |
| 1047.99                | 1134.71  | 1051.83  | 1134.74  | 1052.19  | 1134.75 | 1054.84 | 1134.77 | 1056.23 | 1134.8  |
| 1061.06                | 1134.86  | 1061.94  | 1134.88  | 1064.58  | 1134.9  | 1070.31 | 1134.91 | 1078.36 | 1135    |
| 1087.99                | 1134.99  | 1088.87  | 1134.96  | 1089.5   | 1134.93 | 1107    | 1134    | 1116.9  | 1133.28 |
| 1121.02                | 1133     | 1124.64  | 1132.69  | 1132.28  | 1132    | 1137.77 | 1131    | 1138.96 | 1130.79 |
| 1143.52                | 1130     | 1149.58  | 1129     | 1153.7   | 1128.36 | 1155.96 | 1128    | 1161.23 | 1127.18 |
| 1162.3                 | 1127     | 1172.39  | 1126.65  | 1194.44  | 1126    | 1428.55 | 1125.86 | 1435.24 | 1125.75 |
| 1439.9                 | 1125.72  | 1441.85  | 1125.68  | 1447.4   | 1125.65 | 1449.76 | 1125.59 | 1452.06 | 1125.58 |
| 1458.94                | 1125.41  | 1461.19  | 1125.39  | 1469.93  | 1125.17 | 1471.13 | 1125.15 | 1477.01 | 1125    |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1527.57 | 1125.12 | 1540.8  | 1125.34 | 1573.02 | 1126    | 1585.24 | 1127    | 1590.45 | 1128    |
| 1594.92 | 1129    | 1598.23 | 1129.98 | 1598.56 | 1130.07 | 1605.07 | 1132    | 1608.53 | 1133    |
| 1615.64 | 1135    | 1615.8  | 1135.05 | 1619.29 | 1136    | 1622.53 | 1136.76 | 1623.58 | 1137    |
| 1627.77 | 1138    | 1628.55 | 1138.19 | 1631.75 | 1139    | 1648.12 | 1138.3  | 1649.52 | 1138    |
| 1650.18 | 1137.82 | 1653.22 | 1137    | 1654.73 | 1136.62 | 1659.97 | 1135.34 | 1660.19 | 1135.31 |
| 1666.49 | 1135.12 | 1667.39 | 1135    | 1671.72 | 1134.96 | 1671.91 | 1134.94 | 1672.41 | 1134.75 |
| 1673.21 | 1134.54 | 1674.46 | 1134    | 1677.7  | 1132.55 | 1678.94 | 1132    | 1680.47 | 1131.31 |
| 1681.72 | 1130.74 | 1683.36 | 1130    | 1684.93 | 1129.28 | 1685.56 | 1129    | 1687.51 | 1128    |
| 1687.93 | 1127.77 | 1691.22 | 1126    | 1692.25 | 1125.29 | 1692.65 | 1125    | 1693.92 | 1124.03 |
| 1695.26 | 1123    | 1696.37 | 1122.13 | 1696.54 | 1122    | 1696.79 | 1121.8  | 1697.81 | 1121    |
| 1698.17 | 1120.72 | 1699.09 | 1120    | 1701.31 | 1119.61 | 1704.52 | 1119    | 1709.18 | 1118.18 |
| 1710.16 | 1118    | 1712.99 | 1117.76 | 1722.66 | 1117    | 1736.79 | 1116.22 | 1740.55 | 1116    |
| 1750.78 | 1115    | 1761.5  | 1114    | 1768.18 | 1113.95 | 1771.53 | 1113.23 | 1772.66 | 1113    |
| 1810.6  | 1112.68 | 1832.77 | 1112    | 1877.82 | 1112.2  | 1879.67 | 1112.22 | 2102.45 | 1113    |
| 2156.96 | 1113.61 | 2161.28 | 1114    | 2201.5  | 1115.71 | 2204.3  | 1115.82 | 2208.35 | 1116    |
| 2232.91 | 1116.45 | 2233.81 | 1116.46 | 2237.34 | 1116.54 | 2240.7  | 1116.59 | 2250.03 | 1116.77 |
| 2253.67 | 1116.8  | 2267.77 | 1117    | 2321.19 | 1117.12 | 2325.61 | 1117.23 | 2326.79 | 1117.24 |
| 2339.85 | 1117.5  | 2342.72 | 1117.52 | 2344.57 | 1117.55 | 2348.72 | 1117.58 | 2349.96 | 1117.6  |
| 2369.85 | 1117.78 | 2377.62 | 1117.9  | 2378.01 | 1117.91 | 2379.26 | 1117.9  | 2399.86 | 1117.88 |
| 2404.41 | 1117.86 | 2405.14 | 1117.85 | 2406.33 | 1117.84 | 2411.86 | 1117.82 | 2493.55 | 1116.83 |
| 2493.81 | 1116.82 | 2530.1  | 1116.3  | 2532.7  | 1116.25 | 2583.37 | 1115.48 | 2583.75 | 1115.46 |
| 2584.38 | 1115.47 | 2585.23 | 1115.44 | 2586.35 | 1115.43 | 2587.32 | 1115.4  | 2587.99 | 1115.42 |
| 2598.93 | 1115.61 | 2603.52 | 1115.88 | 2603.81 | 1115.89 | 2605.54 | 1116    | 2614.33 | 1115.53 |
| 2618.19 | 1115    | 2661.3  | 1115.57 | 2666.89 | 1116    | 2667.38 | 1116.31 | 2668.46 | 1117    |
| 2671.16 | 1118.74 | 2671.57 | 1119    | 2673    | 1119.93 | 2674.67 | 1121    | 2674.89 | 1121.17 |
| 2675.97 | 1122    | 2676.88 | 1122.75 | 2677.18 | 1123    | 2678.16 | 1123.79 | 2678.41 | 1124    |
| 2679.02 | 1124.51 | 2679.62 | 1125    | 2679.96 | 1125.29 | 2680.8  | 1126    | 2681.73 | 1126.74 |
| 2682.05 | 1127    | 2687.31 | 1127.69 | 2689.78 | 1128    | 2694.75 | 1127.68 | 2696.98 | 1126.55 |
| 2698.08 | 1126    | 2699.23 | 1126.35 | 2704.56 | 1128.94 | 2706.34 | 1130    | 2708.76 | 1131.59 |
| 2709.37 | 1132    | 2710.4  | 1132.68 | 2710.88 | 1133    | 2713.91 | 1135    | 2715.23 | 1135.97 |
| 2717.91 | 1137.97 | 2719.27 | 1139    | 2738.01 | 1138.25 | 2746.14 | 1136    | 2746.31 | 1135.95 |
| 2749.76 | 1135    | 2760.64 | 1132.09 | 2760.99 | 1132    | 2764.73 | 1131    | 2769.3  | 1130    |
| 2799.52 | 1130.27 | 2807.14 | 1130.54 | 2808.44 | 1130.58 | 2813.13 | 1130.74 | 2814.12 | 1130.77 |
| 2819.78 | 1130.85 | 2820.58 | 1130.87 | 2826.28 | 1130.95 | 2826.64 | 1130.96 | 2829.3  | 1131    |
| 2876.88 | 1130.9  | 2880.73 | 1130.72 | 2882.12 | 1130.66 | 2884.5  | 1130.54 | 2887.26 | 1130.43 |
| 2890.43 | 1130.26 | 2895.15 | 1130.08 | 2896.77 | 1130    | 2932.8  | 1129.89 | 2933.99 | 1129.84 |
| 2940.11 | 1129.56 | 2950.45 | 1129.12 | 2951.18 | 1129.11 | 2953.91 | 1129    | 2956.94 | 1128.9  |
| 2958.73 | 1128.85 | 2960.58 | 1128.81 | 2968.43 | 1128.68 | 2973.82 | 1128.75 | 2974.37 | 1128.74 |
| 2979.07 | 1128.91 | 2980.83 | 1129    | 2983.14 | 1129.31 | 2991.51 | 1130.39 | 2995.36 | 1130.86 |
| 2996.61 | 1131    | 2998.25 | 1131.2  | 2999.29 | 1131.34 | 3001.5  | 1131.61 | 3004.94 | 1132.07 |
| 3009.93 | 1132.8  | 3011.26 | 1133    | 3013.94 | 1133.39 | 3018.01 | 1134    | 3022.29 | 1134.59 |
| 3025.6  | 1135    | 3030.81 | 1135.49 | 3034.62 | 1135.81 | 3035.32 | 1135.88 | 3036.81 | 1136    |
| 3048.5  | 1136.04 | 3048.73 | 1136.05 | 3053.21 | 1136.16 | 3054.43 | 1136.21 | 3059.3  | 1136.36 |
| 3064.6  | 1136.61 | 3068.19 | 1136.75 | 3072.67 | 1137    | 3083.69 | 1136.67 | 3089.38 | 1136    |
| 3092.45 | 1135.57 | 3096.2  | 1135    | 3096.93 | 1134.9  | 3098.39 | 1134.68 | 3101.2  | 1134.29 |
| 3103.11 | 1134    | 3105.32 | 1133.65 | 3109.53 | 1133    | 3117.46 | 1132    | 3124.23 | 1131.32 |
| 3126.23 | 1131.09 | 3126.57 | 1131.06 | 3127.06 | 1131    | 3151.32 | 1131.02 | 3155.77 | 1131.18 |
| 3168.02 | 1131.56 | 3172.83 | 1131.65 | 3175.46 | 1131.66 | 3176.57 | 1131.68 | 3178.97 | 1131.7  |
| 3184    | 1131.78 | 3185.19 | 1131.79 | 3189.74 | 1131.88 | 3200.3  | 1132.16 | 3203.27 | 1132.26 |
| 3225.37 | 1132.34 | 3229.47 | 1132.26 | 3230.85 | 1132.25 | 3233.73 | 1132.19 | 3234.45 | 1132.18 |
| 3238.3  | 1132.08 | 3240.32 | 1132    | 3242.69 | 1131.86 | 3261.97 | 1129.05 | 3262.33 | 1129    |
| 3271.3  | 1128.36 | 3272.9  | 1128.26 | 3277.15 | 1128.16 | 3284.16 | 1128.06 | 3284.39 | 1128.07 |
| 3286.79 | 1128.09 | 3298.46 | 1128.43 | 3302.51 | 1128.53 | 3303.75 | 1128.55 | 3306.66 | 1128.62 |
| 3320.07 | 1128.85 | 3320.68 | 1128.87 | 3328    | 1128.98 | 3329.08 | 1129    | 3355.36 | 1128.69 |
| 3363.93 | 1128.54 | 3366.23 | 1128.49 | 3376.26 | 1128.32 | 3377.47 | 1128.31 | 3381.27 | 1128.25 |
| 3381.75 | 1128.24 | 3386.9  | 1128.17 | 3393.71 | 1128    | 3421.62 | 1128.53 | 3423.05 | 1128.51 |
| 3424.94 | 1129    | 3426.8  | 1129.53 | 3430.44 | 1130.55 | 3438.99 | 1133    | 3440.53 | 1133.45 |
| 3442.45 | 1134    | 3446.08 | 1135    | 3453.84 | 1137    | 3469.94 | 1136.89 | 3473.25 | 1136    |
| 3481.16 | 1135.04 | 3481.43 | 1135    | 3481.66 | 1134.99 | 3497.11 | 1134.59 | 3499.52 | 1134.54 |
| 3505.17 | 1134.39 | 3507.97 | 1134.34 | 3510.63 | 1134.27 | 3514.76 | 1134.2  | 3515.85 | 1134.17 |
| 3518.64 | 1134.14 | 3519.4  | 1134.12 | 3521.56 | 1134.1  | 3522.59 | 1134.08 | 3549.94 | 1133.87 |
| 3553.64 | 1133.82 | 3554.18 | 1133.83 | 3558.21 | 1133.8  | 3560.14 | 1133.81 | 3572.35 | 1133.64 |
| 3595.97 | 1133.48 | 3625.79 | 1133.47 | 3695.3  | 1133.16 | 3711.88 | 1133    | 3759.09 | 1132.89 |
| 3760.06 | 1132.85 | 3764.16 | 1132.73 | 3765.86 | 1132.66 | 3767.2  | 1132.62 | 3768.8  | 1132.55 |
| 3772.03 | 1132.44 | 3774.56 | 1132.33 |         |         |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 1648.12 .039 2719.27 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1648.12 2719.27 258.73 230.41 202.09 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1648.12 1138.3 F  
 2719.27 3774.56 1139 F  
 Left Levee Station= 1648.12 Elevation= 1138.3  
 Right Levee Station= 2719.27 Elevation= 1139

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 219.09

INPUT  
 Description:  
 Station Elevation Data num= 495

## Proposed\_SkyHarbor.rep

| Sta     | Elev    |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 190.52  | 1135    | 207.83  | 1134.09 | 96.59   | 1134    | 150.12  | 1133.16 | 151.87  | 1133.18 |
| 216.88  | 1135    | 219.59  | 1135.2  | 212.24  | 1134.58 | 215.9   | 1134.92 | 216.29  | 1134.96 |
| 239.2   | 1136.29 | 241.8   | 1136.48 | 223.45  | 1135.43 | 237.57  | 1136.2  | 238.89  | 1136.28 |
| 249.07  | 1136.65 | 250.83  | 1136.67 | 244.47  | 1136.64 | 245.45  | 1136.61 | 247.28  | 1136.57 |
| 264.92  | 1136.54 | 266.15  | 1136.52 | 256.9   | 1136.6  | 258.92  | 1136.59 | 262.39  | 1136.55 |
| 277.63  | 1136.47 | 283.02  | 1136.44 | 268.4   | 1136.51 | 269.74  | 1136.49 | 275.78  | 1136.45 |
| 299.18  | 1136.51 | 315.9   | 1136.46 | 287.52  | 1136.51 | 290.5   | 1136.49 | 295.11  | 1136.54 |
| 322.7   | 1136.44 | 323.67  | 1136.46 | 316.3   | 1136.47 | 318.91  | 1136.45 | 319.63  | 1136.46 |
| 477.68  | 1138.05 | 479.68  | 1138    | 345.09  | 1137    | 425.26  | 1137.14 | 441.91  | 1137.5  |
| 523.7   | 1137.44 | 525.12  | 1137.41 | 492.79  | 1137.76 | 494.77  | 1137.75 | 522.07  | 1137.45 |
| 563.58  | 1136.6  | 578.43  | 1136    | 531.48  | 1137.38 | 547.93  | 1137.1  | 551.81  | 1137    |
| 590.32  | 1134    | 597.2   | 1133    | 582.82  | 1135    | 583.38  | 1134.93 | 589.3   | 1134.14 |
| 633.71  | 1131.4  | 642.1   | 1131    | 607.62  | 1132    | 627.07  | 1131.7  | 631.83  | 1131.47 |
| 654.57  | 1132.93 | 654.83  | 1133    | 647.72  | 1131.56 | 651.63  | 1132    | 652.24  | 1132.19 |
| 662.26  | 1134.67 | 663.11  | 1135    | 657.09  | 1133.58 | 658.81  | 1133.99 | 661.61  | 1134.53 |
| 667.19  | 1137.88 | 668.46  | 1138.7  | 664.49  | 1136    | 664.99  | 1136.36 | 665.89  | 1137    |
| 682.64  | 1144.41 | 685.02  | 1145.64 | 668.92  | 1139    | 675.36  | 1143    | 681.77  | 1144    |
| 695.71  | 1148    | 697.96  | 1147.97 | 685.76  | 1146    | 687.68  | 1146.97 | 695.07  | 1147.71 |
| 826.87  | 1144.9  | 840.9   | 1144    | 699.4   | 1147    | 700.85  | 1146    | 825.07  | 1145    |
| 846.49  | 1141.08 | 850     | 1140.39 | 841.88  | 1143.6  | 843.38  | 1143    | 845.03  | 1142    |
| 850.88  | 1138    | 851.13  | 1137.39 | 850.14  | 1140    | 850.31  | 1139.55 | 850.51  | 1139    |
| 861.93  | 1135.16 | 863.69  | 1135.06 | 851.28  | 1137    | 851.59  | 1136.2  | 855.25  | 1135.45 |
| 894.13  | 1134.76 | 897.32  | 1134.54 | 864.34  | 1135    | 890.52  | 1134.97 | 892.64  | 1134.83 |
| 915.53  | 1133.58 | 921.33  | 1133    | 903.21  | 1134.31 | 905.79  | 1134.17 | 910.16  | 1134    |
| 949.86  | 1130.07 | 950.55  | 1130    | 928.82  | 1132    | 940.53  | 1131.04 | 940.99  | 1131    |
| 974.36  | 1125    | 988.96  | 1124.48 | 960.15  | 1128    | 967.54  | 1126.38 | 969.37  | 1126    |
| 1013.22 | 1124    | 1015.66 | 1124.15 | 996.07  | 1124.13 | 998.29  | 1124.03 | 1011.21 | 1123.96 |
| 1023.08 | 1124.81 | 1023.45 | 1124.85 | 1017.17 | 1124.28 | 1019.18 | 1124.44 | 1020.29 | 1124.55 |
| 1029.83 | 1126    | 1033.72 | 1126.86 | 1023.81 | 1124.9  | 1025.01 | 1125    | 1028.9  | 1125.79 |
| 1056.38 | 1128.05 | 1096.25 | 1128.25 | 1034.37 | 1127    | 1041.13 | 1127.89 | 1049.19 | 1129    |
| 1129.15 | 1131.95 | 1142.22 | 1133    | 1101.5  | 1129.41 | 1104.26 | 1130    | 1116.55 | 1131    |
| 1156.03 | 1135    | 1162.36 | 1134.86 | 1143.08 | 1133.12 | 1149.15 | 1134    | 1150.35 | 1134.18 |
| 1176.39 | 1134    | 1178.29 | 1133.87 | 1163.88 | 1134.77 | 1169.07 | 1134.41 | 1169.92 | 1134.36 |
| 1197.03 | 1131.61 | 1200.49 | 1131    | 1180.3  | 1133.7  | 1184.86 | 1133.34 | 1188.74 | 1133.01 |
| 1220.33 | 1127.21 | 1225.54 | 1126    | 1205.7  | 1130.05 | 1205.98 | 1130    | 1216.84 | 1128    |
| 1239.1  | 1125    | 1242.21 | 1124.9  | 1227.3  | 1125.85 | 1230.18 | 1125.62 | 1235.44 | 1125.24 |
| 1251.89 | 1124.59 | 1253.73 | 1124.55 | 1242.98 | 1124.88 | 1246.84 | 1124.75 | 1248.33 | 1124.71 |
| 1335.92 | 1124.37 | 1371.73 | 1125    | 1259.48 | 1124.36 | 1264.71 | 1124.31 | 1280.71 | 1124    |
| 1546.79 | 1125.16 | 1548.46 | 1125.11 | 1398.04 | 1126    | 1525.49 | 1125.76 | 1545.55 | 1125.19 |
| 1563.95 | 1124.78 | 1566.68 | 1124.73 | 1554.9  | 1125    | 1556.23 | 1124.99 | 1562.02 | 1124.8  |
| 1595.41 | 1126    | 1597.87 | 1126.66 | 1575.67 | 1124.51 | 1590.49 | 1124.82 | 1593.56 | 1125.52 |
| 1604.25 | 1128.46 | 1609.08 | 1129.88 | 1599.11 | 1127    | 1601.51 | 1127.69 | 1602.64 | 1128    |
| 1616.04 | 1132    | 1619.29 | 1133    | 1609.51 | 1130    | 1609.81 | 1130.09 | 1615.27 | 1131.76 |
| 1629.53 | 1135.9  | 1633.68 | 1137    | 1622.61 | 1134    | 1625.31 | 1134.74 | 1626.28 | 1135    |
| 1653.36 | 1137    | 1659.04 | 1135.35 | 1635.75 | 1137.6  | 1637    | 1138    | 1648.11 | 1137.71 |
| 1667.12 | 1132.85 | 1669.76 | 1132    | 1660.22 | 1135    | 1663.48 | 1134    | 1666.66 | 1133    |
| 1679.03 | 1128.84 | 1681.59 | 1128    | 1672.03 | 1131.22 | 1672.66 | 1131    | 1678.51 | 1129    |
| 1693.61 | 1127    | 1694.76 | 1126.17 | 1687.78 | 1127.49 | 1688.97 | 1127.4  | 1690.48 | 1127.3  |
| 1698.7  | 1123.47 | 1699.41 | 1123    | 1696.42 | 1125    | 1696.76 | 1124.77 | 1697.89 | 1124    |
| 1701.94 | 1121    | 1702.69 | 1120.46 | 1700.22 | 1122.47 | 1700.95 | 1122    | 1701.52 | 1121.42 |
| 1707.59 | 1118.19 | 1708.05 | 1118    | 1703.38 | 1120    | 1704.31 | 1119.6  | 1705.65 | 1119    |
| 1710.79 | 1116    | 1720.88 | 1115    | 1708.5  | 1117.74 | 1709.68 | 1117    | 1710.4  | 1116.31 |
| 1738.18 | 1113    | 1749.01 | 1112.11 | 1728.47 | 1114.12 | 1729.68 | 1114    | 1735.55 | 1113.33 |
| 2198.72 | 1114    | 2211.59 | 1115    | 1750.16 | 1112    | 1891    | 1112.01 | 2191.54 | 1113    |
| 2293.45 | 1117.65 | 2295.11 | 1117.68 | 2246.66 | 1117    | 2276.63 | 1117.44 | 2278.04 | 1117.45 |
| 2455.28 | 1116.8  | 2456.74 | 1116.78 | 2311.07 | 1117.83 | 2447.43 | 1116.95 | 2447.77 | 1116.94 |
| 2628.67 | 1115.41 | 2637.71 | 1115    | 2498.49 | 1116    | 2619.22 | 1115.79 | 2621.82 | 1115.62 |
| 2679.81 | 1117.35 | 2682.52 | 1119    | 2673.75 | 1115.44 | 2677.59 | 1116    | 2678.93 | 1116.81 |
| 2688.96 | 1123    | 2689.86 | 1123.6  | 2682.84 | 1119.19 | 2685.31 | 1120.71 | 2685.79 | 1121    |
| 2693.77 | 1126.26 | 2694.85 | 1127    | 2690.47 | 1124    | 2692.47 | 1125.36 | 2693.4  | 1126    |
| 2717.24 | 1130    | 2719.08 | 1130.87 | 2711.45 | 1127.18 | 2714.87 | 1128.85 | 2715.43 | 1129.13 |
| 2721.81 | 1132.26 | 2724.63 | 1133.98 | 2719.35 | 1131    | 2721.11 | 1131.86 | 2721.38 | 1132    |
| 2771.41 | 1137.53 | 2772.37 | 1137.05 | 2730.19 | 1137.44 | 2731.1  | 1138    | 2770.52 | 1137.95 |
| 2779.08 | 1134    | 2781.54 | 1133    | 2774.52 | 1136    | 2775.15 | 1135.72 | 2776.69 | 1135    |
| 2786.35 | 1131.78 | 2789.29 | 1131    | 2782.9  | 1132.69 | 2785.21 | 1132.1  | 2785.55 | 1132    |
| 2808.19 | 1130.04 | 2808.55 | 1130.05 | 2796.1  | 1130.55 | 2800.22 | 1130.23 | 2803.44 | 1130    |
| 2830.69 | 1130.97 | 2831.28 | 1131    | 2824.93 | 1130.73 | 2825.77 | 1130.77 | 2827.33 | 1130.82 |
| 2844.85 | 1131.76 | 2866.79 | 1132.89 | 2836.69 | 1131.34 | 2840.52 | 1131.55 | 2843.85 | 1131.7  |
| 2877.51 | 1133.73 | 2878.27 | 1133.8  | 2867.49 | 1132.93 | 2868.86 | 1133    | 2875.8  | 1133.58 |
| 2901.32 | 1136.83 | 2905.35 | 1137.39 | 2880.73 | 1134    | 2887.43 | 1135    | 2889.37 | 1135.28 |
| 2924.59 | 1139.76 | 2926.91 | 1140    | 2909.61 | 1137.93 | 2909.95 | 1137.97 | 2923.23 | 1139.6  |
| 2943.96 | 1141.13 | 2944.79 | 1141.15 | 2937.81 | 1140.86 | 2938.64 | 1140.92 | 2942.94 | 1141.21 |
| 2955.98 | 1141.42 | 2959.6  | 1141.53 | 2948.7  | 1141.26 | 2950.66 | 1141.29 | 2953.88 | 1141.39 |
| 2976.29 | 1141.82 | 2977.37 | 1141.84 | 2963.54 | 1141.46 | 2965.76 | 1141.53 | 2971.11 | 1141.66 |
| 2990.55 | 1142.48 | 2993.07 | 1142.71 | 2981.97 | 1142    | 2982.53 | 1142.03 | 2982.84 | 1142.05 |
| 3010.58 | 1141.39 | 3012.19 | 1141.21 | 2994.33 | 1142.79 | 3002.4  | 1142    | 3008.65 | 1141.59 |
| 3032.24 | 1138.54 | 3035.83 | 1138    | 3014.33 | 1141    | 3019.2  | 1140.34 | 3021.84 | 1140    |
| 3047.43 | 1136.35 | 3059.29 | 1134.75 | 3038.81 | 1137.58 | 3042.71 | 1137    | 3044.43 | 1136.77 |
| 3085.76 | 1132    | 3102.12 | 1131.06 | 3073.01 | 1133.04 | 3079.07 | 1132.59 | 3081.07 | 1132.42 |
| 3122.62 | 1130.48 | 3124.13 | 1130.44 | 3102.61 | 1131.04 | 3103.19 | 1131    | 3116.09 | 1130.62 |
| 3245.22 | 1130.21 | 3248.9  | 1130.37 | 3140.49 | 1130.07 | 3141.03 | 1130.06 | 3143.12 | 1130    |
| 3263.57 | 1130.86 | 3264    | 1130.87 | 3251.7  | 1130.46 | 3257.99 | 1130.69 | 3263.08 | 1130.84 |
| 3271.71 | 1130.63 | 3292.85 | 1129    | 3268.21 | 1130.85 | 3269.16 | 1130.81 | 3270.1  | 1130.74 |
| 3343.01 | 1126.05 | 3353.81 | 1126.28 | 3311.02 | 1127    | 3311.7  | 1126.95 | 3323.95 | 1126    |
| 3388.65 | 1126.47 | 3390.02 | 1126.51 | 3357.23 | 1126.33 | 3364.8  | 1126.48 | 3369.51 | 1126.54 |
| 3415.36 | 1125.93 | 3416.05 | 1125.91 | 3390.39 | 1126.49 | 3391    | 1126.5  | 3410.53 | 1126    |
|         |         |         |         | 3425.9  | 1125.74 | 3429.84 | 1125.63 | 3435.46 | 1125.51 |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 3454.39 | 1125    | 3458.72 | 1125.01 | 3459.54 | 1125.07 | 3470.38 | 1125.91 | 3471.47 | 1126    |
| 3472.25 | 1126.18 | 3478.62 | 1127.69 | 3479.98 | 1128    | 3484.06 | 1129    | 3486.35 | 1129.67 |
| 3487.79 | 1130.11 | 3494.16 | 1132    | 3496.53 | 1132.69 | 3497.57 | 1133    | 3500.97 | 1134    |
| 3513.26 | 1138    | 3529.13 | 1137.12 | 3529.8  | 1136.87 | 3532.31 | 1136    | 3533.72 | 1135.53 |
| 3535.26 | 1135    | 3536.89 | 1134.46 | 3538.63 | 1133.93 | 3539.15 | 1133.78 | 3540.67 | 1133.37 |
| 3542.12 | 1133    | 3550.01 | 1132.87 | 3552.76 | 1132.86 | 3558.37 | 1132.91 | 3561.81 | 1133    |
| 3564.6  | 1133.21 | 3565.96 | 1133.28 | 3572.32 | 1133.36 | 3587.45 | 1133.89 | 3587.97 | 1133.91 |
| 3594.1  | 1133.99 | 3596.04 | 1133.95 | 3600.64 | 1133.7  | 3602.6  | 1133.57 | 3604.34 | 1133.47 |
| 3606.39 | 1133.32 | 3610.34 | 1133    | 3612.82 | 1132.87 | 3613.19 | 1132.84 | 3614.09 | 1132.7  |
| 3617.33 | 1132.45 | 3617.82 | 1132.39 | 3622.97 | 1132    | 3703.14 | 1131.23 | 3719.2  | 1131    |
| 3763.83 | 1130.91 | 3777.88 | 1130.75 | 3779.26 | 1130.71 | 3786.46 | 1130.64 | 3789.57 | 1130.55 |
| 3792.74 | 1130.52 | 3795.24 | 1130.45 | 3797.49 | 1130.42 | 3798.4  | 1130.4  | 3800.78 | 1130.37 |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 1648.11 .039 2731.1 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1648.11 2731.1 330.84 293.33 255.83 .1 .3

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1648.11 1137.71 F  
 2731.1 3800.78 1138 F  
 Left Levee Station= 1648.11 Elevation= 1137.71  
 Right Levee Station= 2731.1 Elevation= 1138

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 219.03

INPUT  
 Description:

| Station | Elevation | Data    | num=    | 458     | Sta     | Elev    | Sta     | Elev    | Sta     | Elev | Sta | Elev |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|------|-----|------|
| 0       | 1132.17   | 1.64    | 1132.15 | 3.77    | 1132.14 | 106.06  | 1132.03 | 107.13  | 1132.02 |      |     |      |
| 107.62  | 1132      | 425.67  | 1132.05 | 436.63  | 1132.21 | 438.06  | 1132.22 | 442.66  | 1132.31 |      |     |      |
| 446.17  | 1132.35   | 497.2   | 1133.08 | 498.11  | 1133.1  | 512.66  | 1133.31 | 603.7   | 1134.29 |      |     |      |
| 604.67  | 1134.31   | 686.94  | 1135.25 | 689.01  | 1135.26 | 696.19  | 1135.37 | 698.94  | 1135.4  |      |     |      |
| 704.34  | 1135.49   | 707.95  | 1135.53 | 711.53  | 1135.6  | 718.24  | 1135.68 | 720.21  | 1135.73 |      |     |      |
| 725.98  | 1135.81   | 726.79  | 1135.83 | 737.64  | 1136    | 742.4   | 1136.05 | 742.91  | 1136.06 |      |     |      |
| 750.19  | 1136.12   | 750.96  | 1136.13 | 761.44  | 1136.21 | 763     | 1136.23 | 785.3   | 1136.4  |      |     |      |
| 786.12  | 1136.41   | 832.9   | 1136.68 | 873.78  | 1136.59 | 896.79  | 1136.65 | 903.58  | 1136.69 |      |     |      |
| 906.73  | 1136.73   | 908.47  | 1136.74 | 914.66  | 1136.85 | 915.52  | 1136.86 | 925.25  | 1137.07 |      |     |      |
| 936.3   | 1137.22   | 937.38  | 1137.24 | 943.41  | 1137.31 | 944.96  | 1137.32 | 969.32  | 1137.61 |      |     |      |
| 977.36  | 1137.67   | 981.43  | 1137.68 | 984.9   | 1137.71 | 990.94  | 1137.72 | 1042.74 | 1138.07 |      |     |      |
| 1043.42 | 1138.08   | 1199.18 | 1139.81 | 1215.25 | 1140.03 | 1215.62 | 1140.04 | 1259.4  | 1140.59 |      |     |      |
| 1273.34 | 1140.7    | 1306    | 1140.63 | 1307.91 | 1140.6  | 1311.15 | 1140.57 | 1316.31 | 1140.48 |      |     |      |
| 1318.59 | 1140.41   | 1320.36 | 1140.38 | 1322.77 | 1140.3  | 1324    | 1140.27 | 1334.07 | 1139.98 |      |     |      |
| 1343.83 | 1139.52   | 1345.99 | 1139.44 | 1349.9  | 1139.27 | 1351.65 | 1139.22 | 1356.63 | 1139.11 |      |     |      |
| 1357.18 | 1139.09   | 1365.38 | 1138.92 | 1366.06 | 1138.9  | 1371.23 | 1138.79 | 1372.03 | 1138.78 |      |     |      |
| 1389.58 | 1139.05   | 1390.03 | 1139.06 | 1430.27 | 1139.76 | 1434.54 | 1139.82 | 1435.61 | 1139.84 |      |     |      |
| 1442.28 | 1139.93   | 1442.68 | 1139.94 | 1453.6  | 1140.07 | 1454.02 | 1140.08 | 1471.68 | 1140.32 |      |     |      |
| 1473.84 | 1140.34   | 1476.82 | 1140.39 | 1478.25 | 1140.4  | 1512.25 | 1140.9  | 1512.51 | 1140.91 |      |     |      |
| 1516.78 | 1141      | 1519.53 | 1141.12 | 1519.85 | 1141.17 | 1521.05 | 1141.31 | 1522.41 | 1141.23 |      |     |      |
| 1522.68 | 1141.21   | 1523.8  | 1141.18 | 1524.2  | 1141.15 | 1526.87 | 1141.18 | 1527.37 | 1141.17 |      |     |      |
| 1537.47 | 1141.34   | 1539.54 | 1141.36 | 1582.39 | 1142.18 | 1587.03 | 1142.24 | 1590.73 | 1142.25 |      |     |      |
| 1598.93 | 1142.21   | 1603.91 | 1142.14 | 1604.35 | 1142.13 | 1609.17 | 1141.94 | 1609.57 | 1141.92 |      |     |      |
| 1614.44 | 1141.7    | 1615.76 | 1141.58 | 1617.88 | 1141.36 | 1621.03 | 1141    | 1621.91 | 1140.93 |      |     |      |
| 1622.71 | 1140.83   | 1626.22 | 1140.46 | 1627.8  | 1140.15 | 1628.31 | 1140    | 1629.28 | 1139.71 |      |     |      |
| 1631.12 | 1139      | 1632.96 | 1138.38 | 1634.06 | 1138    | 1665.49 | 1137.04 | 1666.51 | 1137    |      |     |      |
| 1667.86 | 1136      | 1668.14 | 1135.79 | 1669.2  | 1135    | 1669.95 | 1134.43 | 1671.35 | 1133.37 |      |     |      |
| 1671.86 | 1133      | 1672.79 | 1132.31 | 1673.22 | 1132    | 1673.7  | 1131.7  | 1674.8  | 1131    |      |     |      |
| 1681.51 | 1127      | 1682.55 | 1126.36 | 1683.14 | 1126    | 1683.42 | 1125.82 | 1684.74 | 1125    |      |     |      |
| 1685.13 | 1124.76   | 1687.69 | 1123.22 | 1689.65 | 1122.05 | 1691.67 | 1120.81 | 1692.96 | 1120    |      |     |      |
| 1694.43 | 1119.04   | 1694.73 | 1118.83 | 1695.88 | 1118    | 1697.25 | 1117    | 1698.7  | 1116    |      |     |      |
| 1699.42 | 1115.67   | 1700.86 | 1115    | 1702.94 | 1114    | 1703.72 | 1113.62 | 1704.98 | 1113    |      |     |      |
| 1715.53 | 1112.26   | 1719.53 | 1112    | 1723.27 | 1111.7  | 1731.38 | 1111    | 1739.51 | 1110    |      |     |      |
| 1888.31 | 1110.26   | 1900.81 | 1110    | 1919.74 | 1110.09 | 1927.17 | 1110.21 | 1940.51 | 1110.34 |      |     |      |
| 1992.75 | 1111.33   | 2018.71 | 1112    | 2109.34 | 1112.99 | 2109.99 | 1113    | 2192.79 | 1113.35 |      |     |      |
| 2218.87 | 1113.81   | 2219.26 | 1113.82 | 2220.47 | 1113.83 | 2228.93 | 1114    | 2287.17 | 1116    |      |     |      |
| 2302.48 | 1116.36   | 2310.53 | 1116.41 | 2320.45 | 1116.58 | 2347.55 | 1116.81 | 2354.84 | 1116.79 |      |     |      |
| 2381.07 | 1116.82   | 2381.87 | 1116.81 | 2407.16 | 1116.9  | 2413.01 | 1116.82 | 2424.46 | 1116.37 |      |     |      |
| 2425.18 | 1116.36   | 2434.11 | 1116    | 2512.06 | 1115    | 2708.31 | 1115.75 | 2716.9  | 1116    |      |     |      |
| 2720.7  | 1118.75   | 2721.04 | 1119    | 2722.15 | 1119.8  | 2722.39 | 1119.97 | 2722.62 | 1120.14 |      |     |      |
| 2723.85 | 1121      | 2724.07 | 1121.15 | 2725.37 | 1122    | 2726.7  | 1122.72 | 2727.21 | 1123    |      |     |      |
| 2728.19 | 1123.55   | 2728.98 | 1124    | 2729.38 | 1124.23 | 2730.67 | 1125    | 2732.17 | 1125.91 |      |     |      |
| 2732.51 | 1126.12   | 2734.62 | 1127.44 | 2735.5  | 1128    | 2743.08 | 1132    | 2744.09 | 1132.63 |      |     |      |
| 2744.67 | 1133      | 2744.99 | 1133.24 | 2746.03 | 1134    | 2748.75 | 1136    | 2749.26 | 1136.38 |      |     |      |
| 2750.12 | 1137      | 2751.49 | 1138    | 2783.57 | 1139    | 2787.45 | 1140.64 | 2788.36 | 1141    |      |     |      |
| 2789.79 | 1141.54   | 2790.96 | 1142    | 2793.28 | 1142.93 | 2795.53 | 1143.8  | 2796.62 | 1144.23 |      |     |      |
| 2798.66 | 1145      | 2802.93 | 1146.53 | 2804.21 | 1147    | 2804.55 | 1147.12 | 2806.99 | 1148    |      |     |      |
| 2807.62 | 1148.23   | 2809.58 | 1149    | 2812.04 | 1149.2  | 2825.48 | 1149.31 | 2827.04 | 1149.22 |      |     |      |
| 2827.42 | 1149.21   | 2829.54 | 1149.09 | 2832.86 | 1148.92 | 2835.87 | 1148.79 | 2837.8  | 1148.72 |      |     |      |
| 2839.32 | 1148.62   | 2843.49 | 1148.46 | 2845.92 | 1148.28 | 2847.42 | 1148.21 | 2849.69 | 1148    |      |     |      |
| 2853.49 | 1147.69   | 2854.68 | 1147.57 | 2856.33 | 1147.48 | 2856.97 | 1147.41 | 2858.47 | 1147.37 |      |     |      |
| 2858.96 | 1147.32   | 2859.49 | 1147.29 | 2860.85 | 1147.26 | 2862.54 | 1147.2  | 2863.51 | 1147.13 |      |     |      |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2868.63 | 1147.01 | 2868.91 | 1147    | 2871.8  | 1146.91 | 2872.17 | 1146.89 | 2883.6  | 1146.49 |
| 2895.37 | 1146    | 2895.9  | 1145.98 | 2898.28 | 1145.86 | 2913.68 | 1145.59 | 2915.04 | 1145.56 |
| 2916.84 | 1145.54 | 2925.06 | 1145.36 | 2927.33 | 1145.32 | 2931.66 | 1145.2  | 2932.83 | 1145.19 |
| 2936.91 | 1145.07 | 2942.43 | 1144.94 | 2967.34 | 1144.87 | 2967.96 | 1144.86 | 2978.87 | 1144.84 |
| 2979.36 | 1144.83 | 2982.38 | 1144.8  | 2983.11 | 1144.77 | 2984.38 | 1144.74 | 2993.38 | 1144.58 |
| 3026.29 | 1144.41 | 3039.21 | 1144.46 | 3044.08 | 1144.45 | 3088.16 | 1144.06 | 3088.43 | 1144.05 |
| 3111.11 | 1144    | 3116.41 | 1143.94 | 3120.48 | 1143.84 | 3121.2  | 1143.83 | 3132.39 | 1143.56 |
| 3134.89 | 1143.51 | 3145.99 | 1143.26 | 3146.84 | 1143.25 | 3154.62 | 1143.12 | 3159.89 | 1143.06 |
| 3160.21 | 1143.05 | 3164.06 | 1143    | 3164.53 | 1142.99 | 3170.8  | 1142.9  | 3171.35 | 1142.89 |
| 3176.04 | 1142.83 | 3177.28 | 1142.8  | 3187.31 | 1142.64 | 3188.98 | 1142.6  | 3195.53 | 1142.49 |
| 3197.91 | 1142.44 | 3200.23 | 1142.41 | 3208.41 | 1142.26 | 3220.36 | 1142.08 | 3220.86 | 1142.07 |
| 3226.4  | 1142.01 | 3226.98 | 1142    | 3232.53 | 1141.94 | 3232.95 | 1141.93 | 3237.86 | 1141.87 |
| 3239.4  | 1141.86 | 3244.77 | 1141.78 | 3245.9  | 1141.77 | 3273.99 | 1141.33 | 3276.09 | 1141.27 |
| 3277.54 | 1141.24 | 3286.73 | 1141    | 3287.62 | 1140.98 | 3328.04 | 1139.92 | 3328.53 | 1139.91 |
| 3329.14 | 1139.89 | 3334.73 | 1139.74 | 3336.49 | 1139.7  | 3340.52 | 1139.59 | 3350.96 | 1139.25 |
| 3357.11 | 1138.94 | 3357.34 | 1138.92 | 3361.91 | 1138.62 | 3363.83 | 1138.48 | 3365    | 1138.36 |
| 3365.58 | 1138.31 | 3366.27 | 1138.2  | 3368.16 | 1137.83 | 3368.94 | 1137.66 | 3376.2  | 1136    |
| 3376.53 | 1135.92 | 3377.06 | 1135.8  | 3378.72 | 1135.41 | 3380.24 | 1135    | 3383.33 | 1134.21 |
| 3384.11 | 1134    | 3387.63 | 1133.13 | 3388.08 | 1133    | 3390.09 | 1132.36 | 3391.24 | 1132    |
| 3391.74 | 1131.84 | 3394.19 | 1131    | 3395.55 | 1130.54 | 3397.19 | 1130    | 3398.81 | 1129.41 |
| 3399.97 | 1129    | 3400.52 | 1128.81 | 3402.65 | 1128    | 3405    | 1127.14 | 3405.39 | 1127    |
| 3407.85 | 1126.09 | 3408.08 | 1126    | 3419.78 | 1125    | 3481.58 | 1124.98 | 3491.98 | 1124.61 |
| 3495.54 | 1124.53 | 3500.59 | 1124.36 | 3503.54 | 1124.3  | 3509.54 | 1124.15 | 3520.57 | 1124.01 |
| 3521.72 | 1124    | 3559.11 | 1124.51 | 3562.73 | 1125    | 3569.73 | 1126.84 | 3570.32 | 1127    |
| 3570.9  | 1127.15 | 3574.13 | 1128    | 3575.22 | 1128.3  | 3577.82 | 1129    | 3591.59 | 1132.93 |
| 3591.82 | 1133    | 3595.2  | 1134    | 3596.17 | 1134.34 | 3603.53 | 1137    | 3604.88 | 1137.5  |
| 3608.77 | 1138.92 | 3608.98 | 1139    | 3613.62 | 1139.9  | 3614.35 | 1140    | 3623.45 | 1140.71 |
| 3625.92 | 1140.88 | 3627.43 | 1140.97 | 3628.06 | 1141    | 3630.32 | 1141.19 | 3636.55 | 1142    |
| 3732.44 | 1141.6  | 3738.25 | 1141    | 3740.07 | 1140.15 | 3740.41 | 1140    | 3741.1  | 1139.69 |
| 3742.58 | 1139    | 3743.96 | 1138.45 | 3745.01 | 1138    | 3746.2  | 1137.51 | 3749.29 | 1136.19 |
| 3749.74 | 1136    | 3751.1  | 1135.44 | 3751.94 | 1135.11 | 3752.2  | 1135    | 3755.82 | 1134.23 |
| 3756.15 | 1134.17 | 3758.15 | 1133.77 | 3758.87 | 1133.62 | 3760.29 | 1133.37 | 3761.34 | 1133.2  |
| 3761.6  | 1133.16 | 3762.09 | 1133.1  | 3762.94 | 1133    | 3766.25 | 1132.58 | 3767.16 | 1132.5  |
| 3770.15 | 1132.36 | 3771.9  | 1132.3  | 3772.57 | 1132.32 | 3773.13 | 1132.31 | 3773.76 | 1132.33 |
| 3778.69 | 1132.58 | 3779.83 | 1132.6  | 3780.16 | 1132.62 | 3780.81 | 1132.63 | 3781.55 | 1132.71 |
| 3782.48 | 1132.73 | 3787.49 | 1133    | 3791.53 | 1133.13 | 3795.81 | 1133.33 | 3804.4  | 1133.69 |
| 3805.7  | 1133.75 | 3809.38 | 1133.8  | 3813.42 | 1133.83 | 3814.23 | 1133.85 | 3818.58 | 1133.88 |
| 3819.09 | 1133.89 | 3823.88 | 1133.92 | 3824.19 | 1133.93 | 3836.45 | 1134    | 3837.03 | 1134.01 |
| 3842.58 | 1134.06 | 3842.94 | 1134.07 | 3846.36 | 1134.1  | 3855.91 | 1134.24 | 3858.36 | 1134.26 |
| 3866.42 | 1134.41 | 3869.38 | 1134.44 | 3875.93 | 1134.54 |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 1665.49 .039 2751.49 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1665.49 2751.49 209.7 214.01 218.33 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1665.49 1137.04 F  
 2751.49 3875.93 1138 F  
 Right Levee Station= 2812.04 Elevation= 1150

BRIDGE

RIVER: Salt  
 REACH: 1 RS: 219.02

INPUT

Description: SR 143 Bridge  
 Distance from Upstream XS = 43.5  
 Deck/Roadway Width = 127  
 Weir Coefficient = 2.6  
 Upstream Deck/Roadway Coordinates num= 10  

| Sta     | Hi Cord | Lo Cord | Sta     | Hi Cord | Lo Cord | Sta     | Hi Cord | Lo Cord |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1634.06 | 1146.22 | 1139.6  | 1772.07 | 1146.35 | 1139.64 | 1900.57 | 1147.19 | 1140.48 |
| 2029.07 | 1147.56 | 1140.85 | 2157.57 | 1147.96 | 1141.25 | 2286.07 | 1148.36 | 1141.65 |
| 2414.57 | 1148.63 | 1141.92 | 2543.07 | 1148.91 | 1142.2  | 2671.57 | 1148.16 | 1141.45 |
| 2809.58 | 1147.16 | 1140.45 |         |         |         |         |         |         |

Upstream Bridge Cross Section Data

| Station | Elevation | Data    | num=    | 458     |         |         |         |         |         |     |      |     |      |     |      |     |      |     |      |     |      |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|
| Sta     | Elev      | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta | Elev | Sta | Elev | Sta | Elev | Sta | Elev | Sta | Elev | Sta | Elev |
| 0       | 1132.17   | 1.64    | 1132.15 | 3.77    | 1132.14 | 106.06  | 1132.03 | 107.13  | 1132.02 |     |      |     |      |     |      |     |      |     |      |     |      |
| 107.62  | 1132      | 425.67  | 1132.05 | 436.63  | 1132.21 | 438.06  | 1132.22 | 442.66  | 1132.31 |     |      |     |      |     |      |     |      |     |      |     |      |
| 446.17  | 1132.35   | 497.2   | 1133.08 | 498.11  | 1133.1  | 512.66  | 1133.31 | 603.7   | 1134.29 |     |      |     |      |     |      |     |      |     |      |     |      |
| 604.67  | 1134.31   | 686.94  | 1135.25 | 689.01  | 1135.26 | 696.19  | 1135.37 | 698.94  | 1135.4  |     |      |     |      |     |      |     |      |     |      |     |      |
| 704.34  | 1135.49   | 707.95  | 1135.53 | 711.53  | 1135.6  | 718.24  | 1135.68 | 720.21  | 1135.73 |     |      |     |      |     |      |     |      |     |      |     |      |
| 725.98  | 1135.81   | 726.79  | 1135.83 | 737.64  | 1136    | 742.4   | 1136.05 | 742.91  | 1136.06 |     |      |     |      |     |      |     |      |     |      |     |      |
| 750.19  | 1136.12   | 750.96  | 1136.13 | 761.44  | 1136.21 | 763     | 1136.23 | 785.3   | 1136.4  |     |      |     |      |     |      |     |      |     |      |     |      |
| 786.12  | 1136.41   | 832.9   | 1136.68 | 873.78  | 1136.59 | 896.79  | 1136.65 | 903.58  | 1136.69 |     |      |     |      |     |      |     |      |     |      |     |      |
| 906.73  | 1136.73   | 908.47  | 1136.74 | 914.66  | 1136.85 | 915.52  | 1136.86 | 925.25  | 1137.07 |     |      |     |      |     |      |     |      |     |      |     |      |
| 936.3   | 1137.22   | 937.38  | 1137.24 | 943.41  | 1137.31 | 944.96  | 1137.32 | 969.32  | 1137.61 |     |      |     |      |     |      |     |      |     |      |     |      |
| 977.36  | 1137.67   | 981.43  | 1137.68 | 984.9   | 1137.71 | 990.94  | 1137.72 | 1042.74 | 1138.07 |     |      |     |      |     |      |     |      |     |      |     |      |
| 1043.42 | 1138.08   | 1199.18 | 1139.81 | 1215.25 | 1140.03 | 1215.62 | 1140.04 | 1259.4  | 1140.59 |     |      |     |      |     |      |     |      |     |      |     |      |
| 1273.34 | 1140.7    | 1306    | 1140.63 | 1307.91 | 1140.6  | 1311.15 | 1140.57 | 1316.31 | 1140.48 |     |      |     |      |     |      |     |      |     |      |     |      |

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|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1318.59 | 1140.41 | 1320.36 | 1140.38 | 1322.77 | 1140.3  | 1324    | 1140.27 | 1334.07 | 1139.98 |
| 1343.83 | 1139.52 | 1345.99 | 1139.44 | 1349.9  | 1139.27 | 1351.65 | 1139.22 | 1356.63 | 1139.11 |
| 1357.18 | 1139.09 | 1365.38 | 1138.92 | 1366.06 | 1138.9  | 1371.23 | 1138.79 | 1372.03 | 1138.78 |
| 1389.58 | 1139.05 | 1390.03 | 1139.06 | 1430.27 | 1139.76 | 1434.54 | 1139.82 | 1435.61 | 1139.84 |
| 1442.28 | 1139.93 | 1442.68 | 1139.94 | 1453.6  | 1140.07 | 1454.02 | 1140.08 | 1471.68 | 1140.32 |
| 1473.84 | 1140.34 | 1476.82 | 1140.39 | 1478.25 | 1140.4  | 1512.25 | 1140.9  | 1512.51 | 1140.91 |
| 1516.78 | 1141    | 1519.53 | 1141.12 | 1519.85 | 1141.17 | 1521.05 | 1141.31 | 1522.41 | 1141.23 |
| 1522.68 | 1141.21 | 1523.8  | 1141.18 | 1524.2  | 1141.15 | 1526.87 | 1141.18 | 1527.37 | 1141.17 |
| 1537.47 | 1141.34 | 1539.54 | 1141.36 | 1582.39 | 1142.18 | 1587.03 | 1142.24 | 1590.73 | 1142.25 |
| 1598.93 | 1142.21 | 1603.91 | 1142.14 | 1604.35 | 1142.13 | 1609.17 | 1141.94 | 1609.57 | 1141.92 |
| 1614.44 | 1141.7  | 1615.76 | 1141.58 | 1617.88 | 1141.36 | 1621.03 | 1141    | 1621.91 | 1140.93 |
| 1622.71 | 1140.83 | 1626.22 | 1140.46 | 1627.8  | 1140.15 | 1628.31 | 1140    | 1629.28 | 1139.71 |
| 1631.12 | 1139    | 1632.96 | 1138.38 | 1634.06 | 1138    | 1665.49 | 1137.04 | 1666.51 | 1137    |
| 1667.86 | 1136    | 1668.14 | 1135.79 | 1669.2  | 1135    | 1669.95 | 1134.43 | 1671.35 | 1133.37 |
| 1671.86 | 1133    | 1672.79 | 1132.31 | 1673.22 | 1132    | 1673.7  | 1131.7  | 1674.8  | 1131    |
| 1681.51 | 1127    | 1682.55 | 1126.36 | 1683.14 | 1126    | 1683.42 | 1125.82 | 1684.74 | 1125    |
| 1685.13 | 1124.76 | 1687.69 | 1123.22 | 1689.65 | 1122.05 | 1691.67 | 1120.81 | 1692.96 | 1120    |
| 1694.43 | 1119.04 | 1694.73 | 1118.83 | 1695.88 | 1118    | 1697.25 | 1117    | 1698.7  | 1116    |
| 1699.42 | 1115.67 | 1700.86 | 1115    | 1702.94 | 1114    | 1703.72 | 1113.62 | 1704.98 | 1113    |
| 1715.53 | 1112.26 | 1719.53 | 1112    | 1723.27 | 1111.7  | 1731.38 | 1111    | 1739.51 | 1110    |
| 1888.31 | 1110.26 | 1900.81 | 1110    | 1919.74 | 1110.09 | 1927.17 | 1110.21 | 1940.51 | 1110.34 |
| 1992.75 | 1111.33 | 2018.71 | 1112    | 2109.34 | 1112.99 | 2109.99 | 1113    | 2192.79 | 1113.35 |
| 2218.87 | 1113.81 | 2219.26 | 1113.82 | 2220.47 | 1113.83 | 2228.93 | 1114    | 2287.17 | 1116    |
| 2302.48 | 1116.36 | 2310.53 | 1116.41 | 2320.45 | 1116.58 | 2347.55 | 1116.81 | 2354.84 | 1116.79 |
| 2381.07 | 1116.82 | 2381.87 | 1116.81 | 2407.16 | 1116.9  | 2413.01 | 1116.82 | 2424.46 | 1116.37 |
| 2425.18 | 1116.36 | 2434.11 | 1116    | 2512.06 | 1115    | 2708.31 | 1115.75 | 2716.9  | 1116    |
| 2720.7  | 1118.75 | 2721.04 | 1119    | 2722.15 | 1119.8  | 2722.39 | 1119.97 | 2722.62 | 1120.14 |
| 2723.85 | 1121    | 2724.07 | 1121.15 | 2725.37 | 1122    | 2726.7  | 1122.72 | 2727.21 | 1123    |
| 2728.19 | 1123.55 | 2728.98 | 1124    | 2729.38 | 1124.23 | 2730.67 | 1125    | 2732.17 | 1125.91 |
| 2732.51 | 1126.12 | 2734.62 | 1127.44 | 2735.5  | 1128    | 2743.08 | 1132    | 2744.09 | 1132.63 |
| 2744.67 | 1133    | 2744.99 | 1133.24 | 2746.03 | 1134    | 2748.75 | 1136    | 2749.26 | 1136.38 |
| 2750.12 | 1137    | 2751.49 | 1138    | 2783.57 | 1139    | 2787.45 | 1140.64 | 2788.36 | 1141    |
| 2789.79 | 1141.54 | 2790.96 | 1142    | 2793.28 | 1142.93 | 2795.53 | 1143.8  | 2796.62 | 1144.23 |
| 2798.66 | 1145    | 2802.93 | 1146.53 | 2804.21 | 1147    | 2804.55 | 1147.12 | 2806.99 | 1148    |
| 2807.62 | 1148.23 | 2809.58 | 1149    | 2812.04 | 1149.2  | 2825.48 | 1149.31 | 2827.04 | 1149.22 |
| 2827.42 | 1149.21 | 2829.54 | 1149.09 | 2832.86 | 1148.92 | 2835.87 | 1148.79 | 2837.8  | 1148.72 |
| 2839.32 | 1148.62 | 2843.49 | 1148.46 | 2845.92 | 1148.28 | 2847.42 | 1148.21 | 2849.69 | 1148    |
| 2853.49 | 1147.69 | 2854.68 | 1147.57 | 2856.33 | 1147.48 | 2856.97 | 1147.41 | 2858.47 | 1147.37 |
| 2858.96 | 1147.32 | 2859.49 | 1147.29 | 2860.85 | 1147.26 | 2862.54 | 1147.2  | 2863.51 | 1147.13 |
| 2868.63 | 1147.01 | 2868.91 | 1147    | 2871.8  | 1146.91 | 2872.17 | 1146.89 | 2883.6  | 1146.49 |
| 2895.37 | 1146    | 2895.9  | 1145.98 | 2898.28 | 1145.86 | 2913.68 | 1145.59 | 2915.04 | 1145.56 |
| 2916.84 | 1145.54 | 2925.06 | 1145.36 | 2927.33 | 1145.32 | 2931.66 | 1145.2  | 2932.83 | 1145.19 |
| 2936.91 | 1145.07 | 2942.43 | 1144.94 | 2967.34 | 1144.87 | 2967.96 | 1144.86 | 2978.87 | 1144.84 |
| 2979.36 | 1144.83 | 2982.38 | 1144.8  | 2983.11 | 1144.77 | 2984.38 | 1144.74 | 2993.38 | 1144.58 |
| 3026.29 | 1144.41 | 3039.21 | 1144.46 | 3044.08 | 1144.45 | 3088.16 | 1144.06 | 3088.43 | 1144.05 |
| 3111.11 | 1144    | 3116.41 | 1143.94 | 3120.48 | 1143.84 | 3121.2  | 1143.83 | 3132.39 | 1143.56 |
| 3134.89 | 1143.51 | 3145.99 | 1143.26 | 3146.84 | 1143.25 | 3154.62 | 1143.12 | 3159.89 | 1143.06 |
| 3160.21 | 1143.05 | 3164.06 | 1143    | 3164.53 | 1142.99 | 3170.8  | 1142.9  | 3171.35 | 1142.89 |
| 3176.04 | 1142.83 | 3177.28 | 1142.8  | 3187.31 | 1142.64 | 3188.98 | 1142.6  | 3195.53 | 1142.49 |
| 3197.91 | 1142.44 | 3200.23 | 1142.41 | 3208.41 | 1142.26 | 3220.36 | 1142.08 | 3220.86 | 1142.07 |
| 3226.4  | 1142.01 | 3226.98 | 1142    | 3232.53 | 1141.94 | 3232.95 | 1141.93 | 3237.86 | 1141.87 |
| 3239.4  | 1141.86 | 3244.77 | 1141.78 | 3245.9  | 1141.77 | 3273.99 | 1141.33 | 3276.09 | 1141.27 |
| 3277.54 | 1141.24 | 3286.73 | 1141    | 3287.62 | 1140.98 | 3328.04 | 1139.92 | 3328.53 | 1139.91 |
| 3329.14 | 1139.89 | 3334.73 | 1139.74 | 3336.49 | 1139.7  | 3340.52 | 1139.59 | 3350.96 | 1139.25 |
| 3357.11 | 1138.94 | 3357.34 | 1138.92 | 3361.91 | 1138.62 | 3363.83 | 1138.48 | 3365    | 1138.36 |
| 3365.58 | 1138.31 | 3366.27 | 1138.2  | 3368.16 | 1137.83 | 3368.94 | 1137.66 | 3376.2  | 1136    |
| 3376.53 | 1135.92 | 3377.06 | 1135.8  | 3378.72 | 1135.41 | 3380.24 | 1135    | 3383.33 | 1134.21 |
| 3384.11 | 1134    | 3387.63 | 1133.13 | 3388.08 | 1133    | 3390.09 | 1132.36 | 3391.24 | 1132    |
| 3391.74 | 1131.84 | 3394.19 | 1131    | 3395.55 | 1130.54 | 3397.19 | 1130    | 3398.81 | 1129.41 |
| 3399.97 | 1129    | 3400.52 | 1128.81 | 3402.65 | 1128    | 3405    | 1127.14 | 3405.39 | 1127    |
| 3407.85 | 1126.09 | 3408.08 | 1126    | 3419.78 | 1125    | 3481.58 | 1124.98 | 3491.98 | 1124.61 |
| 3495.54 | 1124.53 | 3500.59 | 1124.36 | 3503.54 | 1124.3  | 3509.54 | 1124.15 | 3520.57 | 1124.01 |
| 3521.72 | 1124    | 3559.11 | 1124.51 | 3562.73 | 1125    | 3569.73 | 1126.84 | 3570.32 | 1127    |
| 3570.9  | 1127.15 | 3574.13 | 1128    | 3575.22 | 1128.3  | 3577.82 | 1129    | 3591.59 | 1132.93 |
| 3591.82 | 1133    | 3595.2  | 1134    | 3596.17 | 1134.34 | 3603.53 | 1137    | 3604.88 | 1137.5  |
| 3608.77 | 1138.92 | 3608.98 | 1139    | 3613.62 | 1139.9  | 3614.35 | 1140    | 3623.45 | 1140.71 |
| 3625.92 | 1140.88 | 3627.43 | 1140.97 | 3628.06 | 1141    | 3630.32 | 1141.19 | 3636.55 | 1142    |
| 3732.44 | 1141.6  | 3738.25 | 1141    | 3740.07 | 1140.15 | 3740.41 | 1140    | 3741.1  | 1139.69 |
| 3742.58 | 1139    | 3743.96 | 1138.45 | 3745.01 | 1138    | 3746.2  | 1137.51 | 3749.29 | 1136.19 |
| 3749.74 | 1136    | 3751.1  | 1135.44 | 3751.94 | 1135.11 | 3752.2  | 1135    | 3755.82 | 1134.23 |
| 3756.15 | 1134.17 | 3758.15 | 1133.77 | 3758.87 | 1133.62 | 3760.29 | 1133.37 | 3761.34 | 1133.2  |
| 3761.6  | 1133.16 | 3762.09 | 1133.1  | 3762.94 | 1133    | 3766.25 | 1132.58 | 3767.16 | 1132.5  |
| 3770.15 | 1132.36 | 3771.9  | 1132.3  | 3772.57 | 1132.32 | 3773.13 | 1132.31 | 3773.76 | 1132.33 |
| 3778.69 | 1132.58 | 3779.83 | 1132.6  | 3780.16 | 1132.62 | 3780.81 | 1132.63 | 3781.55 | 1132.71 |
| 3782.48 | 1132.73 | 3787.49 | 1133    | 3791.53 | 1133.13 | 3795.81 | 1133.33 | 3804.4  | 1133.69 |
| 3805.7  | 1133.75 | 3809.38 | 1133.8  | 3813.42 | 1133.83 | 3814.23 | 1133.85 | 3818.58 | 1133.88 |
| 3819.09 | 1133.89 | 3823.88 | 1133.92 | 3824.19 | 1133.93 | 3836.45 | 1134    | 3837.03 | 1134.01 |
| 3842.58 | 1134.06 | 3842.94 | 1134.07 | 3846.36 | 1134.1  | 3855.91 | 1134.24 | 3858.36 | 1134.26 |
| 3866.42 | 1134.41 | 3869.38 | 1134.44 | 3875.93 | 1134.54 |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .04 1665.49 .039 2751.49 .04

Bank Sta: Left Right Coeff Contr. Expan.  
 1665.49 2751.49 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent

0 1665.49 1137.04 F  
 2751.49 3875.93 1138 F  
 Right Levee Station= 2812.04 Elevation= 1150

Downstream Deck/Roadway Coordinates

| num= | Sta     | Hi Cord | Lo Cord | Sta     | Hi Cord | Lo Cord | Sta     | Hi Cord | Lo Cord |
|------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 10   | 1656.43 | 1146.22 | 1139.6  | 1769.91 | 1146.35 | 1139.64 | 1898.41 | 1147.19 | 1140.48 |
|      | 2026.91 | 1147.56 | 1140.85 | 2155.41 | 1147.96 | 1141.25 | 2283.91 | 1148.36 | 1141.65 |
|      | 2412.41 | 1148.63 | 1141.92 | 2540.91 | 1148.91 | 1142.2  | 2669.41 | 1148.16 | 1141.45 |
|      | 2782.89 | 1147.16 | 1140.45 |         |         |         |         |         |         |

Downstream Bridge Cross Section Data

| Station | Elevation | Data    | num=    | 471     | Sta     | Elev    | Sta     | Elev    | Sta     | Elev | Sta | Elev |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|------|-----|------|
| 0       | 1133.82   | 12.57   | 1133.86 | 24.99   | 1134    | 29.02   | 1134.07 | 50.14   | 1134.33 |      |     |      |
| 53.54   | 1134.34   | 56.11   | 1134.32 | 58.36   | 1134.37 | 61.45   | 1134.27 | 62.62   | 1134.32 |      |     |      |
| 63.73   | 1134.3    | 65.59   | 1134.36 | 66.48   | 1134.38 | 67.67   | 1134.48 | 69.6    | 1134.62 |      |     |      |
| 72.89   | 1135      | 74.23   | 1135.13 | 75.25   | 1135.17 | 79.12   | 1135.46 | 82.25   | 1135.62 |      |     |      |
| 83.56   | 1135.6    | 85.85   | 1135.64 | 105.93  | 1135.29 | 107.33  | 1135.28 | 109.83  | 1135.23 |      |     |      |
| 114.13  | 1135.04   | 118.45  | 1134.91 | 119.6   | 1134.75 | 120.7   | 1134.74 | 123.47  | 1134.46 |      |     |      |
| 126.43  | 1134.43   | 246.3   | 1134.23 | 289.02  | 1134.45 | 293.01  | 1134.44 | 302.27  | 1134.51 |      |     |      |
| 331.12  | 1134.6    | 335.52  | 1134.64 | 364.41  | 1134.76 | 370.4   | 1134.74 | 373.79  | 1134.75 |      |     |      |
| 394.77  | 1134.7    | 400.22  | 1134.65 | 409.71  | 1134.64 | 413.28  | 1134.61 | 457.5   | 1134.48 |      |     |      |
| 460.08  | 1134.46   | 485.01  | 1134.42 | 528.45  | 1134.69 | 532.5   | 1134.74 | 534.08  | 1134.75 |      |     |      |
| 609.72  | 1136.05   | 610.28  | 1136.07 | 616.83  | 1136.2  | 620.12  | 1136.24 | 622.17  | 1136.3  |      |     |      |
| 625.89  | 1136.36   | 628.21  | 1136.42 | 636.87  | 1136.6  | 666.2   | 1137.51 | 667.32  | 1137.54 |      |     |      |
| 673.58  | 1137.75   | 674.11  | 1137.76 | 679.28  | 1137.93 | 679.7   | 1137.94 | 683.37  | 1138.06 |      |     |      |
| 838.81  | 1138.11   | 839.27  | 1138.1  | 854.92  | 1138.05 | 857.34  | 1138    | 860.75  | 1137.95 |      |     |      |
| 863.08  | 1138      | 864.49  | 1138.31 | 865.15  | 1138    | 866.91  | 1137.38 | 869.63  | 1138    |      |     |      |
| 870.95  | 1138.04   | 872.86  | 1137.96 | 876.64  | 1137.66 | 878.21  | 1137.82 | 881.12  | 1137.93 |      |     |      |
| 892.87  | 1137.86   | 949.18  | 1137.2  | 950.43  | 1137.18 | 956.59  | 1137.11 | 1005.74 | 1136.26 |      |     |      |
| 1007.76 | 1136.24   | 1046.46 | 1135.65 | 1047.69 | 1135.62 | 1073.87 | 1135.24 | 1075.07 | 1135.23 |      |     |      |
| 1079.92 | 1135.16   | 1080.85 | 1135.14 | 1086.16 | 1135.07 | 1086.56 | 1135.06 | 1102    | 1134.84 |      |     |      |
| 1102.88 | 1134.82   | 1144.46 | 1134.14 | 1145.25 | 1134.12 | 1164.04 | 1133.85 | 1167.39 | 1133.82 |      |     |      |
| 1203.08 | 1133.43   | 1204.75 | 1133.42 | 1217.8  | 1133.23 | 1218.85 | 1133.22 | 1226.43 | 1133.08 |      |     |      |
| 1226.86 | 1133.07   | 1244.83 | 1132.78 | 1245.64 | 1132.77 | 1276.04 | 1132.23 | 1276.91 | 1132.22 |      |     |      |
| 1280.52 | 1132.15   | 1281.21 | 1132.13 | 1309.55 | 1131.51 | 1323.55 | 1131.18 | 1324.46 | 1131.15 |      |     |      |
| 1330.84 | 1131      | 1331.88 | 1130.97 | 1370.59 | 1130.22 | 1371.33 | 1130.2  | 1381.66 | 1130.01 |      |     |      |
| 1382.46 | 1130      | 1396.93 | 1129.72 | 1397.97 | 1129.69 | 1404.84 | 1129.54 | 1406.48 | 1129.49 |      |     |      |
| 1407.52 | 1129.47   | 1413.94 | 1129.29 | 1414.45 | 1129.28 | 1417.38 | 1129.19 | 1418.24 | 1129.17 |      |     |      |
| 1426.29 | 1128.94   | 1426.71 | 1128.92 | 1439.48 | 1128.59 | 1440.87 | 1128.56 | 1442.51 | 1128.51 |      |     |      |
| 1470.69 | 1127.84   | 1471.84 | 1127.8  | 1475.37 | 1127.7  | 1493.48 | 1127    | 1501.46 | 1126.79 |      |     |      |
| 1502.28 | 1126.76   | 1505.77 | 1126.66 | 1507.59 | 1126.58 | 1510.19 | 1126.49 | 1513.96 | 1126.29 |      |     |      |
| 1515.23 | 1126.23   | 1518.68 | 1126.04 | 1519.32 | 1126    | 1524.95 | 1125.83 | 1526.11 | 1125.76 |      |     |      |
| 1529.67 | 1125.7    | 1530.57 | 1125.64 | 1531.72 | 1125.59 | 1534.89 | 1125.54 | 1538.15 | 1125.42 |      |     |      |
| 1540.25 | 1125.37   | 1543.98 | 1125.1  | 1548    | 1124.91 | 1548.51 | 1124.9  | 1550.84 | 1124.87 |      |     |      |
| 1555.18 | 1125.02   | 1556.08 | 1125.1  | 1559.36 | 1125.21 | 1560.93 | 1125.32 | 1562.28 | 1125.38 |      |     |      |
| 1565.34 | 1125.56   | 1569    | 1125.73 | 1572.55 | 1125.98 | 1573.87 | 1126.19 | 1574.27 | 1126.25 |      |     |      |
| 1574.76 | 1126.36   | 1576.32 | 1126.68 | 1577.43 | 1126.89 | 1578.14 | 1127    | 1579.4  | 1127.15 |      |     |      |
| 1580.46 | 1127.32   | 1581.9  | 1127.49 | 1586.85 | 1128.15 | 1588.43 | 1128.37 | 1591.5  | 1128.75 |      |     |      |
| 1591.9  | 1128.82   | 1592.68 | 1128.93 | 1595.31 | 1129.59 | 1597.7  | 1130    | 1599.85 | 1130.4  |      |     |      |
| 1600.81 | 1130.55   | 1605.35 | 1131.3  | 1607.06 | 1131.57 | 1613.14 | 1132.49 | 1614.81 | 1132.76 |      |     |      |
| 1619    | 1133.54   | 1620.08 | 1133.75 | 1621.31 | 1134    | 1626.16 | 1134.96 | 1635.27 | 1135.82 |      |     |      |
| 1636.76 | 1136      | 1638.28 | 1136.09 | 1656.43 | 1137    | 1686.6  | 1136.48 | 1688.24 | 1135.54 |      |     |      |
| 1689.17 | 1135      | 1689.85 | 1134.61 | 1690.9  | 1134    | 1691.42 | 1133.71 | 1692.63 | 1133    |      |     |      |
| 1693.1  | 1132.72   | 1694.35 | 1132    | 1695.03 | 1131.49 | 1699.71 | 1128    | 1700.16 | 1127.66 |      |     |      |
| 1702.19 | 1126.15   | 1702.87 | 1125.64 | 1703.75 | 1125    | 1706.56 | 1123    | 1707.09 | 1122.62 |      |     |      |
| 1709.1  | 1121.2    | 1710.9  | 1120    | 1713.27 | 1118.58 | 1715.94 | 1117    | 1716.34 | 1116.77 |      |     |      |
| 1717.71 | 1116      | 1718.52 | 1115.55 | 1719.62 | 1115    | 1722.04 | 1114.57 | 1723.31 | 1114.36 |      |     |      |
| 1724.44 | 1114.16   | 1725.28 | 1114    | 1728.87 | 1113.42 | 1731.2  | 1113    | 1738.96 | 1112    |      |     |      |
| 1748.59 | 1111      | 1791.16 | 1110    | 1824.25 | 1109    | 1858.39 | 1109.11 | 1902.5  | 1109.97 |      |     |      |
| 1902.92 | 1109.98   | 1903.5  | 1109.99 | 1978.65 | 1110.43 | 1980.98 | 1110.63 | 1982.13 | 1110.72 |      |     |      |
| 1991.23 | 1111      | 2018.69 | 1111.38 | 2025.87 | 1112    | 2066.26 | 1112.01 | 2141.73 | 1113    |      |     |      |
| 2160.06 | 1114      | 2244.46 | 1114.02 | 2296.12 | 1115    | 2405.61 | 1114.92 | 2410.71 | 1114.88 |      |     |      |
| 2463.51 | 1114.78   | 2464.42 | 1114.77 | 2466.21 | 1114.74 | 2467.41 | 1114.73 | 2468.09 | 1114.72 |      |     |      |
| 2476.71 | 1114.66   | 2504.28 | 1114.82 | 2513.58 | 1114.93 | 2516.9  | 1114.91 | 2541.26 | 1114.59 |      |     |      |
| 2542.6  | 1114.58   | 2573.95 | 1115    | 2723.43 | 1115.7  | 2726.32 | 1116    | 2727.59 | 1116.63 |      |     |      |
| 2728.32 | 1117      | 2728.9  | 1117.28 | 2730.32 | 1118    | 2730.77 | 1118.22 | 2733.8  | 1119.74 |      |     |      |
| 2734.29 | 1120      | 2735.97 | 1120.84 | 2737.84 | 1121.86 | 2741.34 | 1123.89 | 2745.08 | 1126    |      |     |      |
| 2746.81 | 1126.95   | 2748.32 | 1127.8  | 2749.46 | 1128.42 | 2750.51 | 1129    | 2751.76 | 1129.65 |      |     |      |
| 2753.03 | 1130.32   | 2754.36 | 1131    | 2754.94 | 1131.3  | 2756.32 | 1132    | 2762.15 | 1135    |      |     |      |
| 2769.62 | 1135.71   | 2773.93 | 1136    | 2776.63 | 1136.29 | 2779.33 | 1137    | 2782.89 | 1138    |      |     |      |
| 2787.46 | 1137.87   | 2797.14 | 1137.23 | 2802.36 | 1137    | 2803.35 | 1136.91 | 2806.66 | 1136.57 |      |     |      |
| 2818.9  | 1135.4    | 2826.6  | 1134.54 | 2831.65 | 1134.01 | 2834.58 | 1133.75 | 2838.97 | 1133.42 |      |     |      |
| 2844.7  | 1133.11   | 2846.29 | 1133.05 | 2848.16 | 1133.02 | 2848.95 | 1133    | 2852.83 | 1132.83 |      |     |      |
| 2855.84 | 1132.73   | 2857.72 | 1132.7  | 2861.56 | 1132.58 | 2867.93 | 1132.46 | 2869.81 | 1132.44 |      |     |      |
| 2872.01 | 1132.4    | 2878.38 | 1132.32 | 2883.52 | 1132.16 | 2884.4  | 1132.14 | 2889.58 | 1132    |      |     |      |
| 2899.14 | 1131.94   | 2904.64 | 1131.81 | 2912.89 | 1131.73 | 2928.67 | 1131.69 | 2938.02 | 1131.72 |      |     |      |
| 2939.81 | 1131.71   | 2943.7  | 1131.72 | 2945.5  | 1131.71 | 2953.99 | 1131.73 | 2955.28 | 1131.74 |      |     |      |
| 2959.66 | 1131.75   | 2961.67 | 1131.74 | 2964.56 | 1131.75 | 2965.7  | 1131.74 | 2986.01 | 1131.8  |      |     |      |
| 2987.42 | 1131.79   | 2995.83 | 1131.78 | 2996.72 | 1131.77 | 3020.24 | 1131.76 | 3021.69 | 1131.75 |      |     |      |
| 3025.38 | 1131.76   | 3026.92 | 1131.75 | 3051.99 | 1131.91 | 3052.52 | 1131.92 | 3079.24 | 1132.02 |      |     |      |
| 3085.23 | 1132.08   | 3085.76 | 1132.09 | 3112.93 | 1132.4  | 3123.87 | 1132.58 | 3136.19 | 1132.65 |      |     |      |
| 3150.39 | 1132.83   | 3151.38 | 1132.9  | 3155.51 | 1132.92 | 3162.72 | 1133    | 3168.35 | 1133.1  |      |     |      |
| 3168.88 | 1133.09   | 3189.34 | 1133.26 | 3198.57 | 1133.2  | 3234.9  | 1133.45 | 3237.53 | 1133.48 |      |     |      |
| 3255.46 | 1133.6    | 3256.58 | 1133.63 | 3258.87 | 1133.67 | 3260.46 | 1133.75 | 3265.86 | 1133.84 |      |     |      |
| 3266.52 | 1133.86   | 3270.86 | 1133.92 | 3292.06 | 1134.11 | 3292.71 | 1134.12 | 3298.02 | 1134.14 |      |     |      |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 3298.57 | 1134.15 | 3311.84 | 1134.2  | 3312.7  | 1134.21 | 3343.7  | 1134.35 | 3349.31 | 1134.33 |
| 3358.2  | 1134.26 | 3372.95 | 1134.31 | 3374.62 | 1134.35 | 3378.59 | 1134.42 | 3381.33 | 1134.49 |
| 3383.59 | 1134.53 | 3387.84 | 1134.65 | 3396.59 | 1135    | 3397.74 | 1135.06 | 3402.88 | 1135.27 |
| 3407.42 | 1135.4  | 3412.32 | 1135.49 | 3422.5  | 1135.56 | 3427.98 | 1135.51 | 3432.44 | 1135.42 |
| 3434.28 | 1135.37 | 3437.55 | 1135.3  | 3444.1  | 1135.02 | 3450.43 | 1134.52 | 3451.94 | 1134.38 |
| 3454.75 | 1134.08 | 3455.39 | 1134    | 3457.84 | 1133.66 | 3462.22 | 1133    | 3463.57 | 1132.67 |
| 3464.98 | 1132.31 | 3469.26 | 1131.13 | 3473.08 | 1130    | 3475.42 | 1129.2  | 3476.05 | 1129    |
| 3476.77 | 1128.76 | 3480.96 | 1127.3  | 3481.74 | 1127    | 3484.11 | 1126.13 | 3484.93 | 1125.92 |
| 3487.18 | 1125.58 | 3488.54 | 1125.49 | 3490.83 | 1125.24 | 3494.94 | 1125    | 3518.52 | 1125.08 |
| 3519.33 | 1125.09 | 3557.33 | 1124.46 | 3557.6  | 1124    | 3557.83 | 1123.6  | 3558.18 | 1123    |
| 3572.73 | 1122    | 3612.08 | 1121    | 3632.35 | 1120.85 | 3637.79 | 1121    | 3640.28 | 1121.09 |
| 3641.26 | 1121.26 | 3643.5  | 1121.55 | 3645.54 | 1122    | 3647.04 | 1122.35 | 3649.96 | 1123    |
| 3652.65 | 1123.64 | 3654.2  | 1124    | 3661.1  | 1125.97 | 3661.53 | 1126.09 | 3664.84 | 1127    |
| 3665.68 | 1127.24 | 3668.48 | 1128    | 3671.6  | 1128.87 | 3673.12 | 1129.31 | 3678.73 | 1130.76 |
| 3681.86 | 1131.5  | 3683.91 | 1132    | 3686    | 1132.48 | 3686.94 | 1132.68 | 3688.61 | 1133    |
| 3691.27 | 1133.49 | 3691.98 | 1133.61 | 3692.94 | 1133.75 | 3694.96 | 1134    | 3696.79 | 1134.28 |
| 3700.16 | 1134.72 | 3701.52 | 1134.91 | 3703    | 1135    | 3708.54 | 1135.2  | 3715.5  | 1135.51 |
| 3718.12 | 1135.6  | 3722.99 | 1135.81 | 3723.91 | 1135.86 | 3727.79 | 1136.1  | 3731.46 | 1136.25 |
| 3732.73 | 1136.29 | 3736.43 | 1136.38 | 3737.69 | 1136.39 | 3743.25 | 1136.37 | 3753.2  | 1136.56 |
| 3755.35 | 1136.59 | 3757.62 | 1136.57 | 3764.71 | 1136.56 | 3781.57 | 1136.71 | 3787.46 | 1136.82 |
| 3788.26 | 1136.84 | 3807.41 | 1137.18 | 3862.28 | 1137.45 | 3880.02 | 1137.7  | 3902.32 | 1137.81 |
| 3907.63 | 1137.86 |         |         |         |         |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 1686.6 .035 2782.89 .04

Bank Sta: Left Right Coeff Contr. Expan.  
 1686.6 2782.89 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1686.6 1136.48 F  
 2782.89 3907.63 1138 F  
 Left Levee Station= 1686.6 Elevation= 1136.48  
 Right Levee Station= 2782.89 Elevation= 1138

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .98  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Piers = 8

Pier Data  
 Pier Station Upstream= 1772.07 Downstream= 1769.91  
 Upstream num= 2  
 width Elev width Elev  
 5.66 1108 5.66 1139.64  
 Downstream num= 2  
 width Elev width Elev  
 5.66 1108 5.66 1139.64

Pier Data  
 Pier Station Upstream= 1900.57 Downstream= 1898.41  
 Upstream num= 2  
 width Elev width Elev  
 5.66 1108 5.66 1140.48  
 Downstream num= 2  
 width Elev width Elev  
 5.66 1108 5.66 1140.48

Pier Data  
 Pier Station Upstream= 2029.07 Downstream= 2026.91  
 Upstream num= 2  
 width Elev width Elev  
 5.66 1108 5.66 1140.85  
 Downstream num= 2  
 width Elev width Elev  
 5.66 1108 5.66 1140.85

Pier Data  
 Pier Station Upstream= 2157.57 Downstream= 2155.41  
 Upstream num= 2  
 width Elev width Elev  
 5.66 1108 5.66 1141.25  
 Downstream num= 2  
 width Elev width Elev  
 5.66 1108 5.66 1141.25

Pier Data  
 Pier Station Upstream= 2286.07 Downstream= 2283.91  
 Upstream num= 2  
 width Elev width Elev  
 5.66 1108 5.66 1141.65  
 Downstream num= 2

Width Elev width Elev  
5.66 1108 5.66 1141.65

Pier Data  
Pier Station Upstream= 2414.57 Downstream= 2412.41  
Upstream num= 2  
Width Elev width Elev  
5.66 1108 5.66 1141.92  
Downstream num= 2  
Width Elev width Elev  
5.66 1108 5.66 1141.92

Pier Data  
Pier Station Upstream= 2543.07 Downstream= 2540.91  
Upstream num= 2  
Width Elev width Elev  
5.66 1108 5.66 1142.2  
Downstream num= 2  
Width Elev width Elev  
5.66 1108 5.66 1142.2

Pier Data  
Pier Station Upstream= 2671.57 Downstream= 2669.41  
Upstream num= 2  
Width Elev width Elev  
5.66 1108 5.66 1141.45  
Downstream num= 2  
Width Elev width Elev  
5.66 1108 5.66 1141.45

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy  
Momentum Cd = 1.2  
Yarnell KVal = 1.05

Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Pressure and Weir flow  
Submerged Inlet Cd =  
Submerged Inlet + Outlet Cd = .8  
Max Low Cord =

Additional Bridge Parameters

Add Friction component to Momentum  
Do not add Weight component to Momentum  
Class B flow critical depth computations use critical depth  
inside the bridge at the upstream end  
Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 219.01

INPUT

Description:

Station Elevation Data num= 471

| Sta     | Elev    |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0       | 1133.82 | 12.57   | 1133.86 | 24.99   | 1134    | 29.02   | 1134.07 | 50.14   | 1134.33 |
| 53.54   | 1134.34 | 56.11   | 1134.32 | 58.36   | 1134.37 | 61.45   | 1134.27 | 62.62   | 1134.32 |
| 63.73   | 1134.3  | 65.59   | 1134.36 | 66.48   | 1134.38 | 67.67   | 1134.48 | 69.6    | 1134.62 |
| 72.89   | 1135    | 74.23   | 1135.13 | 75.25   | 1135.17 | 79.12   | 1135.46 | 82.25   | 1135.62 |
| 83.56   | 1135.6  | 85.85   | 1135.64 | 105.93  | 1135.29 | 107.33  | 1135.28 | 109.83  | 1135.23 |
| 114.13  | 1135.04 | 118.45  | 1134.91 | 119.6   | 1134.75 | 120.7   | 1134.74 | 123.47  | 1134.46 |
| 126.43  | 1134.43 | 246.3   | 1134.23 | 289.02  | 1134.45 | 293.01  | 1134.44 | 302.27  | 1134.51 |
| 331.12  | 1134.6  | 335.52  | 1134.64 | 364.41  | 1134.76 | 370.4   | 1134.74 | 373.79  | 1134.75 |
| 394.77  | 1134.7  | 400.22  | 1134.65 | 409.71  | 1134.64 | 413.28  | 1134.61 | 457.5   | 1134.48 |
| 460.08  | 1134.46 | 485.01  | 1134.42 | 528.45  | 1134.69 | 532.5   | 1134.74 | 534.08  | 1134.75 |
| 609.72  | 1136.05 | 610.28  | 1136.07 | 616.83  | 1136.2  | 620.12  | 1136.24 | 622.17  | 1136.3  |
| 625.89  | 1136.36 | 628.21  | 1136.42 | 636.87  | 1136.6  | 666.2   | 1137.51 | 667.32  | 1137.54 |
| 673.58  | 1137.75 | 674.11  | 1137.76 | 679.28  | 1137.93 | 679.7   | 1137.94 | 683.37  | 1138.06 |
| 838.81  | 1138.11 | 839.27  | 1138.1  | 854.92  | 1138.05 | 857.34  | 1138    | 860.75  | 1137.95 |
| 863.08  | 1138    | 864.49  | 1138.31 | 865.15  | 1138    | 866.91  | 1137.38 | 869.63  | 1138    |
| 870.95  | 1138.04 | 872.86  | 1137.96 | 876.64  | 1137.66 | 878.21  | 1137.82 | 881.12  | 1137.93 |
| 892.87  | 1137.86 | 949.18  | 1137.2  | 950.43  | 1137.18 | 956.59  | 1137.11 | 1005.74 | 1136.26 |
| 1007.76 | 1136.24 | 1046.46 | 1135.65 | 1047.69 | 1135.62 | 1073.87 | 1135.24 | 1075.07 | 1135.23 |
| 1079.92 | 1135.16 | 1080.85 | 1135.14 | 1086.16 | 1135.07 | 1086.56 | 1135.06 | 1102    | 1134.84 |
| 1102.88 | 1134.82 | 1144.46 | 1134.14 | 1145.25 | 1134.12 | 1164.04 | 1133.85 | 1167.39 | 1133.82 |
| 1203.08 | 1133.43 | 1204.75 | 1133.42 | 1217.8  | 1133.23 | 1218.85 | 1133.22 | 1226.43 | 1133.08 |
| 1226.86 | 1133.07 | 1244.83 | 1132.78 | 1245.64 | 1132.77 | 1276.04 | 1132.23 | 1276.91 | 1132.22 |
| 1280.52 | 1132.15 | 1281.21 | 1132.13 | 1309.55 | 1131.51 | 1323.55 | 1131.18 | 1324.46 | 1131.15 |
| 1330.84 | 1131    | 1331.88 | 1130.97 | 1370.59 | 1130.22 | 1371.33 | 1130.2  | 1381.66 | 1130.01 |
| 1382.46 | 1130    | 1396.93 | 1129.72 | 1397.97 | 1129.69 | 1404.84 | 1129.54 | 1406.48 | 1129.49 |
| 1407.52 | 1129.47 | 1413.94 | 1129.29 | 1414.45 | 1129.28 | 1417.38 | 1129.19 | 1418.24 | 1129.17 |
| 1426.29 | 1128.94 | 1426.71 | 1128.92 | 1439.48 | 1128.59 | 1440.87 | 1128.56 | 1442.51 | 1128.51 |

Proposed\_SkyHarbor\_rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1470.69 | 1127.84 | 1471.84 | 1127.8  | 1475.37 | 1127.7  | 1493.48 | 1127    | 1501.46 | 1126.79 |
| 1502.28 | 1126.76 | 1505.77 | 1126.66 | 1507.59 | 1126.58 | 1510.19 | 1126.49 | 1513.96 | 1126.29 |
| 1515.23 | 1126.23 | 1518.68 | 1126.04 | 1519.32 | 1126    | 1524.95 | 1125.83 | 1526.11 | 1125.76 |
| 1529.67 | 1125.7  | 1530.57 | 1125.64 | 1531.72 | 1125.59 | 1534.89 | 1125.54 | 1538.15 | 1125.42 |
| 1540.25 | 1125.37 | 1543.98 | 1125.1  | 1548    | 1124.91 | 1548.51 | 1124.9  | 1550.84 | 1124.87 |
| 1555.18 | 1125.02 | 1556.08 | 1125.1  | 1559.36 | 1125.21 | 1560.93 | 1125.32 | 1562.28 | 1125.38 |
| 1565.34 | 1125.56 | 1569    | 1125.73 | 1572.55 | 1125.98 | 1573.87 | 1126.19 | 1574.27 | 1126.25 |
| 1574.76 | 1126.36 | 1576.32 | 1126.68 | 1577.43 | 1126.89 | 1578.14 | 1127    | 1579.4  | 1127.15 |
| 1580.46 | 1127.32 | 1581.9  | 1127.49 | 1586.85 | 1128.15 | 1588.43 | 1128.37 | 1591.5  | 1128.75 |
| 1591.9  | 1128.82 | 1592.68 | 1128.93 | 1595.31 | 1129.59 | 1597.7  | 1130    | 1599.85 | 1130.4  |
| 1600.81 | 1130.55 | 1605.35 | 1131.3  | 1607.06 | 1131.57 | 1613.14 | 1132.49 | 1614.81 | 1132.76 |
| 1619    | 1133.54 | 1620.08 | 1133.75 | 1621.31 | 1134    | 1626.16 | 1134.96 | 1635.27 | 1135.82 |
| 1636.76 | 1136    | 1638.28 | 1136.09 | 1656.43 | 1137    | 1686.6  | 1136.48 | 1688.24 | 1135.54 |
| 1689.17 | 1135    | 1689.85 | 1134.61 | 1690.9  | 1134    | 1691.42 | 1133.71 | 1692.63 | 1133    |
| 1693.1  | 1132.72 | 1694.35 | 1132    | 1695.03 | 1131.49 | 1699.71 | 1128    | 1700.16 | 1127.66 |
| 1702.19 | 1126.15 | 1702.87 | 1125.64 | 1703.75 | 1125    | 1706.56 | 1123    | 1707.09 | 1122.62 |
| 1709.1  | 1121.2  | 1710.9  | 1120    | 1713.27 | 1118.58 | 1715.94 | 1117    | 1716.34 | 1116.77 |
| 1717.71 | 1116    | 1718.52 | 1115.55 | 1719.62 | 1115    | 1722.04 | 1114.57 | 1723.31 | 1114.36 |
| 1724.44 | 1114.16 | 1725.28 | 1114    | 1728.87 | 1113.42 | 1731.2  | 1113    | 1738.96 | 1112    |
| 1748.59 | 1111    | 1791.16 | 1110    | 1824.25 | 1109    | 1858.39 | 1109.11 | 1902.5  | 1109.97 |
| 1902.92 | 1109.98 | 1903.5  | 1109.99 | 1978.65 | 1110.43 | 1980.98 | 1110.63 | 1982.13 | 1110.72 |
| 1991.23 | 1111    | 2018.69 | 1111.38 | 2025.87 | 1112    | 2066.26 | 1112.01 | 2141.73 | 1113    |
| 2160.06 | 1114    | 2244.46 | 1114.02 | 2296.12 | 1115    | 2405.61 | 1114.92 | 2410.71 | 1114.88 |
| 2463.51 | 1114.78 | 2464.42 | 1114.77 | 2466.21 | 1114.74 | 2467.41 | 1114.73 | 2468.09 | 1114.72 |
| 2476.71 | 1114.66 | 2504.28 | 1114.82 | 2513.58 | 1114.93 | 2516.9  | 1114.91 | 2541.26 | 1114.59 |
| 2542.6  | 1114.58 | 2573.95 | 1115    | 2723.43 | 1115.7  | 2726.32 | 1116    | 2727.59 | 1116.63 |
| 2728.32 | 1117    | 2728.9  | 1117.28 | 2730.32 | 1118    | 2730.77 | 1118.22 | 2733.8  | 1119.74 |
| 2734.29 | 1120    | 2735.97 | 1120.84 | 2737.84 | 1121.86 | 2741.34 | 1123.89 | 2745.08 | 1126    |
| 2746.81 | 1126.95 | 2748.32 | 1127.8  | 2749.46 | 1128.42 | 2750.51 | 1129    | 2751.76 | 1129.65 |
| 2753.03 | 1130.32 | 2754.36 | 1131    | 2754.94 | 1131.3  | 2756.32 | 1132    | 2762.15 | 1135    |
| 2769.62 | 1135.71 | 2773.93 | 1136    | 2776.63 | 1136.29 | 2779.33 | 1137    | 2782.89 | 1138    |
| 2787.46 | 1137.87 | 2797.14 | 1137.23 | 2802.36 | 1137    | 2803.35 | 1136.91 | 2806.66 | 1136.57 |
| 2818.9  | 1135.4  | 2826.6  | 1134.54 | 2831.65 | 1134.01 | 2834.58 | 1133.75 | 2838.97 | 1133.42 |
| 2844.7  | 1133.11 | 2846.29 | 1133.05 | 2848.16 | 1133.02 | 2848.95 | 1133    | 2852.83 | 1132.83 |
| 2855.84 | 1132.73 | 2857.72 | 1132.7  | 2861.56 | 1132.58 | 2867.93 | 1132.46 | 2869.81 | 1132.44 |
| 2872.01 | 1132.4  | 2878.38 | 1132.32 | 2883.52 | 1132.16 | 2884.4  | 1132.14 | 2889.58 | 1132    |
| 2899.14 | 1131.94 | 2904.64 | 1131.81 | 2912.89 | 1131.73 | 2928.67 | 1131.69 | 2938.02 | 1131.72 |
| 2939.81 | 1131.71 | 2943.7  | 1131.72 | 2945.5  | 1131.71 | 2953.99 | 1131.73 | 2955.28 | 1131.74 |
| 2959.66 | 1131.75 | 2961.67 | 1131.74 | 2964.56 | 1131.75 | 2965.7  | 1131.74 | 2986.01 | 1131.8  |
| 2987.42 | 1131.79 | 2995.83 | 1131.78 | 2996.72 | 1131.77 | 3020.24 | 1131.76 | 3021.69 | 1131.75 |
| 3025.38 | 1131.76 | 3026.92 | 1131.75 | 3051.99 | 1131.91 | 3052.52 | 1131.92 | 3079.24 | 1132.02 |
| 3085.23 | 1132.08 | 3085.76 | 1132.09 | 3112.93 | 1132.4  | 3123.87 | 1132.58 | 3136.19 | 1132.65 |
| 3150.39 | 1132.83 | 3151.38 | 1132.9  | 3155.51 | 1132.92 | 3162.72 | 1133    | 3168.35 | 1133.1  |
| 3168.88 | 1133.09 | 3189.34 | 1133.26 | 3198.57 | 1133.2  | 3234.9  | 1133.45 | 3237.53 | 1133.48 |
| 3255.46 | 1133.6  | 3256.58 | 1133.63 | 3258.87 | 1133.67 | 3260.46 | 1133.75 | 3265.86 | 1133.84 |
| 3266.52 | 1133.86 | 3270.86 | 1133.92 | 3292.06 | 1134.11 | 3292.71 | 1134.12 | 3298.02 | 1134.14 |
| 3298.57 | 1134.15 | 3311.84 | 1134.2  | 3312.7  | 1134.21 | 3343.7  | 1134.35 | 3349.31 | 1134.33 |
| 3358.2  | 1134.26 | 3372.95 | 1134.31 | 3374.62 | 1134.35 | 3378.59 | 1134.42 | 3381.33 | 1134.49 |
| 3383.59 | 1134.53 | 3387.84 | 1134.65 | 3396.59 | 1135    | 3397.74 | 1135.06 | 3402.88 | 1135.27 |
| 3407.42 | 1135.4  | 3412.32 | 1135.49 | 3422.5  | 1135.56 | 3427.98 | 1135.51 | 3432.44 | 1135.42 |
| 3434.28 | 1135.37 | 3437.55 | 1135.3  | 3444.1  | 1135.02 | 3450.43 | 1134.52 | 3451.94 | 1134.38 |
| 3454.75 | 1134.08 | 3455.39 | 1134    | 3457.84 | 1133.66 | 3462.22 | 1133    | 3463.57 | 1132.67 |
| 3464.98 | 1132.31 | 3469.26 | 1131.13 | 3473.08 | 1130    | 3475.42 | 1129.2  | 3476.05 | 1129    |
| 3476.77 | 1128.76 | 3480.96 | 1127.3  | 3481.74 | 1127    | 3484.11 | 1126.13 | 3484.93 | 1125.92 |
| 3487.18 | 1125.58 | 3488.54 | 1125.49 | 3490.83 | 1125.24 | 3494.94 | 1125    | 3518.52 | 1125.08 |
| 3519.33 | 1125.09 | 3557.33 | 1124.46 | 3557.6  | 1124    | 3557.83 | 1123.6  | 3558.18 | 1123    |
| 3572.73 | 1122    | 3612.08 | 1121    | 3632.35 | 1120.85 | 3637.79 | 1121    | 3640.28 | 1121.09 |
| 3641.26 | 1121.26 | 3643.5  | 1121.55 | 3645.54 | 1122    | 3647.04 | 1122.35 | 3649.96 | 1123    |
| 3652.65 | 1123.64 | 3654.2  | 1124    | 3661.1  | 1125.97 | 3661.53 | 1126.09 | 3664.84 | 1127    |
| 3665.68 | 1127.24 | 3668.48 | 1128    | 3671.6  | 1128.87 | 3673.12 | 1129.31 | 3678.73 | 1130.76 |
| 3681.86 | 1131.5  | 3683.91 | 1132    | 3686    | 1132.48 | 3686.94 | 1132.68 | 3688.61 | 1133    |
| 3691.27 | 1133.49 | 3691.98 | 1133.61 | 3692.94 | 1133.75 | 3694.96 | 1134    | 3696.79 | 1134.28 |
| 3700.16 | 1134.72 | 3701.52 | 1134.91 | 3703    | 1135    | 3708.54 | 1135.2  | 3715.5  | 1135.51 |
| 3718.12 | 1135.6  | 3722.99 | 1135.81 | 3723.91 | 1135.86 | 3727.79 | 1136.1  | 3731.46 | 1136.25 |
| 3732.73 | 1136.29 | 3736.43 | 1136.38 | 3737.69 | 1136.39 | 3743.25 | 1136.37 | 3753.2  | 1136.56 |
| 3755.35 | 1136.59 | 3757.62 | 1136.57 | 3764.71 | 1136.56 | 3781.57 | 1136.71 | 3787.46 | 1136.82 |
| 3788.26 | 1136.84 | 3807.41 | 1137.18 | 3862.28 | 1137.45 | 3880.02 | 1137.7  | 3902.32 | 1137.81 |
| 3907.63 | 1137.86 |         |         |         |         |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 1686.6 .035 2782.89 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1686.6 2782.89 104.46 99.71 132.92 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1686.6 1136.48 F  
 2782.89 3907.63 1138 F  
 Left Levee Station= 1686.6 Elevation= 1136.48  
 Right Levee Station= 2782.89 Elevation= 1138

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 218.99

INPUT

Description:

| Station | Elevation | Data    | num=    | 436     | Station | Elevation | Data    | num=    | 436     | Station | Elevation | Data | num= | 436 | Station | Elevation | Data | num= | 436  |
|---------|-----------|---------|---------|---------|---------|-----------|---------|---------|---------|---------|-----------|------|------|-----|---------|-----------|------|------|------|
| Sta     | Elev      | Sta     | Elev    | Sta     | Elev    | Sta       | Elev    | Sta     | Elev    | Sta     | Elev      | Sta  | Elev | Sta | Elev    | Sta       | Elev | Sta  | Elev |
| 0       | 1143      | 60.72   | 1143.78 | 61.59   | 1143.79 | 62.78     | 1143.8  | 64.64   | 1143.82 |         |           |      |      |     |         |           |      |      |      |
| 78.84   | 1144      | 213.3   | 1144.87 | 214.51  | 1144.88 | 226.5     | 1145    | 329.05  | 1145.83 |         |           |      |      |     |         |           |      |      |      |
| 330.81  | 1145.84   | 331.79  | 1145.86 | 334.31  | 1145.89 | 335.7     | 1145.9  | 342.59  | 1146    |         |           |      |      |     |         |           |      |      |      |
| 450.04  | 1146.83   | 450.94  | 1146.84 | 458.07  | 1146.97 | 459.92    | 1147    | 538.8   | 1147.75 |         |           |      |      |     |         |           |      |      |      |
| 541.63  | 1147.76   | 551.88  | 1147.83 | 555.63  | 1147.85 | 655.52    | 1148.55 | 658.8   | 1148.58 |         |           |      |      |     |         |           |      |      |      |
| 660.56  | 1148.59   | 662.28  | 1148.62 | 664.92  | 1148.64 | 668.38    | 1148.69 | 669.43  | 1148.7  |         |           |      |      |     |         |           |      |      |      |
| 674.83  | 1148.79   | 675.97  | 1148.8  | 689.42  | 1149    | 774.15    | 1149.68 | 774.54  | 1149.69 |         |           |      |      |     |         |           |      |      |      |
| 777.42  | 1149.7    | 780.68  | 1149.72 | 784.96  | 1149.76 | 789.05    | 1149.81 | 791.07  | 1149.82 |         |           |      |      |     |         |           |      |      |      |
| 804.94  | 1150      | 895.61  | 1150.69 | 897.82  | 1150.7  | 906.22    | 1150.78 | 908.15  | 1150.79 |         |           |      |      |     |         |           |      |      |      |
| 913.37  | 1150.84   | 916.71  | 1150.88 | 917.79  | 1150.89 | 923.67    | 1150.97 | 925.64  | 1151    |         |           |      |      |     |         |           |      |      |      |
| 1010.21 | 1150.86   | 1011.07 | 1151    | 1017.22 | 1150.88 | 1017.64   | 1150    | 1017.95 | 1149.49 |         |           |      |      |     |         |           |      |      |      |
| 1018.21 | 1149      | 1018.5  | 1148.5  | 1018.75 | 1148    | 1018.84   | 1147.83 | 1019.28 | 1147    |         |           |      |      |     |         |           |      |      |      |
| 1019.39 | 1146.79   | 1019.8  | 1146    | 1020.31 | 1145.04 | 1020.4    | 1144.88 | 1020.67 | 1144.41 |         |           |      |      |     |         |           |      |      |      |
| 1020.89 | 1144      | 1021.22 | 1143.39 | 1021.42 | 1143    | 1021.88   | 1142.09 | 1021.93 | 1142    |         |           |      |      |     |         |           |      |      |      |
| 1022.26 | 1141.38   | 1022.46 | 1141    | 1022.88 | 1140.21 | 1023      | 1140    | 1023.38 | 1139.33 |         |           |      |      |     |         |           |      |      |      |
| 1023.55 | 1139      | 1024.76 | 1138.56 | 1026.27 | 1138    | 1026.66   | 1137.89 | 1029.86 | 1137    |         |           |      |      |     |         |           |      |      |      |
| 1034.97 | 1136.49   | 1043.1  | 1136    | 1043.57 | 1135.92 | 1043.81   | 1135.86 | 1043.94 | 1135.83 |         |           |      |      |     |         |           |      |      |      |
| 1047.11 | 1135      | 1047.67 | 1134.54 | 1048.35 | 1134    | 1048.46   | 1133.92 | 1049.61 | 1133    |         |           |      |      |     |         |           |      |      |      |
| 1050    | 1132.69   | 1050.88 | 1132    | 1051.5  | 1131.52 | 1052.17   | 1131    | 1053.22 | 1130.2  |         |           |      |      |     |         |           |      |      |      |
| 1053.48 | 1130      | 1053.85 | 1129.75 | 1054.9  | 1129    | 1055.75   | 1128.57 | 1055.97 | 1128.45 |         |           |      |      |     |         |           |      |      |      |
| 1056.87 | 1128      | 1058.13 | 1127.35 | 1058.79 | 1127    | 1060.21   | 1126.26 | 1060.73 | 1126.02 |         |           |      |      |     |         |           |      |      |      |
| 1062.17 | 1125.44   | 1063.15 | 1125    | 1065.05 | 1124.12 | 1066.05   | 1123.64 | 1070.72 | 1121.44 |         |           |      |      |     |         |           |      |      |      |
| 1072.33 | 1120.71   | 1073.32 | 1120.27 | 1073.91 | 1120    | 1075.55   | 1119.27 | 1076.14 | 1119    |         |           |      |      |     |         |           |      |      |      |
| 1077.61 | 1118.33   | 1078.35 | 1118    | 1079.62 | 1117.45 | 1080.64   | 1117    | 1082.12 | 1116.35 |         |           |      |      |     |         |           |      |      |      |
| 1082.91 | 1116      | 1084.48 | 1115.28 | 1085.07 | 1115    | 1086.57   | 1114.37 | 1087.44 | 1114    |         |           |      |      |     |         |           |      |      |      |
| 1088.69 | 1113.6    | 1090.5  | 1113    | 1092.25 | 1112.63 | 1092.43   | 1112.6  | 1095.7  | 1112    |         |           |      |      |     |         |           |      |      |      |
| 1096.66 | 1111.87   | 1097.25 | 1111.78 | 1099.39 | 1111.45 | 1102.47   | 1111    | 1105.58 | 1110.5  |         |           |      |      |     |         |           |      |      |      |
| 1105.8  | 1110.51   | 1106.38 | 1110.41 | 1107.55 | 1110.5  | 1109.21   | 1110.31 | 1111.95 | 1110.41 |         |           |      |      |     |         |           |      |      |      |
| 1113.48 | 1110.32   | 1113.9  | 1110.3  | 1115.52 | 1110.35 | 1116      | 1110.33 | 1118.38 | 1110.4  |         |           |      |      |     |         |           |      |      |      |
| 1123.69 | 1110.44   | 1124.56 | 1110.41 | 1125.23 | 1110.42 | 1125.9    | 1110.39 | 1127.71 | 1110.34 |         |           |      |      |     |         |           |      |      |      |
| 1129.11 | 1110.29   | 1148.59 | 1110.31 | 1149.45 | 1110.3  | 1152.19   | 1110.26 | 1179.59 | 1110    |         |           |      |      |     |         |           |      |      |      |
| 1194.06 | 1109.75   | 1196.71 | 1109.61 | 1200.32 | 1109.38 | 1201.59   | 1109.31 | 1201.97 | 1109.29 |         |           |      |      |     |         |           |      |      |      |
| 1204.55 | 1109.12   | 1204.78 | 1109.1  | 1206.48 | 1109    | 1239.19   | 1109.03 | 1259.99 | 1109.45 |         |           |      |      |     |         |           |      |      |      |
| 1267.58 | 1109.58   | 1281.9  | 1109.88 | 1282.61 | 1109.9  | 1287.42   | 1110    | 1382.1  | 1110.43 |         |           |      |      |     |         |           |      |      |      |
| 1388.4  | 1110.58   | 1404.52 | 1111    | 1404.81 | 1111.02 | 1405.22   | 1111.05 | 1414.18 | 1111.69 |         |           |      |      |     |         |           |      |      |      |
| 1417.92 | 1112      | 1442.45 | 1112.19 | 1446.28 | 1112.21 | 1548.41   | 1113    | 1564.41 | 1113.2  |         |           |      |      |     |         |           |      |      |      |
| 1566.67 | 1113.22   | 1603.07 | 1113.65 | 1613.74 | 1113.74 | 1616.89   | 1113.78 | 1639.54 | 1114    |         |           |      |      |     |         |           |      |      |      |
| 1645.29 | 1114.02   | 1652.16 | 1114.09 | 1653.06 | 1114.11 | 1654.94   | 1114.14 | 1660.47 | 1114.25 |         |           |      |      |     |         |           |      |      |      |
| 1662.75 | 1114.29   | 1699.63 | 1115    | 1852.07 | 1114    | 1887.02   | 1113.21 | 1910.64 | 1112.51 |         |           |      |      |     |         |           |      |      |      |
| 1924.64 | 1112.07   | 1926.57 | 1112    | 1947.86 | 1112.72 | 1952.97   | 1113    | 2086.76 | 1113.55 |         |           |      |      |     |         |           |      |      |      |
| 2089.6  | 1114      | 2091.12 | 1114.61 | 2092.15 | 1115    | 2093.65   | 1115.59 | 2096.72 | 1116.81 |         |           |      |      |     |         |           |      |      |      |
| 2097.21 | 1117      | 2097.51 | 1117.12 | 2099.63 | 1118    | 2100.88   | 1119    | 2101.54 | 1119.53 |         |           |      |      |     |         |           |      |      |      |
| 2102.12 | 1120      | 2103.15 | 1120.83 | 2103.37 | 1121    | 2104.51   | 1121.89 | 2104.65 | 1122    |         |           |      |      |     |         |           |      |      |      |
| 2104.84 | 1122.15   | 2105.9  | 1123    | 2106.18 | 1123.22 | 2107.15   | 1124    | 2108.33 | 1124.94 |         |           |      |      |     |         |           |      |      |      |
| 2108.47 | 1125.05   | 2109.66 | 1126    | 2110.58 | 1126.73 | 2110.91   | 1127    | 2111.91 | 1127.79 |         |           |      |      |     |         |           |      |      |      |
| 2112.16 | 1128      | 2118.09 | 1128.39 | 2126.86 | 1128.87 | 2127.3    | 1129    | 2129.99 | 1129.81 |         |           |      |      |     |         |           |      |      |      |
| 2130.61 | 1130      | 2132.65 | 1130.61 | 2133.93 | 1131    | 2134.41   | 1131.15 | 2137.24 | 1132    |         |           |      |      |     |         |           |      |      |      |
| 2140.38 | 1132.98   | 2140.46 | 1133    | 2140.85 | 1133.12 | 2143.7    | 1134    | 2149.53 | 1135.77 |         |           |      |      |     |         |           |      |      |      |
| 2150.3  | 1136      | 2153.03 | 1136.82 | 2153.61 | 1137    | 2169.31   | 1136.13 | 2169.73 | 1136    |         |           |      |      |     |         |           |      |      |      |
| 2173.69 | 1135.05   | 2173.89 | 1135    | 2175.06 | 1134.71 | 2177.87   | 1134    | 2178.4  | 1133.87 |         |           |      |      |     |         |           |      |      |      |
| 2181.87 | 1133      | 2187.11 | 1132.04 | 2187.34 | 1132    | 2188.05   | 1131.9  | 2194.24 | 1131    |         |           |      |      |     |         |           |      |      |      |
| 2195.83 | 1130.01   | 2196.56 | 1129    | 2222.55 | 1128.51 | 2224.13   | 1128    | 2224.67 | 1127.78 |         |           |      |      |     |         |           |      |      |      |
| 2226.71 | 1127      | 2254.66 | 1127.5  | 2255.63 | 1128    | 2257.29   | 1128.82 | 2257.65 | 1129    |         |           |      |      |     |         |           |      |      |      |
| 2259.23 | 1129.75   | 2259.74 | 1130    | 2261.13 | 1130.64 | 2261.89   | 1131    | 2263.69 | 1131.8  |         |           |      |      |     |         |           |      |      |      |
| 2264.12 | 1132      | 2264.75 | 1132.28 | 2269.04 | 1133.98 | 2271.46   | 1135    | 2271.7  | 1135.07 |         |           |      |      |     |         |           |      |      |      |
| 2274.37 | 1136      | 2274.65 | 1136.09 | 2277.6  | 1137    | 2280.91   | 1138    | 2282.68 | 1138.54 |         |           |      |      |     |         |           |      |      |      |
| 2284.15 | 1139      | 2285.32 | 1139.37 | 2287.34 | 1140    | 2289.3    | 1140.6  | 2290.57 | 1141    |         |           |      |      |     |         |           |      |      |      |
| 2293.68 | 1141.96   | 2293.8  | 1142    | 2293.91 | 1142.03 | 2295.07   | 1142.39 | 2297.05 | 1143    |         |           |      |      |     |         |           |      |      |      |
| 2297.25 | 1143.06   | 2300.36 | 1144    | 2303.71 | 1145    | 2304.86   | 1145.33 | 2307.16 | 1146    |         |           |      |      |     |         |           |      |      |      |
| 2309.43 | 1146.52   | 2311.67 | 1147    | 2316.4  | 1148    | 2317.71   | 1148.59 | 2318.73 | 1149    |         |           |      |      |     |         |           |      |      |      |
| 2324.3  | 1148.89   | 2324.75 | 1148.94 | 2325.31 | 1148.97 | 2329.5    | 1148.91 | 2338.42 | 1148.81 |         |           |      |      |     |         |           |      |      |      |
| 2343.01 | 1148.77   | 2348.51 | 1148.7  | 2352.48 | 1148.64 | 2355      | 1148.62 | 2373.07 | 1148.43 |         |           |      |      |     |         |           |      |      |      |
| 2375.26 | 1148.41   | 2376.91 | 1148.4  | 2378.92 | 1148.38 | 2383.09   | 1148.35 | 2385.28 | 1148.33 |         |           |      |      |     |         |           |      |      |      |
| 2390.61 | 1148.26   | 2392.22 | 1148.23 | 2408.06 | 1148    | 2413.58   | 1147.9  | 2414.17 | 1147.89 |         |           |      |      |     |         |           |      |      |      |
| 2415.28 | 1147.86   | 2415.88 | 1147.85 | 2419.11 | 1147.78 | 2420.07   | 1147.75 | 2426.08 | 1147.62 |         |           |      |      |     |         |           |      |      |      |
| 2428.77 | 1147.55   | 2432.08 | 1147.48 | 2439.02 | 1147.31 | 2442.34   | 1147.25 | 2443.86 | 1147.21 |         |           |      |      |     |         |           |      |      |      |
| 2447.99 | 1147.14   | 2448.63 | 1147.12 | 2454.51 | 1147.02 | 2454.62   | 1147.01 | 2455.53 | 1147    |         |           |      |      |     |         |           |      |      |      |
| 2465.78 | 1146.84   | 2469.44 | 1146.79 | 2470.64 | 1146.77 | 2474.48   | 1146.73 | 2476.19 | 1146.7  |         |           |      |      |     |         |           |      |      |      |
| 2480.46 | 1146.64   | 2482.34 | 1146.61 | 2487.63 | 1146.54 | 2490.24   | 1146.5  | 2493.52 | 1146.44 |         |           |      |      |     |         |           |      |      |      |
| 2494.8  | 1146.42   | 2495.52 | 1146.41 | 2499.43 | 1146.35 | 2501.33   | 1146.31 | 2505.36 | 1146.24 |         |           |      |      |     |         |           |      |      |      |
| 2507.99 | 1146.2    | 2508.75 | 1146.18 | 2514.59 | 1146.11 | 2514.9    | 1146.1  | 2519.99 | 1146.04 |         |           |      |      |     |         |           |      |      |      |
| 2520.23 | 1146.03   | 2533.42 | 1145.89 | 2534.17 | 1145.87 | 2539.38   | 1145.82 | 2540.56 | 1145.8  |         |           |      |      |     |         |           |      |      |      |
| 2545.34 | 1145.75   | 2546.48 | 1145.74 | 2551.52 | 1145.68 | 2553.46   | 1145.66 | 2555.84 | 1145.63 |         |           |      |      |     |         |           |      |      |      |
| 2563.89 | 1145.54   | 2568.53 | 1145.48 | 2571.65 | 1145.45 | 2572.87   | 1145.43 | 2575.84 | 1145.39 |         |           |      |      |     |         |           |      |      |      |
| 2582.62 | 1145.27   | 2584.12 | 1145.25 | 2584.46 | 1145.24 | 2589.2    | 1145.16 | 2590.02 | 1145.15 |         |           |      |      |     |         |           |      |      |      |
| 2596.14 | 1145.05   | 2606.17 | 1144.91 | 2606.73 | 1144.9  | 2607.76   | 1144.88 | 2619.46 | 1144.72 |         |           |      |      |     |         |           |      |      |      |
| 2620.82 | 1144.69   | 2622.21 | 1144.65 | 2623.74 | 1144.61 | 2635.23   | 1144.43 | 2641.05 | 1144.37 |         |           |      |      |     |         |           |      |      |      |
| 2645.49 | 1144.31   | 2648.34 | 1144.28 | 2651.78 | 1144.26 | 2653.66   | 1144.23 | 2656.81 | 1144.22 |         |           |      |      |     |         |           |      |      |      |
| 2657.8  | 1144.21   | 2660.62 | 1144.23 | 2661.37 | 1144.24 | 2662.67   | 1144.26 | 2665.62 | 1144.31 |         |           |      |      |     |         |           |      |      |      |
| 2667.15 | 1144.33   | 2676.95 | 1144.32 | 2679.63 | 1144.31 | 2682.41   | 1144.28 | 2693.52 | 1144.2  |         |           |      |      |     |         |           |      |      |      |
| 2697.26 | 1144.12   | 2700.78 | 1144    | 2704.53 | 1143.83 | 2705.76   | 1143.75 | 2707.51 | 1143.72 |         |           |      |      |     |         |           |      |      |      |
| 2708.96 | 1143.64   | 2713.24 | 1143.48 | 2714.91 | 1143.43 | 2717.77   | 1143.39 | 2720.81 | 1143.32 |         |           |      |      |     |         |           |      |      |      |
| 2722.48 | 1143.3    | 2728.17 | 1143.2  | 2731.24 | 1143.14 | 2731.97   | 1143.13 | 2735.61 | 1143.05 |         |           |      |      |     |         |           |      |      |      |
| 2737.4  | 1143      | 2739.36 | 1142.92 | 2739.73 | 1142.91 | 2743.57   | 1142.76 | 2744.76 | 1142.75 |         |           |      |      |     |         |           |      |      |      |

2745.36 1142.71 2752.32 1142.38 2754.61 1142.35 2766.33 1142.31 2768.15 1142.29
2773.45 1142.25 2783.37 1142.01 2783.61 1142 2786.47 1141.79 2791.27 1141.55
2795.35 1141.54 2795.69 1141.52 2797.73 1141.51 2808.01 1141 2832.46 1140.53
2842.2 1140

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
0 .04 1017.22 .035 2153.61 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
1017.22 2153.61 156.44 141.27 128.83 .1 .3
Ineffective Flow num= 2
Sta L Sta R Elev Permanent
0 1017.22 1150.88 F
2153.61 2842.2 1137 F
Right Levee Station= 2153.61 Elevation= 1137

BRIDGE

RIVER: Salt
REACH: 1 RS: 218.975

INPUT

Description: SR 153 Bridge
Distance from Upstream XS = 12.05
Deck/Roadway Width = 117.17
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates

num= 10
Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord
1017.22 1150.35 1143.68 1164.85 1151.59 1144.92 1308.6 1152.55 1145.88
1452.35 1153.1 1146.43 1596.1 1153.22 1146.55 1739.85 1152.93 1146.26
1883.6 1152.21 1145.54 2027.35 1151.07 1144.4 2171.1 1149.51 1142.84
2318.73 1147.92 1141.25

Upstream Bridge Cross Section Data

Station Elevation Data num= 436
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
0 1143 60.72 1143.78 61.59 1143.79 62.78 1143.8 64.64 1143.82
78.84 1144 213.3 1144.87 214.51 1144.88 226.5 1145 329.05 1145.83
330.81 1145.84 331.79 1145.86 334.31 1145.89 335.7 1145.9 342.59 1146
450.04 1146.83 450.94 1146.84 458.07 1146.97 459.92 1147 538.8 1147.75
541.63 1147.76 551.88 1147.83 555.63 1147.85 655.52 1148.55 658.8 1148.58
660.56 1148.59 662.28 1148.62 664.92 1148.64 668.38 1148.69 669.43 1148.7
674.83 1148.79 675.97 1148.8 689.42 1149 774.15 1149.68 774.54 1149.69
777.42 1149.7 780.68 1149.72 784.96 1149.76 789.05 1149.81 791.07 1149.82
804.94 1150 895.61 1150.69 897.82 1150.7 906.22 1150.78 908.15 1150.79
913.37 1150.84 916.71 1150.88 917.79 1150.89 923.67 1150.97 925.64 1151
1010.21 1150.86 1011.07 1151 1017.22 1150.88 1017.64 1150 1017.95 1149.49
1018.21 1149 1018.5 1148.5 1018.75 1148 1018.84 1147.83 1019.28 1147
1019.39 1146.79 1019.8 1146 1020.31 1145.04 1020.4 1144.88 1020.67 1144.41
1020.89 1144 1021.22 1143.39 1021.42 1143 1021.88 1142.09 1021.93 1142
1022.26 1141.38 1022.46 1141 1022.88 1140.21 1023 1140 1023.38 1139.33
1023.55 1139 1024.76 1138.56 1026.27 1138 1026.66 1137.89 1029.86 1137
1034.97 1136.49 1043.1 1136 1043.57 1135.92 1043.81 1135.86 1043.94 1135.83
1047.11 1135 1047.67 1134.54 1048.35 1134 1048.46 1133.92 1049.61 1133
1050 1132.69 1050.88 1132 1051.5 1131.52 1052.17 1131 1053.22 1130.2
1053.48 1130 1053.85 1129.75 1054.9 1129 1055.75 1128.57 1055.97 1128.45
1056.87 1128 1058.13 1127.35 1058.79 1127 1060.21 1126.26 1060.73 1126.02
1062.17 1125.44 1063.15 1125 1065.05 1124.12 1066.05 1123.64 1070.72 1121.44
1072.33 1120.71 1073.32 1120.27 1073.91 1120 1075.55 1119.27 1076.14 1119
1077.61 1118.33 1078.35 1118 1079.62 1117.45 1080.64 1117 1082.12 1116.35
1082.91 1116 1084.48 1115.28 1085.07 1115 1086.57 1114.37 1087.44 1114
1088.69 1113.6 1090.5 1113 1092.25 1112.63 1092.43 1112.6 1095.7 1112
1096.66 1111.87 1097.25 1111.78 1099.39 1111.45 1102.47 1111 1105.58 1110.5
1105.8 1110.51 1106.38 1110.41 1107.55 1110.5 1109.21 1110.31 1111.95 1110.41
1113.48 1110.32 1113.9 1110.3 1115.52 1110.35 1116 1110.33 1118.38 1110.4
1123.69 1110.44 1124.56 1110.41 1125.23 1110.42 1125.9 1110.39 1127.71 1110.34
1129.11 1110.29 1148.59 1110.31 1149.45 1110.3 1152.19 1110.26 1179.59 1110
1194.06 1109.75 1196.71 1109.61 1200.32 1109.38 1201.59 1109.31 1201.97 1109.29
1204.55 1109.12 1204.78 1109.1 1206.48 1109 1239.19 1109.03 1259.99 1109.45
1267.58 1109.58 1281.9 1109.88 1282.61 1109.9 1287.42 1110 1382.1 1110.43
1388.4 1110.58 1404.52 1111 1404.81 1111.02 1405.22 1111.05 1414.18 1111.69
1417.92 1112 1442.45 1112.19 1446.28 1112.21 1548.41 1113 1564.41 1113.2
1566.67 1113.22 1603.07 1113.65 1613.74 1113.74 1616.89 1113.78 1639.54 1114
1645.29 1114.02 1652.16 1114.09 1653.06 1114.11 1654.94 1114.14 1660.47 1114.25
1662.75 1114.29 1699.63 1115 1852.07 1114 1887.02 1113.21 1910.64 1112.51
1924.64 1112.07 1926.57 1112 1947.86 1112.72 1952.97 1113 2086.76 1113.55
2089.6 1114 2091.12 1114.61 2092.15 1115 2093.65 1115.59 2096.72 1116.81
2097.21 1117 2097.51 1117.12 2099.63 1118 2100.88 1119 2101.54 1119.53
2102.12 1120 2103.15 1120.83 2103.37 1121 2104.51 1121.89 2104.65 1122
2104.84 1122.15 2105.9 1123 2106.18 1123.22 2107.15 1124 2108.33 1124.94
2108.47 1125.05 2109.66 1126 2110.58 1126.73 2110.91 1127 2111.91 1127.79
2112.16 1128 2118.09 1128.39 2126.86 1128.87 2127.3 1129 2129.99 1129.81
2130.61 1130 2132.65 1130.61 2133.93 1131 2134.41 1131.15 2137.24 1132
2140.38 1132.98 2140.46 1133 2140.85 1133.12 2143.7 1134 2149.53 1135.77
2150.3 1136 2153.03 1136.82 2153.61 1137 2169.31 1136.13 2169.73 1136

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2173.69 | 1135.05 | 2173.89 | 1135    | 2175.06 | 1134.71 | 2177.87 | 1134    | 2178.4  | 1133.87 |
| 2181.87 | 1133    | 2187.11 | 1132.04 | 2187.34 | 1132    | 2188.05 | 1131.9  | 2194.24 | 1131    |
| 2195.83 | 1130.01 | 2196.56 | 1129    | 2222.55 | 1128.51 | 2224.13 | 1128    | 2224.67 | 1127.78 |
| 2226.71 | 1127    | 2254.66 | 1127.5  | 2255.63 | 1128    | 2257.29 | 1128.82 | 2257.65 | 1129    |
| 2259.23 | 1129.75 | 2259.74 | 1130    | 2261.13 | 1130.64 | 2261.89 | 1131    | 2263.69 | 1131.8  |
| 2264.12 | 1132    | 2264.75 | 1132.28 | 2269.04 | 1133.98 | 2271.46 | 1135    | 2271.7  | 1135.07 |
| 2274.37 | 1136    | 2274.65 | 1136.09 | 2277.6  | 1137    | 2280.91 | 1138    | 2282.68 | 1138.54 |
| 2284.15 | 1139    | 2285.32 | 1139.37 | 2287.34 | 1140    | 2289.3  | 1140.6  | 2290.57 | 1141    |
| 2293.68 | 1141.96 | 2293.8  | 1142    | 2293.91 | 1142.03 | 2295.07 | 1142.39 | 2297.05 | 1143    |
| 2297.25 | 1143.06 | 2300.36 | 1144    | 2303.71 | 1145    | 2304.86 | 1145.33 | 2307.16 | 1146    |
| 2309.43 | 1146.52 | 2311.67 | 1147    | 2316.4  | 1148    | 2317.71 | 1148.59 | 2318.73 | 1149    |
| 2324.3  | 1148.89 | 2324.75 | 1148.94 | 2325.31 | 1148.97 | 2329.5  | 1148.91 | 2338.42 | 1148.81 |
| 2343.01 | 1148.77 | 2348.51 | 1148.7  | 2352.48 | 1148.64 | 2355    | 1148.62 | 2373.07 | 1148.43 |
| 2375.26 | 1148.41 | 2376.91 | 1148.4  | 2378.92 | 1148.38 | 2383.09 | 1148.35 | 2385.28 | 1148.33 |
| 2390.61 | 1148.26 | 2392.22 | 1148.23 | 2408.06 | 1148    | 2413.58 | 1147.9  | 2414.17 | 1147.89 |
| 2415.28 | 1147.86 | 2415.88 | 1147.85 | 2419.11 | 1147.78 | 2420.07 | 1147.75 | 2426.08 | 1147.62 |
| 2428.77 | 1147.55 | 2432.08 | 1147.48 | 2439.02 | 1147.31 | 2442.34 | 1147.25 | 2443.86 | 1147.21 |
| 2447.99 | 1147.14 | 2448.63 | 1147.12 | 2454.51 | 1147.02 | 2454.62 | 1147.01 | 2455.53 | 1147    |
| 2465.78 | 1146.84 | 2469.44 | 1146.79 | 2470.64 | 1146.77 | 2474.48 | 1146.73 | 2476.19 | 1146.7  |
| 2480.46 | 1146.64 | 2482.34 | 1146.61 | 2487.63 | 1146.54 | 2490.24 | 1146.5  | 2493.52 | 1146.44 |
| 2494.8  | 1146.42 | 2495.52 | 1146.41 | 2499.43 | 1146.35 | 2501.33 | 1146.31 | 2505.36 | 1146.24 |
| 2507.99 | 1146.2  | 2508.75 | 1146.18 | 2514.59 | 1146.11 | 2514.9  | 1146.1  | 2519.99 | 1146.04 |
| 2520.23 | 1146.03 | 2533.42 | 1145.89 | 2534.17 | 1145.87 | 2539.38 | 1145.82 | 2540.56 | 1145.8  |
| 2545.34 | 1145.75 | 2546.48 | 1145.74 | 2551.52 | 1145.68 | 2553.46 | 1145.66 | 2555.84 | 1145.63 |
| 2563.89 | 1145.54 | 2568.53 | 1145.48 | 2571.65 | 1145.45 | 2572.87 | 1145.43 | 2575.84 | 1145.39 |
| 2582.62 | 1145.27 | 2584.12 | 1145.25 | 2584.46 | 1145.24 | 2589.2  | 1145.16 | 2590.02 | 1145.15 |
| 2596.14 | 1145.05 | 2606.17 | 1144.91 | 2606.73 | 1144.9  | 2607.76 | 1144.88 | 2619.46 | 1144.72 |
| 2620.82 | 1144.69 | 2622.21 | 1144.65 | 2623.74 | 1144.61 | 2635.23 | 1144.43 | 2641.05 | 1144.37 |
| 2645.49 | 1144.31 | 2648.34 | 1144.28 | 2651.78 | 1144.26 | 2653.66 | 1144.23 | 2656.81 | 1144.22 |
| 2657.8  | 1144.21 | 2660.62 | 1144.23 | 2661.37 | 1144.24 | 2662.67 | 1144.26 | 2665.62 | 1144.31 |
| 2667.15 | 1144.33 | 2676.95 | 1144.32 | 2679.63 | 1144.31 | 2682.41 | 1144.28 | 2693.52 | 1144.2  |
| 2697.26 | 1144.12 | 2700.78 | 1144    | 2704.53 | 1143.83 | 2705.76 | 1143.75 | 2707.51 | 1143.72 |
| 2708.96 | 1143.64 | 2713.24 | 1143.48 | 2714.91 | 1143.43 | 2717.77 | 1143.39 | 2720.81 | 1143.32 |
| 2722.48 | 1143.3  | 2728.17 | 1143.2  | 2731.24 | 1143.14 | 2731.97 | 1143.13 | 2735.61 | 1143.05 |
| 2737.4  | 1143    | 2739.36 | 1142.92 | 2739.73 | 1142.91 | 2743.57 | 1142.76 | 2744.76 | 1142.75 |
| 2745.36 | 1142.71 | 2752.32 | 1142.38 | 2754.61 | 1142.35 | 2766.33 | 1142.31 | 2768.15 | 1142.29 |
| 2773.45 | 1142.25 | 2783.37 | 1142.01 | 2783.61 | 1142    | 2786.47 | 1141.79 | 2791.27 | 1141.55 |
| 2795.35 | 1141.54 | 2795.69 | 1141.52 | 2797.73 | 1141.51 | 2808.01 | 1141    | 2832.46 | 1140.53 |
| 2842.2  | 1140    |         |         |         |         |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .04 1017.22 .035 2153.61 .04

Bank Sta: Left Right Coeff Contr. Expan.  
 1017.22 2153.61 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1017.22 1150.88 F  
 2153.61 2842.2 1137 F  
 Right Levee Station= 2153.61 Elevation= 1137

Downstream Deck/Roadway Coordinates num= 10  
 Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord  
 810.45 1150.35 1143.68 1046.84 1151.59 1144.92 1190.59 1152.55 1145.88  
 1334.34 1153.1 1146.43 1478.09 1153.22 1146.55 1621.84 1152.93 1146.26  
 1765.59 1152.21 1145.54 1909.34 1151.07 1144.4 2053.09 1149.51 1142.84  
 2289.48 1147.92 1141.25

Downstream Bridge Cross Section Data num= 473  
 Station Elevation Data Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 0 1135.85 7.55 1135.76 8.1 1135.75 15.24 1135.68 17.39 1135.65  
 19.13 1135.64 20.37 1135.62 36.56 1135.5 38.42 1135.48 44.97 1135.45  
 56.53 1135.35 57.98 1135.33 66.36 1135.24 67.67 1135.22 74.95 1135.14  
 75.55 1135.13 80.47 1135.08 80.81 1135.07 90.07 1134.98 97.45 1135  
 102.39 1135.04 102.72 1135.05 106.81 1135.09 108.19 1135.11 120.65 1135.25  
 122.56 1135.28 126.54 1135.32 129.04 1135.36 138.61 1135.47 139.55 1135.49  
 149.33 1135.61 150.96 1135.64 152.68 1135.66 154.6 1135.71 157.83 1135.82  
 158.67 1135.84 163.1 1136 164.98 1136.06 165.47 1136.08 180.48 1136.59  
 192.82 1136.27 193.75 1136.25 197.22 1136.16 206.72 1135.95 207.05 1135.94  
 211.23 1135.84 211.53 1135.83 212.65 1135.8 216.49 1135.71 220.15 1135.65  
 220.56 1135.64 233.68 1135.41 235.21 1135.4 250.85 1135.22 252.26 1135.21  
 281.36 1134.9 281.76 1134.89 302.53 1134.66 305.85 1134.64 306.64 1134.63  
 314.6 1134.58 336.83 1134.59 338.79 1134.6 376.34 1134.69 387.57 1134.77  
 388.5 1134.78 400.46 1134.96 405.23 1135.05 405.42 1135.06 413.61 1135.21  
 414.43 1135.23 437.6 1135.7 437.86 1135.69 442.18 1135.57 443.7 1135.52  
 460.71 1135.04 460.9 1135.03 466.14 1134.88 466.62 1134.87 467.23 1134.85  
 476.28 1134.59 477.24 1134.57 487.2 1134.29 492.67 1134.16 509.57 1133.88  
 514.87 1133.81 515.95 1133.8 528.27 1133.65 530.12 1133.62 541.22 1133.52  
 548.32 1133.54 550.45 1133.56 554.15 1133.58 556.07 1133.6 595.18 1133.83  
 596.01 1133.84 604.61 1133.9 605 1133.91 607.02 1133.93 613.65 1134.02  
 620.78 1134.19 625.82 1134.34 627.16 1134.39 630.92 1134.51 631.79 1134.49  
 649.6 1134.25 674.28 1133.94 679.63 1133.91 680.14 1133.92 685.52 1133.96  
 697.06 1134.12 697.29 1134.13 700.67 1134.18 713.61 1134.41 717.62 1134.53  
 718.9 1134.59 719.45 1134.62 721.18 1134.76 721.7 1134.8 727.18 1135.3  
 728.4 1135.44 731.49 1135.71 732.12 1135.79 732.53 1135.86 733.24 1136

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 736.84  | 1136.54 | 738.4   | 1136.78 | 739.78  | 1137    | 744.01  | 1137.58 | 747.4   | 1137.98 |
| 748.85  | 1138.15 | 749.13  | 1138.17 | 749.4   | 1138.2  | 750.84  | 1138.39 | 751.7   | 1138.46 |
| 752.43  | 1138.5  | 754.72  | 1138.61 | 758.73  | 1138.73 | 761.5   | 1138.8  | 762.14  | 1138.81 |
| 762.43  | 1138.82 | 767.63  | 1138.8  | 768.12  | 1138.79 | 768.38  | 1138.78 | 769.78  | 1138.76 |
| 771.47  | 1138.69 | 774.64  | 1138.58 | 778.1   | 1138.42 | 783.88  | 1138    | 784.21  | 1137.99 |
| 788.33  | 1137.88 | 788.92  | 1137.86 | 794.77  | 1137.68 | 797.53  | 1137.56 | 800.56  | 1137.46 |
| 803.53  | 1137.32 | 804.91  | 1137.27 | 808.43  | 1137.1  | 808.98  | 1137.08 | 810.45  | 1137    |
| 812     | 1136.31 | 812.71  | 1136    | 813.17  | 1135.79 | 814.99  | 1135    | 817.12  | 1134.05 |
| 818.09  | 1133.63 | 819.5   | 1133    | 821.35  | 1132.16 | 821.61  | 1132.04 | 821.99  | 1131.85 |
| 823.62  | 1131    | 824.69  | 1130.38 | 826.99  | 1129.02 | 828.69  | 1128    | 829.2   | 1127.7  |
| 829.82  | 1127.33 | 830.36  | 1127    | 831.64  | 1126.24 | 832.05  | 1126    | 833.32  | 1125.25 |
| 833.75  | 1125    | 835.2   | 1124.15 | 835.45  | 1124    | 837.1   | 1123.03 | 840.04  | 1121.31 |
| 840.56  | 1121    | 841.29  | 1120.56 | 842.28  | 1120    | 843.11  | 1119.54 | 845.59  | 1118.19 |
| 845.95  | 1118    | 846.7   | 1117.6  | 847.87  | 1117    | 848.35  | 1116.74 | 848.54  | 1116.63 |
| 849.57  | 1116    | 852.87  | 1115.7  | 855.27  | 1115.63 | 858.33  | 1115.45 | 863.15  | 1115.27 |
| 866.04  | 1115    | 868.69  | 1114    | 871.21  | 1113.02 | 873.65  | 1112.45 | 873.95  | 1112.37 |
| 878.04  | 1111.21 | 878.8   | 1111    | 879.44  | 1110.88 | 882.45  | 1110.19 | 883.17  | 1110.03 |
| 886.61  | 1109.47 | 889.19  | 1109    | 1047.05 | 1109.1  | 1047.59 | 1109.11 | 1058.12 | 1109.37 |
| 1059.76 | 1109.42 | 1062.69 | 1109.49 | 1068.22 | 1109.65 | 1071.45 | 1109.73 | 1078.99 | 1109.96 |
| 1079.24 | 1109.97 | 1080.13 | 1110    | 1178.41 | 1110.21 | 1179.82 | 1110.24 | 1187.24 | 1110.37 |
| 1190.84 | 1110.45 | 1197.11 | 1110.56 | 1216.73 | 1111    | 1238.58 | 1112    | 1475.47 | 1114    |
| 1517    | 1114.15 | 1605.85 | 1115    | 1712.24 | 1114.35 | 1714.01 | 1114.31 | 1715.83 | 1114.28 |
| 1718.93 | 1114.21 | 1720.55 | 1114.19 | 1722.33 | 1114.14 | 1733.98 | 1114    | 1836.42 | 1113.83 |
| 1857.93 | 1113.9  | 1867.36 | 1114    | 1893.6  | 1114.45 | 1896.29 | 1114.66 | 1899.94 | 1115    |
| 1900.85 | 1115.43 | 1901.78 | 1115.89 | 1902.01 | 1116    | 1903.41 | 1116.83 | 1903.69 | 1117    |
| 1905.69 | 1118.19 | 1907.04 | 1119    | 1907.7  | 1119.48 | 1908.37 | 1120    | 1909.35 | 1120.78 |
| 1909.62 | 1121    | 1910.83 | 1121.95 | 1911    | 1122.08 | 1912.22 | 1123    | 1912.92 | 1123.51 |
| 1913.57 | 1124    | 1914.43 | 1124.63 | 1914.93 | 1125    | 1916.05 | 1125.82 | 1916.3  | 1126    |
| 1917.15 | 1126.62 | 1917.66 | 1127    | 1931.1  | 1128    | 1933.8  | 1128.96 | 1934.45 | 1129.2  |
| 1941.67 | 1131.77 | 1942.33 | 1132    | 1945    | 1132.92 | 1945.22 | 1133    | 1945.56 | 1133.11 |
| 1951.27 | 1135    | 1953.16 | 1135.61 | 1954.35 | 1136    | 1954.76 | 1136.13 | 1957.46 | 1137    |
| 1972.72 | 1136.34 | 1973.46 | 1136    | 1974.7  | 1135.42 | 1976.17 | 1134.71 | 1977.85 | 1133.92 |
| 1979.87 | 1133    | 1980.69 | 1132.74 | 1982.85 | 1132    | 1985.71 | 1131.17 | 1986.4  | 1131    |
| 1987.45 | 1130.82 | 1991.55 | 1130.04 | 1991.78 | 1130    | 1991.94 | 1129.97 | 1997.9  | 1129    |
| 1998.89 | 1128.36 | 1999.53 | 1128    | 1999.72 | 1127.7  | 2000.16 | 1127    | 2028.04 | 1126    |
| 2028.46 | 1125.76 | 2029.82 | 1125    | 2031.77 | 1124.1  | 2031.95 | 1124    | 2039.29 | 1124.12 |
| 2039.72 | 1124.08 | 2040.48 | 1124.11 | 2040.77 | 1124.09 | 2042.35 | 1124.04 | 2053.01 | 1124    |
| 2063.52 | 1124.3  | 2064.86 | 1124.28 | 2068.25 | 1124.29 | 2075.17 | 1124.27 | 2077.09 | 1124.28 |
| 2081.76 | 1124.27 | 2083.7  | 1124.3  | 2089.71 | 1124.35 | 2092.19 | 1124.36 | 2094.03 | 1124.43 |
| 2096.35 | 1124.47 | 2098.55 | 1124.55 | 2104.99 | 1124.63 | 2146.67 | 1124.68 | 2168.14 | 1124.78 |
| 2176.16 | 1124.74 | 2197.36 | 1124.52 | 2199.04 | 1124.51 | 2217.99 | 1124.3  | 2219.71 | 1124.27 |
| 2225.91 | 1124.2  | 2226.48 | 1124.18 | 2231.88 | 1124.11 | 2241.88 | 1124.03 | 2244.38 | 1124    |
| 2275.43 | 1124.23 | 2275.58 | 1124.47 | 2275.76 | 1124.74 | 2275.88 | 1124.91 | 2276.01 | 1125.1  |
| 2276.31 | 1125.51 | 2276.57 | 1125.86 | 2276.87 | 1126.25 | 2276.99 | 1126.4  | 2277.46 | 1127    |
| 2277.68 | 1127.33 | 2277.89 | 1127.66 | 2278.05 | 1127.9  | 2278.3  | 1128.27 | 2278.41 | 1128.42 |
| 2278.75 | 1128.91 | 2278.92 | 1129.15 | 2279.22 | 1129.55 | 2279.47 | 1129.88 | 2279.64 | 1130.11 |
| 2279.82 | 1130.33 | 2279.99 | 1130.54 | 2280.14 | 1130.73 | 2280.35 | 1131    | 2280.49 | 1131.17 |
| 2280.71 | 1131.43 | 2281.17 | 1131.97 | 2281.29 | 1132.12 | 2281.52 | 1132.37 | 2281.76 | 1132.65 |
| 2281.9  | 1132.8  | 2282.19 | 1133.12 | 2282.33 | 1133.28 | 2282.51 | 1133.5  | 2282.8  | 1133.86 |
| 2283.02 | 1134.12 | 2283.3  | 1134.47 | 2283.56 | 1134.77 | 2283.74 | 1134.98 | 2283.91 | 1135.18 |
| 2284.28 | 1135.59 | 2284.43 | 1135.75 | 2284.65 | 1136    | 2284.86 | 1136.23 | 2285.1  | 1136.49 |
| 2285.26 | 1136.66 | 2285.51 | 1136.92 | 2285.68 | 1137.09 | 2285.84 | 1137.26 | 2286.4  | 1137.81 |
| 2286.6  | 1138    | 2287.01 | 1138.39 | 2287.33 | 1138.69 | 2287.59 | 1138.96 | 2287.78 | 1139.17 |
| 2288.03 | 1139.46 | 2288.51 | 1140    | 2288.71 | 1140.22 | 2288.93 | 1140.45 | 2289.47 | 1141    |
| 2289.74 | 1141.01 | 2290.75 | 1141.03 | 2291.65 | 1141.06 | 2291.98 | 1141.04 | 2297.95 | 1141.16 |
| 2298.87 | 1141.13 | 2300.65 | 1141.15 | 2301.51 | 1141.17 | 2303.94 | 1141.2  | 2305.05 | 1141.17 |
| 2309.37 | 1141.22 | 2310.68 | 1141.2  | 2312.41 | 1141.21 | 2314.07 | 1141.23 | 2315.78 | 1141.24 |
| 2317.29 | 1141.22 | 2319.04 | 1141.23 | 2320.73 | 1141.25 | 2322.44 | 1141.26 | 2323.63 | 1141.24 |
| 2325.38 | 1141.26 | 2327.23 | 1141.27 | 2328.69 | 1141.25 | 2332.99 | 1141.24 | 2335.91 | 1141.21 |
| 2350.69 | 1141.01 | 2351.18 | 1141    | 2352.71 | 1140.91 | 2355.87 | 1140.79 | 2356.98 | 1140.78 |
| 2361.31 | 1140.64 | 2361.97 | 1140.63 | 2366.17 | 1140.54 | 2367.42 | 1140.53 | 2371.16 | 1140.46 |
| 2372.34 | 1140.45 | 2375.99 | 1140.4  | 2379.15 | 1140.39 | 2381.27 | 1140.35 | 2383.02 | 1140.34 |
| 2386.49 | 1140.3  | 2401    | 1140.07 | 2407.03 | 1140    | 2411.47 | 1139.82 | 2416.93 | 1139.64 |
| 2421.65 | 1139.56 | 2424.04 | 1139.55 | 2426.85 | 1139.49 | 2439.36 | 1139.34 | 2463.55 | 1139.23 |
| 2464.91 | 1139.21 | 2469.42 | 1139.2  | 2475.59 | 1139.15 | 2476.22 | 1139.14 | 2481.69 | 1139.11 |
| 2482.31 | 1139.1  | 2488.42 | 1139.07 | 2488.84 | 1139.06 | 2504.31 | 1138.98 | 2515.85 | 1139.01 |
| 2520.85 | 1139    | 2535.23 | 1138.75 | 2535.51 | 1138.76 | 2538.14 | 1138.72 | 2538.45 | 1138.73 |
| 2541.21 | 1138.7  | 2541.86 | 1138.71 | 2544.99 | 1138.65 | 2545.5  | 1138.66 | 2548.81 | 1138.63 |
| 2550.17 | 1138.64 | 2554.15 | 1138.61 | 2555.61 | 1138.62 | 2559.12 | 1138.58 | 2560.77 | 1138.59 |
| 2564.87 | 1138.56 | 2565.96 | 1138.57 | 2568.93 | 1138.55 |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .04 810.45 .035 1957.46 .04

Bank Sta: Left Right Coeff Contr. Expan.  
 810.45 1957.46 .1 .3

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 810.45 1137 F  
 1957.46 2568.93 1137 F

Right Levee Station= 1957.46 Elevation= 1137

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .98  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =

Spillway height used in design  
weir crest shape

=  
= Broad Crested

Number of Piers = 8

Pier Data  
Pier Station Upstream= 1164.85 Downstream= 1046.84  
Upstream num= 2  
width Elev width Elev  
6.5 1108 6.5 1151.59  
Downstream num= 2  
width Elev width Elev  
6.5 1108 6.5 1151.59

Pier Data  
Pier Station Upstream= 1308.6 Downstream= 1190.59  
Upstream num= 2  
width Elev width Elev  
6.5 1108 6.5 1152.55  
Downstream num= 2  
width Elev width Elev  
6.5 1108 6.5 1152.55

Pier Data  
Pier Station Upstream= 1452.35 Downstream= 1334.34  
Upstream num= 2  
width Elev width Elev  
6.5 1108 6.5 1153.1  
Downstream num= 2  
width Elev width Elev  
6.5 1108 6.5 1153.1

Pier Data  
Pier Station Upstream= 1596.1 Downstream= 1478.09  
Upstream num= 2  
width Elev width Elev  
6.5 1108 6.5 1153.22  
Downstream num= 2  
width Elev width Elev  
6.5 1108 6.5 1153.22

Pier Data  
Pier Station Upstream= 1739.85 Downstream= 1621.84  
Upstream num= 2  
width Elev width Elev  
6.5 1108 6.5 1152.93  
Downstream num= 2  
width Elev width Elev  
6.5 1108 6.5 1152.93

Pier Data  
Pier Station Upstream= 1883.6 Downstream= 1765.59  
Upstream num= 2  
width Elev width Elev  
6.5 1108 6.5 1152.21  
Downstream num= 2  
width Elev width Elev  
6.5 1108 6.5 1152.21

Pier Data  
Pier Station Upstream= 2027.35 Downstream= 1909.34  
Upstream num= 2  
width Elev width Elev  
6.5 1108 6.5 1151.07  
Downstream num= 2  
width Elev width Elev  
6.5 1108 6.5 1151.07

Pier Data  
Pier Station Upstream= 2171.1 Downstream= 2053.09  
Upstream num= 2  
width Elev width Elev  
6.5 1108 6.5 1149.51  
Downstream num= 2  
width Elev width Elev  
6.5 1108 6.5 1149.51

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy  
Momentum Cd = 1.2  
Yarnell Kval = 1.05

Selected Low Flow Methods = Highest Energy Answer

High Flow Method  
Energy Only

Additional Bridge Parameters

Add Friction component to Momentum  
 Do not add Weight component to Momentum  
 Class B flow critical depth computations use critical depth  
 inside the bridge at the upstream end  
 Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Salt  
 REACH: 1

RS: 218.96

INPUT

Description:

| Station | Elevation | Data    | num=    | 473     | Sta     | Elev    | Sta     | Elev    | Sta     | Elev |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|------|
| 0       | 1135.85   | 7.55    | 1135.76 | 8.1     | 1135.75 | 15.24   | 1135.68 | 17.39   | 1135.65 |      |
| 19.13   | 1135.64   | 20.37   | 1135.62 | 36.56   | 1135.5  | 38.42   | 1135.48 | 44.97   | 1135.45 |      |
| 56.53   | 1135.35   | 57.98   | 1135.33 | 66.36   | 1135.24 | 67.67   | 1135.22 | 74.95   | 1135.14 |      |
| 75.55   | 1135.13   | 80.47   | 1135.08 | 80.81   | 1135.07 | 90.07   | 1134.98 | 97.45   | 1135    |      |
| 102.39  | 1135.04   | 102.72  | 1135.05 | 106.81  | 1135.09 | 108.19  | 1135.11 | 120.65  | 1135.25 |      |
| 122.56  | 1135.28   | 126.54  | 1135.32 | 129.04  | 1135.36 | 138.61  | 1135.47 | 139.55  | 1135.49 |      |
| 149.33  | 1135.61   | 150.96  | 1135.64 | 152.68  | 1135.66 | 154.6   | 1135.71 | 157.83  | 1135.82 |      |
| 158.67  | 1135.84   | 163.1   | 1136    | 164.98  | 1136.06 | 165.47  | 1136.08 | 180.48  | 1136.59 |      |
| 192.82  | 1136.27   | 193.75  | 1136.25 | 197.22  | 1136.16 | 206.72  | 1135.95 | 207.05  | 1135.94 |      |
| 211.23  | 1135.84   | 211.53  | 1135.83 | 212.65  | 1135.8  | 216.49  | 1135.71 | 220.15  | 1135.65 |      |
| 220.56  | 1135.64   | 233.68  | 1135.41 | 235.21  | 1135.4  | 250.85  | 1135.22 | 252.26  | 1135.21 |      |
| 281.36  | 1134.9    | 281.76  | 1134.89 | 302.53  | 1134.66 | 305.85  | 1134.64 | 306.64  | 1134.63 |      |
| 314.6   | 1134.58   | 336.83  | 1134.59 | 338.79  | 1134.6  | 376.34  | 1134.69 | 387.57  | 1134.77 |      |
| 388.5   | 1134.78   | 400.46  | 1134.96 | 405.23  | 1135.05 | 405.42  | 1135.06 | 413.61  | 1135.21 |      |
| 414.43  | 1135.23   | 437.6   | 1135.7  | 437.86  | 1135.69 | 442.18  | 1135.57 | 443.7   | 1135.52 |      |
| 460.71  | 1135.04   | 460.9   | 1135.03 | 466.14  | 1134.88 | 466.62  | 1134.87 | 467.23  | 1134.85 |      |
| 476.28  | 1134.59   | 477.24  | 1134.57 | 487.2   | 1134.29 | 492.67  | 1134.16 | 509.57  | 1133.88 |      |
| 514.87  | 1133.81   | 515.95  | 1133.8  | 528.27  | 1133.65 | 530.12  | 1133.62 | 541.22  | 1133.52 |      |
| 548.32  | 1133.54   | 550.45  | 1133.56 | 554.15  | 1133.58 | 556.07  | 1133.6  | 595.18  | 1133.83 |      |
| 596.01  | 1133.84   | 604.61  | 1133.9  | 605     | 1133.91 | 607.02  | 1133.93 | 613.65  | 1134.02 |      |
| 620.78  | 1134.19   | 625.82  | 1134.34 | 627.16  | 1134.39 | 630.92  | 1134.51 | 631.79  | 1134.49 |      |
| 649.6   | 1134.25   | 674.28  | 1133.94 | 679.63  | 1133.91 | 680.14  | 1133.92 | 685.52  | 1133.96 |      |
| 697.06  | 1134.12   | 697.29  | 1134.13 | 700.67  | 1134.18 | 713.61  | 1134.41 | 717.62  | 1134.53 |      |
| 718.9   | 1134.59   | 719.45  | 1134.62 | 721.18  | 1134.76 | 721.7   | 1134.8  | 727.18  | 1135.3  |      |
| 728.4   | 1135.44   | 731.49  | 1135.71 | 732.12  | 1135.79 | 732.53  | 1135.86 | 733.24  | 1136    |      |
| 736.84  | 1136.54   | 738.4   | 1136.78 | 739.78  | 1137    | 744.01  | 1137.58 | 747.4   | 1137.98 |      |
| 748.85  | 1138.15   | 749.13  | 1138.17 | 749.4   | 1138.2  | 750.84  | 1138.39 | 751.7   | 1138.46 |      |
| 752.43  | 1138.5    | 754.72  | 1138.61 | 758.73  | 1138.73 | 761.5   | 1138.8  | 762.14  | 1138.81 |      |
| 762.43  | 1138.82   | 767.63  | 1138.8  | 768.12  | 1138.79 | 768.38  | 1138.78 | 769.78  | 1138.76 |      |
| 771.47  | 1138.69   | 774.64  | 1138.58 | 778.1   | 1138.42 | 783.88  | 1138    | 784.21  | 1137.99 |      |
| 788.33  | 1137.88   | 788.92  | 1137.86 | 794.77  | 1137.68 | 797.53  | 1137.56 | 800.56  | 1137.46 |      |
| 803.53  | 1137.32   | 804.91  | 1137.27 | 808.43  | 1137.1  | 808.98  | 1137.08 | 810.45  | 1137    |      |
| 812     | 1136.31   | 812.71  | 1136    | 813.17  | 1135.79 | 814.99  | 1135    | 817.12  | 1134.05 |      |
| 818.09  | 1133.63   | 819.5   | 1133    | 821.35  | 1132.16 | 821.61  | 1132.04 | 821.99  | 1131.85 |      |
| 823.62  | 1131      | 824.69  | 1130.38 | 826.99  | 1129.02 | 828.69  | 1128    | 829.2   | 1127.7  |      |
| 829.82  | 1127.33   | 830.36  | 1127    | 831.64  | 1126.24 | 832.05  | 1126    | 833.32  | 1125.25 |      |
| 833.75  | 1125      | 835.2   | 1124.15 | 835.45  | 1124    | 837.1   | 1123.03 | 840.04  | 1121.31 |      |
| 840.56  | 1121      | 841.29  | 1120.56 | 842.28  | 1120    | 843.11  | 1119.54 | 845.59  | 1118.19 |      |
| 845.95  | 1118      | 846.7   | 1117.6  | 847.87  | 1117    | 848.35  | 1116.74 | 848.54  | 1116.63 |      |
| 849.57  | 1116      | 852.87  | 1115.7  | 855.27  | 1115.63 | 858.33  | 1115.45 | 863.15  | 1115.27 |      |
| 866.04  | 1115      | 868.69  | 1114    | 871.21  | 1113.02 | 873.65  | 1112.45 | 873.95  | 1112.37 |      |
| 878.04  | 1111.21   | 878.8   | 1111    | 879.44  | 1110.88 | 882.45  | 1110.19 | 883.17  | 1110.03 |      |
| 886.61  | 1109.47   | 889.19  | 1109    | 1047.05 | 1109.1  | 1047.59 | 1109.11 | 1058.12 | 1109.37 |      |
| 1059.76 | 1109.42   | 1062.69 | 1109.49 | 1068.22 | 1109.65 | 1071.45 | 1109.73 | 1078.99 | 1109.96 |      |
| 1079.24 | 1109.97   | 1080.13 | 1110    | 1178.41 | 1110.21 | 1179.82 | 1110.24 | 1187.24 | 1110.37 |      |
| 1190.84 | 1110.45   | 1197.11 | 1110.56 | 1216.73 | 1111    | 1238.58 | 1112    | 1475.47 | 1114    |      |
| 1517    | 1114.15   | 1605.85 | 1115    | 1712.24 | 1114.35 | 1714.01 | 1114.31 | 1715.83 | 1114.28 |      |
| 1718.93 | 1114.21   | 1720.55 | 1114.19 | 1722.33 | 1114.14 | 1733.98 | 1114    | 1836.42 | 1113.83 |      |
| 1857.93 | 1113.9    | 1867.36 | 1114    | 1893.6  | 1114.45 | 1896.29 | 1114.66 | 1899.94 | 1115    |      |
| 1900.85 | 1115.43   | 1901.78 | 1115.89 | 1902.01 | 1116    | 1903.41 | 1116.83 | 1903.69 | 1117    |      |
| 1905.69 | 1118.19   | 1907.04 | 1119    | 1907.7  | 1119.48 | 1908.37 | 1120    | 1909.35 | 1120.78 |      |
| 1909.62 | 1121      | 1910.83 | 1121.95 | 1911    | 1122.08 | 1912.22 | 1123    | 1912.92 | 1123.51 |      |
| 1913.57 | 1124      | 1914.43 | 1124.63 | 1914.93 | 1125    | 1916.05 | 1125.82 | 1916.3  | 1126    |      |
| 1917.15 | 1126.62   | 1917.66 | 1127    | 1931.1  | 1128    | 1933.8  | 1128.96 | 1934.45 | 1129.2  |      |
| 1941.67 | 1131.77   | 1942.33 | 1132    | 1945    | 1132.92 | 1945.22 | 1133    | 1945.56 | 1133.11 |      |
| 1951.27 | 1135      | 1953.16 | 1135.61 | 1954.35 | 1136    | 1954.76 | 1136.13 | 1957.46 | 1137    |      |
| 1972.72 | 1136.34   | 1973.46 | 1136    | 1974.7  | 1135.42 | 1976.17 | 1134.71 | 1977.85 | 1133.92 |      |
| 1979.87 | 1133      | 1980.69 | 1132.74 | 1982.85 | 1132    | 1985.71 | 1131.17 | 1986.4  | 1131    |      |
| 1987.45 | 1130.82   | 1991.55 | 1130.04 | 1991.78 | 1130    | 1991.94 | 1129.97 | 1997.9  | 1129    |      |
| 1998.89 | 1128.36   | 1999.53 | 1128    | 1999.72 | 1127.7  | 2000.16 | 1127    | 2028.04 | 1126    |      |
| 2028.46 | 1125.76   | 2029.82 | 1125    | 2031.77 | 1124.1  | 2031.95 | 1124    | 2039.29 | 1124.12 |      |
| 2039.72 | 1124.08   | 2040.48 | 1124.11 | 2040.77 | 1124.09 | 2042.35 | 1124.04 | 2053.01 | 1124    |      |
| 2063.52 | 1124.3    | 2064.86 | 1124.28 | 2068.25 | 1124.29 | 2075.17 | 1124.27 | 2077.09 | 1124.28 |      |
| 2081.76 | 1124.27   | 2083.7  | 1124.3  | 2089.71 | 1124.35 | 2092.19 | 1124.36 | 2094.03 | 1124.43 |      |
| 2096.35 | 1124.47   | 2098.55 | 1124.55 | 2104.99 | 1124.63 | 2146.67 | 1124.68 | 2168.14 | 1124.78 |      |
| 2176.16 | 1124.74   | 2197.36 | 1124.52 | 2199.04 | 1124.51 | 2217.99 | 1124.3  | 2219.71 | 1124.27 |      |
| 2225.91 | 1124.2    | 2226.48 | 1124.18 | 2231.88 | 1124.11 | 2241.88 | 1124.03 | 2244.38 | 1124    |      |
| 2275.43 | 1124.23   | 2275.58 | 1124.47 | 2275.76 | 1124.74 | 2275.88 | 1124.91 | 2276.01 | 1125.1  |      |
| 2276.31 | 1125.51   | 2276.57 | 1125.86 | 2276.87 | 1126.25 | 2276.99 | 1126.4  | 2277.46 | 1127    |      |
| 2277.68 | 1127.33   | 2277.89 | 1127.66 | 2278.05 | 1127.9  | 2278.3  | 1128.27 | 2278.41 | 1128.42 |      |
| 2278.75 | 1128.91   | 2278.92 | 1129.15 | 2279.22 | 1129.55 | 2279.47 | 1129.88 | 2279.64 | 1130.11 |      |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2279.82 | 1130.33 | 2279.99 | 1130.54 | 2280.14 | 1130.73 | 2280.35 | 1131    | 2280.49 | 1131.17 |
| 2280.71 | 1131.43 | 2281.17 | 1131.97 | 2281.29 | 1132.12 | 2281.52 | 1132.37 | 2281.76 | 1132.65 |
| 2281.9  | 1132.8  | 2282.19 | 1133.12 | 2282.33 | 1133.28 | 2282.51 | 1133.5  | 2282.8  | 1133.86 |
| 2283.02 | 1134.12 | 2283.3  | 1134.47 | 2283.56 | 1134.77 | 2283.74 | 1134.98 | 2283.91 | 1135.18 |
| 2284.28 | 1135.59 | 2284.43 | 1135.75 | 2284.65 | 1136    | 2284.86 | 1136.23 | 2285.1  | 1136.49 |
| 2285.26 | 1136.66 | 2285.51 | 1136.92 | 2285.68 | 1137.09 | 2285.84 | 1137.26 | 2286.4  | 1137.81 |
| 2286.6  | 1138    | 2287.01 | 1138.39 | 2287.33 | 1138.69 | 2287.59 | 1138.96 | 2287.78 | 1139.17 |
| 2288.03 | 1139.46 | 2288.51 | 1140    | 2288.71 | 1140.22 | 2288.93 | 1140.45 | 2289.47 | 1141    |
| 2289.74 | 1141.01 | 2290.75 | 1141.03 | 2291.65 | 1141.06 | 2291.98 | 1141.04 | 2297.95 | 1141.16 |
| 2298.87 | 1141.13 | 2300.65 | 1141.15 | 2301.51 | 1141.17 | 2303.94 | 1141.2  | 2305.05 | 1141.17 |
| 2309.37 | 1141.22 | 2310.68 | 1141.2  | 2312.41 | 1141.21 | 2314.07 | 1141.23 | 2315.78 | 1141.24 |
| 2317.29 | 1141.22 | 2319.04 | 1141.23 | 2320.73 | 1141.25 | 2322.44 | 1141.26 | 2323.63 | 1141.24 |
| 2325.38 | 1141.26 | 2327.23 | 1141.27 | 2328.69 | 1141.25 | 2332.99 | 1141.24 | 2335.91 | 1141.21 |
| 2350.69 | 1141.01 | 2351.18 | 1141    | 2352.71 | 1140.91 | 2355.87 | 1140.79 | 2356.98 | 1140.78 |
| 2361.31 | 1140.64 | 2361.97 | 1140.63 | 2366.17 | 1140.54 | 2367.42 | 1140.53 | 2371.16 | 1140.46 |
| 2372.34 | 1140.45 | 2375.99 | 1140.4  | 2379.15 | 1140.39 | 2381.27 | 1140.35 | 2383.02 | 1140.34 |
| 2386.49 | 1140.3  | 2401    | 1140.07 | 2407.03 | 1140    | 2411.47 | 1139.82 | 2416.93 | 1139.64 |
| 2421.65 | 1139.56 | 2424.04 | 1139.55 | 2426.85 | 1139.49 | 2439.36 | 1139.34 | 2463.55 | 1139.23 |
| 2464.91 | 1139.21 | 2469.42 | 1139.2  | 2475.59 | 1139.15 | 2476.22 | 1139.14 | 2481.69 | 1139.11 |
| 2482.31 | 1139.1  | 2488.42 | 1139.07 | 2488.84 | 1139.06 | 2504.31 | 1138.98 | 2515.85 | 1139.01 |
| 2520.85 | 1139    | 2535.23 | 1138.75 | 2535.51 | 1138.76 | 2538.14 | 1138.72 | 2538.45 | 1138.73 |
| 2541.21 | 1138.7  | 2541.86 | 1138.71 | 2544.99 | 1138.65 | 2545.5  | 1138.66 | 2548.81 | 1138.63 |
| 2550.17 | 1138.64 | 2554.15 | 1138.61 | 2555.61 | 1138.62 | 2559.12 | 1138.58 | 2560.77 | 1138.59 |
| 2564.87 | 1138.56 | 2565.96 | 1138.57 | 2568.93 | 1138.55 |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .04 810.45 .035 1957.46 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 810.45 1957.46 738.85 820.64 861.73 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 810.45 1137 F  
 1957.46 2568.93 1137 F  
 Right Levee Station= 1957.46 Elevation= 1137

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 218.8

INPUT

Description:

| Station | Elevation | Data    | num=    | 211     | Sta     | Elev    | Sta     | Elev    | Sta     | Elev |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|------|
| 0       | 1121      | 60.22   | 1121.12 | 60.74   | 1121.14 | 63.67   | 1121.3  | 65.26   | 1121.36 |      |
| 67.92   | 1121.44   | 68.53   | 1121.47 | 69.3    | 1121.51 | 71.69   | 1121.58 | 78.54   | 1122    |      |
| 78.67   | 1122.02   | 78.8    | 1122.03 | 80.64   | 1122.27 | 85.99   | 1122.98 | 86.24   | 1123    |      |
| 103.44  | 1123.08   | 111.22  | 1123.13 | 118.84  | 1123.15 | 119.59  | 1123.14 | 125.04  | 1123.13 |      |
| 125.41  | 1123.12   | 130.29  | 1123.1  | 130.62  | 1123.09 | 130.99  | 1123.08 | 136.09  | 1123.07 |      |
| 142.36  | 1123.08   | 148.93  | 1123.11 | 149.78  | 1123.1  | 154.94  | 1123.13 | 155.84  | 1123.12 |      |
| 158.54  | 1123.16   | 162.49  | 1123.18 | 164.13  | 1123.23 | 167.09  | 1123.27 | 169.55  | 1123.35 |      |
| 172.42  | 1123.42   | 175.32  | 1123.53 | 178.68  | 1123.67 | 184.29  | 1123.92 | 184.96  | 1123.94 |      |
| 186.23  | 1124      | 205.63  | 1125    | 206.05  | 1125.11 | 209.41  | 1126    | 213     | 1126.97 |      |
| 213.2   | 1127.03   | 216.37  | 1128    | 217.64  | 1128.43 | 218.98  | 1128.89 | 219.33  | 1129    |      |
| 222     | 1130      | 223.35  | 1130.54 | 224.56  | 1131    | 226.22  | 1131.64 | 227.18  | 1132    |      |
| 228.28  | 1132.42   | 229.81  | 1133    | 231.75  | 1133.73 | 232.46  | 1134    | 234.23  | 1134.67 |      |
| 235.11  | 1135      | 290.28  | 1134.63 | 291.48  | 1134    | 293.3   | 1133    | 293.89  | 1132.68 |      |
| 295.11  | 1132      | 296.83  | 1131    | 297.96  | 1130.32 | 298.48  | 1130    | 298.78  | 1129.81 |      |
| 300.07  | 1129      | 300.84  | 1128.47 | 301.55  | 1128    | 302.82  | 1127.15 | 303.04  | 1127    |      |
| 304.1   | 1126.3    | 304.64  | 1125.94 | 307.13  | 1124.29 | 307.57  | 1124    | 307.85  | 1123.81 |      |
| 309.06  | 1123      | 309.68  | 1122.59 | 311.47  | 1121.39 | 312.06  | 1121    | 312.57  | 1120.64 |      |
| 313.48  | 1120      | 314.27  | 1119.44 | 314.9   | 1119    | 315.64  | 1118.48 | 316.31  | 1118    |      |
| 317.68  | 1117.03   | 318.52  | 1116.43 | 319.14  | 1116    | 319.48  | 1115.76 | 320.5   | 1115.05 |      |
| 320.75  | 1114.87   | 321.49  | 1114.36 | 322     | 1114    | 323.37  | 1113.12 | 323.56  | 1113    |      |
| 325.21  | 1112      | 325.73  | 1111.68 | 326.71  | 1111.08 | 326.85  | 1111    | 327.07  | 1110.87 |      |
| 328.5   | 1110      | 329.8   | 1109.22 | 330.16  | 1109    | 428.75  | 1108.02 | 430.34  | 1108    |      |
| 459.01  | 1108.13   | 474.5   | 1108.39 | 516.68  | 1109    | 577.42  | 1109.3  | 588.18  | 1109.4  |      |
| 612.38  | 1109.56   | 653.74  | 1110    | 674.26  | 1110.6  | 682.15  | 1110.8  | 687.71  | 1111    |      |
| 734.11  | 1112      | 1100.36 | 1112.42 | 1103.3  | 1112.46 | 1107.15 | 1112.53 | 1136.53 | 1113    |      |
| 1212.05 | 1112.16   | 1215.83 | 1112    | 1260.51 | 1112.04 | 1282.38 | 1113    | 1283.35 | 1113.67 |      |
| 1284.67 | 1114.54   | 1285.36 | 1115    | 1286.39 | 1115.74 | 1286.75 | 1116    | 1288.08 | 1116.94 |      |
| 1288.16 | 1117      | 1288.63 | 1117.31 | 1289.67 | 1118    | 1289.81 | 1118.09 | 1291.26 | 1119    |      |
| 1292.19 | 1119.58   | 1294.46 | 1121    | 1295.46 | 1121.62 | 1296.06 | 1122    | 1296.82 | 1122.47 |      |
| 1298.9  | 1123.75   | 1299.3  | 1124    | 1300.89 | 1124.98 | 1301.24 | 1125.19 | 1302.57 | 1126    |      |
| 1303.35 | 1126.07   | 1313.92 | 1127    | 1314.93 | 1127.31 | 1320.51 | 1129    | 1322.6  | 1129.64 |      |
| 1323.8  | 1130      | 1327.09 | 1131    | 1327.83 | 1131.21 | 1330.6  | 1132    | 1332.3  | 1132.43 |      |
| 1334.53 | 1133      | 1336    | 1133.37 | 1341.73 | 1134.84 | 1342.34 | 1135    | 1342.6  | 1135.07 |      |
| 1345.6  | 1135      | 1361.2  | 1134.87 | 1365.24 | 1134    | 1365.78 | 1133.79 | 1367.42 | 1133.1  |      |
| 1367.65 | 1133      | 1370    | 1132    | 1370.71 | 1131.68 | 1372.36 | 1131    | 1374.38 | 1130.14 |      |
| 1374.71 | 1130      | 1375.66 | 1129.62 | 1377.19 | 1129    | 1378.17 | 1128.63 | 1379.85 | 1128    |      |
| 1380.24 | 1127.85   | 1382.51 | 1127    | 1383.42 | 1126.7  | 1385.51 | 1126    | 1387.94 | 1125.26 |      |
| 1388.8  | 1125      | 1389.95 | 1124.73 | 1393.12 | 1124    | 1409.43 | 1124.73 | 1410.55 | 1125    |      |
| 1410.9  | 1125.09   | 1414.55 | 1126    | 1416.99 | 1126.73 | 1417.95 | 1127    | 1420.25 | 1127.68 |      |
| 1421.37 | 1128      | 1431.43 | 1128.34 | 1435.1  | 1128.44 | 1454.18 | 1129    | 1569.43 | 1129.69 |      |
| 1571.88 | 1129.7    | 1591.77 | 1129.81 | 1600.15 | 1129.87 | 1626.59 | 1130    | 1702.75 | 1130.03 |      |

2067.28 1131.95 2068.55 1131.96 2077.95 1132 2163.24 1132.09 2234.99 1132.72  
2283.08 1133

Manning's n Values num= 3  
Sta n Val Sta n Val  
0 .04 290.28 .035 1342.6 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
290.28 1342.6 240.49 241.5 242.51 .1 .3  
Ineffective Flow num= 2  
Sta L Sta R Elev Permanent  
0 290.28 1134.63 F  
1342.6 2283.08 1135.07 F  
Left Levee Station= 290.28 Elevation= 1134.63  
Right Levee Station= 1342.6 Elevation= 1135.07

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 218.77

INPUT

Description:

| Station | Elevation | Data    | num=    | 416     | Sta     | Elev    | Sta     | Elev    | Sta     | Elev |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|------|
| 0       | 1133      | 160.42  | 1132.78 | 168.21  | 1132.66 | 179.17  | 1132.51 | 210.05  | 1132    |      |
| 217.15  | 1132.23   | 219.32  | 1133    | 223.37  | 1133.71 | 225.09  | 1134    | 230.3   | 1133.32 |      |
| 232.53  | 1133      | 235.23  | 1132.57 | 238.9   | 1132    | 292.29  | 1132.1  | 299.56  | 1132.98 |      |
| 299.7   | 1133      | 519.72  | 1133.21 | 539.73  | 1133.16 | 553.83  | 1133    | 674.39  | 1132.79 |      |
| 674.92  | 1132.78   | 679.92  | 1132.82 | 688.45  | 1132.86 | 694.2   | 1132.87 | 698.96  | 1132.89 |      |
| 708.48  | 1132.87   | 709.64  | 1132.85 | 710.82  | 1132.84 | 711.24  | 1132.83 | 713.82  | 1132.81 |      |
| 768.78  | 1132      | 849.59  | 1131.92 | 857.15  | 1131    | 862.53  | 1131.2  | 866.83  | 1132    |      |
| 871.02  | 1132.92   | 871.4   | 1133    | 871.81  | 1133.09 | 875.76  | 1134    | 880.02  | 1134.92 |      |
| 880.37  | 1134.99   | 880.88  | 1135.08 | 886.45  | 1136    | 887.09  | 1136.11 | 892.49  | 1137    |      |
| 893.92  | 1137.24   | 901.37  | 1138.47 | 904.53  | 1139    | 916.66  | 1141    | 947.05  | 1141.07 |      |
| 947.6   | 1141.06   | 948.45  | 1141.05 | 952.58  | 1141.08 | 955.87  | 1141.12 | 966.11  | 1141.29 |      |
| 1012.68 | 1141.52   | 1039.05 | 1141.01 | 1039.45 | 1141    | 1051.3  | 1140.4  | 1058.04 | 1140    |      |
| 1060.65 | 1139.26   | 1061.56 | 1139    | 1062.89 | 1138.61 | 1065.02 | 1138    | 1066.21 | 1137.64 |      |
| 1068.37 | 1137      | 1070.87 | 1136.23 | 1071.61 | 1136    | 1073.23 | 1135.48 | 1074.76 | 1135    |      |
| 1075.35 | 1134.82   | 1077.9  | 1134    | 1079.96 | 1133.37 | 1081.19 | 1133    | 1082.57 | 1132.58 |      |
| 1087.25 | 1131.19   | 1087.9  | 1131    | 1088.28 | 1130.89 | 1091.39 | 1130    | 1094.26 | 1129.19 |      |
| 1094.95 | 1129      | 1096.3  | 1128.62 | 1098.53 | 1128    | 1099.53 | 1127.72 | 1102.01 | 1127    |      |
| 1102.7  | 1126.79   | 1105.26 | 1126    | 1107.77 | 1125.38 | 1108.68 | 1125.16 | 1109.32 | 1125    |      |
| 1117.73 | 1123.08   | 1122.33 | 1122    | 1126.03 | 1121.36 | 1128.26 | 1121    | 1135.29 | 1120.55 |      |
| 1142.35 | 1120.13   | 1143.43 | 1120.06 | 1144.55 | 1120    | 1153.44 | 1119.56 | 1155.23 | 1119.46 |      |
| 1157.08 | 1119.33   | 1157.63 | 1119.32 | 1190.66 | 1119.82 | 1196.8  | 1120    | 1198.06 | 1120.44 |      |
| 1199.65 | 1121      | 1200.91 | 1121.43 | 1202.52 | 1122    | 1204.23 | 1122.59 | 1205.4  | 1123    |      |
| 1206.5  | 1123.79   | 1206.79 | 1124    | 1207.45 | 1124.49 | 1208.15 | 1125    | 1209.27 | 1125.82 |      |
| 1209.52 | 1126      | 1209.62 | 1126.08 | 1210.87 | 1127    | 1211.47 | 1127.38 | 1212.41 | 1128    |      |
| 1218.02 | 1129.82   | 1218.57 | 1130    | 1220.4  | 1130.59 | 1221.66 | 1131    | 1224.26 | 1131.84 |      |
| 1224.75 | 1132      | 1227.11 | 1132.78 | 1227.78 | 1133    | 1228.21 | 1133.19 | 1230.18 | 1134    |      |
| 1231.87 | 1134.66   | 1232.81 | 1135    | 1235.58 | 1135.99 | 1237.77 | 1136.78 | 1238.43 | 1137    |      |
| 1241.24 | 1138      | 1242.78 | 1138.56 | 1244.05 | 1139    | 1244.84 | 1139.28 | 1245.51 | 1139.52 |      |
| 1246.9  | 1140      | 1249.04 | 1140.73 | 1249.82 | 1141    | 1250.07 | 1141.1  | 1251.96 | 1142    |      |
| 1252.8  | 1142.41   | 1254    | 1143    | 1255.36 | 1143.69 | 1255.98 | 1144    | 1257.15 | 1144.59 |      |
| 1257.98 | 1145      | 1265.33 | 1144.81 | 1270.46 | 1145    | 1271.26 | 1145.02 | 1271.8  | 1145.03 |      |
| 1284.2  | 1145.06   | 1292.95 | 1145.1  | 1301.96 | 1145.08 | 1306.45 | 1145.03 | 1307.81 | 1145    |      |
| 1311.97 | 1144.87   | 1315.94 | 1144.7  | 1319.85 | 1144.5  | 1322.39 | 1144.36 | 1328.62 | 1144    |      |
| 1332.43 | 1143.83   | 1333.55 | 1143.77 | 1335.3  | 1143.67 | 1338.54 | 1143.47 | 1343.6  | 1143.18 |      |
| 1346.04 | 1143      | 1351.89 | 1142.4  | 1360.15 | 1141.61 | 1363.09 | 1141.31 | 1366.3  | 1141    |      |
| 1369.71 | 1140.65   | 1375.77 | 1140    | 1376.06 | 1139.96 | 1377    | 1139.85 | 1382.5  | 1139.19 |      |
| 1387.99 | 1138.58   | 1393.48 | 1138    | 1395.04 | 1137.84 | 1416.61 | 1135.54 | 1419.78 | 1135    |      |
| 1423.19 | 1134.65   | 1424.13 | 1134.57 | 1428.18 | 1134.28 | 1431.71 | 1134    | 1444.82 | 1133.77 |      |
| 1450.82 | 1133      | 1450.96 | 1132.94 | 1451.87 | 1132.57 | 1453.28 | 1132    | 1454.93 | 1131.32 |      |
| 1456.9  | 1130.5    | 1458.2  | 1130    | 1460.18 | 1129.21 | 1460.71 | 1129    | 1461    | 1128.88 |      |
| 1464.14 | 1127.63   | 1465.7  | 1127    | 1467.11 | 1126.44 | 1468.19 | 1126    | 1469.75 | 1125.37 |      |
| 1470.66 | 1125      | 1479.25 | 1125.43 | 1482.98 | 1126    | 1484.84 | 1126.7  | 1485.72 | 1127    |      |
| 1488.23 | 1127.79   | 1488.71 | 1127.94 | 1489.09 | 1128.06 | 1491.94 | 1129    | 1494.51 | 1130    |      |
| 1495.15 | 1130.29   | 1496.73 | 1131    | 1498.58 | 1131.79 | 1499.07 | 1132    | 1499.73 | 1132.34 |      |
| 1501.05 | 1133      | 1502.87 | 1133.87 | 1503.16 | 1134    | 1504.55 | 1134.64 | 1505.35 | 1135    |      |
| 1530.76 | 1134.49   | 1535.06 | 1133.21 | 1535.75 | 1133    | 1537.35 | 1132.52 | 1539.06 | 1132    |      |
| 1539.75 | 1131.78   | 1541.14 | 1131.36 | 1542.3  | 1131    | 1542.64 | 1130.9  | 1545.51 | 1130    |      |
| 1548.38 | 1129.09   | 1548.68 | 1129    | 1549.03 | 1128.88 | 1551.76 | 1128    | 1552.89 | 1127.61 |      |
| 1554.77 | 1127      | 1557.19 | 1126.16 | 1557.68 | 1126    | 1558.05 | 1125.87 | 1560.67 | 1125    |      |
| 1562.86 | 1124.26   | 1563.62 | 1124    | 1566.47 | 1123    | 1567.34 | 1122.69 | 1568.14 | 1122.4  |      |
| 1569.26 | 1122      | 1569.66 | 1121.8  | 1571.51 | 1121    | 1571.86 | 1120.77 | 1573    | 1120    |      |
| 1573.55 | 1119.63   | 1575.38 | 1118.39 | 1575.97 | 1118    | 1577.18 | 1117.18 | 1577.45 | 1117    |      |
| 1578.57 | 1116.25   | 1578.95 | 1116    | 1580.45 | 1115    | 1580.94 | 1114.68 | 1581.96 | 1114    |      |
| 1582.76 | 1113.47   | 1583.48 | 1113    | 1584.67 | 1112.27 | 1585.13 | 1112    | 1585.44 | 1111.84 |      |
| 1587.06 | 1111      | 1588.24 | 1110.38 | 1588.98 | 1110    | 1602.57 | 1109.34 | 1606.14 | 1109.16 |      |
| 1609.95 | 1109      | 1623.51 | 1108.76 | 1624.8  | 1108.75 | 1688.77 | 1108    | 1744.14 | 1108.31 |      |
| 1808.94 | 1108.99   | 1809.76 | 1109    | 1929.38 | 1109.99 | 1930.99 | 1110    | 2008.94 | 1111.78 |      |
| 2019.99 | 1112      | 2088.19 | 1111.19 | 2096.36 | 1111    | 2138.17 | 1111.01 | 2185.06 | 1111.29 |      |
| 2375.18 | 1111.63   | 2379    | 1111.66 | 2384.08 | 1111.69 | 2415.36 | 1112    | 2419.36 | 1112.31 |      |
| 2422.22 | 1113      | 2431.55 | 1112.3  | 2432.6  | 1112    | 2434.88 | 1111.21 | 2435.54 | 1111    |      |
| 2444.07 | 1111.14   | 2446    | 1112    | 2450.53 | 1111.94 | 2460    | 1111    | 2527.3  | 1111.57 |      |
| 2529.45 | 1111.66   | 2531.76 | 1111.75 | 2532.58 | 1111.76 | 2538.15 | 1111.94 | 2538.71 | 1111.95 |      |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2539.53 | 1112    | 2543.54 | 1112.59 | 2545.3  | 1113    | 2546.04 | 1113.46 | 2546.36 | 1113.65 |
| 2546.91 | 1114    | 2547.21 | 1114.18 | 2548.52 | 1115    | 2549.23 | 1115.44 | 2550.15 | 1116    |
| 2550.8  | 1116.4  | 2551.77 | 1117    | 2552.33 | 1117.34 | 2553.4  | 1118    | 2553.73 | 1118.21 |
| 2555.01 | 1119    | 2555.26 | 1119.17 | 2555.8  | 1119.53 | 2556.52 | 1120    | 2558.03 | 1121    |
| 2559.41 | 1121.91 | 2559.54 | 1122    | 2559.91 | 1122.26 | 2560.98 | 1123    | 2561.85 | 1123.67 |
| 2562.32 | 1124    | 2563.2  | 1124.36 | 2564.64 | 1125    | 2569.48 | 1125.83 | 2569.8  | 1125.88 |
| 2570.41 | 1126    | 2579.92 | 1127    | 2580.1  | 1127.05 | 2583.25 | 1128    | 2584.93 | 1128.5  |
| 2588.99 | 1129.73 | 2589.85 | 1130    | 2593.25 | 1131    | 2595.52 | 1131.56 | 2597.34 | 1132    |
| 2599.29 | 1132.48 | 2601.44 | 1133    | 2602.54 | 1133.27 | 2606.82 | 1134.31 | 2607.21 | 1134.39 |
| 2608.83 | 1134.78 | 2609.31 | 1134.75 | 2616.3  | 1134.67 | 2619.96 | 1134.53 | 2629.3  | 1134    |
| 2631.32 | 1133.3  | 2632.17 | 1133    | 2632.37 | 1132.93 | 2634.96 | 1132    | 2636.13 | 1131.57 |
| 2637.71 | 1131    | 2639.13 | 1130.44 | 2640.24 | 1130    | 2641.12 | 1129.61 | 2642.48 | 1129    |
| 2643.95 | 1128.33 | 2644.68 | 1128    | 2646.87 | 1127    | 2648.35 | 1126.31 | 2649.02 | 1126    |
| 2649.75 | 1125.64 | 2651.08 | 1125    | 2652.37 | 1124.64 | 2654.61 | 1124    | 2668.51 | 1124.26 |
| 2671.91 | 1125    | 2675.72 | 1125.86 | 2676.37 | 1126    | 2679.92 | 1126.95 | 2680.09 | 1127    |
| 2685.67 | 1128    | 2724.88 | 1128.47 | 2745.2  | 1128.66 | 2796.49 | 1129    | 2870.41 | 1129.03 |
| 3090.78 | 1130.41 | 3091.75 | 1130.42 | 3098.28 | 1130.46 | 3124.57 | 1130.75 | 3130.87 | 1130.83 |
| 3134.88 | 1130.87 | 3150.57 | 1131    | 3282.37 | 1131.53 | 3288.72 | 1131.57 | 3293.47 | 1131.63 |
| 3295.6  | 1131.64 | 3298.88 | 1131.68 | 3301.17 | 1131.69 | 3310.89 | 1131.83 | 3310.97 | 1131.84 |
| 3322.91 | 1132    | 3357.27 | 1132.2  | 3362.52 | 1132.22 | 3364.54 | 1132.24 | 3375.69 | 1132.28 |
| 3378.27 | 1132.3  | 3415.21 | 1132.47 | 3417.98 | 1132.49 | 3466.04 | 1132.69 | 3475.04 | 1132.76 |
| 3492.7  | 1133    |         |         |         |         |         |         |         |         |

Manning's n Values  
 Sta n Val Sta num= 3 n Val Sta n Val  
 0 .04 1530.76 .035 2608.83 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1530.76 2608.83 245.71 248.41 251.12 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1530.76 1134.49 F  
 2608.83 3492.7 1134.78 F  
 Left Levee Station= 1530.76 Elevation= 1134.49  
 Right Levee Station= 2608.83 Elevation= 1134.78

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 218.71

INPUT  
 Description:

| Station | Elevation | Data    | num=    | 422     | Sta     | Elev    | Sta     | Elev    | Sta     | Elev | Sta | Elev |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|------|-----|------|
| 0       | 1132      | 29.51   | 1132.68 | 31.31   | 1132.84 | 31.88   | 1132.81 | 32.16   | 1132.84 |      |     |      |
| 32.46   | 1132.83   | 32.81   | 1132.81 | 33.25   | 1132.87 | 33.61   | 1132.85 | 33.82   | 1133    |      |     |      |
| 204.04  | 1133.74   | 229.38  | 1133.67 | 229.79  | 1133.65 | 230.23  | 1133.67 | 230.92  | 1133.65 |      |     |      |
| 232.57  | 1133.61   | 232.91  | 1133.62 | 234.69  | 1133.54 | 235.36  | 1133.5  | 236.91  | 1133.42 |      |     |      |
| 237.84  | 1133.46   | 240.07  | 1133.31 | 241.5   | 1133.41 | 243.6   | 1133.12 | 244.51  | 1133    |      |     |      |
| 256.49  | 1132.98   | 262.67  | 1132.92 | 264.19  | 1132.9  | 264.95  | 1132.88 | 265.86  | 1132.86 |      |     |      |
| 267.39  | 1132.82   | 269.73  | 1132.77 | 301.56  | 1132    | 307.32  | 1132.19 | 310.76  | 1133    |      |     |      |
| 328.44  | 1132.14   | 329.39  | 1132    | 329.89  | 1131.93 | 355.66  | 1131.41 | 365.76  | 1131.62 |      |     |      |
| 368.24  | 1131.66   | 377.35  | 1131.86 | 378.9   | 1131.89 | 383.87  | 1132    | 409.36  | 1132.24 |      |     |      |
| 450.81  | 1132      | 469.86  | 1132.09 | 470.06  | 1132.08 | 479.86  | 1132.01 | 496.53  | 1132.03 |      |     |      |
| 500.47  | 1132      | 679.75  | 1132.39 | 737.6   | 1132.94 | 738.34  | 1132.95 | 740.28  | 1132.97 |      |     |      |
| 740.8   | 1132.98   | 742.86  | 1133    | 760.86  | 1133.5  | 765.69  | 1133.61 | 771.41  | 1133.85 |      |     |      |
| 771.55  | 1133.86   | 774.91  | 1134    | 808.27  | 1134.23 | 816.75  | 1134.84 | 818.88  | 1135    |      |     |      |
| 819.22  | 1135.06   | 829.95  | 1137    | 835.04  | 1138    | 872.33  | 1139    | 913.24  | 1139.87 |      |     |      |
| 920.54  | 1139.92   | 922.77  | 1139.88 | 926.15  | 1139.84 | 928.56  | 1139.8  | 942.05  | 1139.64 |      |     |      |
| 948.92  | 1139.49   | 955.15  | 1139.41 | 968.56  | 1139.08 | 969.48  | 1139.06 | 971.79  | 1139    |      |     |      |
| 979.12  | 1138.15   | 980.36  | 1138    | 981.69  | 1137.62 | 983.97  | 1137    | 986.32  | 1136.31 |      |     |      |
| 988.57  | 1135.66   | 990.81  | 1135    | 993.9   | 1134    | 996.27  | 1133.22 | 999.07  | 1132.31 |      |     |      |
| 999.99  | 1132      | 1003.03 | 1131    | 1003.82 | 1130.76 | 1006.3  | 1130    | 1009.25 | 1129    |      |     |      |
| 1011.41 | 1128.31   | 1012.41 | 1128    | 1015.55 | 1127    | 1016.77 | 1126.62 | 1018.74 | 1126    |      |     |      |
| 1022.08 | 1125      | 1022.41 | 1124.91 | 1025.43 | 1124    | 1026.45 | 1123.81 | 1029.92 | 1123    |      |     |      |
| 1056.74 | 1121      | 1084.45 | 1121.61 | 1086.02 | 1122.34 | 1088.26 | 1123.46 | 1089.35 | 1124    |      |     |      |
| 1090.65 | 1124.54   | 1091.78 | 1125    | 1092.81 | 1125.65 | 1093.37 | 1126    | 1094.16 | 1126.49 |      |     |      |
| 1094.94 | 1127      | 1096.03 | 1127.7  | 1096.51 | 1128    | 1098.08 | 1129    | 1098.68 | 1129.39 |      |     |      |
| 1099.64 | 1130      | 1100.92 | 1130.8  | 1101.23 | 1131    | 1101.64 | 1131.27 | 1102.76 | 1132    |      |     |      |
| 1103.3  | 1132.35   | 1104.34 | 1133    | 1105.91 | 1134    | 1106.34 | 1134.27 | 1107.47 | 1135    |      |     |      |
| 1107.94 | 1135.3    | 1109.03 | 1136    | 1109.38 | 1136.23 | 1110.61 | 1137    | 1113.61 | 1138.92 |      |     |      |
| 1113.74 | 1139      | 1114.95 | 1139.79 | 1116.65 | 1140.87 | 1116.86 | 1141    | 1119.64 | 1142.78 |      |     |      |
| 1119.99 | 1143      | 1121.55 | 1144    | 1135.01 | 1143.91 | 1136.89 | 1143.92 | 1140.86 | 1143.86 |      |     |      |
| 1148.82 | 1143.73   | 1151.03 | 1143.71 | 1151.53 | 1143.7  | 1152.73 | 1143.69 | 1162.08 | 1143.72 |      |     |      |
| 1162.66 | 1143.71   | 1165.58 | 1143.79 | 1166.08 | 1143.78 | 1172.85 | 1144    | 1176.05 | 1144.2  |      |     |      |
| 1179.07 | 1144.35   | 1182.64 | 1144.49 | 1185.85 | 1144.6  | 1186.64 | 1144.62 | 1189.89 | 1144.69 |      |     |      |
| 1190.6  | 1144.71   | 1192.72 | 1144.72 | 1193.28 | 1144.73 | 1201.27 | 1144.7  | 1203.38 | 1144.68 |      |     |      |
| 1203.97 | 1144.67   | 1205.14 | 1144.64 | 1205.92 | 1144.61 | 1207.21 | 1144.54 | 1208.75 | 1144.47 |      |     |      |
| 1212.26 | 1144.26   | 1213.23 | 1144.21 | 1214.77 | 1144.09 | 1215.78 | 1144    | 1224.82 | 1143.25 |      |     |      |
| 1227.37 | 1143      | 1239.48 | 1142.67 | 1271.65 | 1142    | 1273.7  | 1141.94 | 1274.1  | 1142    |      |     |      |
| 1279.28 | 1142.07   | 1280.45 | 1142.09 | 1282.33 | 1142.13 | 1297.94 | 1142.38 | 1300.86 | 1142.44 |      |     |      |
| 1305.52 | 1142.52   | 1308.89 | 1142.59 | 1316.91 | 1142.72 | 1319.29 | 1142.78 | 1332.59 | 1143    |      |     |      |
| 1344.38 | 1143.27   | 1346.89 | 1143.34 | 1361.77 | 1143.71 | 1363.6  | 1143.75 | 1372.18 | 1144    |      |     |      |
| 1380.03 | 1144.27   | 1395.78 | 1145    | 1401.02 | 1145.73 | 1402.5  | 1146    | 1403.75 | 1146.32 |      |     |      |
| 1406.69 | 1147      | 1408.24 | 1147.32 | 1411.34 | 1148    | 1416.56 | 1149    | 1417.32 | 1148.73 |      |     |      |
| 1418.43 | 1148      | 1419.46 | 1147.31 | 1419.91 | 1147    | 1420.43 | 1146.65 | 1421.38 | 1146    |      |     |      |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1422.82 | 1145.02 | 1424.2  | 1144    | 1424.59 | 1143.69 | 1425.47 | 1143    | 1426.33 | 1142.33 |
| 1426.75 | 1142    | 1427.39 | 1141.52 | 1428.92 | 1140.4  | 1430.75 | 1139.09 | 1431.01 | 1138.91 |
| 1432.25 | 1138    | 1433.62 | 1137    | 1433.98 | 1136.73 | 1435.93 | 1135.31 | 1436.34 | 1135    |
| 1436.82 | 1134.64 | 1437.7  | 1134    | 1439.05 | 1133    | 1440.08 | 1132.35 | 1440.63 | 1132    |
| 1441.49 | 1131.51 | 1442.41 | 1131    | 1444.08 | 1130.11 | 1445.86 | 1129.13 | 1446.09 | 1129    |
| 1446.43 | 1128.89 | 1447.11 | 1128.8  | 1447.61 | 1128.74 | 1453.17 | 1128.19 | 1453.82 | 1128.44 |
| 1453.99 | 1128.45 | 1455.53 | 1129    | 1456.98 | 1129.55 | 1458.2  | 1130    | 1460.83 | 1131    |
| 1461.63 | 1131.31 | 1463.18 | 1131.9  | 1463.38 | 1131.97 | 1466.22 | 1133.03 | 1467.5  | 1133.47 |
| 1469.32 | 1134    | 1471.3  | 1133.29 | 1471.94 | 1133    | 1476.27 | 1133.14 | 1487.76 | 1133.67 |
| 1491.98 | 1134    | 1492.93 | 1134.11 | 1496.93 | 1134.46 | 1497.21 | 1134.47 | 1497.41 | 1134.49 |
| 1499.74 | 1135    | 1533.78 | 1134.72 | 1535.81 | 1134    | 1537.16 | 1133.49 | 1539.44 | 1132.61 |
| 1540.99 | 1132    | 1542.58 | 1131.2  | 1542.99 | 1131    | 1543.89 | 1130.5  | 1544.78 | 1130    |
| 1546.57 | 1129    | 1547.18 | 1128.68 | 1548.45 | 1128    | 1549.31 | 1127.62 | 1550.74 | 1127    |
| 1554.54 | 1125.33 | 1555.3  | 1125    | 1565.44 | 1124    | 1568.34 | 1123.05 | 1571.11 | 1122.13 |
| 1571.52 | 1122    | 1571.98 | 1121.84 | 1574.45 | 1121    | 1576.99 | 1120    | 1577.69 | 1119.73 |
| 1579.52 | 1119    | 1580.4  | 1118.66 | 1582.04 | 1118    | 1583.9  | 1117.24 | 1584.5  | 1117    |
| 1585.49 | 1116.39 | 1586.13 | 1116    | 1586.5  | 1115.71 | 1587.38 | 1115    | 1588.27 | 1114.3  |
| 1588.64 | 1114    | 1588.97 | 1113.75 | 1589.95 | 1113    | 1591.11 | 1112.14 | 1591.31 | 1112    |
| 1591.63 | 1111.76 | 1592.35 | 1111.24 | 1592.68 | 1111    | 1592.94 | 1110.83 | 1594.17 | 1110    |
| 1594.7  | 1109.72 | 1596.9  | 1108.54 | 1597.26 | 1108.34 | 1597.89 | 1108    | 1678.04 | 1107    |
| 1711.45 | 1107.13 | 1789.1  | 1108    | 1835.32 | 1109    | 1968.37 | 1111    | 2067.2  | 1110.71 |
| 2097.38 | 1110    | 2222.83 | 1110.99 | 2223.08 | 1111    | 2223.61 | 1110.94 | 2223.84 | 1110.92 |
| 2224.86 | 1110.78 | 2232.23 | 1110.08 | 2232.95 | 1110    | 2243.68 | 1110.15 | 2249.95 | 1110.3  |
| 2254.09 | 1110.44 | 2268.66 | 1111    | 2282.87 | 1110.94 | 2285.4  | 1110.91 | 2381.29 | 1110.77 |
| 2399.99 | 1110.87 | 2401.17 | 1110.88 | 2406.71 | 1110.9  | 2407.61 | 1110.91 | 2413.15 | 1110.92 |
| 2413.73 | 1110.93 | 2419.18 | 1110.94 | 2430.35 | 1110.89 | 2431.19 | 1110.88 | 2436.72 | 1111    |
| 2477.11 | 1110.07 | 2477.5  | 1110.01 | 2477.6  | 1110    | 2518.13 | 1110.88 | 2519.1  | 1111    |
| 2530.12 | 1111.96 | 2530.52 | 1112    | 2530.85 | 1112.18 | 2532.34 | 1113    | 2532.66 | 1113.19 |
| 2534.13 | 1114    | 2534.86 | 1114.42 | 2535.91 | 1115    | 2537.03 | 1115.65 | 2537.66 | 1116    |
| 2539.17 | 1116.88 | 2539.8  | 1117.24 | 2541.09 | 1118    | 2542.66 | 1118.91 | 2542.81 | 1119    |
| 2543.03 | 1119.13 | 2545.76 | 1120.72 | 2546.23 | 1121    | 2546.64 | 1121.25 | 2547.9  | 1122    |
| 2548.31 | 1122.25 | 2549.57 | 1123    | 2549.81 | 1123.15 | 2551.25 | 1124    | 2551.87 | 1124.38 |
| 2552.89 | 1125    | 2553.94 | 1125.62 | 2554.56 | 1126    | 2555.89 | 1126.81 | 2556.21 | 1127    |
| 2557.78 | 1127.95 | 2558.3  | 1128.26 | 2559.51 | 1129    | 2561.41 | 1129.86 | 2561.78 | 1130    |
| 2562.28 | 1130.12 | 2566.12 | 1131    | 2567.05 | 1131.22 | 2570.45 | 1132    | 2575.77 | 1132.96 |
| 2575.97 | 1133    | 2576.29 | 1133.03 | 2576.63 | 1133.06 | 2587.68 | 1134    | 2608.24 | 1133.96 |
| 2615.69 | 1133    | 2621.46 | 1132    | 2623.25 | 1131.66 | 2626.9  | 1131    | 2628.09 | 1130.63 |
| 2630.08 | 1130    | 2631.55 | 1129.48 | 2634.25 | 1128.5  | 2635.67 | 1128    | 2637.51 | 1127.34 |
| 2639.48 | 1126.65 | 2641.29 | 1126    | 2642.94 | 1125.5  | 2644.62 | 1125    | 2648.27 | 1124    |
| 2648.88 | 1123.86 | 2652.75 | 1123    | 2663.43 | 1123.78 | 2664.86 | 1124.25 | 2667.19 | 1125    |
| 2670.37 | 1126    | 2673.07 | 1127    | 2706.48 | 1128    | 2859.11 | 1128.55 | 2998.06 | 1129.27 |
| 3371.44 | 1131    | 3406.62 | 1131.03 | 3408.22 | 1131.04 | 3535.82 | 1131.52 | 3602.1  | 1132    |
| 3711.03 | 1131.43 | 3712.5  | 1131    |         |         |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 1533.78 .035 2587.68 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1533.78 2587.68 250.27 250.27 250.27 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1533.78 1134.72 F  
 2587.68 3712.5 1134 F  
 Left Levee Station= 1533.78 Elevation= 1134.72  
 Right Levee Station= 2587.68 Elevation= 1134

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 218.66

INPUT

Description:

|         |           |         |         |         |         |         |         |         |         |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|
| Station | Elevation | Data    | num=    | 393     |         |         |         |         |         |
| Sta     | Elev      | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    |
| 0       | 1132      | 35.17   | 1132.32 | 40.75   | 1132.73 | 42.18   | 1132.83 | 42.81   | 1132.88 |
| 44.49   | 1133      | 69.46   | 1132.86 | 70.32   | 1132.84 | 77.56   | 1132.47 | 81.31   | 1132.3  |
| 84.91   | 1132      | 138.05  | 1132.42 | 138.94  | 1132.52 | 141.48  | 1132.68 | 144.01  | 1132.9  |
| 144.29  | 1132.92   | 145.27  | 1133    | 286.5   | 1133.76 | 289.94  | 1133.77 | 292.02  | 1133.78 |
| 296.3   | 1133.84   | 297.39  | 1133.85 | 300.41  | 1133.86 | 310.46  | 1134    | 318.11  | 1133.97 |
| 318.94  | 1133.92   | 319.81  | 1133.88 | 323.65  | 1133.67 | 329.25  | 1133.34 | 332.07  | 1133.18 |
| 335.74  | 1133      | 342.66  | 1132.49 | 345.53  | 1132.27 | 348.8   | 1132    | 410.05  | 1131.48 |
| 413.07  | 1131      | 491.2   | 1131.02 | 491.59  | 1131.04 | 492.57  | 1131.08 | 506.69  | 1131.63 |
| 513.81  | 1131.92   | 514.71  | 1131.96 | 515.76  | 1132    | 681.02  | 1133    | 695.61  | 1132.81 |
| 708.63  | 1132      | 725.63  | 1132.14 | 728.24  | 1132.33 | 737.08  | 1133    | 742.14  | 1133.56 |
| 744.49  | 1133.81   | 746.15  | 1134    | 748.74  | 1134.32 | 749.15  | 1134.36 | 753.02  | 1134.82 |
| 757.48  | 1135      | 774.08  | 1135.04 | 776.52  | 1135.29 | 783.25  | 1135.81 | 784.71  | 1135.93 |
| 785.8   | 1136      | 793.21  | 1136.29 | 804.06  | 1136.85 | 805.7   | 1136.93 | 806.94  | 1137    |
| 850.35  | 1137.14   | 854.75  | 1137.23 | 888.69  | 1138    | 895.25  | 1137.79 | 903.12  | 1137    |
| 908.35  | 1135.44   | 909.79  | 1135    | 913.05  | 1134.02 | 913.31  | 1133.94 | 916.48  | 1133    |
| 919.78  | 1132.03   | 919.88  | 1132    | 920.16  | 1131.92 | 923.31  | 1131    | 925.16  | 1130.38 |
| 926.26  | 1130      | 929.04  | 1129.07 | 929.26  | 1129    | 930.07  | 1128.73 | 932.28  | 1128    |
| 932.8   | 1127.83   | 933.9   | 1127.48 | 935.43  | 1127    | 938.72  | 1126    | 941.06  | 1125.71 |
| 947.09  | 1125      | 992.04  | 1125.06 | 992.31  | 1125.17 | 994.27  | 1126    | 996.44  | 1127    |
| 997.14  | 1127.32   | 998.56  | 1128    | 999.29  | 1128.36 | 1003.57 | 1129    | 1006.14 | 1129.3  |
| 1010.61 | 1130      | 1016.86 | 1131    | 1021.49 | 1131.78 | 1022.78 | 1132    | 1028.25 | 1132.89 |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1028.96 | 1133    | 1035.78 | 1134    | 1038.41 | 1134.47 | 1041.23 | 1135    | 1046.41 | 1135.91 |
| 1046.87 | 1136    | 1053.45 | 1137    | 1059.37 | 1137.93 | 1059.87 | 1138    | 1063.4  | 1138.65 |
| 1066.09 | 1139    | 1067.63 | 1139.56 | 1068.81 | 1140    | 1070.83 | 1140.84 | 1071.25 | 1141    |
| 1071.45 | 1141.08 | 1073.37 | 1141.93 | 1073.53 | 1142    | 1076.91 | 1143.49 | 1078.88 | 1144.37 |
| 1080.26 | 1145    | 1081.77 | 1145.7  | 1082.37 | 1146    | 1083.45 | 1146.55 | 1084.29 | 1147    |
| 1090.77 | 1146.43 | 1092.48 | 1146    | 1094.86 | 1145.41 | 1096.48 | 1145    | 1115.3  | 1144.23 |
| 1116.22 | 1144.19 | 1119.18 | 1144.09 | 1120.27 | 1144    | 1209.09 | 1144.59 | 1219.05 | 1145    |
| 1234.31 | 1145.9  | 1235.87 | 1146    | 1289.05 | 1145.73 | 1310.59 | 1145    | 1338.59 | 1144.77 |
| 1339.54 | 1144.76 | 1341.05 | 1144.77 | 1342.25 | 1144.76 | 1344.75 | 1144.75 | 1353.85 | 1144.69 |
| 1358.95 | 1144.64 | 1360.77 | 1144.63 | 1363.47 | 1144.62 | 1364.06 | 1144.6  | 1367.6  | 1144.59 |
| 1375.23 | 1144.51 | 1417.63 | 1144.64 | 1430.9  | 1145    | 1433.14 | 1145.56 | 1434.95 | 1146    |
| 1436.96 | 1145.16 | 1437.2  | 1145    | 1437.64 | 1144.7  | 1438.65 | 1144    | 1439.9  | 1143.16 |
| 1440.14 | 1143    | 1441.14 | 1142.42 | 1441.85 | 1142    | 1443.53 | 1141    | 1443.74 | 1140.87 |
| 1445.15 | 1140    | 1446.47 | 1139    | 1447.26 | 1138.41 | 1447.8  | 1138    | 1448.72 | 1137.31 |
| 1449.12 | 1137    | 1450.21 | 1136.18 | 1450.45 | 1136    | 1450.63 | 1135.87 | 1451.78 | 1135    |
| 1454.22 | 1134.23 | 1454.96 | 1134    | 1457.29 | 1133.35 | 1458.51 | 1133    | 1466.15 | 1132    |
| 1468.51 | 1132.03 | 1478.64 | 1133    | 1483.11 | 1133.59 | 1485.52 | 1133.87 | 1486.2  | 1134    |
| 1525.22 | 1133.04 | 1525.34 | 1133    | 1528.06 | 1132    | 1529.93 | 1131.34 | 1530.91 | 1131    |
| 1531.72 | 1130.68 | 1533.47 | 1130    | 1534.37 | 1129.54 | 1535.41 | 1129    | 1536.02 | 1128.69 |
| 1537.37 | 1128    | 1538.17 | 1127.6  | 1539.36 | 1127    | 1540.64 | 1126.4  | 1541.5  | 1126    |
| 1543.21 | 1125.2  | 1543.92 | 1124.87 | 1545.8  | 1124    | 1556.83 | 1123    | 1558.65 | 1122.24 |
| 1559.27 | 1122    | 1560.13 | 1121.69 | 1561.96 | 1121    | 1563.97 | 1120.3  | 1564.82 | 1120    |
| 1567.42 | 1119.06 | 1567.58 | 1119    | 1567.71 | 1118.95 | 1570.06 | 1118    | 1571.44 | 1117.4  |
| 1572.38 | 1117    | 1573.73 | 1116.02 | 1574.85 | 1115.19 | 1575.1  | 1115    | 1575.87 | 1114.42 |
| 1576.42 | 1114    | 1576.77 | 1113.73 | 1577.71 | 1113    | 1578.46 | 1112.44 | 1579.04 | 1112    |
| 1580.04 | 1111.34 | 1580.55 | 1111    | 1582.05 | 1110.02 | 1584.91 | 1108.07 | 1585.01 | 1108    |
| 1607.82 | 1107.94 | 1665.33 | 1107    | 1708.77 | 1107.14 | 1793.44 | 1108    | 1832.43 | 1109    |
| 1927.76 | 1111    | 2050.9  | 1110.75 | 2051.03 | 1110.74 | 2054.36 | 1110.64 | 2057.51 | 1110.53 |
| 2059.06 | 1110.51 | 2061.83 | 1110.4  | 2063.65 | 1110.39 | 2083.54 | 1110    | 2110.88 | 1109.95 |
| 2113.15 | 1109.87 | 2119.84 | 1109.58 | 2132.21 | 1109    | 2144.07 | 1108.17 | 2144.3  | 1108.16 |
| 2146.4  | 1108    | 2149.85 | 1107.78 | 2151.01 | 1107.72 | 2152.97 | 1107.61 | 2154.09 | 1107.54 |
| 2155.31 | 1107.49 | 2160.49 | 1107    | 2169.03 | 1106.38 | 2172.4  | 1106    | 2183.59 | 1106.04 |
| 2183.8  | 1106.05 | 2189.69 | 1106.3  | 2195.47 | 1106.5  | 2196.66 | 1106.52 | 2200.02 | 1106.64 |
| 2200.53 | 1106.65 | 2202.65 | 1106.76 | 2203.01 | 1106.78 | 2203.38 | 1106.79 | 2203.81 | 1106.81 |
| 2204.5  | 1106.82 | 2204.98 | 1106.84 | 2208.73 | 1106.66 | 2213.14 | 1106    | 2213.3  | 1105.98 |
| 2220.84 | 1105.19 | 2222.52 | 1105.45 | 2226.21 | 1106    | 2229.82 | 1106.39 | 2231.31 | 1106.57 |
| 2234.69 | 1107    | 2235.33 | 1107.07 | 2235.71 | 1107.11 | 2237.92 | 1107.38 | 2242.2  | 1107.88 |
| 2243.1  | 1108    | 2247.93 | 1108.55 | 2251.72 | 1108.94 | 2252.02 | 1108.97 | 2252.4  | 1109    |
| 2350.8  | 1109.89 | 2353.51 | 1109.94 | 2356.25 | 1110    | 2469.87 | 1109.59 | 2473.92 | 1109    |
| 2502.34 | 1109.98 | 2502.5  | 1110    | 2502.58 | 1110.02 | 2508.16 | 1111    | 2514.83 | 1111.75 |
| 2515.17 | 1112    | 2516.46 | 1112.93 | 2516.55 | 1113    | 2516.64 | 1113.06 | 2516.92 | 1113.26 |
| 2517.96 | 1114    | 2518.8  | 1114.59 | 2519.39 | 1115    | 2520    | 1115.42 | 2520.85 | 1116    |
| 2521.85 | 1116.6  | 2522.52 | 1117    | 2523.19 | 1117.37 | 2524.32 | 1118    | 2525.17 | 1118.47 |
| 2526.12 | 1119    | 2526.86 | 1119.41 | 2528.87 | 1120.53 | 2529.73 | 1121    | 2530.78 | 1121.58 |
| 2531.53 | 1122    | 2532.95 | 1122.78 | 2533.34 | 1123    | 2535.03 | 1124    | 2542.94 | 1124.68 |
| 2546.58 | 1125    | 2549.32 | 1126    | 2550.84 | 1126.56 | 2552.05 | 1127    | 2553.63 | 1127.58 |
| 2554.79 | 1128    | 2556.87 | 1128.72 | 2557.69 | 1129    | 2559.27 | 1129.48 | 2561    | 1130    |
| 2562.95 | 1130.56 | 2564.45 | 1131    | 2567.2  | 1131.76 | 2568.05 | 1132    | 2568.85 | 1132.22 |
| 2571.78 | 1133    | 2574.74 | 1133.78 | 2575.56 | 1134    | 2586.37 | 1133.36 | 2590.17 | 1133    |
| 2592.38 | 1132.25 | 2594.04 | 1131.69 | 2598.71 | 1130.09 | 2598.96 | 1130    | 2599.09 | 1129.96 |
| 2599.69 | 1129.75 | 2601.85 | 1129    | 2602.92 | 1128.62 | 2607.56 | 1127    | 2610.39 | 1126    |
| 2611.97 | 1125.41 | 2613.05 | 1125    | 2615.98 | 1124.11 | 2616.34 | 1124    | 2617.22 | 1123.75 |
| 2619.97 | 1123    | 2623.98 | 1122.19 | 2624.95 | 1122    | 2643.06 | 1122.34 | 2645.71 | 1123    |
| 2648.4  | 1123.74 | 2649.38 | 1124    | 2652.66 | 1125    | 2653.26 | 1125.18 | 2655.2  | 1125.77 |
| 2655.98 | 1126    | 2685.96 | 1126.62 | 2695.5  | 1126.75 | 2711    | 1127    | 2717.3  | 1127.03 |
| 2788.79 | 1128    | 2980.16 | 1128.31 | 2983.53 | 1128.32 | 2990.47 | 1128.33 | 3026.14 | 1128.48 |
| 3028.76 | 1128.5  | 3034.25 | 1128.52 | 3034.91 | 1128.53 | 3122.9  | 1129    | 3582.85 | 1131    |
| 3659.48 | 1132    | 3705.6  | 1132.03 | 3706.7  | 1132    |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 1525.22 .035 2575.56 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1525.22 2575.56 261.14 262.57 264 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1525.22 1133.04 F  
 2575.56 3706.7 1134 F  
 Left Levee Station= 1525.22 Elevation= 1133.04  
 Right Levee Station= 2575.56 Elevation= 1134

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 218.61

INPUT Description:

|         |           |        |         |        |         |        |         |        |         |
|---------|-----------|--------|---------|--------|---------|--------|---------|--------|---------|
| Station | Elevation | Data   | num=    | 442    |         |        |         |        |         |
| Sta     | Elev      | Sta    | Elev    | Sta    | Elev    | Sta    | Elev    | Sta    | Elev    |
| 0       | 1129      | 23.07  | 1129.74 | 24.01  | 1130    | 30.74  | 1131    | 217.73 | 1131.05 |
| 221.27  | 1132      | 228.67 | 1133    | 427.19 | 1132.3  | 428.78 | 1132    | 432.92 | 1131.11 |
| 433.39  | 1131      | 464.46 | 1131.19 | 468.2  | 1131.29 | 473.6  | 1131.5  | 476.47 | 1131.57 |
| 492.08  | 1132      | 570.95 | 1131.91 | 571.79 | 1131.86 | 584.57 | 1131.05 | 584.87 | 1131.03 |
| 585.27  | 1131      | 590.05 | 1130.68 | 593.01 | 1130.5  | 595.87 | 1130.31 | 597.17 | 1130.23 |
| 601.41  | 1130      | 612.08 | 1130.76 | 614.45 | 1131    | 631.9  | 1131.83 | 633.87 | 1131.93 |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 642.46  | 1132.33 | 648.23  | 1132.62 | 651.08  | 1132.75 | 656.13  | 1133    | 679.95  | 1134.1  |
| 698.99  | 1135    | 711.38  | 1134.52 | 712.61  | 1134    | 719.53  | 1134.24 | 731.04  | 1134.86 |
| 732.5   | 1134.93 | 732.99  | 1134.96 | 751.58  | 1136    | 766.61  | 1136.96 | 766.97  | 1136.98 |
| 767.25  | 1137    | 782.45  | 1136.5  | 784.85  | 1136    | 788.99  | 1135    | 790.74  | 1134.55 |
| 792.91  | 1134    | 796.62  | 1133.04 | 796.78  | 1133    | 796.99  | 1132.95 | 800.7   | 1132    |
| 802.07  | 1131.64 | 804.59  | 1131    | 808.18  | 1130.06 | 808.43  | 1130    | 808.75  | 1129.92 |
| 812.14  | 1129    | 815.72  | 1128.01 | 818.52  | 1127.17 | 819.08  | 1127    | 821.53  | 1126.27 |
| 822.45  | 1126    | 822.84  | 1125.89 | 825.79  | 1125    | 826.03  | 1124.93 | 829.35  | 1124    |
| 832.93  | 1123.08 | 833.25  | 1123    | 833.66  | 1122.89 | 837.16  | 1122    | 856.15  | 1121.07 |
| 857.49  | 1121    | 873.7   | 1121.16 | 875.36  | 1121.58 | 877.17  | 1122    | 877.77  | 1122.22 |
| 879.62  | 1123    | 881.61  | 1124    | 884.59  | 1124.42 | 888.38  | 1125    | 912.8   | 1125.39 |
| 914.07  | 1126.28 | 916.5   | 1127.96 | 919.42  | 1130    | 920.85  | 1130.98 | 921.05  | 1131.12 |
| 922.32  | 1132    | 923.59  | 1133    | 924.51  | 1133.72 | 924.86  | 1134    | 925.78  | 1134.72 |
| 926.13  | 1135    | 927.15  | 1135.83 | 927.38  | 1136    | 928.06  | 1136.56 | 928.61  | 1137    |
| 928.93  | 1137.25 | 929.75  | 1137.92 | 931.14  | 1139    | 931.93  | 1139.65 | 932.37  | 1140    |
| 933.59  | 1140.79 | 933.9   | 1141    | 935.51  | 1141.89 | 935.71  | 1142    | 937.35  | 1142.89 |
| 937.55  | 1143    | 939.34  | 1144    | 939.48  | 1144.08 | 941.13  | 1145    | 946.04  | 1144.65 |
| 948.74  | 1144    | 978.41  | 1144.63 | 979     | 1144.78 | 979.25  | 1144.73 | 979.65  | 1144.77 |
| 980.83  | 1144.45 | 981.06  | 1144.44 | 982.14  | 1144.18 | 982.59  | 1144.07 | 983.07  | 1144    |
| 1030.27 | 1144.09 | 1030.52 | 1144.15 | 1031.91 | 1144.49 | 1033.6  | 1144.89 | 1034.01 | 1145    |
| 1042.12 | 1145.68 | 1043.01 | 1145.7  | 1044.2  | 1145.78 | 1045.56 | 1145.74 | 1046.59 | 1145.65 |
| 1047.59 | 1145.58 | 1048.47 | 1145.5  | 1049.39 | 1145.4  | 1050.37 | 1145.23 | 1050.85 | 1145    |
| 1052.01 | 1144.9  | 1052.26 | 1144.87 | 1054.14 | 1144.5  | 1055.81 | 1144.27 | 1057.34 | 1144    |
| 1062.87 | 1143.97 | 1204.14 | 1143.85 | 1217    | 1143.77 | 1220.9  | 1143.83 | 1222.03 | 1143.8  |
| 1223.72 | 1143.78 | 1228.87 | 1143.84 | 1230.33 | 1143.82 | 1237.04 | 1143.89 | 1237.98 | 1143.88 |
| 1245.83 | 1143.92 | 1246.83 | 1143.9  | 1254.81 | 1143.89 | 1271.68 | 1143.76 | 1277.8  | 1143.74 |
| 1313.82 | 1143.9  | 1349.04 | 1144.22 | 1385.63 | 1144    | 1403.59 | 1143.71 | 1405.34 | 1143.65 |
| 1406.02 | 1143.62 | 1417.19 | 1143.24 | 1423.54 | 1143.36 | 1424.09 | 1143.48 | 1424.72 | 1143.61 |
| 1425.59 | 1143.77 | 1427.13 | 1143.55 | 1427.94 | 1143    | 1429.06 | 1142.2  | 1429.33 | 1142    |
| 1429.66 | 1141.76 | 1432.07 | 1140    | 1433.03 | 1139.38 | 1433.6  | 1139    | 1435.52 | 1137.84 |
| 1436.89 | 1137    | 1437.8  | 1136.43 | 1438.48 | 1136    | 1439.69 | 1135.18 | 1439.96 | 1135    |
| 1441.43 | 1134    | 1442.99 | 1133    | 1444.01 | 1132.42 | 1444.74 | 1132    | 1445.29 | 1131.73 |
| 1446.8  | 1131    | 1447.5  | 1130.68 | 1448.93 | 1130    | 1457.42 | 1130.76 | 1458.12 | 1131    |
| 1459.26 | 1131.41 | 1460.92 | 1132    | 1462.24 | 1132.27 | 1465.71 | 1133    | 1509.13 | 1132.02 |
| 1509.32 | 1131.94 | 1511.46 | 1131    | 1513.28 | 1130.21 | 1513.75 | 1130    | 1514.5  | 1129.67 |
| 1516.05 | 1129    | 1517.96 | 1128    | 1519.84 | 1127    | 1521.66 | 1126.02 | 1521.83 | 1125.94 |
| 1526.53 | 1123.69 | 1527.96 | 1123    | 1540.55 | 1122    | 1542.38 | 1121.3  | 1543.15 | 1121    |
| 1545.34 | 1120.16 | 1545.75 | 1120    | 1548.59 | 1119    | 1548.89 | 1118.9  | 1551.7  | 1118    |
| 1553.4  | 1117.07 | 1553.53 | 1117    | 1553.78 | 1116.85 | 1555.23 | 1116    | 1556.23 | 1115.4  |
| 1556.91 | 1115    | 1557.9  | 1114.4  | 1558.58 | 1114    | 1558.91 | 1113.8  | 1560.22 | 1113    |
| 1561.01 | 1112.35 | 1562.63 | 1111    | 1563.76 | 1110.07 | 1564.97 | 1109.09 | 1565.08 | 1109    |
| 1566.85 | 1108.91 | 1569.15 | 1108.78 | 1577.18 | 1108.36 | 1578.07 | 1108.33 | 1580.86 | 1108.19 |
| 1589.67 | 1108    | 1603.64 | 1107.95 | 1606.49 | 1107.92 | 1670.45 | 1107    | 1704.91 | 1107.15 |
| 1707.8  | 1108    | 1824.2  | 1108.23 | 1853.14 | 1109    | 1943.83 | 1111    | 2070.99 | 1110.26 |
| 2078.02 | 1110    | 2126.97 | 1109    | 2134.04 | 1108.99 | 2193.4  | 1108.19 | 2195.62 | 1108.11 |
| 2199.1  | 1108    | 2204.68 | 1107.65 | 2215.97 | 1107    | 2219.49 | 1106.54 | 2221.85 | 1106    |
| 2236.59 | 1105    | 2242.03 | 1104    | 2277.13 | 1104.32 | 2281.14 | 1104.64 | 2286.05 | 1105    |
| 2293.24 | 1105.99 | 2299.47 | 1106.69 | 2302.32 | 1107    | 2319.1  | 1108    | 2327.3  | 1108.18 |
| 2350.49 | 1108.77 | 2358.63 | 1109    | 2428.64 | 1109.16 | 2433.78 | 1110    | 2441.29 | 1109.16 |
| 2442.16 | 1109    | 2458.81 | 1108.16 | 2462.4  | 1108    | 2469.22 | 1108.1  | 2475.88 | 1109    |
| 2477.97 | 1109.31 | 2482.93 | 1110    | 2498.62 | 1110.06 | 2498.8  | 1110.18 | 2499.97 | 1111    |
| 2501.39 | 1112    | 2502.82 | 1113    | 2503.31 | 1113.34 | 2505.17 | 1114.66 | 2505.64 | 1115    |
| 2506.9  | 1115.89 | 2507.05 | 1116    | 2508.1  | 1116.46 | 2509.32 | 1117    | 2509.73 | 1117.23 |
| 2511.12 | 1118    | 2512.66 | 1118.86 | 2512.92 | 1119    | 2513.12 | 1119.11 | 2514.71 | 1120    |
| 2516.51 | 1121    | 2516.93 | 1121.23 | 2518.29 | 1122    | 2518.44 | 1122.09 | 2519.98 | 1123    |
| 2529.92 | 1124    | 2531.18 | 1124.42 | 2532.94 | 1125    | 2535.68 | 1125.88 | 2536.06 | 1126    |
| 2536.51 | 1126.14 | 2545.45 | 1129    | 2548.21 | 1129.95 | 2548.77 | 1130.15 | 2556.3  | 1132.73 |
| 2557.54 | 1133.16 | 2559.69 | 1133.89 | 2560    | 1134    | 2574.84 | 1133.92 | 2578.42 | 1132.47 |
| 2582.03 | 1131    | 2583.15 | 1130.54 | 2588.68 | 1128.29 | 2589.38 | 1128    | 2590.18 | 1127.72 |
| 2592.32 | 1127    | 2595.35 | 1126    | 2598.48 | 1124.95 | 2601.23 | 1124    | 2603.43 | 1123.46 |
| 2605.36 | 1123    | 2609.01 | 1122.1  | 2609.42 | 1122    | 2613.06 | 1121.09 | 2613.44 | 1121    |
| 2660.52 | 1121.11 | 2671.01 | 1123    | 2672.21 | 1123.2  | 2682.77 | 1125    | 2687.81 | 1126    |
| 2756.7  | 1126.56 | 2760.53 | 1126.6  | 2765.67 | 1126.63 | 2768.86 | 1126.66 | 2800.57 | 1126.87 |
| 2801.61 | 1126.88 | 2860.08 | 1127.17 | 2864.07 | 1127.18 | 3102.42 | 1128    | 3187.24 | 1128.52 |
| 3188.22 | 1128.53 | 3332.95 | 1129.23 | 3506.76 | 1130    | 3531.37 | 1130.23 | 3535.61 | 1130.28 |
| 3556.27 | 1130.47 | 3564.87 | 1130.59 | 3574.11 | 1130.68 | 3585.15 | 1130.85 | 3587.62 | 1130.87 |
| 3595.34 | 1131    | 3599.98 | 1132    | 3602.2  | 1132.83 | 3602.65 | 1133    | 3603.11 | 1133.17 |
| 3606.23 | 1134.34 | 3608.02 | 1135    | 3609.51 | 1135.54 | 3613.61 | 1137    | 3615.94 | 1137.84 |
| 3616.4  | 1138    | 3616.55 | 1138.05 | 3620.43 | 1139.46 | 3621.93 | 1140    | 3624.54 | 1140.95 |
| 3624.67 | 1141    | 3624.78 | 1141.04 | 3627.34 | 1142    | 3629.79 | 1142.93 | 3629.96 | 1143    |
| 3630.08 | 1143.05 | 3632.5  | 1144    | 3634.06 | 1144.27 | 3635.43 | 1144.25 | 3643.92 | 1144.68 |
| 3651.1  | 1144.65 | 3653.43 | 1144.63 | 3664.74 | 1144.58 | 3666.16 | 1144.56 | 3669.78 | 1144.53 |
| 3671.82 | 1144.5  | 3676.92 | 1144.45 | 3679.56 | 1144.41 | 3695.66 | 1144.21 | 3695.93 | 1144.2  |
| 3696.9  | 1144.19 | 3699.18 | 1144.22 | 3700.01 | 1144.25 | 3710.31 | 1144.04 | 3710.86 | 1144    |
| 3714.02 | 1143.85 | 3715.46 | 1143.77 | 3716.39 | 1143.73 | 3717.97 | 1143.63 | 3721.42 | 1143.44 |
| 3726.56 | 1143.29 | 3727.12 | 1143.27 | 3727.63 | 1143.26 | 3728.68 | 1143.25 | 3729.38 | 1143.23 |
| 3734.07 | 1143    | 3734.84 | 1142.94 | 3735.29 | 1142.89 | 3736.13 | 1142.79 | 3740.88 | 1142.31 |
| 3743.35 | 1142    | 3744.28 | 1141.84 | 3747.84 | 1141.25 | 3749.39 | 1141    | 3751.68 | 1140.62 |
| 3758.47 | 1139.54 | 3761.77 | 1139    | 3764.32 | 1138.56 | 3767.66 | 1138    | 3768.48 | 1137.86 |
| 3773.59 | 1137    | 3774.98 | 1136.74 | 3779.05 | 1136    | 3779.57 | 1135.9  | 3780.36 | 1135.74 |
| 3785.63 | 1134.77 | 3789.27 | 1134.14 | 3789.87 | 1134.03 | 3790.08 | 1134    | 3794.18 | 1133.28 |
| 3795.81 | 1133    | 3797.85 | 1132.64 | 3799.33 | 1132.4  | 3800.09 | 1132.29 | 3802.72 | 1131.89 |
| 3804.35 | 1131.67 | 3805.84 | 1131.44 |         |         |         |         |         |         |

|           |     |         |      |      |     |
|-----------|-----|---------|------|------|-----|
| Manning's | n   | Values  | num= | 3    |     |
| Sta       | n   | Val     | Sta  | n    | Val |
| 0         | .04 | 1509.13 | .035 | 2560 | .04 |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1509.13 2560 250.42 250.45 250.48 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1509.13 1132.02 F  
 2560 3805.84 1134 F  
 Left Levee Station= 1509.13 Elevation= 1132.02  
 Right Levee Station= 2560 Elevation= 1134

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 218.57

INPUT

Description:

| Station | Elevation | Data    | num=    | 492     | Sta     | Elev    | Sta     | Elev    | Sta     | Elev | Sta | Elev |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|------|-----|------|
| 0       | 1131      | 219.79  | 1131.26 | 224.24  | 1131.4  | 245.37  | 1132    | 259.88  | 1131.98 |      |     |      |
| 265.17  | 1131.61   | 276.93  | 1130.85 | 280.89  | 1130.55 | 285.75  | 1130.13 | 286.34  | 1130.09 |      |     |      |
| 286.59  | 1130.07   | 287.27  | 1130    | 309.5   | 1130.03 | 316.77  | 1130.06 | 317.08  | 1130.07 |      |     |      |
| 325.15  | 1130.11   | 325.69  | 1130.12 | 331.71  | 1130.15 | 333.37  | 1130.17 | 338.26  | 1130.2  |      |     |      |
| 338.85  | 1130.22   | 339.24  | 1130.23 | 342.6   | 1130.26 | 344.09  | 1130.29 | 351.58  | 1130.39 |      |     |      |
| 353.54  | 1130.43   | 365.67  | 1130.63 | 367.28  | 1130.65 | 399.59  | 1131.13 | 434.99  | 1131.9  |      |     |      |
| 435.67  | 1131.92   | 436.17  | 1131.93 | 439.06  | 1132    | 454.99  | 1132.45 | 458.56  | 1132.6  |      |     |      |
| 461.47  | 1132.68   | 465.57  | 1132.86 | 466.38  | 1132.89 | 468.86  | 1133    | 477.45  | 1132.5  |      |     |      |
| 478.34  | 1132.13   | 478.63  | 1132    | 500.25  | 1132.18 | 517.39  | 1132.93 | 518     | 1132.95 |      |     |      |
| 542.29  | 1134.04   | 542.79  | 1134.07 | 559.25  | 1134.84 | 560.65  | 1134.9  | 562.67  | 1135    |      |     |      |
| 572.03  | 1134.59   | 578.14  | 1134    | 583.47  | 1133    | 586.73  | 1132.37 | 603.78  | 1129    |      |     |      |
| 604.07  | 1128.94   | 608.5   | 1128.07 | 608.84  | 1128    | 613.74  | 1127.1  | 614.22  | 1127    |      |     |      |
| 618.92  | 1126.06   | 619.2   | 1126    | 620.37  | 1125.81 | 626.18  | 1125    | 633.87  | 1124.55 |      |     |      |
| 638.75  | 1124.33   | 643.99  | 1124    | 660.1   | 1123.16 | 662.82  | 1123    | 673.42  | 1123.01 |      |     |      |
| 676.64  | 1123.35   | 681.63  | 1124    | 689.19  | 1126    | 695.77  | 1127    | 702.39  | 1127.76 |      |     |      |
| 703.19  | 1127.86   | 704.37  | 1128    | 729.48  | 1128.44 | 736.09  | 1128.52 | 740.24  | 1128.6  |      |     |      |
| 742.11  | 1128.62   | 754.36  | 1128.68 | 755.98  | 1128.67 | 757.36  | 1128.69 | 758.92  | 1128.67 |      |     |      |
| 760.89  | 1128.69   | 762.07  | 1128.68 | 763.82  | 1128.65 | 766.52  | 1128.67 | 767.21  | 1128.66 |      |     |      |
| 771.01  | 1128.68   | 772.79  | 1128.66 | 776.85  | 1128.68 | 778.19  | 1128.67 | 781.57  | 1128.69 |      |     |      |
| 783.09  | 1128.68   | 786.04  | 1128.7  | 787.57  | 1128.69 | 791.96  | 1128.71 | 793.29  | 1128.7  |      |     |      |
| 796.69  | 1128.73   | 798.87  | 1128.71 | 803.22  | 1128.75 | 804.89  | 1128.74 | 809.63  | 1128.79 |      |     |      |
| 810.31  | 1128.78   | 825.73  | 1129    | 858.16  | 1129    | 859     | 1128.99 | 865     | 1128.88 |      |     |      |
| 891.79  | 1128.5    | 894.41  | 1128.45 | 898.42  | 1128.42 | 900     | 1128.43 | 902.14  | 1128.42 |      |     |      |
| 905.34  | 1128.45   | 908.96  | 1128.55 | 910.42  | 1128.65 | 912.34  | 1128.87 | 913.06  | 1129    |      |     |      |
| 939.48  | 1128.9    | 939.74  | 1128.87 | 941.24  | 1128.67 | 942.02  | 1128.57 | 943.88  | 1128.25 |      |     |      |
| 944.34  | 1128.18   | 945.31  | 1128    | 948.93  | 1127.55 | 950.37  | 1127.42 | 953.18  | 1127.13 |      |     |      |
| 954.26  | 1127      | 954.87  | 1126.9  | 955.22  | 1126.87 | 956.05  | 1126.78 | 960.3   | 1126.24 |      |     |      |
| 962.87  | 1126      | 965.16  | 1125.7  | 969.92  | 1125.27 | 971.27  | 1125.13 | 972.78  | 1125    |      |     |      |
| 986.84  | 1125.35   | 988.53  | 1126    | 990.64  | 1126.77 | 991.23  | 1127    | 992.84  | 1127.62 |      |     |      |
| 993.87  | 1128      | 995.75  | 1128.71 | 996.19  | 1128.87 | 996.52  | 1129    | 999.15  | 1130    |      |     |      |
| 1001.62 | 1130.99   | 1005.8  | 1133    | 1006.66 | 1133.41 | 1007.24 | 1133.69 | 1007.87 | 1134    |      |     |      |
| 1009.48 | 1134.78   | 1009.82 | 1134.94 | 1013.2  | 1136.6  | 1013.63 | 1136.82 | 1014    | 1137    |      |     |      |
| 1015.53 | 1137.65   | 1016.34 | 1138    | 1017.12 | 1138.31 | 1018.83 | 1139    | 1019.61 | 1139.31 |      |     |      |
| 1023.48 | 1141      | 1028.83 | 1143.42 | 1030.01 | 1144    | 1031.14 | 1144.54 | 1032.01 | 1145    |      |     |      |
| 1035.56 | 1144.42   | 1037.81 | 1144    | 1069.07 | 1143.17 | 1072.68 | 1143.06 | 1073.1  | 1143.05 |      |     |      |
| 1073.34 | 1143.04   | 1074.08 | 1143.03 | 1075.16 | 1143    | 1077.74 | 1142.99 | 1081.16 | 1143    |      |     |      |
| 1126.04 | 1143.78   | 1126.81 | 1144    | 1129.76 | 1143.06 | 1130.05 | 1142.97 | 1135.02 | 1142    |      |     |      |
| 1157.07 | 1142.44   | 1161.96 | 1143    | 1163.05 | 1143.33 | 1165.45 | 1144    | 1168.73 | 1143.48 |      |     |      |
| 1169.78 | 1143      | 1172.73 | 1141.09 | 1173.88 | 1140.34 | 1174.39 | 1140    | 1175.89 | 1139.05 |      |     |      |
| 1177.48 | 1138      | 1178.38 | 1137.42 | 1179.72 | 1136.54 | 1180.55 | 1136    | 1182.05 | 1135    |      |     |      |
| 1182.87 | 1134.5    | 1183.68 | 1134    | 1185.09 | 1133.11 | 1186.76 | 1132.04 | 1188.36 | 1131    |      |     |      |
| 1189.02 | 1130.56   | 1189.88 | 1130    | 1190.81 | 1129.36 | 1191.36 | 1129    | 1192.31 | 1128.43 |      |     |      |
| 1192.7  | 1128.19   | 1193.02 | 1128    | 1195.14 | 1127    | 1196.44 | 1126.4  | 1197.28 | 1126    |      |     |      |
| 1199.41 | 1125      | 1245.34 | 1125.2  | 1245.86 | 1125.23 | 1246.23 | 1125.24 | 1250.45 | 1125.46 |      |     |      |
| 1251.42 | 1125.47   | 1252.45 | 1125.51 | 1253.78 | 1125.54 | 1256.91 | 1125.69 | 1258.02 | 1125.72 |      |     |      |
| 1259.44 | 1125.81   | 1261.67 | 1126    | 1262.57 | 1126.25 | 1263.72 | 1126.51 | 1264.13 | 1126.59 |      |     |      |
| 1265.25 | 1126.73   | 1265.6  | 1126.79 | 1265.88 | 1126.81 | 1267.9  | 1127    | 1302.2  | 1127.5  |      |     |      |
| 1308.78 | 1128      | 1309.37 | 1128.1  | 1313.9  | 1128.84 | 1315.04 | 1129    | 1323.97 | 1129.38 |      |     |      |
| 1325.82 | 1129.47   | 1336.09 | 1129.89 | 1336.73 | 1129.91 | 1338.92 | 1130    | 1341.84 | 1130.15 |      |     |      |
| 1347.18 | 1130.45   | 1349.03 | 1130.57 | 1353.92 | 1130.84 | 1354.48 | 1130.89 | 1356.76 | 1131    |      |     |      |
| 1360.56 | 1131.82   | 1361.42 | 1132    | 1362.9  | 1132.22 | 1364.24 | 1132.11 | 1369.71 | 1132.14 |      |     |      |
| 1371.53 | 1132.16   | 1371.97 | 1132.18 | 1372.64 | 1132.19 | 1383.17 | 1132.67 | 1384.6  | 1132.72 |      |     |      |
| 1385.93 | 1132.75   | 1387.58 | 1132.77 | 1388.73 | 1132.76 | 1391.18 | 1132.78 | 1395.89 | 1132.79 |      |     |      |
| 1396.2  | 1132.8    | 1401.28 | 1132.81 | 1401.52 | 1132.82 | 1406.88 | 1133    | 1415.9  | 1133.05 |      |     |      |
| 1417.22 | 1133.16   | 1418.57 | 1133.15 | 1425.25 | 1133.47 | 1447.27 | 1133.34 | 1454.37 | 1133    |      |     |      |
| 1490.24 | 1132.08   | 1490.51 | 1132    | 1490.79 | 1131.91 | 1493.26 | 1131    | 1495.59 | 1130    |      |     |      |
| 1497.02 | 1129.1    | 1497.42 | 1128.85 | 1498.76 | 1128    | 1500.86 | 1127    | 1502.7  | 1126.25 |      |     |      |
| 1503.32 | 1126      | 1505.77 | 1125.03 | 1508.3  | 1124    | 1510.09 | 1123.21 | 1510.59 | 1123    |      |     |      |
| 1512.35 | 1122.17   | 1512.72 | 1122    | 1514.73 | 1121.16 | 1515.12 | 1121    | 1518.3  | 1120    |      |     |      |
| 1528.14 | 1119.34   | 1528.99 | 1119    | 1531.24 | 1118.22 | 1531.78 | 1118    | 1533.63 | 1117    |      |     |      |
| 1535.05 | 1116.11   | 1536.65 | 1115    | 1537.88 | 1114    | 1539.28 | 1113.03 | 1540.82 | 1112    |      |     |      |
| 1542.25 | 1111.19   | 1542.6  | 1111    | 1544.59 | 1110    | 1572.17 | 1109    | 1572.78 | 1108.98 |      |     |      |
| 1584.71 | 1108.63   | 1608.24 | 1108.2  | 1613.88 | 1108    | 1680.31 | 1107    | 1732.98 | 1107.19 |      |     |      |
| 1881.58 | 1109      | 1922.24 | 1110    | 1941.7  | 1110.24 | 1944.36 | 1110.26 | 1980.53 | 1110.67 |      |     |      |
| 2031.94 | 1110.58   | 2072.56 | 1110    | 2077.32 | 1109.91 | 2114.55 | 1109    | 2142.32 | 1108.93 |      |     |      |
| 2143.46 | 1108.91   | 2156.98 | 1108.72 | 2168.51 | 1108.53 | 2171.71 | 1108.46 | 2175.69 | 1108.4  |      |     |      |
| 2186.76 | 1108.18   | 2188.12 | 1108.16 | 2195.49 | 1108    | 2206.83 | 1107    | 2220.33 | 1106    |      |     |      |
| 2220.79 | 1105.94   | 2228.31 | 1105    | 2242.67 | 1104.24 | 2249.31 | 1104.01 | 2259.3  | 1104.02 |      |     |      |
| 2260.77 | 1104      | 2317.48 | 1104.15 | 2317.95 | 1104.18 | 2326.5  | 1104.84 | 2328.76 | 1105    |      |     |      |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2329.51 | 1105.05 | 2331.61 | 1105.18 | 2333.08 | 1105.29 | 2350.27 | 1106    | 2354.4  | 1106.26 |
| 2362.08 | 1107    | 2378.96 | 1107.22 | 2389.97 | 1108    | 2429.4  | 1108.54 | 2445.69 | 1109    |
| 2476.23 | 1109.54 | 2486.7  | 1110    | 2488.26 | 1111    | 2489.12 | 1111.54 | 2491.15 | 1112.8  |
| 2491.47 | 1113    | 2492.18 | 1113.43 | 2493.09 | 1114    | 2493.91 | 1114.53 | 2494.66 | 1115    |
| 2495.78 | 1115.9  | 2496.02 | 1116.1  | 2502.09 | 1120.92 | 2503.46 | 1122    | 2515.17 | 1123    |
| 2517.81 | 1123.9  | 2518.1  | 1124    | 2518.57 | 1124.17 | 2520.95 | 1125    | 2522.55 | 1125.57 |
| 2529.23 | 1128    | 2532.41 | 1129    | 2535.19 | 1129.8  | 2536.36 | 1130.13 | 2541.78 | 1131.73 |
| 2542.66 | 1132    | 2545.87 | 1133    | 2563.8  | 1132.31 | 2565.24 | 1132    | 2566.45 | 1131.68 |
| 2571.84 | 1130.28 | 2576.74 | 1129    | 2579.39 | 1128.24 | 2580.25 | 1128    | 2580.65 | 1127.87 |
| 2586.27 | 1126    | 2588.7  | 1125.18 | 2589.24 | 1125    | 2589.59 | 1124.89 | 2592.26 | 1124    |
| 2593.83 | 1123.59 | 2596.03 | 1123    | 2597.48 | 1122.64 | 2607.63 | 1120    | 2670.97 | 1120.03 |
| 2671.72 | 1120.06 | 2673.16 | 1120.11 | 2674.56 | 1120.18 | 2677.63 | 1120.29 | 2684.25 | 1120.6  |
| 2697.18 | 1120.99 | 2697.61 | 1121    | 2705.21 | 1121.22 | 2707.67 | 1121.31 | 2712.99 | 1121.48 |
| 2716.11 | 1121.61 | 2718.82 | 1121.7  | 2724.08 | 1121.93 | 2725.89 | 1122    | 2731.48 | 1122.24 |
| 2741.69 | 1122.73 | 2746.48 | 1123    | 2756.21 | 1123.91 | 2757.1  | 1124    | 2763.92 | 1125    |
| 2765.19 | 1125.15 | 2771.97 | 1126    | 3365.11 | 1129    | 3405.01 | 1129.81 | 3411.57 | 1129.89 |
| 3413.12 | 1129.92 | 3420.64 | 1130    | 3421.48 | 1130.09 | 3422.45 | 1130.2  | 3425.86 | 1130.57 |
| 3438.39 | 1132    | 3439.35 | 1132.05 | 3439.66 | 1132.07 | 3444.06 | 1132.32 | 3445.98 | 1132.52 |
| 3448.14 | 1132.66 | 3450.6  | 1133    | 3453.96 | 1133.18 | 3456.54 | 1133.3  | 3460.45 | 1133.51 |
| 3464.63 | 1133.66 | 3476.44 | 1134.42 | 3477.32 | 1134.48 | 3485.54 | 1135    | 3503.55 | 1135.73 |
| 3508.09 | 1136    | 3512.9  | 1136.21 | 3518.98 | 1136.44 | 3519.48 | 1136.45 | 3524.73 | 1136.64 |
| 3529.38 | 1136.76 | 3531.51 | 1136.83 | 3537.58 | 1136.98 | 3538.21 | 1137    | 3582.47 | 1138    |
| 3586.42 | 1138.12 | 3627.73 | 1139.17 | 3628.67 | 1139.2  | 3649.26 | 1139.66 | 3651.96 | 1139.61 |
| 3653.68 | 1139.6  | 3657.53 | 1139.65 | 3661.13 | 1139.66 | 3662.84 | 1139.69 | 3668.5  | 1139.72 |
| 3674.59 | 1139.68 | 3679.99 | 1139.76 | 3682.67 | 1139.83 | 3683.95 | 1139.88 | 3686.14 | 1140    |
| 3693.04 | 1140.95 | 3693.39 | 1141    | 3698.8  | 1142    | 3699.97 | 1142.24 | 3703.81 | 1143    |
| 3708.81 | 1143.66 | 3712.19 | 1144    | 3727.37 | 1143.95 | 3738.34 | 1143.96 | 3740.68 | 1143.94 |
| 3741.16 | 1143.93 | 3755.82 | 1143.56 | 3756.06 | 1143.55 | 3764.8  | 1143.43 | 3776.5  | 1143    |
| 3776.71 | 1142.96 | 3782.29 | 1141.1  | 3782.6  | 1141    | 3788.28 | 1139.11 | 3791.72 | 1138    |
| 3794.97 | 1137    | 3803.28 | 1134.38 |         |         |         |         |         |         |

Manning's n Values

|     |       |         |       |         |       |
|-----|-------|---------|-------|---------|-------|
| Sta | n Val | Sta     | n Val | Sta     | n Val |
| 0   | .04   | 1490.24 | .035  | 2545.87 | .04   |

|                  |          |               |            |         |       |        |        |
|------------------|----------|---------------|------------|---------|-------|--------|--------|
| Bank Sta: Left   | Right    | Lengths: Left | Channel    | Right   | Coeff | Contr. | Expan. |
| 1490.24          | 2545.87  | 249.1         | 247.19     | 245.29  | .1    |        | .3     |
| Ineffective Flow |          | num=          | 2          |         |       |        |        |
| Sta L            | Sta R    | Elev          | Permanent  |         |       |        |        |
| 0                | 1490.24  | 1132.08       | F          |         |       |        |        |
| 2545.87          | 3803.28  | 1133          | F          |         |       |        |        |
| Left Levee       | Station= | 1490.24       | Elevation= | 1132.08 |       |        |        |
| Right Levee      | Station= | 2545.87       | Elevation= | 1133    |       |        |        |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 218.52

INPUT Description:

|         |           |         |         |         |         |         |         |         |         |     |      |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|-----|------|
| Station | Elevation | Data    | num=    | 477     |         |         |         |         |         |     |      |
| Sta     | Elev      | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta | Elev |
| 0       | 1133.65   | 3.45    | 1134    | 12.57   | 1134.84 | 14.4    | 1135    | 18.59   | 1135.18 |     |      |
| 22.51   | 1135      | 68.46   | 1134.84 | 100.99  | 1134    | 107.03  | 1133.87 | 113.16  | 1133.77 |     |      |
| 120.82  | 1133.74   | 125.37  | 1133.68 | 127.93  | 1133.66 | 133.11  | 1133.59 | 136.08  | 1133.57 |     |      |
| 139.23  | 1133.53   | 144.56  | 1133.49 | 147.2   | 1133.45 | 151.01  | 1133.43 | 154.15  | 1133.39 |     |      |
| 171.23  | 1133.25   | 173.7   | 1133.22 | 182.33  | 1133.17 | 183.99  | 1133.15 | 191.8   | 1133.1  |     |      |
| 192.68  | 1133.09   | 208.38  | 1133    | 212.01  | 1132.67 | 216.72  | 1132.21 | 218.74  | 1132    |     |      |
| 221.84  | 1131.65   | 227.34  | 1131    | 237.12  | 1130    | 240.72  | 1129.83 | 244.27  | 1129.51 |     |      |
| 247.83  | 1129.26   | 249.67  | 1129.07 | 250.42  | 1129    | 282.55  | 1128.06 | 284.24  | 1128    |     |      |
| 357.6   | 1128.29   | 364.4   | 1128.27 | 386.34  | 1128.06 | 389.13  | 1128.02 | 390.22  | 1128    |     |      |
| 516.46  | 1127.37   | 531.43  | 1127.04 | 533.63  | 1127    | 548.45  | 1126.57 | 548.67  | 1126.56 |     |      |
| 552.18  | 1126.46   | 557.27  | 1126.34 | 558.92  | 1126.24 | 562.96  | 1126.02 | 563.31  | 1126    |     |      |
| 603.7   | 1125.87   | 626.57  | 1125    | 670.97  | 1124    | 775.21  | 1123.33 | 776.8   | 1123    |     |      |
| 787.34  | 1123.05   | 789.75  | 1123.12 | 790.9   | 1123.17 | 793.46  | 1123.27 | 795.41  | 1123.36 |     |      |
| 796.36  | 1123.39   | 798.65  | 1123.5  | 804.64  | 1123    | 815.83  | 1122.94 | 818.26  | 1122    |     |      |
| 819.11  | 1121.68   | 821.14  | 1120.9  | 821.56  | 1120.74 | 823.35  | 1120    | 824.78  | 1119.4  |     |      |
| 825.67  | 1119      | 826.65  | 1118.71 | 828.98  | 1118    | 831.12  | 1117.65 | 834.6   | 1117.16 |     |      |
| 835.07  | 1117.1    | 835.81  | 1117    | 837.54  | 1116.64 | 838.62  | 1116.44 | 840.81  | 1116.58 |     |      |
| 842.81  | 1116.42   | 846.75  | 1116.28 | 857.49  | 1116.49 | 859.74  | 1116.52 | 865.71  | 1117    |     |      |
| 871.33  | 1117.58   | 872.2   | 1118    | 873.21  | 1118.44 | 874.6   | 1119    | 875.68  | 1119.37 |     |      |
| 877.55  | 1120      | 883.65  | 1120.77 | 884.93  | 1120.88 | 886.37  | 1120.96 | 886.82  | 1121    |     |      |
| 888.44  | 1121.32   | 891.38  | 1122    | 892.39  | 1122.24 | 895.06  | 1122.83 | 895.68  | 1122.97 |     |      |
| 898.18  | 1123.53   | 899.63  | 1123.81 | 900.59  | 1124    | 901.83  | 1124.39 | 902.85  | 1124.72 |     |      |
| 903.29  | 1124.86   | 903.71  | 1125    | 904.96  | 1125.4  | 906.81  | 1126    | 907.28  | 1126.16 |     |      |
| 908.77  | 1126.65   | 909.82  | 1127    | 914.07  | 1127.15 | 915.05  | 1127.18 | 917.76  | 1127.41 |     |      |
| 920.46  | 1127.68   | 922.66  | 1127.82 | 923.86  | 1128    | 925.2   | 1128.15 | 926.96  | 1128.33 |     |      |
| 930.82  | 1128.52   | 933.19  | 1128.68 | 934.73  | 1128.74 | 939.76  | 1128.98 | 940.26  | 1129    |     |      |
| 943.99  | 1129.78   | 945.08  | 1130    | 945.31  | 1130.06 | 948.52  | 1130.85 | 949.1   | 1131    |     |      |
| 950.73  | 1131.48   | 952.65  | 1132    | 954.59  | 1132.58 | 956.22  | 1133    | 959.34  | 1133.11 |     |      |
| 960.1   | 1133.13   | 961.11  | 1133.15 | 967.27  | 1133.34 | 971.16  | 1133.45 | 973.08  | 1133.49 |     |      |
| 975.11  | 1133.55   | 979.48  | 1133.66 | 981.78  | 1133.73 | 984.18  | 1133.79 | 988.61  | 1133.92 |     |      |
| 989.05  | 1133.93   | 989.41  | 1133.94 | 992.05  | 1134    | 995.05  | 1134.53 | 997.86  | 1135    |     |      |
| 998.07  | 1135.04   | 998.27  | 1135.07 | 1001.47 | 1135.61 | 1003.72 | 1136    | 1003.88 | 1136.03 |     |      |
| 1004.06 | 1136.07   | 1006.82 | 1136.65 | 1008.54 | 1137    | 1008.97 | 1137.11 | 1009.43 | 1137.23 |     |      |
| 1012.42 | 1138      | 1013.13 | 1138.18 | 1014.39 | 1138.51 | 1016.14 | 1138.95 | 1016.33 | 1139    |     |      |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1018.47 | 1139.53 | 1020.44 | 1140    | 1021.68 | 1140.29 | 1024.9  | 1141    | 1026.14 | 1141.28 |
| 1029.44 | 1142    | 1031.8  | 1142.53 | 1033.02 | 1142.81 | 1038.4  | 1144    | 1039.73 | 1144.28 |
| 1041.94 | 1144.76 | 1043.05 | 1145    | 1047.07 | 1145.79 | 1047.48 | 1145.88 | 1048.09 | 1146    |
| 1049.33 | 1146.25 | 1050.2  | 1146.42 | 1053.51 | 1147.09 | 1054.15 | 1147.21 | 1056.7  | 1147.68 |
| 1058.78 | 1148    | 1059.41 | 1148.1  | 1059.83 | 1148.17 | 1064.42 | 1148.9  | 1065.01 | 1149    |
| 1067.49 | 1149.47 | 1070.04 | 1150    | 1070.35 | 1150.06 | 1070.68 | 1150.13 | 1072.18 | 1150.51 |
| 1073.7  | 1150.91 | 1074.07 | 1151    | 1075.58 | 1151.38 | 1078.53 | 1152.05 | 1078.73 | 1152.1  |
| 1081.28 | 1152.68 | 1082.72 | 1153    | 1083.63 | 1153.23 | 1086.77 | 1154    | 1087.07 | 1154.07 |
| 1087.87 | 1154.27 | 1089.68 | 1154.71 | 1090.12 | 1154.82 | 1095    | 1156    | 1096.18 | 1156.29 |
| 1096.65 | 1156.4  | 1097.84 | 1156.69 | 1099.14 | 1157    | 1099.5  | 1157.09 | 1111.22 | 1159.93 |
| 1111.49 | 1160    | 1176.98 | 1159.95 | 1177.14 | 1159.94 | 1186.6  | 1159.6  | 1205.72 | 1159    |
| 1207.84 | 1158.91 | 1208.38 | 1158.88 | 1214.92 | 1158.6  | 1218.88 | 1158.35 | 1220.87 | 1158.25 |
| 1224.67 | 1158    | 1233.05 | 1157.83 | 1249.93 | 1157.58 | 1253.91 | 1157.6  | 1256.64 | 1157.56 |
| 1257.73 | 1157.57 | 1301.83 | 1157.84 | 1309.25 | 1158    | 1321.09 | 1157.92 | 1323.57 | 1157    |
| 1323.72 | 1156.94 | 1328.92 | 1155.01 | 1330.9  | 1154.26 | 1331.61 | 1154    | 1333.49 | 1153    |
| 1334.64 | 1152.34 | 1335.22 | 1152    | 1336.95 | 1151    | 1337.5  | 1150.69 | 1338.68 | 1150    |
| 1340.07 | 1149.2  | 1340.42 | 1149    | 1342.06 | 1148    | 1343.68 | 1147.2  | 1344.22 | 1146.93 |
| 1346.01 | 1146    | 1346.73 | 1145.62 | 1347.92 | 1145    | 1349.81 | 1144    | 1350.64 | 1143.55 |
| 1351.67 | 1143    | 1352.75 | 1142.41 | 1353.48 | 1142    | 1354.93 | 1141.17 | 1355.23 | 1141    |
| 1355.57 | 1140.8  | 1356.88 | 1140    | 1357.83 | 1139.36 | 1358.36 | 1139    | 1359.1  | 1138.47 |
| 1359.75 | 1138    | 1361.91 | 1137.12 | 1362.22 | 1137    | 1362.42 | 1136.92 | 1364.87 | 1136    |
| 1365.18 | 1135.88 | 1369.06 | 1134.39 | 1370.05 | 1134    | 1466.67 | 1133.67 | 1470.29 | 1133    |
| 1476.07 | 1131    | 1476.98 | 1130.69 | 1478.94 | 1130    | 1481.32 | 1129    | 1484.65 | 1127.08 |
| 1486.53 | 1126    | 1487.61 | 1125.43 | 1488.4  | 1125    | 1489.76 | 1124.34 | 1491.56 | 1123.37 |
| 1492.27 | 1123    | 1503.47 | 1122    | 1504.03 | 1121.68 | 1505.19 | 1121    | 1505.84 | 1120.64 |
| 1506.94 | 1120    | 1508.38 | 1119.24 | 1508.88 | 1119    | 1509.58 | 1118.72 | 1511.5  | 1118    |
| 1513.35 | 1117.09 | 1513.55 | 1117    | 1517.53 | 1115    | 1517.96 | 1114.8  | 1519.64 | 1114    |
| 1521.76 | 1113    | 1523.01 | 1112.3  | 1523.56 | 1112    | 1523.98 | 1111.72 | 1525.07 | 1111    |
| 1525.59 | 1110.66 | 1525.91 | 1110.44 | 1526.58 | 1110    | 1594.88 | 1109    | 1622.13 | 1108.46 |
| 1634.36 | 1108    | 1695.98 | 1107    | 1697.51 | 1106.41 | 1698.48 | 1106    | 1729.11 | 1106.99 |
| 1849.6  | 1107.79 | 1858.8  | 1107.91 | 1861.69 | 1108    | 1871.21 | 1108.12 | 1896.68 | 1108.77 |
| 1904.6  | 1109    | 1998.57 | 1110    | 2060.26 | 1109.86 | 2159.63 | 1108.05 | 2160.5  | 1108.03 |
| 2162.46 | 1108    | 2164.65 | 1107.91 | 2189.35 | 1107    | 2190.76 | 1106.84 | 2190.99 | 1106.82 |
| 2198.4  | 1106    | 2215.27 | 1105    | 2236.62 | 1104    | 2239.13 | 1103.76 | 2248    | 1103    |
| 2338.48 | 1103.06 | 2348.14 | 1104    | 2349.25 | 1104.13 | 2354.01 | 1105    | 2361.36 | 1105.03 |
| 2362.5  | 1105.09 | 2371.72 | 1106    | 2379.03 | 1107    | 2410.52 | 1107.47 | 2424.52 | 1108    |
| 2450.77 | 1108.47 | 2468.4  | 1108.84 | 2472.12 | 1109    | 2472.79 | 1109.48 | 2473.55 | 1110    |
| 2474.93 | 1110.98 | 2476.35 | 1112    | 2476.51 | 1112.12 | 2477.74 | 1113    | 2478.6  | 1113.63 |
| 2479.12 | 1114    | 2479.96 | 1114.62 | 2480.49 | 1115    | 2481.83 | 1115.99 | 2483.16 | 1117    |
| 2483.81 | 1117.52 | 2484.42 | 1118    | 2485.64 | 1119    | 2485.82 | 1119.15 | 2487.41 | 1120.49 |
| 2488.01 | 1121    | 2499.29 | 1122    | 2499.96 | 1122.24 | 2502.13 | 1123    | 2502.85 | 1123.26 |
| 2504.96 | 1124    | 2505.68 | 1124.25 | 2507.8  | 1125    | 2508.52 | 1125.25 | 2513.78 | 1127.11 |
| 2521.13 | 1129.63 | 2522.24 | 1130    | 2523.33 | 1130.37 | 2527.09 | 1131.66 | 2528.1  | 1132    |
| 2546.35 | 1131.64 | 2551.4  | 1130.08 | 2551.67 | 1130    | 2554.63 | 1129.1  | 2554.95 | 1129    |
| 2555.15 | 1128.94 | 2558.33 | 1128    | 2561.81 | 1127    | 2561.98 | 1126.95 | 2566.64 | 1125.48 |
| 2577.14 | 1122.08 | 2577.4  | 1122    | 2580.96 | 1121    | 2586.96 | 1119.37 | 2588.36 | 1119    |
| 2589.4  | 1118.72 | 2592.12 | 1118    | 2680.81 | 1118.04 | 2684.88 | 1118.07 | 2687.16 | 1118    |
| 2722.52 | 1118.46 | 2729.98 | 1118.59 | 2738.49 | 1118.69 | 2754.48 | 1119    | 2758.13 | 1120    |
| 2759.94 | 1120.57 | 2761.4  | 1121    | 2763.83 | 1121.69 | 2764.95 | 1122    | 2768.17 | 1123    |
| 2770.26 | 1123.72 | 2771.03 | 1124    | 2771.48 | 1124.13 | 2774.59 | 1125    | 2825.76 | 1126    |
| 2924.19 | 1126.19 | 2978.08 | 1127    | 3061.54 | 1126.99 | 3068.4  | 1126.74 | 3069.49 | 1127    |
| 3072.47 | 1127.36 | 3078.81 | 1128    | 3105.32 | 1128.26 | 3227.82 | 1129    | 3319.01 | 1130.09 |
| 3371.86 | 1131    | 3405.36 | 1131.2  | 3407.12 | 1131.59 | 3409.03 | 1132    | 3413.82 | 1133    |
| 3480.08 | 1133.52 | 3480.6  | 1133.53 | 3494.77 | 1133.57 | 3499.71 | 1133.56 | 3523.86 | 1133.67 |
| 3525.88 | 1133.7  | 3530.35 | 1133.72 | 3549.84 | 1133.91 | 3550.52 | 1133.92 | 3574.07 | 1134.15 |
| 3590.1  | 1134.22 | 3591.96 | 1134.24 | 3614.01 | 1134.08 | 3621.08 | 1134    | 3627.77 | 1134.03 |
| 3628.3  | 1134.04 | 3638.48 | 1134.16 | 3674.33 | 1133.86 | 3675.06 | 1133.84 | 3687    | 1133.44 |
| 3688    | 1133.41 | 3689.56 | 1133.37 | 3689.81 | 1133.36 | 3697.08 | 1133.34 | 3710.59 | 1133.58 |
| 3716.29 | 1133.67 | 3721.74 | 1133.74 | 3724.4  | 1133.76 | 3728.07 | 1133.74 | 3739.28 | 1133.6  |
| 3742    | 1133.58 | 3748.61 | 1133.48 | 3758.03 | 1133.5  | 3767.08 | 1133.83 | 3770.42 | 1134    |
| 3774.23 | 1135    | 3778.05 | 1135.94 | 3778.27 | 1136    | 3778.99 | 1136.06 | 3789.83 | 1137    |
| 3795.23 | 1137.21 | 3801.62 | 1137.35 |         |         |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .04 1466.67 .035 2528.1 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1466.67 2528.1 230.95 229.08 227.21 .1 .3

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1466.67 1133.67 F  
 2528.1 3801.62 1132 F

Left Levee Station= 1466.67 Elevation= 1133.67  
 Right Levee Station= 2528.1 Elevation= 1132

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 218.47

INPUT

Description: Station Elevation Data num= 497  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 0 1129.64 4.37 1129.39 5.78 1129.32 11.71 1129 33.64 1129.08  
 34.27 1129.1 39.34 1129.32 41.27 1129.37 43.51 1129.46 47.55 1129.55

## Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 47.75   | 1129.56 | 53.12   | 1130    | 70.07   | 1130.28 | 72.08   | 1130.43 | 80.47   | 1131    |
| 83.58   | 1131.33 | 86.24   | 1131.58 | 88.38   | 1131.8  | 90.64   | 1132    | 93.2    | 1132.29 |
| 100.01  | 1133    | 101.18  | 1133.1  | 102.19  | 1133.18 | 105.64  | 1133.47 | 107.2   | 1133.61 |
| 112.17  | 1134    | 132.88  | 1134.61 | 135.21  | 1134.7  | 144.17  | 1134.94 | 144.46  | 1134.95 |
| 146.62  | 1135    | 148.79  | 1135.34 | 150.43  | 1135.62 | 151.64  | 1135.81 | 153.97  | 1136.22 |
| 158.07  | 1137    | 162.85  | 1137.71 | 164.92  | 1138    | 166.43  | 1138.24 | 167.76  | 1138.41 |
| 169.83  | 1138.66 | 171.79  | 1138.88 | 180.08  | 1139.81 | 181.85  | 1140    | 184.58  | 1140.26 |
| 191.96  | 1141    | 192.5   | 1141.06 | 192.98  | 1141.1  | 200.51  | 1141.88 | 210.93  | 1142.87 |
| 212.18  | 1143    | 214.21  | 1143.17 | 215.15  | 1143.27 | 217.65  | 1143.5  | 219.25  | 1143.7  |
| 219.83  | 1143.76 | 221.09  | 1144    | 221.74  | 1144.12 | 223.2   | 1144.43 | 225.14  | 1144    |
| 227.2   | 1143.5  | 230.02  | 1142.84 | 230.4   | 1143    | 231.94  | 1143.71 | 232.45  | 1144    |
| 233.01  | 1144.34 | 233.94  | 1145    | 234.59  | 1145.42 | 235.46  | 1146    | 236.82  | 1146.3  |
| 237.33  | 1146.31 | 238.43  | 1146.35 | 240.51  | 1146.47 | 242.52  | 1146.55 | 243.57  | 1146.62 |
| 244.5   | 1146.7  | 249.73  | 1146.9  | 250.17  | 1146.91 | 250.91  | 1146.94 | 251.89  | 1146.96 |
| 252.93  | 1147    | 257.92  | 1147.14 | 260.27  | 1147    | 262.65  | 1146.67 | 265.43  | 1146    |
| 267.64  | 1145.48 | 273.77  | 1144    | 273.97  | 1143.95 | 274.67  | 1143.78 | 279.99  | 1142.36 |
| 284.63  | 1141.08 | 285.31  | 1140.88 | 289.61  | 1139.66 | 291.76  | 1139    | 292.99  | 1138.65 |
| 295.36  | 1138    | 296.72  | 1137.66 | 299.47  | 1137    | 304     | 1136    | 336.74  | 1135.15 |
| 337.06  | 1135    | 337.75  | 1134.69 | 339.2   | 1134    | 339.92  | 1133.85 | 340.54  | 1133.79 |
| 341.17  | 1133.74 | 344.44  | 1133.29 | 346.74  | 1133.19 | 351.72  | 1133.02 | 352.22  | 1133    |
| 357.77  | 1132.53 | 358.96  | 1131.73 | 360.08  | 1131    | 360.89  | 1130.46 | 361.62  | 1130    |
| 362.72  | 1129.3  | 363.35  | 1129    | 365.32  | 1128.12 | 365.57  | 1128    | 367.32  | 1127.78 |
| 371.38  | 1127.48 | 373.2   | 1127.41 | 374.71  | 1127.48 | 374.91  | 1127.49 | 375.58  | 1127.48 |
| 375.88  | 1127.47 | 380.33  | 1127.29 | 382.24  | 1127.08 | 383.01  | 1127    | 390.87  | 1126.67 |
| 393.01  | 1126.64 | 393.77  | 1126.65 | 395.75  | 1126.63 | 398.69  | 1126.68 | 401.34  | 1126.76 |
| 402.55  | 1126.78 | 406.36  | 1126.9  | 406.56  | 1126.91 | 409.12  | 1126.99 | 409.59  | 1127    |
| 413.98  | 1126.94 | 420.48  | 1126.75 | 433.19  | 1126.82 | 484.64  | 1126    | 493.69  | 1126.41 |
| 495.45  | 1127    | 497.26  | 1127.63 | 498.38  | 1128    | 501.21  | 1129    | 504.18  | 1130    |
| 505.58  | 1130.5  | 507.07  | 1131    | 509.41  | 1131.84 | 509.87  | 1132    | 512.63  | 1133    |
| 513.72  | 1133.39 | 515.34  | 1134    | 519.8   | 1135.77 | 520.37  | 1136    | 522.45  | 1136.82 |
| 522.89  | 1137    | 525.22  | 1137.92 | 526.52  | 1138.44 | 527.75  | 1138.92 | 527.97  | 1139    |
| 530.39  | 1139.96 | 530.66  | 1140.07 | 531.26  | 1140.32 | 532.87  | 1141    | 535.11  | 1141.97 |
| 537.58  | 1143    | 539.4   | 1143.8  | 539.88  | 1144    | 540.44  | 1144.25 | 542.23  | 1145    |
| 543.78  | 1145.68 | 544.56  | 1146    | 546.55  | 1146.84 | 546.95  | 1147    | 548.88  | 1147.79 |
| 551.8   | 1148.97 | 554.33  | 1150    | 555.36  | 1150.43 | 556.8   | 1151    | 557.89  | 1151.45 |
| 561.77  | 1153    | 562.48  | 1153.28 | 564.57  | 1154    | 565.05  | 1154.18 | 568.13  | 1155.28 |
| 570.22  | 1156    | 570.86  | 1156.23 | 573.1   | 1156.96 | 579.67  | 1158.89 | 580.04  | 1159    |
| 594.86  | 1158.93 | 598.98  | 1158.87 | 599.72  | 1158.85 | 604.77  | 1158.79 | 610.42  | 1158.76 |
| 612.41  | 1158.74 | 612.92  | 1158.73 | 618.29  | 1158.71 | 619.78  | 1158.69 | 623.87  | 1158.68 |
| 625.79  | 1158.66 | 631.91  | 1158.63 | 635.82  | 1158.64 | 638.18  | 1158.62 | 644.4   | 1158.6  |
| 647.45  | 1158.61 | 649.63  | 1158.6  | 652.61  | 1158.55 | 655.37  | 1158.53 | 677.4   | 1158.2  |
| 686.15  | 1158    | 690.7   | 1157.93 | 695.77  | 1157.94 | 702.27  | 1157.89 | 704.17  | 1157.85 |
| 709.26  | 1157.81 | 709.96  | 1157.79 | 715.46  | 1157.74 | 717     | 1157.71 | 722.32  | 1157.65 |
| 724.67  | 1157.6  | 728.93  | 1157.55 | 734.07  | 1157.43 | 742.14  | 1157.32 | 747.65  | 1157.19 |
| 748.99  | 1157.17 | 756.48  | 1157    | 782.82  | 1157.19 | 809.97  | 1158    | 848.56  | 1158.41 |
| 926.74  | 1158.86 | 928.69  | 1158.88 | 947.04  | 1159    | 1058.36 | 1158.57 | 1071.1  | 1158    |
| 1083.54 | 1158.26 | 1107.09 | 1159    | 1151.26 | 1158.99 | 1287.86 | 1157    | 1338.28 | 1156.87 |
| 1343.79 | 1156    | 1344.83 | 1155.56 | 1347.38 | 1154.53 | 1350.72 | 1153.15 | 1351.08 | 1153    |
| 1353.07 | 1152.18 | 1355.35 | 1151.29 | 1356.17 | 1151    | 1358.8  | 1150.16 | 1359.29 | 1150    |
| 1360.69 | 1149.49 | 1362.13 | 1149    | 1363.36 | 1148.35 | 1364    | 1148    | 1364.35 | 1147.77 |
| 1365.49 | 1147    | 1366.56 | 1146.27 | 1366.97 | 1146    | 1367.67 | 1145.53 | 1368.44 | 1145    |
| 1369.4  | 1144.35 | 1369.91 | 1144    | 1370.63 | 1143.57 | 1371.57 | 1143    | 1373.47 | 1142    |
| 1375.36 | 1141.02 | 1377.17 | 1140.07 | 1379.1  | 1139    | 1379.42 | 1138.81 | 1380.82 | 1138    |
| 1381.99 | 1137.31 | 1382.52 | 1137    | 1384.11 | 1136.06 | 1384.51 | 1135.88 | 1386.54 | 1135    |
| 1387.05 | 1134.79 | 1391.56 | 1133    | 1457.49 | 1132.98 | 1460.14 | 1131.76 | 1461.69 | 1131    |
| 1463.12 | 1130.23 | 1463.54 | 1130    | 1463.94 | 1129.79 | 1467.21 | 1128.02 | 1470.32 | 1126.37 |
| 1471    | 1126    | 1471.65 | 1125.66 | 1472.88 | 1125    | 1473.65 | 1124.58 | 1475.63 | 1123.53 |
| 1476.61 | 1123    | 1479.52 | 1121.44 | 1480.35 | 1121    | 1482.22 | 1120    | 1483.12 | 1119.57 |
| 1484.28 | 1119    | 1486.07 | 1118.3  | 1487.8  | 1117.59 | 1489.26 | 1117    | 1490.09 | 1116.63 |
| 1491.34 | 1116    | 1496.27 | 1115.32 | 1498.72 | 1115.18 | 1499.79 | 1115.15 | 1500.2  | 1115    |
| 1501.82 | 1114.65 | 1503.02 | 1114    | 1503.35 | 1113.83 | 1504.91 | 1113    | 1505.47 | 1112.78 |
| 1507.39 | 1112    | 1508.14 | 1111.78 | 1510.51 | 1111    | 1543.39 | 1110    | 1605.9  | 1109    |
| 1621.91 | 1108.97 | 1622.78 | 1108.93 | 1644.61 | 1108    | 1646.32 | 1107.95 | 1684.09 | 1107    |
| 1696.06 | 1106.45 | 1704.64 | 1106    | 1734.18 | 1106.37 | 1739.73 | 1106.58 | 1752.97 | 1107    |
| 1814.77 | 1108    | 1853.26 | 1107.96 | 1853.48 | 1107.95 | 1853.8  | 1107.94 | 1858.93 | 1107.76 |
| 1860.21 | 1107.7  | 1864.56 | 1107.54 | 1868.9  | 1107.34 | 1870.97 | 1107.26 | 1876.25 | 1107    |
| 1886.6  | 1106.6  | 1892.39 | 1106.33 | 1894.56 | 1106.24 | 1899.5  | 1106    | 1953.25 | 1105.91 |
| 1956.68 | 1106    | 1958.48 | 1106.13 | 1965.49 | 1106.6  | 1971.71 | 1106.98 | 1973.28 | 1106.94 |
| 1973.52 | 1106.93 | 1974.82 | 1106.85 | 1989.98 | 1106    | 2031.1  | 1105.1  | 2031.86 | 1105    |
| 2065.65 | 1105.22 | 2065.94 | 1105.25 | 2067.33 | 1105.36 | 2074.98 | 1106.02 | 2078.75 | 1106.41 |
| 2082.55 | 1106.83 | 2082.83 | 1106.86 | 2083.27 | 1106.9  | 2084.11 | 1107    | 2095.21 | 1107.22 |
| 2095.45 | 1107.21 | 2098.61 | 1107.27 | 2098.96 | 1107.24 | 2103.1  | 1107.32 | 2103.61 | 1107.29 |
| 2104.2  | 1107.25 | 2108.91 | 1107.31 | 2118.71 | 1107.12 | 2125.84 | 1107.15 | 2139.89 | 1107    |
| 2157.27 | 1106.94 | 2159.25 | 1106.84 | 2164.8  | 1106.59 | 2175.58 | 1106.03 | 2176.22 | 1106    |
| 2211.35 | 1105.99 | 2225.95 | 1105    | 2237    | 1104.82 | 2247.63 | 1104.25 | 2250.41 | 1104.2  |
| 2254.37 | 1104    | 2264.24 | 1103.9  | 2264.66 | 1103.84 | 2264.89 | 1103.81 | 2265.75 | 1103.65 |
| 2268.7  | 1103    | 2275.46 | 1102.2  | 2277.37 | 1102    | 2278.38 | 1101.94 | 2292.92 | 1101    |
| 2324.01 | 1101.03 | 2329.17 | 1102.17 | 2332.48 | 1102.96 | 2332.84 | 1103.04 | 2334.35 | 1103.13 |
| 2347.58 | 1104    | 2373.5  | 1105    | 2375.87 | 1105.23 | 2383.37 | 1106    | 2391.45 | 1107    |
| 2446.97 | 1107.8  | 2450.49 | 1108    | 2453.8  | 1110.29 | 2457.63 | 1112.91 | 2457.97 | 1113.15 |
| 2459.21 | 1114    | 2459.73 | 1114.33 | 2460.77 | 1115    | 2461.96 | 1115.67 | 2462.54 | 1116    |
| 2464    | 1116.82 | 2464.31 | 1117    | 2465.45 | 1117.64 | 2466.1  | 1118    | 2466.33 | 1118.13 |
| 2467.89 | 1119    | 2468.86 | 1119.53 | 2471.48 | 1121    | 2483.66 | 1122    | 2484.02 | 1122.12 |
| 2489.57 | 1124    | 2497.35 | 1126.7  | 2498.2  | 1127    | 2500.26 | 1127.74 | 2501    | 1128    |
| 2501.84 | 1128.28 | 2503.93 | 1129    | 2506.91 | 1130    | 2509.91 | 1131    | 2510.78 | 1131.28 |
| 2512.97 | 1132    | 2529.76 | 1131.22 | 2532.05 | 1131    | 2534.1  | 1130.5  | 2536.09 | 1130    |
| 2548.58 | 1127    | 2551.01 | 1126.34 | 2556.07 | 1125    | 2560.16 | 1124    | 2568.67 | 1123    |
| 2613.5  | 1123.03 | 2659.01 | 1123.39 | 2663.77 | 1123.41 | 2666.42 | 1123.44 | 2741.14 | 1123.75 |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2743.6  | 1123.77 | 2751.54 | 1123.79 | 2752.08 | 1123.8  | 2757.81 | 1123.81 | 2758.08 | 1123.82 |
| 2767.2  | 1124    | 2834.21 | 1124.47 | 2840.14 | 1124.75 | 2844.08 | 1125    | 2868.78 | 1125.44 |
| 2890.76 | 1126    | 2972.27 | 1126.01 | 3108.03 | 1127    | 3164.5  | 1128    | 3170.71 | 1127.16 |
| 3171.81 | 1126.82 | 3176.17 | 1125.49 | 3177.74 | 1125    | 3210.37 | 1125.55 | 3211.69 | 1126    |
| 3212.37 | 1126.2  | 3214.8  | 1127    | 3218.08 | 1128    | 3219.06 | 1128.2  | 3224.44 | 1129.27 |
| 3227.9  | 1130    | 3230.78 | 1130.67 | 3232.13 | 1131    | 3325.73 | 1131.78 | 3334.32 | 1132    |
| 3362.02 | 1132.01 | 3427.51 | 1132.5  | 3433.19 | 1132.57 | 3436.55 | 1132.59 | 3442.11 | 1132.66 |
| 3446.68 | 1132.69 | 3448.18 | 1132.71 | 3477.67 | 1133    | 3655.03 | 1133.39 | 3714.9  | 1133.13 |
| 3717.65 | 1133.14 | 3731.36 | 1133.09 | 3732.52 | 1133.1  | 3748.05 | 1133.12 | 3749.41 | 1133.13 |
| 3769.7  | 1133.2  | 3790.97 | 1133    |         |         |         |         |         |         |

|                    |           |                  |
|--------------------|-----------|------------------|
| Manning's n Values | num=      | 3                |
| Sta n Val          | Sta n Val | Sta n Val        |
| 0 .04              | 1457.49   | .035 2512.97 .04 |

|                  |          |               |            |         |       |        |        |
|------------------|----------|---------------|------------|---------|-------|--------|--------|
| Bank Sta: Left   | Right    | Lengths: Left | Channel    | Right   | Coeff | Contr. | Expan. |
| 1457.49          | 2512.97  | 276.98        | 270.17     | 263.37  | .1    |        | .3     |
| Ineffective Flow | num=     | 2             |            |         |       |        |        |
| Sta L            | Sta R    | Elev          | Permanent  |         |       |        |        |
| 0                | 1457.49  | 1132.98       | F          |         |       |        |        |
| 2512.97          | 3790.97  | 1132          | F          |         |       |        |        |
| Left Levee       | Station= | 1457.49       | Elevation= | 1132.98 |       |        |        |
| Right Levee      | Station= | 2512.97       | Elevation= | 1132    |       |        |        |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 218.42

INPUT  
Description:

|         |           |         |         |         |         |         |         |         |         |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|
| Station | Elevation | Data    | num=    | 473     |         |         |         |         |         |
| Sta     | Elev      | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    |
| 0       | 1164.37   | 4.44    | 1165    | 5.29    | 1165.14 | 5.82    | 1165.24 | 8.56    | 1165.75 |
| 9.67    | 1165.95   | 9.96    | 1166    | 10.66   | 1166.24 | 12.91   | 1167    | 14.63   | 1167.04 |
| 14.91   | 1167.05   | 21.23   | 1167.21 | 22.82   | 1167.27 | 27.19   | 1167.39 | 29.59   | 1167.47 |
| 33.5    | 1167.58   | 38.05   | 1167.76 | 39.8    | 1167.81 | 44.04   | 1168    | 255.24  | 1167.73 |
| 270.82  | 1167.42   | 272.1   | 1167.39 | 290.68  | 1167    | 307.96  | 1167.54 | 310.54  | 1168    |
| 316.43  | 1169      | 322.33  | 1168.94 | 324.91  | 1168    | 326.56  | 1167.36 | 327.55  | 1167    |
| 330.08  | 1166.26   | 330.96  | 1166    | 334.44  | 1165.11 | 335.71  | 1164.79 | 338.76  | 1164    |
| 342.51  | 1163.05   | 342.7   | 1163    | 346.75  | 1162.05 | 346.95  | 1162    | 347.78  | 1161.81 |
| 365.2   | 1158      | 366.61  | 1157.67 | 369.58  | 1157    | 375.11  | 1155.73 | 378.35  | 1155    |
| 384.64  | 1153.55   | 388.43  | 1152.66 | 394.5   | 1151.26 | 395.65  | 1151    | 400.54  | 1150    |
| 406.96  | 1149.16   | 408.21  | 1149    | 410.28  | 1148.53 | 412.84  | 1148    | 413.44  | 1147.68 |
| 414.68  | 1147      | 415.94  | 1146.33 | 416.54  | 1146    | 417.92  | 1145.27 | 418.4   | 1145    |
| 419.48  | 1144.41   | 420.22  | 1144    | 420.45  | 1143.88 | 421.98  | 1143    | 422.76  | 1142.59 |
| 423.8   | 1142      | 426.94  | 1140.35 | 427.61  | 1140    | 428.8   | 1139.37 | 429.48  | 1139    |
| 429.8   | 1138.83   | 431.33  | 1138    | 433.27  | 1137.01 | 435.91  | 1136.15 | 436.45  | 1136    |
| 438.13  | 1135.7    | 441.15  | 1135    | 472.22  | 1134.94 | 475.55  | 1134    | 476.29  | 1133.62 |
| 477.53  | 1133      | 478.13  | 1132.69 | 479.51  | 1132    | 481.48  | 1131    | 481.75  | 1130.86 |
| 483.45  | 1130      | 483.89  | 1129.78 | 485.44  | 1129    | 488.13  | 1128    | 489.23  | 1127.89 |
| 489.94  | 1127.81   | 496.78  | 1127    | 502.24  | 1126.76 | 507.54  | 1126.56 | 511.23  | 1126.4  |
| 522.6   | 1126      | 525.86  | 1125.9  | 526.46  | 1125.91 | 527.13  | 1125.89 | 539.13  | 1126    |
| 612.81  | 1125.28   | 620.5   | 1125    | 622.04  | 1125.26 | 623.19  | 1125.68 | 626.2   | 1126.69 |
| 627.09  | 1127      | 627.92  | 1127.28 | 629.08  | 1127.64 | 633.85  | 1128.97 | 633.96  | 1129    |
| 637.7   | 1130      | 638.03  | 1130.09 | 638.64  | 1130.22 | 641.06  | 1130.78 | 642.09  | 1131    |
| 643.5   | 1131.4    | 645.65  | 1132    | 646.21  | 1132.16 | 649.94  | 1133.27 | 653.29  | 1134.29 |
| 655.5   | 1135      | 658.54  | 1135.99 | 658.73  | 1136.05 | 661.37  | 1136.91 | 661.66  | 1137    |
| 666.75  | 1138.65   | 667.84  | 1139    | 670.76  | 1139.95 | 670.93  | 1140    | 673.62  | 1140.86 |
| 674.08  | 1141      | 677.42  | 1142    | 678.93  | 1142.34 | 681.69  | 1143    | 682.58  | 1143.17 |
| 683.4   | 1143.33   | 686.79  | 1144    | 687.4   | 1144.16 | 690.55  | 1145    | 692.57  | 1145.56 |
| 694.18  | 1146      | 696.16  | 1146.55 | 697.09  | 1146.8  | 702.68  | 1148.37 | 704.8   | 1149    |
| 706.38  | 1149.49   | 707.85  | 1150    | 709.29  | 1150.53 | 713.17  | 1152    | 713.44  | 1152.12 |
| 715.12  | 1152.82   | 715.51  | 1152.98 | 717.87  | 1153.93 | 718.06  | 1154    | 723.25  | 1156    |
| 723.81  | 1156.22   | 725.91  | 1157    | 922.61  | 1157.07 | 942.54  | 1157    | 1211.1  | 1156.97 |
| 1212.36 | 1156.96   | 1338.63 | 1155.29 | 1340.14 | 1155    | 1342.36 | 1154    | 1342.97 | 1153.73 |
| 1345.96 | 1152.38   | 1346.82 | 1152    | 1349.05 | 1151    | 1349.91 | 1150.62 | 1351.3  | 1150    |
| 1351.83 | 1149.76   | 1353.47 | 1149    | 1355.01 | 1148.25 | 1355.52 | 1148    | 1357.4  | 1147.09 |
| 1357.78 | 1146.9    | 1359.69 | 1146    | 1362    | 1145    | 1362.37 | 1144.85 | 1364.58 | 1144    |
| 1366.5  | 1143.22   | 1366.96 | 1143    | 1368.14 | 1142.44 | 1369.05 | 1142    | 1370.87 | 1141.13 |
| 1371.14 | 1141      | 1371.36 | 1140.9  | 1373.24 | 1140    | 1374.11 | 1139.59 | 1375.34 | 1139    |
| 1377.3  | 1138.07   | 1377.44 | 1138    | 1377.81 | 1137.78 | 1379.15 | 1137    | 1379.38 | 1136.84 |
| 1380.64 | 1136      | 1381.73 | 1135.32 | 1382.26 | 1135    | 1383.13 | 1134.46 | 1383.88 | 1134    |
| 1384.82 | 1133.61   | 1386.26 | 1133    | 1387.36 | 1132.61 | 1389.11 | 1129    | 1433.4  | 1128.9  |
| 1448.4  | 1128.29   | 1449    | 1128    | 1450.85 | 1127.09 | 1451.03 | 1127    | 1451.79 | 1126.63 |
| 1453.06 | 1126      | 1453.52 | 1125.77 | 1456.17 | 1124.45 | 1457.08 | 1124    | 1457.43 | 1123.82 |
| 1459.06 | 1123      | 1459.74 | 1122.66 | 1461.03 | 1122    | 1462.88 | 1121.06 | 1463.01 | 1121    |
| 1463.13 | 1120.94   | 1466.12 | 1119.43 | 1466.98 | 1119    | 1468.6  | 1118.2  | 1469.01 | 1118    |
| 1474.3  | 1116      | 1475.05 | 1115.72 | 1477.9  | 1114.63 | 1478.53 | 1114.38 | 1479.54 | 1114    |
| 1480.26 | 1113.72   | 1482.13 | 1113    | 1501.24 | 1112.05 | 1502.43 | 1112    | 1503.97 | 1111.2  |
| 1504.27 | 1111.06   | 1504.39 | 1111    | 1506.78 | 1110    | 1538.15 | 1109    | 1648.89 | 1108.9  |
| 1649.9  | 1108.95   | 1650.11 | 1108.91 | 1650.85 | 1108.95 | 1651.56 | 1108.94 | 1651.93 | 1108.86 |
| 1652.9  | 1108.71   | 1655.93 | 1108    | 1656.26 | 1107.79 | 1657.52 | 1107    | 1658.46 | 1106.64 |
| 1660.15 | 1106      | 1661.63 | 1105.4  | 1662.63 | 1105    | 1663.84 | 1104.65 | 1665.58 | 1104    |
| 1675.28 | 1104.77   | 1677.88 | 1105    | 1679.12 | 1105.44 | 1680.67 | 1106    | 1684    | 1106.71 |
| 1684.93 | 1106.9    | 1685.37 | 1107    | 1685.7  | 1107.05 | 1698.06 | 1107.73 | 1710.26 | 1107.44 |
| 1720.85 | 1107      | 1811.22 | 1107.12 | 1905.15 | 1109    | 2010.65 | 1108.39 | 2028.99 | 1108    |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2054.2  | 1107    | 2074.75 | 1106    | 2075.45 | 1105.96 | 2080.92 | 1105.63 | 2085.5  | 1105.38 |
| 2088.07 | 1105.23 | 2111.34 | 1104    | 2145.74 | 1103    | 2172.31 | 1103.49 | 2173.62 | 1104    |
| 2200.98 | 1103.69 | 2208.73 | 1103.44 | 2209.25 | 1103.42 | 2212.67 | 1103.3  | 2220.26 | 1103    |
| 2275.46 | 1102.1  | 2277.91 | 1102    | 2300.62 | 1102.22 | 2301.25 | 1102.25 | 2305.02 | 1102.54 |
| 2307.86 | 1102.72 | 2308.93 | 1102.74 | 2313.67 | 1103    | 2343.72 | 1103.53 | 2344.36 | 1103.62 |
| 2346.53 | 1104    | 2366.68 | 1105    | 2372.42 | 1105.35 | 2382.98 | 1106    | 2384.82 | 1106.35 |
| 2385.48 | 1106.46 | 2390.5  | 1106.63 | 2393.58 | 1106    | 2432.72 | 1107    | 2433.44 | 1107.06 |
| 2436.23 | 1107.32 | 2443.79 | 1108    | 2444.59 | 1108.57 | 2445.21 | 1109    | 2446.11 | 1109.64 |
| 2446.63 | 1110    | 2447.94 | 1110.95 | 2449.35 | 1112    | 2450.66 | 1113    | 2450.98 | 1113.21 |
| 2452.2  | 1114    | 2453.23 | 1114.59 | 2455.62 | 1115.97 | 2455.8  | 1116.07 | 2457.4  | 1117    |
| 2458.82 | 1117.81 | 2459.16 | 1118    | 2459.62 | 1118.26 | 2460.95 | 1119    | 2462.82 | 1120    |
| 2474.73 | 1121    | 2476.85 | 1121.74 | 2477.58 | 1122    | 2480.4  | 1122.99 | 2485.69 | 1124.84 |
| 2486.13 | 1125    | 2488.65 | 1126    | 2489.55 | 1126.36 | 2495.81 | 1128.85 | 2496.19 | 1129    |
| 2498.48 | 1129.91 | 2498.71 | 1130    | 2500.51 | 1130.72 | 2501.22 | 1131    | 2520.15 | 1130.17 |
| 2520.87 | 1130    | 2521.45 | 1129.86 | 2524.93 | 1129    | 2527.44 | 1128.37 | 2528.95 | 1128    |
| 2533.44 | 1127    | 2537    | 1126.25 | 2538.02 | 1126.04 | 2538.2  | 1126    | 2555.18 | 1126.34 |
| 2558.73 | 1127    | 2564.58 | 1127.53 | 2570.49 | 1128    | 2582.94 | 1128.62 | 2585.11 | 1128.71 |
| 2590.88 | 1129    | 2598.7  | 1129.37 | 2608.58 | 1129.73 | 2609.51 | 1129.76 | 2610.3  | 1129.79 |
| 2616.63 | 1130    | 2618.69 | 1130.05 | 2618.99 | 1130.06 | 2625.14 | 1130.21 | 2632.42 | 1130.37 |
| 2641.18 | 1130.52 | 2643.4  | 1130.55 | 2646.18 | 1130.6  | 2650.37 | 1130.66 | 2652.44 | 1130.7  |
| 2656.98 | 1130.77 | 2668.9  | 1131    | 2673.44 | 1131.12 | 2674.06 | 1131.13 | 2674.99 | 1131.15 |
| 2706.75 | 1132    | 2745.52 | 1131.94 | 2747.33 | 1131.8  | 2753.14 | 1131.42 | 2758.02 | 1131    |
| 2775.89 | 1130    | 2785.22 | 1129.61 | 2797.29 | 1129.16 | 2802.2  | 1129    | 2806.03 | 1128.85 |
| 2807.6  | 1128.78 | 2811.42 | 1128.63 | 2827.21 | 1128.08 | 2827.69 | 1128.07 | 2828.02 | 1128.05 |
| 2830    | 1128    | 2836.64 | 1127.9  | 2855.16 | 1128    | 2972.62 | 1127.95 | 2987.34 | 1127.78 |
| 3008.31 | 1128    | 3051.9  | 1128.67 | 3052.17 | 1128.68 | 3053.99 | 1129    | 3057.52 | 1129.39 |
| 3058.01 | 1129.44 | 3059.53 | 1129.59 | 3060.08 | 1129.64 | 3061.35 | 1129.7  | 3063.23 | 1129.81 |
| 3063.35 | 1129.82 | 3066.95 | 1130    | 3074.8  | 1130.15 | 3075.33 | 1130.17 | 3080.78 | 1130.24 |
| 3081.54 | 1130.28 | 3083.08 | 1130.33 | 3085.14 | 1130.42 | 3086.34 | 1130.44 | 3087.87 | 1130.5  |
| 3089.41 | 1130.54 | 3092.66 | 1130.56 | 3094.39 | 1130.58 | 3096.45 | 1130.56 | 3098.43 | 1130.58 |
| 3102.44 | 1130.54 | 3104.82 | 1130.55 | 3106.33 | 1130.54 | 3108.66 | 1130.56 | 3112.08 | 1130.53 |
| 3114.24 | 1130.54 | 3116.82 | 1130.52 | 3120.4  | 1130.51 | 3125.56 | 1130.48 | 3128.18 | 1130.45 |
| 3146.88 | 1130.37 | 3150.63 | 1130.34 | 3170.35 | 1130.3  | 3172.63 | 1130.29 | 3179.1  | 1130.28 |
| 3182.97 | 1130.26 | 3190.41 | 1130.25 | 3191.84 | 1130.24 | 3207.28 | 1130.21 | 3208.54 | 1130.2  |
| 3213.81 | 1130.19 | 3219.13 | 1130.21 | 3220.81 | 1130.19 | 3225.22 | 1130.21 | 3226.63 | 1130.2  |
| 3232.13 | 1130.22 | 3233.51 | 1130.21 | 3252.39 | 1130.28 | 3258.37 | 1130.27 | 3259.6  | 1130.26 |
| 3262.89 | 1130.25 | 3264.13 | 1130.24 | 3290.11 | 1130.32 | 3297.23 | 1130.46 | 3304.73 | 1130.45 |
| 3305.62 | 1130.48 | 3307.78 | 1130.47 | 3309.78 | 1130.45 | 3310.53 | 1130.48 | 3312.14 | 1130.46 |
| 3312.92 | 1130.48 | 3315.14 | 1130.46 | 3316.59 | 1130.52 | 3321.21 | 1130.73 | 3321.63 | 1130.74 |
| 3322.99 | 1130.75 | 3326.78 | 1131    | 3374.72 | 1133    | 3753.7  | 1133.48 | 3755.23 | 1133.49 |
| 3786.14 | 1133.53 | 3788.04 | 1133.54 | 3794.35 | 1133.55 |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .04 1433.4 .035 2501.22 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1433.4 2501.22 250.13 250.13 250.13 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1433.4 1131.67 F  
 2501.22 3794.35 1131 F  
 Left Levee Station= 1433.4 Elevation= 1131.67  
 Right Levee Station= 2501.22 Elevation= 1131

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 218.38

INPUT

Description:  
 Station Elevation Data num= 480

| Sta    | Elev    |
|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|
| 0      | 1149.54 | 1.93   | 1149.53 | 11.2   | 1149.62 | 12.65  | 1150    | 16.38  | 1151    |
| 19.72  | 1152    | 22.14  | 1152.79 | 22.8   | 1153    | 24.6   | 1153.59 | 25.9   | 1154    |
| 29     | 1155    | 29.73  | 1155.23 | 32.12  | 1156    | 35.47  | 1157.05 | 35.76  | 1157.12 |
| 39.3   | 1158    | 43.25  | 1158.79 | 47.72  | 1159.77 | 52.47  | 1160.85 | 53.11  | 1161    |
| 57.23  | 1161.95 | 57.44  | 1162    | 61.56  | 1162.88 | 68.18  | 1164.25 | 72.09  | 1165    |
| 73.38  | 1165.19 | 82.19  | 1166.44 | 85.84  | 1167    | 86.73  | 1167.29 | 88.77  | 1168    |
| 104.01 | 1168.28 | 104.34 | 1168.25 | 105.87 | 1168.36 | 106.24 | 1168.34 | 107.11 | 1168.3  |
| 108.34 | 1168.26 | 110.51 | 1168.34 | 132.35 | 1168.64 | 195.04 | 1168    | 343.56 | 1167.83 |
| 351.22 | 1167.68 | 398.7  | 1166.94 | 401.55 | 1166.83 | 416.29 | 1166.86 | 417.18 | 1167    |
| 420.62 | 1167.69 | 422.22 | 1168    | 433.41 | 1167.75 | 435.66 | 1167    | 436.72 | 1166.67 |
| 438.78 | 1166    | 441.66 | 1165.28 | 442.75 | 1165    | 462.48 | 1160    | 465.08 | 1159.33 |
| 466.32 | 1159    | 467.24 | 1158.73 | 469.77 | 1158    | 473.15 | 1157    | 473.75 | 1156.82 |
| 476.61 | 1156    | 486.83 | 1153    | 488.25 | 1152.59 | 493.64 | 1151    | 496.51 | 1150.24 |
| 497.47 | 1150    | 498.6  | 1149.78 | 503.58 | 1149    | 507.47 | 1148.26 | 511.07 | 1148.08 |
| 512.9  | 1148    | 519.49 | 1147.43 | 520.43 | 1147    | 522.56 | 1146.01 | 525.39 | 1144.58 |
| 526.55 | 1144    | 527.53 | 1143.5  | 528.53 | 1143    | 529.81 | 1142.23 | 530.2  | 1142    |
| 531.82 | 1141.03 | 532.08 | 1140.89 | 533.8  | 1140    | 535.83 | 1139    | 536.55 | 1138.65 |
| 537.73 | 1138.07 | 538.02 | 1137.93 | 541.94 | 1136    | 542.17 | 1135.89 | 544    | 1135    |
| 546.16 | 1134.18 | 546.56 | 1134    | 573.21 | 1133.92 | 574.23 | 1133.72 | 574.85 | 1133.65 |
| 575.51 | 1133.63 | 576.75 | 1133.72 | 577.08 | 1133.75 | 579.26 | 1134    | 583.94 | 1133.92 |
| 584.16 | 1133.83 | 586.15 | 1133    | 588    | 1132.26 | 588.6  | 1132    | 589.97 | 1131.51 |
| 591.27 | 1131    | 594.24 | 1130.02 | 599.4  | 1129    | 603    | 1128.26 | 604.23 | 1128    |
| 605.16 | 1127.78 | 610.86 | 1126.47 | 611.77 | 1126.25 | 613.85 | 1126    | 622.38 | 1125.59 |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 622.71  | 1125.58 | 624.83  | 1125.48 | 628     | 1125.47 | 628.94  | 1125.44 | 631.37  | 1125.39 |
| 637.01  | 1125.4  | 638.28  | 1125.41 | 650.18  | 1125.28 | 651.39  | 1125.3  | 653.61  | 1125.35 |
| 655.04  | 1125.37 | 659.95  | 1125.49 | 664.28  | 1125.57 | 666.6   | 1125.63 | 667.21  | 1125.65 |
| 673.44  | 1125.83 | 673.69  | 1125.84 | 678.98  | 1126    | 731.97  | 1126.82 | 732.3   | 1127    |
| 734.19  | 1128    | 734.39  | 1128.11 | 738.9   | 1130.48 | 739.91  | 1131    | 743.52  | 1132.88 |
| 743.76  | 1133    | 747.42  | 1134.88 | 747.88  | 1135.11 | 749.6   | 1136    | 750.01  | 1136.22 |
| 756.56  | 1139.6  | 757.32  | 1140    | 757.67  | 1140.18 | 759.12  | 1140.94 | 762.56  | 1142.73 |
| 763.09  | 1143    | 764.92  | 1143.95 | 765.29  | 1144.13 | 767.18  | 1145    | 767.75  | 1145.25 |
| 769.4   | 1146    | 771.15  | 1146.86 | 771.44  | 1147    | 772.67  | 1147.61 | 773.44  | 1148    |
| 773.74  | 1148.15 | 776.96  | 1149.73 | 777.52  | 1150    | 779.25  | 1150.8  | 779.66  | 1151    |
| 781.77  | 1152    | 782.02  | 1152.12 | 783.91  | 1153    | 784.41  | 1153.24 | 787.75  | 1154.86 |
| 788.05  | 1155    | 789.78  | 1155.82 | 790.15  | 1156    | 790.97  | 1156.39 | 792.21  | 1157    |
| 804.5   | 1156.67 | 812.29  | 1156    | 946.88  | 1155.5  | 949.42  | 1155.46 | 952.84  | 1155.47 |
| 957.71  | 1155.39 | 973.85  | 1155    | 1136.39 | 1154.93 | 1147.08 | 1154.79 | 1150.86 | 1154.72 |
| 1214.59 | 1154    | 1237.45 | 1153.98 | 1237.77 | 1153.97 | 1246.32 | 1153.87 | 1258.08 | 1153.72 |
| 1304.85 | 1153.3  | 1320.16 | 1153    | 1323.25 | 1152.56 | 1326.28 | 1152    | 1328.24 | 1151.14 |
| 1328.57 | 1151    | 1332.77 | 1149.18 | 1333.2  | 1149    | 1335.4  | 1148    | 1337.55 | 1147    |
| 1338.38 | 1146.56 | 1339.48 | 1146    | 1340.38 | 1145.4  | 1340.97 | 1145    | 1342.32 | 1144.03 |
| 1343.77 | 1143    | 1344.16 | 1142.73 | 1345.2  | 1142    | 1346.7  | 1141    | 1348.72 | 1140    |
| 1349.28 | 1139.73 | 1350.75 | 1139    | 1354.81 | 1137    | 1355.55 | 1136.62 | 1356.79 | 1136    |
| 1357.64 | 1135.57 | 1362.58 | 1133.05 | 1362.8  | 1132.94 | 1365.22 | 1131.71 | 1366.63 | 1131    |
| 1368.38 | 1130.2  | 1368.81 | 1130    | 1371.02 | 1129    | 1373.28 | 1128    | 1381.81 | 1128.35 |
| 1385.66 | 1128.45 | 1427.62 | 1128.25 | 1431.81 | 1126    | 1432.22 | 1125.81 | 1434.82 | 1124.56 |
| 1436    | 1124    | 1437.26 | 1123.39 | 1438.08 | 1123    | 1444.32 | 1120    | 1444.67 | 1119.84 |
| 1446.46 | 1119    | 1448.5  | 1118    | 1449.88 | 1117.48 | 1452.57 | 1116.45 | 1455.62 | 1115.3  |
| 1456.39 | 1115    | 1461.27 | 1113.1  | 1494.9  | 1112    | 1496.22 | 1111.07 | 1496.73 | 1110.94 |
| 1503.83 | 1110    | 1528.85 | 1109    | 1614.98 | 1108.46 | 1618.44 | 1108    | 1621.43 | 1107    |
| 1624.33 | 1106    | 1626.05 | 1105.2  | 1626.4  | 1105.03 | 1628.6  | 1104    | 1630.72 | 1103.37 |
| 1632    | 1103    | 1646.72 | 1103.58 | 1648.93 | 1104    | 1650.72 | 1104.88 | 1650.99 | 1105    |
| 1652.31 | 1105.67 | 1652.95 | 1106    | 1655.21 | 1107    | 1657.06 | 1107.74 | 1657.7  | 1108    |
| 1660.19 | 1109    | 1673.29 | 1108.96 | 1675.6  | 1108.79 | 1675.99 | 1108.74 | 1678.86 | 1108    |
| 1723.22 | 1107.05 | 1725.25 | 1107    | 1740.05 | 1106.87 | 1773.24 | 1106    | 1853.62 | 1105.87 |
| 1858.53 | 1106    | 1874.42 | 1107    | 1876.57 | 1107.06 | 1916.76 | 1108    | 1944.49 | 1109    |
| 1992.25 | 1108.11 | 1992.84 | 1108.09 | 1993.21 | 1108.07 | 1994.22 | 1108    | 2013.83 | 1107    |
| 2014.19 | 1106.98 | 2050.22 | 1105.12 | 2051.1  | 1105.07 | 2068.8  | 1104.29 | 2074.48 | 1104    |
| 2086.79 | 1104.9  | 2087.9  | 1105    | 2130.55 | 1104.84 | 2133.65 | 1104.36 | 2136.08 | 1104    |
| 2150.57 | 1103.3  | 2155.94 | 1103    | 2188.84 | 1102.07 | 2191.54 | 1102    | 2242.76 | 1102.12 |
| 2245.72 | 1102.32 | 2253.73 | 1102.76 | 2256.09 | 1103    | 2313.53 | 1104.13 | 2325.14 | 1104    |
| 2354.01 | 1104.24 | 2362.69 | 1104.47 | 2363.54 | 1104.52 | 2367.26 | 1104.72 | 2368.68 | 1104.79 |
| 2373.64 | 1105    | 2387.35 | 1105.72 | 2389.81 | 1106    | 2409.81 | 1105.97 | 2417.92 | 1105    |
| 2426.98 | 1105.07 | 2436.61 | 1106    | 2448.44 | 1108    | 2448.89 | 1108.28 | 2450.07 | 1109    |
| 2450.62 | 1109.34 | 2451.7  | 1110    | 2452.76 | 1110.64 | 2453.34 | 1111    | 2456.23 | 1112.77 |
| 2456.61 | 1113    | 2459.87 | 1115    | 2460.22 | 1115.21 | 2464.47 | 1117.82 | 2464.77 | 1118    |
| 2466.39 | 1119    | 2477.54 | 1120    | 2478.18 | 1120.26 | 2481.71 | 1121.65 | 2482.59 | 1122    |
| 2485.15 | 1123    | 2486.32 | 1123.45 | 2487.78 | 1124    | 2490.54 | 1125    | 2498.78 | 1127.88 |
| 2499.14 | 1128    | 2502.08 | 1129    | 2503.79 | 1129.57 | 2505.04 | 1130    | 2526.97 | 1129.14 |
| 2527.53 | 1129    | 2531.45 | 1128    | 2534.97 | 1127.15 | 2535.62 | 1127    | 2537.13 | 1126.68 |
| 2540.26 | 1126    | 2546.92 | 1125.29 | 2547.55 | 1125.28 | 2548.94 | 1125.14 | 2552.94 | 1125.16 |
| 2555.54 | 1125.33 | 2556.6  | 1125.39 | 2561.81 | 1125.57 | 2565.68 | 1126    | 2575.57 | 1127    |
| 2576.05 | 1127.05 | 2585.94 | 1128    | 2593.02 | 1128.62 | 2595.84 | 1128.84 | 2598.08 | 1129    |
| 2619.72 | 1130    | 2713.57 | 1130.59 | 2719.76 | 1130.53 | 2721.25 | 1130.54 | 2737.6  | 1130.38 |
| 2739.53 | 1130.37 | 2742.85 | 1130.33 | 2744.25 | 1130.32 | 2749.23 | 1130.25 | 2750.52 | 1130.24 |
| 2769.12 | 1130.01 | 2770.31 | 1130    | 2773.9  | 1129.91 | 2782.25 | 1129.76 | 2783.59 | 1129.88 |
| 2792.97 | 1129.8  | 2827.27 | 1129.66 | 2828.14 | 1129.63 | 2832.47 | 1129.61 | 2834.33 | 1129.56 |
| 2838    | 1129.54 | 2840.66 | 1129.47 | 2842.45 | 1129.45 | 2846.78 | 1129.33 | 2848.62 | 1129.32 |
| 2851.55 | 1129.22 | 2852.9  | 1129.21 | 2857.97 | 1129    | 2902.36 | 1128.73 | 2917.18 | 1128.7  |
| 2922.11 | 1128.71 | 2923.71 | 1128.62 | 2927.3  | 1128.65 | 2928.49 | 1128.55 | 2932.92 | 1128.64 |
| 2933.15 | 1128.62 | 2944.45 | 1128.81 | 2945.29 | 1128.83 | 2956.14 | 1129    | 2968.7  | 1129.07 |
| 2970.4  | 1129    | 3057.43 | 1128.96 | 3059.51 | 1128.93 | 3081.45 | 1128    | 3126.77 | 1127.09 |
| 3139.27 | 1127    | 3187.91 | 1127.01 | 3204.54 | 1127.2  | 3205.8  | 1127.21 | 3210.9  | 1127.31 |
| 3213.3  | 1127.33 | 3217.75 | 1127.42 | 3223.44 | 1127.47 | 3230.15 | 1127.58 | 3239.57 | 1127.64 |
| 3241.37 | 1127.66 | 3249.23 | 1127.7  | 3250.17 | 1127.72 | 3258.02 | 1127.74 | 3258.67 | 1127.75 |
| 3258.97 | 1127.76 | 3263.76 | 1128    | 3314.37 | 1128.04 | 3316.96 | 1128.07 | 3318.36 | 1128    |
| 3351.3  | 1128.72 | 3366.24 | 1128.83 | 3372.56 | 1129    | 3385.62 | 1129.07 | 3386.17 | 1129.09 |
| 3388.29 | 1129.22 | 3390.7  | 1129.32 | 3393.13 | 1129.5  | 3395.91 | 1129.61 | 3402    | 1129.92 |
| 3402.49 | 1129.96 | 3428.62 | 1131    | 3485.04 | 1131.03 | 3489.42 | 1131    | 3510.81 | 1131.11 |
| 3511.43 | 1131.12 | 3560.28 | 1131.37 | 3574.47 | 1131.31 | 3581.53 | 1131.33 | 3585.34 | 1131.32 |
| 3587.91 | 1131.35 | 3600.2  | 1131.17 | 3601.21 | 1131.19 | 3602.51 | 1131.16 | 3603.37 | 1131.18 |
| 3604.29 | 1131.17 | 3605.07 | 1131.19 | 3606.49 | 1131.2  | 3607.26 | 1131.21 | 3609.55 | 1131.28 |
| 3610.23 | 1131.29 | 3630.53 | 1131.94 | 3631.06 | 1131.96 | 3641.09 | 1132.22 | 3644.84 | 1132.3  |
| 3646.71 | 1132.35 | 3653.75 | 1132.51 | 3656.19 | 1132.58 | 3660.05 | 1132.66 | 3669.48 | 1132.9  |
| 3672.69 | 1133    | 3696.7  | 1133.33 | 3700.08 | 1133.35 | 3702.91 | 1133.39 | 3728.58 | 1133.55 |
| 3738.42 | 1133.52 | 3740.82 | 1133.5  | 3744.25 | 1133.51 | 3790.77 | 1133.28 | 3796.73 | 1133.21 |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 1427.62 .03 2505.04 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1427.62 2505.04 253.35 251.03 248.72 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1385.66 1129 F  
 2505.04 3796.73 1130 F  
 Left Levee Station= 1385.66 Elevation= 1129  
 Right Levee Station= 2505.04 Elevation= 1130

CROSS SECTION

RIVER: Salt  
REACH: 1

RS: 218.33

INPUT

Description:

| Station | Elevation | Data    | num=    | 461     | Sta     | Elev    | Sta     | Elev    | Sta     | Elev | Sta | Elev |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|------|-----|------|
| 0       | 1125.32   | 9.77    | 1125    | 87.16   | 1125    | 110.67  | 1125.31 | 110.9   | 1125.28 |      |     |      |
| 111.46  | 1125.33   | 112.16  | 1125.4  | 112.46  | 1125.37 | 113.36  | 1125.44 | 113.68  | 1125.47 |      |     |      |
| 114.73  | 1125.65   | 115.08  | 1125.57 | 115.14  | 1125.56 | 116.57  | 1126    | 117.93  | 1126.37 |      |     |      |
| 120.32  | 1127      | 122.85  | 1127.59 | 124.76  | 1128    | 126.22  | 1128.27 | 128.41  | 1128.7  |      |     |      |
| 130.28  | 1129      | 134.17  | 1129.92 | 134.46  | 1130    | 136.53  | 1130.91 | 138.28  | 1131.69 |      |     |      |
| 142.65  | 1133.72   | 143.23  | 1134    | 147.48  | 1136    | 148.15  | 1136.31 | 149.62  | 1137    |      |     |      |
| 154.24  | 1137.93   | 154.73  | 1138    | 155.3   | 1138    | 160.49  | 1138.84 | 161.74  | 1139    |      |     |      |
| 173.66  | 1140      | 174.06  | 1140.03 | 185.51  | 1141    | 185.89  | 1141    | 187.38  | 1141.8  |      |     |      |
| 187.79  | 1142      | 190.74  | 1143.6  | 191.49  | 1144    | 192.39  | 1144.49 | 193.09  | 1144.85 |      |     |      |
| 193.28  | 1144.95   | 193.38  | 1145    | 193.62  | 1145.13 | 195.14  | 1146    | 196.87  | 1146.95 |      |     |      |
| 196.96  | 1147      | 197.02  | 1147.03 | 200.3   | 1148.88 | 200.52  | 1149    | 200.64  | 1149.07 |      |     |      |
| 202.34  | 1150.09   | 203.82  | 1151    | 204.43  | 1151.38 | 205.17  | 1151.82 | 205.46  | 1152    |      |     |      |
| 206.48  | 1152.64   | 207.46  | 1153.28 | 208.82  | 1154    | 209.43  | 1154.28 | 211.1   | 1155    |      |     |      |
| 211.74  | 1155.22   | 213.72  | 1155.88 | 213.99  | 1155.98 | 214.07  | 1156    | 217.65  | 1157    |      |     |      |
| 223.95  | 1157      | 227.11  | 1157.33 | 228.2   | 1157.35 | 230.53  | 1157.43 | 230.73  | 1157.44 |      |     |      |
| 235.87  | 1157.65   | 239.1   | 1158    | 247.45  | 1158.81 | 250.2   | 1159    | 252.72  | 1159.15 |      |     |      |
| 253.95  | 1159.2    | 258.49  | 1159.42 | 262.85  | 1159.57 | 266.09  | 1159.71 | 272.26  | 1159.88 |      |     |      |
| 273.27  | 1159.92   | 278.13  | 1159.99 | 301.79  | 1159.97 | 301.91  | 1159.98 | 308.46  | 1159.98 |      |     |      |
| 308.84  | 1159.97   | 309.11  | 1159.97 | 326.86  | 1159.77 | 330.54  | 1159.77 | 331.97  | 1159.74 |      |     |      |
| 336.52  | 1159.73   | 337.69  | 1159.7  | 340.71  | 1159.68 | 341.89  | 1159.66 | 346.16  | 1159.62 |      |     |      |
| 347.91  | 1159.59   | 366.61  | 1159.42 | 396.14  | 1159.42 | 397.1   | 1159.41 | 441.48  | 1159.37 |      |     |      |
| 451.6   | 1159.45   | 454.68  | 1159.45 | 461.2   | 1159.51 | 463.45  | 1159.49 | 466.2   | 1159.51 |      |     |      |
| 467.57  | 1159.49   | 469.87  | 1159.51 | 476.16  | 1159.52 | 487.15  | 1159.43 | 516.57  | 1159    |      |     |      |
| 537.74  | 1159      | 538.84  | 1159.22 | 543.38  | 1160    | 549.87  | 1161    | 550.39  | 1161.06 |      |     |      |
| 556.88  | 1162      | 566.19  | 1162    | 568.01  | 1161.7  | 571.92  | 1161    | 577.07  | 1160    |      |     |      |
| 588.28  | 1158.05   | 588.54  | 1158    | 599.77  | 1156    | 610.44  | 1153    | 610.77  | 1152.91 |      |     |      |
| 619.53  | 1150.43   | 624.52  | 1149.01 | 624.62  | 1148.98 | 630.05  | 1147.43 | 631.62  | 1147    |      |     |      |
| 634.46  | 1146.13   | 634.87  | 1146    | 637.73  | 1145.12 | 638.11  | 1145    | 638.7   | 1144.82 |      |     |      |
| 644.56  | 1143      | 647.33  | 1142.16 | 647.84  | 1142    | 654.33  | 1140    | 655.29  | 1139.71 |      |     |      |
| 659.15  | 1138.5    | 660.4   | 1138    | 662.3   | 1137.06 | 662.42  | 1137    | 662.53  | 1136.96 |      |     |      |
| 665.28  | 1136      | 666.06  | 1135.82 | 670.33  | 1135    | 672.31  | 1134.65 | 675.15  | 1134.29 |      |     |      |
| 675.44  | 1134.29   | 678.09  | 1134    | 679.18  | 1133.85 | 679.75  | 1133.81 | 683.01  | 1133    |      |     |      |
| 683.63  | 1133      | 688.45  | 1132.04 | 688.58  | 1132    | 689.84  | 1132    | 697.29  | 1131.61 |      |     |      |
| 711.94  | 1131      | 712.44  | 1130.76 | 713.98  | 1130    | 714.33  | 1129.83 | 715.98  | 1129    |      |     |      |
| 716.57  | 1128.69   | 717.95  | 1128    | 718.51  | 1127.71 | 719.86  | 1127    | 721.53  | 1126.09 |      |     |      |
| 721.7   | 1126      | 723.41  | 1125.07 | 723.53  | 1125    | 725.07  | 1124.14 | 725.31  | 1124    |      |     |      |
| 732.28  | 1123.54   | 736.58  | 1123.29 | 738.88  | 1123.14 | 740.18  | 1123    | 751.17  | 1123    |      |     |      |
| 751.64  | 1123.05   | 751.79  | 1123.07 | 751.96  | 1123.08 | 760.74  | 1123.91 | 761.94  | 1124    |      |     |      |
| 766.08  | 1124      | 768.53  | 1124.09 | 768.77  | 1124.08 | 777.75  | 1124.24 | 778.86  | 1124.2  |      |     |      |
| 780.24  | 1124.21   | 787.79  | 1124.21 | 789.35  | 1124.22 | 790.55  | 1124.24 | 795.32  | 1124.28 |      |     |      |
| 797.06  | 1124.32   | 803.08  | 1124.37 | 805.43  | 1124.42 | 810.23  | 1124.44 | 814.26  | 1124.57 |      |     |      |
| 816     | 1124.58   | 824.82  | 1124.93 | 825.14  | 1124.94 | 825.41  | 1124.94 | 826.47  | 1125    |      |     |      |
| 863.45  | 1126      | 865.02  | 1126.22 | 865.5   | 1126.21 | 867.21  | 1126.27 | 893.92  | 1128    |      |     |      |
| 897.09  | 1128.23   | 902.26  | 1128.57 | 909.25  | 1128.95 | 909.8   | 1129    | 910.14  | 1129    |      |     |      |
| 919.94  | 1129.48   | 927.55  | 1130    | 929.65  | 1130    | 932.07  | 1130.3  | 936.19  | 1130.46 |      |     |      |
| 940.29  | 1130.73   | 941.97  | 1130.83 | 949.49  | 1131    | 949.64  | 1131.02 | 949.71  | 1131.03 |      |     |      |
| 955.27  | 1131.69   | 955.6   | 1131.76 | 956.2   | 1131.9  | 957.8   | 1132    | 964.28  | 1132.91 |      |     |      |
| 964.6   | 1132.96   | 964.91  | 1133    | 970.49  | 1133.9  | 970.65  | 1133.93 | 971.01  | 1134    |      |     |      |
| 971.91  | 1134.21   | 974.4   | 1134.55 | 975.02  | 1134.72 | 976.58  | 1134.85 | 977.27  | 1135    |      |     |      |
| 977.85  | 1135.15   | 978.01  | 1135.18 | 978.99  | 1135.47 | 980.73  | 1136    | 984.32  | 1137.43 |      |     |      |
| 985.63  | 1138      | 988.02  | 1139    | 989.52  | 1139.54 | 994.74  | 1141    | 995.3   | 1141.1  |      |     |      |
| 995.51  | 1141.16   | 995.78  | 1141.25 | 996.1   | 1141.4  | 997.24  | 1142    | 997.85  | 1142.38 |      |     |      |
| 998.93  | 1143      | 1000.06 | 1143.66 | 1000.5  | 1143.91 | 1000.65 | 1144    | 1002.34 | 1144.98 |      |     |      |
| 1002.45 | 1145.03   | 1005.37 | 1146.72 | 1005.91 | 1147    | 1008.94 | 1148.63 | 1011.41 | 1149.93 |      |     |      |
| 1011.55 | 1150      | 1013.08 | 1150.81 | 1013.41 | 1151    | 1014.89 | 1151.82 | 1015.21 | 1152    |      |     |      |
| 1016.92 | 1153      | 1018.32 | 1153.8  | 1018.66 | 1154    | 1019.99 | 1154.73 | 1024.72 | 1155    |      |     |      |
| 1037.84 | 1155      | 1078.76 | 1154.33 | 1104.13 | 1154    | 1104.31 | 1154    | 1131.65 | 1153    |      |     |      |
| 1133.65 | 1153      | 1243.69 | 1152    | 1244.14 | 1151.99 | 1244.22 | 1151.99 | 1319.94 | 1151    |      |     |      |
| 1328.5  | 1151      | 1333.93 | 1152    | 1335.23 | 1152    | 1338.95 | 1151    | 1341.07 | 1150    |      |     |      |
| 1341.31 | 1149.89   | 1343.2  | 1149    | 1343.84 | 1148.68 | 1344.92 | 1148.15 | 1345.23 | 1148    |      |     |      |
| 1346.41 | 1147.39   | 1347.19 | 1147    | 1348.66 | 1146.24 | 1349.13 | 1146    | 1349.59 | 1145.77 |      |     |      |
| 1352.13 | 1144.45   | 1353.01 | 1144    | 1354.62 | 1143.31 | 1355.36 | 1143    | 1360.48 | 1141    |      |     |      |
| 1361.11 | 1140.75   | 1365.63 | 1139    | 1368.32 | 1138    | 1368.73 | 1137.77 | 1370.15 | 1137    |      |     |      |
| 1371.79 | 1136.05   | 1371.87 | 1136    | 1372.35 | 1135.72 | 1378.39 | 1132.25 | 1378.82 | 1132    |      |     |      |
| 1379.09 | 1131.84   | 1380.56 | 1131    | 1382.15 | 1130.2  | 1382.54 | 1130    | 1382.77 | 1129.91 |      |     |      |
| 1385.13 | 1129      | 1387.79 | 1128    | 1389.95 | 1127.7  | 1394.01 | 1127    | 1395.54 | 1127    |      |     |      |
| 1398.02 | 1126.5    | 1400.65 | 1125.4  | 1440.41 | 1125.28 | 1447.24 | 1124.42 | 1451.24 | 1122.31 |      |     |      |
| 1453.71 | 1121      | 1454.23 | 1120.72 | 1455.59 | 1120    | 1458.87 | 1118.25 | 1459.33 | 1118    |      |     |      |
| 1461.24 | 1117      | 1462.58 | 1116.33 | 1463.23 | 1116    | 1463.54 | 1115.85 | 1472.56 | 1111.31 |      |     |      |
| 1473.19 | 1111      | 1478.1  | 1111    | 1485.94 | 1111    | 1489.53 | 1110.89 | 1491.42 | 1110.77 |      |     |      |
| 1492.96 | 1110.71   | 1503.88 | 1110    | 1506.47 | 1109.27 | 1507.37 | 1109    | 1578.45 | 1109    |      |     |      |
| 1697.93 | 1108      | 1710.47 | 1107    | 1711.06 | 1106.63 | 1712.09 | 1106    | 1712.29 | 1105.86 |      |     |      |
| 1713.98 | 1105      | 1714.41 | 1104.83 | 1715.45 | 1104.39 | 1715.96 | 1104.14 | 1716.23 | 1104    |      |     |      |
| 1721    | 1103      | 1726.75 | 1102    | 1733.64 | 1102    | 1739.2  | 1103    | 1739.57 | 1103.08 |      |     |      |
| 1744.07 | 1104      | 1749.64 | 1106    | 1752.33 | 1107    | 1753.28 | 1107.81 | 1853.37 | 1107.86 |      |     |      |
| 1945.74 | 1107.86   | 2258.72 | 1104.29 | 2450.29 | 1105.97 | 2458.34 | 1106    | 2463.87 | 1106    |      |     |      |
| 2470.26 | 1106.56   | 2472.08 | 1106.72 | 2474.69 | 1107    | 2475.96 | 1107.84 | 2476.2  | 1108    |      |     |      |
| 2478.89 | 1109.78   | 2479.23 | 1110    | 2479.77 | 1110.36 | 2483.77 | 1113    | 2484.22 | 1113.3  |      |     |      |
| 2485.29 | 1114      | 2486.74 | 1114.96 | 2486.89 | 1115.06 | 2489.72 | 1116.93 | 2489.83 | 1117    |      |     |      |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2490.19 | 1117.24 | 2491.23 | 1117.92 | 2491.35 | 1118    | 2491.42 | 1118.04 | 2492.87 | 1119    |
| 2506.11 | 1120    | 2507.77 | 1120.65 | 2508.69 | 1121    | 2516.21 | 1123.93 | 2516.4  | 1124    |
| 2517.92 | 1124.59 | 2518.95 | 1125    | 2519.12 | 1125.07 | 2526.09 | 1127.8  | 2526.59 | 1128    |
| 2528.69 | 1128.81 | 2531.53 | 1129.84 | 2531.99 | 1130    | 2554.52 | 1130    | 2562.14 | 1129.67 |
| 2574.46 | 1129    | 2586.06 | 1127    | 2594.22 | 1127    | 2753.87 | 1130    | 2797.66 | 1131    |
| 2800.04 | 1131.03 | 2800.37 | 1131.04 | 2823.68 | 1131.37 | 2826.83 | 1131.39 | 2835.31 | 1131.52 |
| 2865.16 | 1131.7  | 2866.86 | 1131.69 | 2872.47 | 1131.7  | 2873.43 | 1131.69 | 2881.89 | 1131.67 |
| 2884.01 | 1131.65 | 2903.13 | 1131.59 | 2950.04 | 1131.15 | 2950.83 | 1131.15 | 2951.38 | 1131.14 |
| 2963.06 | 1131.03 | 2963.13 | 1131.02 | 2965.8  | 1131    | 2994.12 | 1130.64 | 3021.83 | 1130.23 |
| 3023.83 | 1130.19 | 3036.02 | 1130.01 | 3036.16 | 1130.01 | 3036.94 | 1130    | 3055.31 | 1129.87 |
| 3056.71 | 1129.85 | 3057.38 | 1129.85 | 3132.68 | 1129.18 | 3148.71 | 1129.03 | 3149.07 | 1129.03 |
| 3159.76 | 1128.92 | 3160.05 | 1128.91 | 3228.1  | 1128    | 3388.38 | 1127    | 3491.92 | 1127    |
| 3494.39 | 1127.12 | 3529.13 | 1129    | 3617.24 | 1130    | 3626.06 | 1130    | 3696.02 | 1129    |
| 3826.3  | 1129    |         |         |         |         |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 1440.41 .035 2531.99 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1440.41 2531.99 230.59 223.53 216.47 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1400.65 1128 F  
 2531.99 3826.3 1130 F  
 Left Levee Station= 1400.65 Elevation= 1128  
 Right Levee Station= 2531.99 Elevation= 1130

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 218.29

INPUT  
 Description:

| Station | Elevation | Data    | num=    | 478     | Sta     | Elev    | Sta     | Elev    | Sta     | Elev |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|------|
| 0       | 1125      | 14.98   | 1125    | 35.35   | 1124.37 | 41.25   | 1124.13 | 43.05   | 1124.09 |      |
| 45.26   | 1124      | 84.17   | 1124    | 126.57  | 1123.13 | 127.28  | 1123.12 | 131.64  | 1123    |      |
| 148.38  | 1123      | 153.5   | 1123.16 | 155.07  | 1123.22 | 179.8   | 1124    | 196.6   | 1124    |      |
| 197.22  | 1124.06   | 198.31  | 1124.04 | 199.19  | 1124.05 | 199.25  | 1124.05 | 200.19  | 1124.15 |      |
| 201.07  | 1124.21   | 202.75  | 1124.36 | 206.55  | 1125    | 208.48  | 1125.6  | 209.86  | 1126    |      |
| 212.27  | 1126.52   | 214.41  | 1127    | 221.16  | 1128    | 222.99  | 1128.28 | 227.94  | 1129    |      |
| 230.69  | 1129.84   | 231.2   | 1130    | 241.47  | 1131    | 242.07  | 1131.31 | 244.24  | 1132.49 |      |
| 245.2   | 1133      | 249.01  | 1135    | 250.92  | 1135.59 | 251.95  | 1136    | 254.66  | 1136.59 |      |
| 256.48  | 1137      | 258.89  | 1137.92 | 259.14  | 1138    | 259.39  | 1138.1  | 261.68  | 1139    |      |
| 264.48  | 1139.66   | 265.69  | 1140    | 267.81  | 1140    | 271.44  | 1140.28 | 273.78  | 1140.33 |      |
| 285.35  | 1141      | 287.54  | 1141    | 289.37  | 1141.49 | 291.18  | 1142    | 294.17  | 1143    |      |
| 294.31  | 1143.1    | 294.49  | 1143.22 | 295.61  | 1144    | 296.06  | 1144.31 | 298.44  | 1146    |      |
| 299.38  | 1146.65   | 299.87  | 1147    | 301.93  | 1147.51 | 303.66  | 1148    | 309.16  | 1148.47 |      |
| 309.8   | 1148.5    | 312.35  | 1148.69 | 312.66  | 1148.72 | 317.99  | 1149    | 321.8   | 1149    |      |
| 325.62  | 1149.35   | 327.14  | 1149.69 | 327.98  | 1149.81 | 328.49  | 1150    | 329.01  | 1150.2  |      |
| 333.36  | 1151.85   | 333.77  | 1152    | 334.36  | 1152.21 | 336.51  | 1153    | 337.97  | 1153.52 |      |
| 338.79  | 1153.82   | 341.26  | 1154.7  | 343.66  | 1155.58 | 344.84  | 1156    | 346.07  | 1156.4  |      |
| 347.2   | 1156.72   | 347.64  | 1156.79 | 348.11  | 1156.93 | 348.84  | 1157    | 349.73  | 1157    |      |
| 350.46  | 1157.05   | 350.52  | 1157.05 | 350.63  | 1157.06 | 351.74  | 1157.33 | 355.32  | 1158    |      |
| 355.38  | 1158.01   | 355.55  | 1158.01 | 362.12  | 1158.26 | 362.76  | 1158.28 | 365.46  | 1158.4  |      |
| 369.56  | 1159      | 379.52  | 1159    | 383.47  | 1159.19 | 383.75  | 1159.19 | 386.95  | 1159.33 |      |
| 387.48  | 1159.32   | 390.85  | 1159.28 | 393.43  | 1159.35 | 393.78  | 1159.35 | 395.84  | 1159.39 |      |
| 396.75  | 1159.39   | 399.2   | 1159.45 | 401.14  | 1159.51 | 422.28  | 1160    | 508.39  | 1160    |      |
| 667     | 1161      | 682.31  | 1161    | 699.23  | 1163    | 714.05  | 1163    | 719.67  | 1161    |      |
| 721.43  | 1160.39   | 723.23  | 1159.75 | 734.13  | 1156    | 734.4   | 1155.91 | 739.07  | 1154.29 |      |
| 741.09  | 1153.57   | 751.01  | 1150.1  | 751.33  | 1150    | 754.63  | 1149    | 757.19  | 1148    |      |
| 759.15  | 1147      | 759.55  | 1146.8  | 760.94  | 1146.09 | 761.12  | 1146    | 761.8   | 1145.65 |      |
| 763.08  | 1145      | 763.16  | 1144.97 | 763.41  | 1144.89 | 764.58  | 1144.51 | 766.27  | 1144    |      |
| 768.16  | 1143.51   | 772.91  | 1142.25 | 773.87  | 1142    | 783.04  | 1139.57 | 785.24  | 1139    |      |
| 789.12  | 1138.12   | 789.58  | 1138    | 791.91  | 1137.43 | 793.62  | 1137    | 795.09  | 1136.64 |      |
| 803.18  | 1134.56   | 805.27  | 1134    | 806.06  | 1133.81 | 809.11  | 1133    | 813.11  | 1132    |      |
| 813.77  | 1131.63   | 815.12  | 1131    | 853.77  | 1131    | 857.43  | 1130.58 | 862.86  | 1130    |      |
| 863.57  | 1129.61   | 864.61  | 1129    | 864.93  | 1128.9  | 865.27  | 1128.82 | 867.44  | 1128.19 |      |
| 868.16  | 1128      | 870.84  | 1127.03 | 870.96  | 1127    | 872.51  | 1126.2  | 872.99  | 1126    |      |
| 873.56  | 1125.54   | 873.88  | 1125.42 | 874.34  | 1125.38 | 874.68  | 1125.22 | 875.36  | 1125    |      |
| 875.43  | 1124.99   | 876.65  | 1124.89 | 876.82  | 1124.85 | 877.84  | 1124.65 | 881.29  | 1124    |      |
| 882.9   | 1123.86   | 883.86  | 1123.76 | 883.93  | 1123.76 | 886.57  | 1123.52 | 889.02  | 1123.33 |      |
| 892.47  | 1123.37   | 892.79  | 1123.35 | 895.1   | 1123.38 | 895.71  | 1123.34 | 896.48  | 1123.3  |      |
| 899.1   | 1123.21   | 902.2   | 1123.23 | 915.32  | 1123    | 955.59  | 1123    | 955.67  | 1123.01 |      |
| 969.37  | 1124      | 987.28  | 1125    | 999.77  | 1125    | 1006.66 | 1127    | 1008.21 | 1127.44 |      |
| 1010.14 | 1128      | 1012.69 | 1128.86 | 1013.1  | 1129    | 1014.91 | 1129.79 | 1015.38 | 1130    |      |
| 1015.61 | 1130.1    | 1019.41 | 1131.78 | 1019.92 | 1132    | 1023.36 | 1133.52 | 1024.43 | 1134    |      |
| 1025.2  | 1134.35   | 1026.66 | 1135    | 1028.72 | 1135.95 | 1028.83 | 1136    | 1028.96 | 1136.09 |      |
| 1030.38 | 1137      | 1033.54 | 1138.99 | 1035.16 | 1140    | 1036.74 | 1141    | 1037.25 | 1141.33 |      |
| 1038.31 | 1142      | 1038.91 | 1142.36 | 1039.95 | 1143    | 1041.62 | 1143.9  | 1041.81 | 1144    |      |
| 1042.18 | 1144.19   | 1043.74 | 1145    | 1045.74 | 1146    | 1046.97 | 1146.63 | 1051.22 | 1148.77 |      |
| 1051.67 | 1149      | 1052.03 | 1149.18 | 1053.65 | 1150    | 1054.74 | 1150.54 | 1055.69 | 1151    |      |
| 1057.1  | 1151      | 1062.32 | 1150.55 | 1067.85 | 1150.36 | 1068.76 | 1150.64 | 1068.85 | 1150.64 |      |
| 1069.94 | 1151      | 1073.67 | 1151    | 1081.93 | 1150.17 | 1083.51 | 1150    | 1094.92 | 1149.24 |      |
| 1099.82 | 1149      | 1140.33 | 1149    | 1140.89 | 1149.02 | 1165.66 | 1150    | 1165.79 | 1150.01 |      |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1165.97 | 1150.02 | 1186.77 | 1151    | 1191.11 | 1151.11 | 1191.44 | 1151.12 | 1202.69 | 1151.4  |
| 1203.44 | 1151.41 | 1210.49 | 1151.58 | 1248.27 | 1151    | 1252.39 | 1151    | 1283.77 | 1150    |
| 1286.43 | 1149.86 | 1287.77 | 1149.77 | 1294.24 | 1149.41 | 1299.57 | 1149.44 | 1299.68 | 1149.43 |
| 1300.96 | 1149.59 | 1301.1  | 1149.59 | 1309.49 | 1149.36 | 1310.96 | 1149.23 | 1312.34 | 1149.12 |
| 1313.01 | 1149.06 | 1313.98 | 1149    | 1314.41 | 1149    | 1319.76 | 1148.57 | 1321.62 | 1148.4  |
| 1324.27 | 1148.2  | 1326.11 | 1148    | 1331.77 | 1147.63 | 1343.12 | 1147    | 1348.93 | 1147    |
| 1352.48 | 1147.08 | 1353.86 | 1147    | 1371.14 | 1147    | 1374.82 | 1146    | 1375.82 | 1145.47 |
| 1376.69 | 1145    | 1378.17 | 1144.22 | 1380.27 | 1143.1  | 1380.65 | 1142.89 | 1382.31 | 1142    |
| 1384.15 | 1141    | 1385.89 | 1140.04 | 1386.03 | 1139.97 | 1386.43 | 1139.75 | 1387.82 | 1139    |
| 1389.81 | 1138    | 1394.71 | 1136.16 | 1395.1  | 1136    | 1400.29 | 1135    | 1405.18 | 1132.34 |
| 1405.8  | 1132    | 1406.3  | 1131.73 | 1407.63 | 1131    | 1407.87 | 1130.87 | 1413.1  | 1128    |
| 1414.98 | 1127    | 1415.95 | 1126.57 | 1417.26 | 1126    | 1419.75 | 1125    | 1421.03 | 1124.59 |
| 1424.09 | 1125.23 | 1470.73 | 1125.1  | 1472.75 | 1123.12 | 1473.02 | 1123    | 1473.32 | 1122.87 |
| 1477.57 | 1121.01 | 1477.63 | 1120.99 | 1479.85 | 1120.02 | 1479.92 | 1119.99 | 1482.17 | 1119    |
| 1482.84 | 1118.71 | 1487.73 | 1116.57 | 1489.05 | 1116    | 1489.51 | 1115.81 | 1491.51 | 1115    |
| 1495.83 | 1113.15 | 1496.17 | 1113    | 1500.83 | 1111    | 1502.67 | 1110.33 | 1503.15 | 1110.16 |
| 1506.72 | 1110.05 | 1508.55 | 1110    | 1532.02 | 1110    | 1534.44 | 1109    | 1563.82 | 1109    |
| 1565.6  | 1108.24 | 1566.15 | 1108    | 1579.81 | 1108    | 1583.22 | 1108.68 | 1584.24 | 1108.92 |
| 1584.56 | 1108.97 | 1584.7  | 1108.99 | 1585.09 | 1109    | 1623.57 | 1109    | 1633.48 | 1109.39 |
| 1637.34 | 1109.51 | 1643.28 | 1110    | 1643.8  | 1110    | 1647.43 | 1109    | 1651.85 | 1109    |
| 1700.81 | 1108.22 | 1702.69 | 1108.2  | 1714.87 | 1108    | 1715.1  | 1108    | 1727.19 | 1107    |
| 1729.8  | 1106    | 1732.48 | 1105    | 1735.27 | 1104.01 | 1757.13 | 1104    | 1765.22 | 1108.31 |
| 1833.67 | 1105.87 | 1884.91 | 1100.94 | 1988.48 | 1100.61 | 2142.24 | 1100.63 | 2240.87 | 1100.28 |
| 2349.41 | 1104.29 | 2490.73 | 1106.81 | 2491.55 | 1107.73 | 2491.66 | 1107.74 | 2493.56 | 1108    |
| 2494.82 | 1109    | 2495.49 | 1109.52 | 2496.1  | 1110    | 2497.4  | 1111    | 2498.73 | 1112    |
| 2500.09 | 1113    | 2501.42 | 1113.94 | 2501.63 | 1114.08 | 2502.95 | 1115    | 2504.09 | 1115.78 |
| 2504.4  | 1116    | 2505.33 | 1116.15 | 2511.72 | 1117    | 2514.9  | 1117.44 | 2517.78 | 1118    |
| 2519.25 | 1118.84 | 2520.2  | 1119.4  | 2521.26 | 1120    | 2522.62 | 1120.79 | 2522.99 | 1121    |
| 2524.37 | 1121.79 | 2524.74 | 1122    | 2525.31 | 1122.32 | 2527.76 | 1123.72 | 2529.13 | 1124.49 |
| 2533.47 | 1126.9  | 2533.61 | 1126.97 | 2536.63 | 1127.17 | 2551.08 | 1128    | 2575.56 | 1128    |
| 2576.17 | 1128.16 | 2579.32 | 1129    | 2592.48 | 1129    | 2613.75 | 1128    | 2635.83 | 1128    |
| 2842.05 | 1131    | 2842.36 | 1131    | 2902.08 | 1132    | 3035.41 | 1132    | 3092.38 | 1131.07 |
| 3092.73 | 1131.06 | 3093.6  | 1131.05 | 3156.84 | 1130    | 3246.3  | 1129    | 3246.37 | 1129    |
| 3308.08 | 1128    | 3315.62 | 1127.96 | 3315.9  | 1127.96 | 3357.13 | 1127.74 | 3358.37 | 1127.74 |
| 3362.99 | 1127.71 | 3364.16 | 1127.71 | 3370.47 | 1127.67 | 3469.9  | 1127.46 | 3471.8  | 1127.44 |
| 3495.59 | 1127.77 | 3496.14 | 1127.76 | 3496.48 | 1127.77 | 3497.54 | 1127.75 | 3499.02 | 1127.79 |
| 3500.31 | 1127.77 | 3503.84 | 1127.87 | 3504.63 | 1127.85 | 3505.06 | 1127.86 | 3505.68 | 1127.86 |
| 3506.1  | 1127.85 | 3509.17 | 1127.84 | 3510.33 | 1127.82 | 3510.4  | 1127.82 | 3512.51 | 1127.79 |
| 3512.69 | 1127.79 | 3556.9  | 1127    | 3558.16 | 1127    | 3575.84 | 1128    | 3576.41 | 1128    |
| 3593.38 | 1129    | 3616.86 | 1130    | 3637.71 | 1130    | 3715.94 | 1130.45 | 3716.76 | 1130.44 |
| 3726.19 | 1130.48 | 3727.14 | 1130.48 | 3743.55 | 1130.39 | 3744.37 | 1130.4  | 3747.15 | 1130.41 |
| 3753.44 | 1130.47 | 3755.76 | 1130.51 | 3758.45 | 1130.48 | 3770.97 | 1130.19 | 3771.06 | 1130.19 |
| 3773.17 | 1130.12 | 3773.53 | 1130.13 | 3773.83 | 1130.13 | 3776.64 | 1130.07 | 3776.85 | 1130.07 |
| 3780.77 | 1130.02 | 3780.99 | 1130.02 | 3781.05 | 1130.03 | 3785.36 | 1130.01 | 3810.29 | 1130.08 |
| 3810.86 | 1130.09 | 3815.84 | 1130.12 | 3816.51 | 1130.12 | 3820.74 | 1130.16 | 3821.37 | 1130.17 |
| 3825.91 | 1130.22 | 3826.95 | 1130.24 | 3856.46 | 1130.68 |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .04 1470.73 .035 2551.08 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1470.73 2551.08 273.91 266.26 258.6 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1424.09 1124 F  
 2551.08 3856.46 1128 F  
 Left Levee Station= 1413.1 Elevation= 1128  
 Right Levee Station= 2551.08 Elevation= 1128

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 218.24

INPUT

Description:

|         |           |        |         |        |         |        |         |        |         |     |      |
|---------|-----------|--------|---------|--------|---------|--------|---------|--------|---------|-----|------|
| Station | Elevation | Data   | num=    | 473    |         |        |         |        |         |     |      |
| Sta     | Elev      | Sta    | Elev    | Sta    | Elev    | Sta    | Elev    | Sta    | Elev    | Sta | Elev |
| 0       | 1126.18   | 57.24  | 1127    | 103.73 | 1126.35 | 119.33 | 1126.32 | 142.23 | 1126    |     |      |
| 147.74  | 1126      | 164.33 | 1125    | 165.18 | 1124.96 | 182.21 | 1124.25 | 188.76 | 1124    |     |      |
| 292.61  | 1123.07   | 293.02 | 1123.07 | 298.24 | 1123.01 | 298.37 | 1123.01 | 299.21 | 1123    |     |      |
| 313.27  | 1123      | 314.58 | 1123.15 | 321.81 | 1124    | 359.13 | 1124    | 359.27 | 1124.02 |     |      |
| 366.81  | 1124.87   | 368.01 | 1125    | 372.59 | 1126.62 | 375.08 | 1127.51 | 376.48 | 1128    |     |      |
| 382.13  | 1130      | 383.33 | 1130.42 | 386.41 | 1131.52 | 387.72 | 1132    | 388.53 | 1132.37 |     |      |
| 393.64  | 1134.73   | 394.23 | 1135    | 394.75 | 1135.24 | 396.38 | 1136    | 397.44 | 1136.5  |     |      |
| 398.51  | 1137      | 400.59 | 1138    | 402.59 | 1139    | 406.44 | 1141    | 408.3  | 1142    |     |      |
| 409.14  | 1142.44   | 410.1  | 1143    | 410.77 | 1143.4  | 411.76 | 1144    | 413.19 | 1144.85 |     |      |
| 413.45  | 1145      | 413.51 | 1145.04 | 413.91 | 1145.27 | 414.62 | 1145.7  | 414.89 | 1145.87 |     |      |
| 415.12  | 1146      | 415.63 | 1146.25 | 417.2  | 1147    | 417.75 | 1147.25 | 419.3  | 1148    |     |      |
| 420.19  | 1148.4    | 421.42 | 1149    | 422.79 | 1149.62 | 423.8  | 1150    | 429.1  | 1150    |     |      |
| 429.61  | 1149.84   | 432.11 | 1149    | 440.62 | 1149    | 440.74 | 1149.02 | 440.8  | 1148.98 |     |      |
| 442.58  | 1148      | 444.38 | 1147    | 466.59 | 1147    | 468.7  | 1147.89 | 468.94 | 1148    |     |      |
| 469.57  | 1148.33   | 470.88 | 1149    | 472.39 | 1149.67 | 473.06 | 1150    | 475.26 | 1150.8  |     |      |
| 475.78  | 1151      | 477.26 | 1151.56 | 478.46 | 1152    | 479.14 | 1152.23 | 481.31 | 1153    |     |      |
| 484.51  | 1153.81   | 485.23 | 1154    | 486.33 | 1154.28 | 489.26 | 1155    | 495.34 | 1156    |     |      |
| 496.49  | 1156.3    | 499    | 1157    | 499.21 | 1157.12 | 500.8  | 1158    | 501.77 | 1158.54 |     |      |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 503.69  | 1159.59 | 504.76  | 1159.86 | 506.96  | 1159.05 | 507.11  | 1159    | 602.08  | 1159    |
| 647.78  | 1159.23 | 649.59  | 1159.21 | 652.01  | 1159.23 | 658.02  | 1159.23 | 664.91  | 1159.27 |
| 666.75  | 1159.29 | 670.24  | 1159.31 | 671.41  | 1159.31 | 699.99  | 1159.53 | 703.96  | 1159.57 |
| 714.77  | 1159.64 | 716.93  | 1159.66 | 734.34  | 1159.75 | 735.86  | 1159.77 | 745.03  | 1159.81 |
| 753.52  | 1160    | 849.24  | 1160    | 849.31  | 1160.01 | 857.85  | 1161    | 860.19  | 1161.28 |
| 865.92  | 1162    | 869.91  | 1162.52 | 873.74  | 1163    | 876.05  | 1163    | 876.43  | 1162.94 |
| 882.53  | 1162    | 885.59  | 1161.19 | 886.29  | 1161    | 886.69  | 1160.89 | 892.11  | 1159.47 |
| 893.88  | 1159    | 897.69  | 1158    | 898.49  | 1157.78 | 901.41  | 1157    | 904.85  | 1156    |
| 906.21  | 1155.6  | 913.13  | 1153.59 | 928.84  | 1149    | 930.62  | 1148.51 | 935.59  | 1147.12 |
| 936.04  | 1147    | 936.23  | 1146.95 | 939.63  | 1146    | 940.3   | 1145.81 | 945.6   | 1144.34 |
| 946.81  | 1144    | 948.33  | 1143.58 | 952.7   | 1142.34 | 953.88  | 1142    | 956.86  | 1141.13 |
| 957.28  | 1141    | 964.51  | 1138.81 | 969.11  | 1137.4  | 970.44  | 1137    | 977     | 1135    |
| 979.21  | 1134.28 | 980.1   | 1134    | 980.37  | 1133.9  | 980.85  | 1133.71 | 982.73  | 1133    |
| 985.13  | 1132.06 | 985.28  | 1132    | 987.83  | 1131.01 | 987.89  | 1130.99 | 993.95  | 1130.17 |
| 994.5   | 1130.13 | 995.22  | 1130    | 1026.17 | 1130    | 1026.92 | 1129.74 | 1027.12 | 1129.78 |
| 1028.13 | 1129.61 | 1028.74 | 1129.72 | 1028.85 | 1129.73 | 1030.04 | 1129.3  | 1030.19 | 1129.25 |
| 1030.77 | 1129    | 1033    | 1128.26 | 1033.74 | 1128    | 1034.48 | 1127.72 | 1036.59 | 1127    |
| 1038.1  | 1126.06 | 1038.2  | 1126    | 1038.34 | 1125.91 | 1039.48 | 1125    | 1039.93 | 1124.62 |
| 1040.8  | 1124    | 1043.66 | 1123.8  | 1051.47 | 1123.3  | 1053.23 | 1123.18 | 1056.03 | 1123    |
| 1058.51 | 1122.28 | 1059.35 | 1122    | 1062.49 | 1121.34 | 1064.25 | 1121    | 1064.53 | 1120.96 |
| 1065.49 | 1120.81 | 1070.89 | 1120    | 1095.71 | 1120    | 1102.05 | 1120.56 | 1107.5  | 1121    |
| 1111.83 | 1121.68 | 1113.38 | 1122    | 1122.88 | 1122.53 | 1126.11 | 1122.72 | 1127.63 | 1122.8  |
| 1130.92 | 1123    | 1146.08 | 1124    | 1161.15 | 1124    | 1163.6  | 1124.87 | 1163.96 | 1125    |
| 1166.37 | 1125.84 | 1166.84 | 1126    | 1169.04 | 1126.77 | 1169.69 | 1127    | 1171.98 | 1127.83 |
| 1172.46 | 1128    | 1175.14 | 1129    | 1175.34 | 1129.07 | 1177.47 | 1129.89 | 1177.74 | 1130    |
| 1179.63 | 1130.73 | 1180.31 | 1131    | 1181.9  | 1131.61 | 1182.87 | 1132    | 1185.41 | 1133    |
| 1186.59 | 1133.46 | 1189.89 | 1134.77 | 1191.71 | 1135.48 | 1193.01 | 1136    | 1193.88 | 1136.42 |
| 1195.06 | 1137    | 1196.49 | 1137.89 | 1196.67 | 1138    | 1196.78 | 1138.07 | 1198.28 | 1139    |
| 1198.71 | 1139.27 | 1201.5  | 1141    | 1202.44 | 1141.58 | 1203.16 | 1142    | 1204.42 | 1142.69 |
| 1205.01 | 1143    | 1206.57 | 1143.77 | 1207.03 | 1144    | 1208.81 | 1144.88 | 1209.06 | 1145    |
| 1209.38 | 1145.16 | 1211.08 | 1146    | 1211.4  | 1146.16 | 1213.09 | 1147    | 1215.07 | 1148    |
| 1220.31 | 1148    | 1221.75 | 1148.25 | 1223.27 | 1149    | 1248.98 | 1149    | 1268.74 | 1149.68 |
| 1277.6  | 1149.95 | 1279.55 | 1150    | 1284.87 | 1150.1  | 1285.95 | 1150.11 | 1299.56 | 1150.32 |
| 1302.63 | 1150.35 | 1307.31 | 1150.42 | 1314.06 | 1150.49 | 1345.67 | 1151    | 1345.92 | 1151    |
| 1358.52 | 1151.2  | 1365.82 | 1151    | 1400.59 | 1151    | 1402.43 | 1150.31 | 1403.31 | 1150    |
| 1404.04 | 1149.79 | 1406.71 | 1149    | 1408.92 | 1148.14 | 1409.24 | 1148    | 1409.47 | 1147.87 |
| 1410.96 | 1147    | 1411.61 | 1146.63 | 1414.41 | 1145    | 1415.37 | 1144.45 | 1416.14 | 1144    |
| 1417.86 | 1143    | 1419.02 | 1142.32 | 1419.58 | 1142    | 1420.24 | 1141.61 | 1421.29 | 1141    |
| 1421.94 | 1140.61 | 1424    | 1139.4  | 1426.06 | 1138.17 | 1426.34 | 1138    | 1426.52 | 1137.89 |
| 1428    | 1137    | 1429.03 | 1136.37 | 1429.65 | 1136    | 1432.03 | 1134.55 | 1432.92 | 1134    |
| 1436.2  | 1132    | 1437.03 | 1131.5  | 1437.85 | 1131    | 1438.35 | 1130.7  | 1440.69 | 1129.29 |
| 1441.18 | 1129    | 1441.58 | 1128.76 | 1442.9  | 1128    | 1444.98 | 1127.72 | 1445.78 | 1127.69 |
| 1456.29 | 1127    | 1457.91 | 1127    | 1459.45 | 1126.66 | 1462.55 | 1126    | 1466.52 | 1125.09 |
| 1466.89 | 1125    | 1468.98 | 1124.84 | 1479.73 | 1125.17 | 1520.03 | 1125    | 1520.72 | 1123.64 |
| 1521.96 | 1123    | 1525.25 | 1121.25 | 1525.71 | 1121    | 1526.3  | 1120.75 | 1528.05 | 1120    |
| 1530.06 | 1119.17 | 1530.9  | 1118.83 | 1534.47 | 1117.35 | 1535.3  | 1117    | 1536.62 | 1116.45 |
| 1540.07 | 1115    | 1541.89 | 1114.19 | 1542.32 | 1114    | 1544.49 | 1113.02 | 1544.54 | 1113    |
| 1544.71 | 1112.92 | 1546.76 | 1112    | 1547.24 | 1111.78 | 1548.97 | 1111    | 1550.24 | 1110.54 |
| 1551.76 | 1110    | 1552.14 | 1109.98 | 1559.08 | 1109.68 | 1565.69 | 1109.49 | 1581.1  | 1109    |
| 1582.4  | 1109    | 1584.01 | 1108.31 | 1584.76 | 1108    | 1645.2  | 1108    | 1648.39 | 1108.85 |
| 1649.16 | 1109    | 1649.95 | 1109    | 1676.93 | 1108.03 | 1677.3  | 1108.01 | 1677.71 | 1108    |
| 1682    | 1107.18 | 1682.87 | 1107    | 1685.84 | 1106.03 | 1685.92 | 1106    | 1686.03 | 1105.97 |
| 1688.65 | 1105.16 | 1689.19 | 1105    | 1692.66 | 1104    | 1693.46 | 1103.79 | 1699.39 | 1102.18 |
| 1700.07 | 1102    | 1709.92 | 1102    | 1715.54 | 1103    | 1718.5  | 1103.89 | 1718.87 | 1104    |
| 1719.39 | 1104.16 | 1724.93 | 1105.83 | 1725.51 | 1106    | 1725.93 | 1106.13 | 1728.82 | 1107    |
| 1730.51 | 1107.04 | 1732.56 | 1107.29 | 1866.6  | 1105.87 | 1925.28 | 1098.83 | 2022.3  | 1098.91 |
| 2171.66 | 1098.86 | 2340    | 1099.08 | 2427.57 | 1098.99 | 2519.71 | 1103.8  | 2535.35 | 1108    |
| 2538.24 | 1108.42 | 2547.63 | 1109.74 | 2547.67 | 1109.74 | 2549.49 | 1110    | 2551.39 | 1110.8  |
| 2551.86 | 1111    | 2552.22 | 1111.17 | 2554.09 | 1112    | 2555.44 | 1112.65 | 2556.18 | 1113    |
| 2557.38 | 1113.58 | 2558.26 | 1114    | 2559.74 | 1114.72 | 2560.31 | 1115    | 2560.82 | 1115.24 |
| 2562.4  | 1116    | 2564.33 | 1116.92 | 2564.49 | 1117    | 2566.44 | 1117.93 | 2566.59 | 1118    |
| 2566.73 | 1118.07 | 2572.84 | 1120.96 | 2572.92 | 1121    | 2573.22 | 1121.14 | 2575.04 | 1122    |
| 2575.69 | 1122.31 | 2581.18 | 1124.89 | 2581.41 | 1125    | 2582.36 | 1125.44 | 2583.54 | 1126    |
| 2588.92 | 1127    | 2611.53 | 1128    | 2618.06 | 1129    | 2631.13 | 1129    | 2631.76 | 1128.97 |
| 2648.2  | 1128.12 | 2650.24 | 1128    | 2697.72 | 1128    | 2775.42 | 1129    | 2776.26 | 1129    |
| 2855.19 | 1130    | 2944.6  | 1131    | 3018.27 | 1131.97 | 3018.54 | 1131.98 | 3020.11 | 1132    |
| 3020.23 | 1132    | 3040.4  | 1132.26 | 3128.91 | 1132.49 | 3130.52 | 1132.47 | 3131.88 | 1132.47 |
| 3137.68 | 1132.39 | 3141.63 | 1132.39 | 3146.06 | 1132.33 | 3148.4  | 1132.33 | 3160.7  | 1132.16 |
| 3161.93 | 1132.15 | 3212.41 | 1131.37 | 3214.85 | 1131.34 | 3228.62 | 1131.11 | 3229.43 | 1131.1  |
| 3243.71 | 1130.9  | 3244.82 | 1130.88 | 3270.79 | 1130.54 | 3295.61 | 1130.16 | 3296.71 | 1130.14 |
| 3376.31 | 1129    | 3454.95 | 1129    | 3463.79 | 1128.96 | 3466.14 | 1129    | 3532.86 | 1129.67 |
| 3534.26 | 1129.67 | 3535.95 | 1129.69 | 3537.41 | 1129.69 | 3574.13 | 1130    | 3582.18 | 1130    |
| 3639.07 | 1129.5  | 3639.39 | 1129.49 | 3639.76 | 1129.5  | 3643.29 | 1129.53 | 3643.97 | 1129.53 |
| 3648.06 | 1129.56 | 3650.7  | 1129.56 | 3668.42 | 1129.76 | 3669.35 | 1129.75 | 3674.58 | 1129.84 |
| 3675.39 | 1129.83 | 3744.22 | 1131    | 3766.28 | 1131    | 3795.88 | 1131.44 | 3797.41 | 1131.44 |
| 3815.4  | 1131.6  | 3818.46 | 1131.6  | 3842.82 | 1131.74 | 3844.5  | 1131.74 | 3850.47 | 1131.76 |
| 3850.9  | 1131.76 | 3871.5  | 1132    | 3897.9  | 1132    |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .04 1520.03 .035 2583.54 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1520.03 2583.54 248.98 243.45 237.92 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1520.03 1124 F  
 2583.54 3897.9 1126 F

Left Levee Station= 1402.43

Elevation= 1150.31

CROSS SECTION

RIVER: Salt  
REACH: 1

RS: 218.19

INPUT  
Description:

| Station Elevation Data |         | num= 467 |         | Sta Elev |         | Sta Elev |         | Sta Elev |         | Sta Elev |      |
|------------------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|------|
| Sta                    | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev |
| 0                      | 1127    | 44.89    | 1127    | 62.19    | 1126    | 111.37   | 1125    | 114.56   | 1125    |          |      |
| 114.72                 | 1125.02 | 114.84   | 1125.03 | 121.97   | 1126    | 213.59   | 1126.19 | 214.82   | 1126.18 |          |      |
| 215.6                  | 1126.18 | 217.52   | 1126.16 | 225.78   | 1126.2  | 226.79   | 1126.21 | 229.21   | 1126.18 |          |      |
| 230.22                 | 1126.19 | 235.98   | 1126.13 | 236.6    | 1126.14 | 247.52   | 1126.04 | 247.98   | 1126.04 |          |      |
| 252.8                  | 1126    | 276.83   | 1126    | 277.51   | 1125.99 | 284.28   | 1125.93 | 284.54   | 1125.93 |          |      |
| 294.81                 | 1125.9  | 300.14   | 1125.89 | 321.57   | 1125.71 | 329.77   | 1125.67 | 341.46   | 1125.5  |          |      |
| 348.82                 | 1125.45 | 357.13   | 1125.3  | 361.25   | 1125.28 | 369.04   | 1125.11 | 370.12   | 1125.1  |          |      |
| 370.79                 | 1125.1  | 374.43   | 1125    | 425.71   | 1124.1  | 426.65   | 1124.08 | 433.91   | 1124    |          |      |
| 459.89                 | 1124    | 461.7    | 1124.87 | 461.98   | 1125    | 465.09   | 1125    | 465.23   | 1124.99 |          |      |
| 468.72                 | 1124.77 | 481.98   | 1125    | 501.68   | 1125    | 507.47   | 1125.72 | 509.4    | 1126    |          |      |
| 511.14                 | 1126.67 | 511.96   | 1127    | 514.48   | 1127.96 | 514.57   | 1127.99 | 517.11   | 1129    |          |      |
| 518.15                 | 1129.26 | 528.58   | 1133    | 531.97   | 1133.68 | 533.7    | 1134    | 543.2    | 1136.44 |          |      |
| 545.5                  | 1137    | 547.94   | 1137.58 | 549.75   | 1138    | 551.91   | 1138.49 | 556.18   | 1139.49 |          |      |
| 558.25                 | 1140    | 560.31   | 1140.47 | 562.35   | 1141    | 567.52   | 1141    | 573.88   | 1143    |          |      |
| 574.11                 | 1143.07 | 574.32   | 1143.14 | 576.95   | 1144    | 578.23   | 1144.39 | 580.07   | 1145    |          |      |
| 583.05                 | 1146    | 584.25   | 1146.41 | 586.01   | 1147    | 588.77   | 1148    | 591.56   | 1148.3  |          |      |
| 592.52                 | 1148.35 | 595.7    | 1148.64 | 608.24   | 1149    | 609.28   | 1149    | 609.44   | 1149.11 |          |      |
| 610.2                  | 1149.64 | 610.72   | 1150    | 611.02   | 1150.2  | 612.17   | 1151    | 613.57   | 1151.58 |          |      |
| 615.19                 | 1152    | 616.03   | 1152.28 | 616.25   | 1152.34 | 617.35   | 1152.68 | 617.48   | 1152.7  |          |      |
| 617.71                 | 1152.69 | 618.78   | 1153    | 620.67   | 1153    | 628.95   | 1155.61 | 630.22   | 1156    |          |      |
| 633.34                 | 1157    | 635      | 1157.6  | 635.54   | 1157.79 | 636.15   | 1158    | 637.32   | 1158.86 |          |      |
| 637.55                 | 1159    | 638.98   | 1160    | 640.75   | 1161    | 641.06   | 1161.17 | 641.89   | 1161.57 |          |      |
| 642.8                  | 1162    | 646.76   | 1162    | 646.98   | 1161.93 | 647.46   | 1161.83 | 647.73   | 1161.77 |          |      |
| 649.18                 | 1161    | 650.24   | 1161    | 650.31   | 1160.97 | 650.61   | 1160.75 | 650.99   | 1160.46 |          |      |
| 651.58                 | 1160    | 655.12   | 1159.85 | 655.8    | 1159.84 | 661.32   | 1159.62 | 667.1    | 1159.42 |          |      |
| 667.91                 | 1159.41 | 670.47   | 1159.33 | 682.94   | 1159.28 | 690.14   | 1159.47 | 691.02   | 1159.49 |          |      |
| 706.91                 | 1160    | 768.32   | 1161    | 770.38   | 1161    | 770.7    | 1161.25 | 771.82   | 1162    |          |      |
| 773.79                 | 1162    | 774.41   | 1162.25 | 775.09   | 1162    | 776.39   | 1161.56 | 776.76   | 1161.44 |          |      |
| 778.28                 | 1161    | 785.18   | 1161    | 794.32   | 1160.83 | 810.49   | 1160.64 | 812.29   | 1160.64 |          |      |
| 812.93                 | 1160.63 | 821.82   | 1160.52 | 823.75   | 1160.53 | 830.03   | 1160.47 | 830.4    | 1160.46 |          |      |
| 910.34                 | 1160.56 | 917.83   | 1160.62 | 920.6    | 1160.63 | 961.06   | 1161    | 967.62   | 1161.54 |          |      |
| 972.85                 | 1162    | 991.58   | 1162    | 993.45   | 1161.32 | 996.29   | 1160.31 | 997.19   | 1160    |          |      |
| 1003.11                | 1158.22 | 1003.82  | 1158    | 1006.77  | 1157.11 | 1007.15  | 1157    | 1010.34  | 1156.04 |          |      |
| 1010.48                | 1156    | 1017.14  | 1154    | 1017.29  | 1153.96 | 1020.48  | 1153    | 1020.72  | 1152.93 |          |      |
| 1023.81                | 1152    | 1024.13  | 1151.9  | 1027.16  | 1151    | 1030.59  | 1150    | 1033.42  | 1149.15 |          |      |
| 1033.94                | 1149    | 1037.1   | 1148    | 1039.74  | 1147.2  | 1040.35  | 1147    | 1040.99  | 1146.81 |          |      |
| 1043.89                | 1146    | 1045.46  | 1145.58 | 1051.61  | 1144.01 | 1051.79  | 1143.96 | 1055.61  | 1143    |          |      |
| 1056.78                | 1142.71 | 1061.05  | 1141.63 | 1063.6   | 1141    | 1065.68  | 1140.5  | 1072.1   | 1138.91 |          |      |
| 1081.29                | 1136.53 | 1083.41  | 1136    | 1088.53  | 1135.06 | 1088.85  | 1135    | 1094.89  | 1134    |          |      |
| 1096.7                 | 1133.63 | 1099.85  | 1133.23 | 1100.58  | 1133.11 | 1101.6   | 1133    | 1103.47  | 1132.53 |          |      |
| 1105.06                | 1132    | 1105.72  | 1131.9  | 1108.81  | 1131.45 | 1111.68  | 1131    | 1113.7   | 1130.23 |          |      |
| 1114.46                | 1130    | 1131.6   | 1130    | 1139.88  | 1129.45 | 1153.14  | 1129    | 1154.14  | 1129    |          |      |
| 1154.33                | 1128.91 | 1156.06  | 1128    | 1157.07  | 1127.49 | 1157.94  | 1127    | 1159.85  | 1126.58 |          |      |
| 1162.16                | 1126    | 1168.02  | 1126    | 1168.5   | 1125.73 | 1169.71  | 1125    | 1179.33  | 1124.05 |          |      |
| 1179.78                | 1124    | 1182.36  | 1123.69 | 1183.1   | 1123.62 | 1184.03  | 1123.54 | 1187     | 1123.23 |          |      |
| 1188.46                | 1123.16 | 1189.83  | 1123.08 | 1190.42  | 1123.11 | 1190.6   | 1123.12 | 1193.43  | 1123.3  |          |      |
| 1195.45                | 1123.44 | 1196.49  | 1123.53 | 1197.19  | 1123.6  | 1199.81  | 1123.7  | 1200.32  | 1123.73 |          |      |
| 1201.73                | 1123.78 | 1205.22  | 1123.82 | 1206.99  | 1123.81 | 1207.67  | 1123.84 | 1208.98  | 1123.8  |          |      |
| 1213.36                | 1123.72 | 1213.84  | 1123.7  | 1215.25  | 1123.7  | 1216.46  | 1123.72 | 1216.62  | 1123.72 |          |      |
| 1218.69                | 1123.82 | 1219.47  | 1123.85 | 1220.11  | 1123.88 | 1220.75  | 1123.88 | 1222.77  | 1123.79 |          |      |
| 1224.15                | 1123.78 | 1225.28  | 1123.83 | 1226.91  | 1123.84 | 1227.55  | 1123.85 | 1228.69  | 1123.84 |          |      |
| 1229.51                | 1123.82 | 1233.17  | 1123.78 | 1233.71  | 1123.76 | 1234.39  | 1123.73 | 1236.41  | 1123.71 |          |      |
| 1237.84                | 1123.62 | 1238.17  | 1123.61 | 1238.59  | 1123.59 | 1239.86  | 1123.52 | 1246.36  | 1123.87 |          |      |
| 1246.46                | 1123.89 | 1246.54  | 1123.88 | 1246.7   | 1123.91 | 1246.83  | 1123.94 | 1248.62  | 1123.96 |          |      |
| 1248.8                 | 1123.96 | 1289.21  | 1123    | 1290.07  | 1123    | 1294.97  | 1122.66 | 1303.69  | 1122    |          |      |
| 1341.32                | 1122    | 1343.45  | 1121.91 | 1348.36  | 1122.07 | 1349.57  | 1122.12 | 1358.01  | 1122.38 |          |      |
| 1366.15                | 1122.57 | 1369.87  | 1122.7  | 1371.6   | 1122.74 | 1377.2   | 1122.97 | 1377.28  | 1122.98 |          |      |
| 1377.93                | 1123    | 1403.69  | 1123    | 1406.64  | 1122.95 | 1406.79  | 1122.95 | 1415.3   | 1123    |          |      |
| 1445.83                | 1123    | 1463.78  | 1124    | 1478.21  | 1125    | 1483.14  | 1125.22 | 1483.99  | 1125.25 |          |      |
| 1485.96                | 1125.31 | 1494.46  | 1125.63 | 1497.39  | 1125.72 | 1507.16  | 1125.44 | 1508.36  | 1125.26 |          |      |
| 1508.98                | 1125.14 | 1509.53  | 1125.02 | 1509.6   | 1125    | 1509.83  | 1124.98 | 1518.09  | 1124    |          |      |
| 1527.85                | 1124.9  | 1552.79  | 1125    | 1561.41  | 1122.53 | 1567.89  | 1122.45 | 1568.86  | 1122    |          |      |
| 1572.32                | 1120.21 | 1572.71  | 1120    | 1574.67  | 1119    | 1576.33  | 1118.19 | 1576.7   | 1118    |          |      |
| 1578.81                | 1117.44 | 1580.5   | 1117    | 1581.51  | 1116.67 | 1583.59  | 1116    | 1585.38  | 1115.3  |          |      |
| 1586.14                | 1115    | 1586.9   | 1114.68 | 1588.55  | 1114    | 1595.31  | 1111.16 | 1595.68  | 1111    |          |      |
| 1595.77                | 1110.96 | 1598.04  | 1110    | 1598.65  | 1109.81 | 1601.3   | 1109    | 1602.74  | 1108.91 |          |      |
| 1617.99                | 1108    | 1633.36  | 1108    | 1634.83  | 1107.75 | 1638.72  | 1107    | 1682.13  | 1107    |          |      |
| 1699.14                | 1106.65 | 1702.58  | 1106.54 | 1706.59  | 1106.47 | 1708.64  | 1106.4  | 1710.92  | 1106.35 |          |      |
| 1716.42                | 1106.13 | 1717.18  | 1106.11 | 1719.66  | 1106    | 1723.4   | 1105    | 1730     | 1103.27 |          |      |
| 1731.01                | 1103    | 1731.43  | 1102.85 | 1733.87  | 1102    | 1737     | 1101.07 | 1737.25  | 1101    |          |      |
| 1746.74                | 1101    | 1748.83  | 1101.61 | 1750.28  | 1102    | 1755.22  | 1103.91 | 1755.44  | 1104    |          |      |
| 1760.33                | 1105.9  | 1760.6   | 1106    | 1760.71  | 1106.05 | 1763.15  | 1107    | 1764.98  | 1107.12 |          |      |
| 1896.66                | 1105.87 | 1957.24  | 1098.66 | 2059.94  | 1098.17 | 2200.44  | 1098.08 | 2427.16  | 1098.42 |          |      |
| 2502.04                | 1098.7  | 2556.51  | 1099.32 | 2596.9   | 1118.22 | 2618.07  | 1118.92 | 2620.3   | 1119    |          |      |
| 2621.9                 | 1119.75 | 2624.41  | 1121    | 2626.25  | 1121.93 | 2626.38  | 1122    | 2626.71  | 1122.17 |          |      |
| 2627.76                | 1122.7  | 2628.34  | 1123    | 2628.88  | 1123.27 | 2630.3   | 1124    | 2632.27  | 1125    |          |      |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2632.81 | 1125.28 | 2634.23 | 1126    | 2644.86 | 1127    | 2645.51 | 1127.05 | 2656.93 | 1128    |
| 2659.7  | 1128    | 2686.68 | 1127    | 2708.82 | 1127    | 2763.38 | 1128    | 2847.29 | 1129    |
| 2997.94 | 1131    | 3092.93 | 1132    | 3139.64 | 1133    | 3142.05 | 1133.04 | 3142.18 | 1133.04 |
| 3178.59 | 1133.59 | 3221.84 | 1133.73 | 3223.31 | 1133.71 | 3224.51 | 1133.7  | 3225.61 | 1133.68 |
| 3226.53 | 1133.68 | 3227.99 | 1133.67 | 3230.42 | 1133.64 | 3234.59 | 1133.62 | 3238.17 | 1133.58 |
| 3245.15 | 1133.55 | 3249.8  | 1133.49 | 3252.79 | 1133.47 | 3255.06 | 1133.47 | 3260.69 | 1133.38 |
| 3262.13 | 1133.37 | 3268.8  | 1133.26 | 3269.65 | 1133.26 | 3276.15 | 1133.14 | 3276.61 | 1133.14 |
| 3281.11 | 1133.06 | 3281.47 | 1133.06 | 3284.97 | 1133    | 3285.87 | 1133    | 3309.97 | 1132.58 |
| 3321.07 | 1132.3  | 3324.27 | 1132.24 | 3325.58 | 1132.21 | 3333.41 | 1132    | 3337.98 | 1131.9  |
| 3338.51 | 1131.88 | 3339.25 | 1131.86 | 3347.51 | 1131.67 | 3349.71 | 1131.63 | 3356.21 | 1131.48 |
| 3366.78 | 1131.31 | 3369.52 | 1131.25 | 3370.98 | 1131.24 | 3381.54 | 1131    | 3386.3  | 1131    |
| 3401.94 | 1130.9  | 3405.68 | 1130.92 | 3405.91 | 1130.92 | 3417    | 1131    | 3417.64 | 1131    |
| 3425.44 | 1131.04 | 3433.02 | 1131    | 3646.34 | 1131    | 3651.37 | 1130.95 | 3651.8  | 1130.95 |
| 3657.41 | 1130.89 | 3658.13 | 1130.89 | 3686.86 | 1130.62 | 3700.03 | 1130.52 | 3704.56 | 1130.49 |
| 3706.91 | 1130.49 | 3708.9  | 1130.47 | 3712.3  | 1130.45 | 3712.85 | 1130.44 | 3713.96 | 1130.44 |
| 3715.51 | 1130.42 | 3716.85 | 1130.41 | 3719.06 | 1130.42 | 3726.2  | 1130.37 | 3728.04 | 1130.35 |
| 3729.69 | 1130.34 | 3730.89 | 1130.34 | 3732.18 | 1130.33 | 3818.84 | 1130.93 | 3876.53 | 1131.47 |
| 3877.32 | 1131.48 | 3930.21 | 1131.86 |         |         |         |         |         |         |

|                    |              |             |
|--------------------|--------------|-------------|
| Manning's n Values | num=         | 3           |
| Sta n Val          | Sta n Val    | Sta n Val   |
| 0 .04              | 1552.79 .035 | 2634.23 .04 |

|                  |          |               |            |         |              |        |
|------------------|----------|---------------|------------|---------|--------------|--------|
| Bank Sta: Left   | Right    | Lengths: Left | Channel    | Right   | Coeff Contr. | Expan. |
| 1552.79          | 2634.23  | 257.12        | 250.43     | 243.74  | .1           | .3     |
| Ineffective Flow | num=     | 2             |            |         |              |        |
| Sta L Sta R      | Elev     | Permanent     |            |         |              |        |
| 0 1552.79        | 1123     | F             |            |         |              |        |
| 2634.23          | 3930.21  | 1126          | F          |         |              |        |
| Left Levee       | Station= | 1507.16       | Elevation= | 1125.44 |              |        |

CROSS SECTION

RIVER: Salt  
REACH: 1 RS: 218.14

INPUT

Description:

|                        |                 |                 |                 |                 |
|------------------------|-----------------|-----------------|-----------------|-----------------|
| Station Elevation Data | num=            | 479             |                 |                 |
| Sta Elev               | Sta Elev        | Sta Elev        | Sta Elev        | Sta Elev        |
| 0 1127                 | 179.33 1127     | 186.75 1126.23  | 190.48 1126     | 198.52 1126     |
| 199.24 1126.15         | 200.39 1126.43  | 202.83 1127     | 208.43 1127     | 208.71 1126.6   |
| 209.12 1126            | 209.55 1125.39  | 209.83 1125     | 262.83 1125     | 266.06 1125.78  |
| 266.91 1126            | 275.44 1126     | 345.73 1125     | 376.31 1124.68  | 469.78 1124     |
| 472.29 1124            | 505.04 1123.38  | 525.22 1123.1   | 526.22 1123.08  | 533.26 1123     |
| 536.11 1122.95         | 573.5 1122      | 583.61 1121.05  | 584.1 1121      | 589.33 1121     |
| 590.78 1121.22         | 596.14 1122     | 602.16 1123     | 605.43 1124     | 607.22 1124.66  |
| 608.25 1125            | 617.93 1125     | 621.62 1124.59  | 628.15 1125     | 628.85 1125.04  |
| 629.54 1125.09         | 642.92 1126     | 647.38 1127     | 654.83 1128     | 655.36 1128.21  |
| 657.4 1129             | 666.93 1129.84  | 668.93 1130     | 679.23 1131     | 686.86 1133.64  |
| 687.95 1134            | 689.49 1134.44  | 691.32 1135     | 698.21 1137     | 707.31 1139.74  |
| 708.15 1140            | 711.44 1141     | 713.13 1141.54  | 714.26 1141.84  | 714.77 1142     |
| 714.98 1142.07         | 715.91 1142.65  | 716.31 1142.89  | 716.47 1143     | 716.71 1143.17  |
| 717.91 1144            | 718.77 1144.62  | 719.75 1145.31  | 720.7 1146      | 722.13 1146.98  |
| 723.08 1146.7          | 723.32 1146.7   | 724.98 1146.34  | 733.43 1146.53  | 734.16 1146.54  |
| 734.56 1146.53         | 736.21 1146.56  | 736.76 1146.53  | 737.1 1146.52   | 738.37 1146.52  |
| 739.44 1146.53         | 740.27 1146.52  | 742.64 1147     | 744.18 1147     | 745.98 1147.63  |
| 746.71 1147.89         | 747.03 1148     | 747.74 1148     | 753.83 1148.36  | 754.24 1148.36  |
| 757.52 1148.49         | 762.9 1148.49   | 772.15 1148.61  | 779.03 1148.75  | 793.09 1148.19  |
| 793.2 1148.2           | 794.09 1148.31  | 795.36 1148.41  | 798.45 1148.61  | 799.26 1148.64  |
| 800.69 1148.72         | 803.94 1148.79  | 804.45 1148.81  | 809.43 1148.89  | 809.73 1148.89  |
| 809.99 1148.9          | 811.83 1148.91  | 811.93 1148.91  | 813.29 1148.9   | 813.8 1148.88   |
| 814.98 1148.85         | 815.78 1148.74  | 815.84 1148.72  | 818.89 1148.55  | 820.23 1148.4   |
| 821.23 1148.45         | 821.91 1148.37  | 822.63 1148.34  | 824.28 1148.45  | 826.25 1148.5   |
| 830.27 1148.48         | 837.9 1148.3    | 840.16 1148.2   | 840.71 1148.17  | 843.38 1148.06  |
| 843.54 1148.05         | 846.24 1147.96  | 846.38 1147.97  | 848.74 1148.1   | 848.99 1148.1   |
| 851.93 1148.34         | 854.46 1148.66  | 856.71 1149     | 856.93 1149.04  | 863.21 1150.33  |
| 865.06 1150.72         | 865.78 1150.88  | 868.13 1151.42  | 872.97 1152.58  | 873.17 1152.58  |
| 873.51 1152.65         | 873.74 1152.68  | 874.54 1152.71  | 877.77 1152.36  | 878.3 1152.35   |
| 881.54 1152.01         | 881.65 1152     | 883.01 1151.87  | 883.86 1151.84  | 884.82 1151.83  |
| 889.74 1151.72         | 891.12 1151.65  | 892.08 1151.58  | 893.96 1151.41  | 920.5 1149.31   |
| 926.67 1148.88         | 930.46 1148.65  | 933.38 1148.52  | 942.26 1148.31  | 942.96 1148.28  |
| 945.55 1148.15         | 946.02 1148.12  | 952.86 1147.85  | 959.68 1147.67  | 963.11 1147.61  |
| 965.67 1147.61         | 971.84 1147.53  | 980.8 1147.32   | 982.01 1147.3   | 982.87 1147.27  |
| 985.74 1147.21         | 996.65 1146.89  | 997.34 1146.86  | 1014.95 1146.22 | 1017.03 1146.16 |
| 1017.61 1146.14        | 1023.71 1146.05 | 1023.91 1146.05 | 1024.11 1146.04 | 1028.91 1145.97 |
| 1029.08 1145.97        | 1033.28 1145.9  | 1033.49 1145.9  | 1036.68 1145.83 | 1052.51 1145.36 |
| 1056.69 1145.25        | 1062.02 1145.06 | 1068.2 1144.76  | 1071.54 1144.56 | 1075.57 1144.28 |
| 1080.37 1143.89        | 1080.81 1143.85 | 1084.21 1143.59 | 1086.55 1143.38 | 1091.63 1143    |
| 1092.5 1142.88         | 1092.8 1142.83  | 1093.58 1142.71 | 1095.7 1142.35  | 1097.39 1142.08 |
| 1097.84 1142           | 1102.87 1141.16 | 1105.95 1140.62 | 1106.56 1140.51 | 1107.77 1140.28 |
| 1110.23 1139.77        | 1110.95 1139.61 | 1111.9 1139.41  | 1113.76 1139    | 1114.02 1138.94 |
| 1116.19 1138.55        | 1117.96 1138.31 | 1118.44 1138.23 | 1119.9 1138     | 1121.32 1137.76 |
| 1122.46 1137.69        | 1124.93 1137.47 | 1125.61 1137.44 | 1126.59 1137.35 | 1128.85 1137    |
| 1132.07 1136.17        | 1133.57 1135.71 | 1135.43 1135.06 | 1135.53 1135.02 | 1135.59 1135    |
| 1138.62 1134.36        | 1142.59 1134    | 1143.73 1133.89 | 1147.97 1133.52 | 1152.03 1133.24 |
| 1154.37 1133.04        | 1154.47 1133.03 | 1154.73 1133    | 1156.17 1132.82 | 1156.5 1132.77  |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1157.79 | 1132.56 | 1159.61 | 1132.21 | 1160.61 | 1132.08 | 1160.76 | 1132.04 | 1164.79 | 1131.76 |
| 1166.59 | 1131.65 | 1169.36 | 1131.46 | 1169.81 | 1131.48 | 1174.3  | 1131.16 | 1174.95 | 1131.18 |
| 1175.25 | 1131.22 | 1176.85 | 1131.34 | 1177.47 | 1131.42 | 1177.87 | 1131.43 | 1178.95 | 1131.57 |
| 1179.56 | 1131.54 | 1179.9  | 1131.6  | 1180.53 | 1131.53 | 1180.87 | 1131.61 | 1181.44 | 1131.54 |
| 1182.93 | 1131.66 | 1187.36 | 1131    | 1189.25 | 1130    | 1190.73 | 1130    | 1192.09 | 1129.43 |
| 1195.54 | 1129.73 | 1197.16 | 1129.82 | 1197.34 | 1129.79 | 1198.27 | 1129.83 | 1198.61 | 1129.78 |
| 1202.64 | 1129.74 | 1202.87 | 1129.73 | 1203.82 | 1129.8  | 1204.76 | 1129.71 | 1205.15 | 1129.76 |
| 1205.85 | 1129.69 | 1208.06 | 1129.4  | 1209.27 | 1129.21 | 1210.49 | 1129    | 1211.03 | 1128.92 |
| 1211.36 | 1128.88 | 1211.98 | 1128.76 | 1212.49 | 1128.64 | 1214.1  | 1128.35 | 1216.43 | 1128.1  |
| 1216.69 | 1128.11 | 1216.8  | 1128.1  | 1217.77 | 1128    | 1218.68 | 1127.88 | 1218.97 | 1127.81 |
| 1220.16 | 1127.58 | 1221.26 | 1127.31 | 1222.22 | 1127    | 1223.79 | 1126.54 | 1225.48 | 1126    |
| 1230.25 | 1126    | 1234.63 | 1126.31 | 1236.08 | 1126.4  | 1238.63 | 1126.59 | 1241.67 | 1126.77 |
| 1244.84 | 1127    | 1248.47 | 1127.33 | 1250.47 | 1127.59 | 1251.67 | 1127.72 | 1253.62 | 1128    |
| 1255.13 | 1128.46 | 1255.67 | 1128.53 | 1256.65 | 1128.77 | 1258.28 | 1128.84 | 1258.48 | 1128.88 |
| 1260.4  | 1128.93 | 1260.52 | 1128.95 | 1262.79 | 1129    | 1281.91 | 1129    | 1299.1  | 1128.3  |
| 1300.05 | 1128.29 | 1300.56 | 1128.29 | 1302.97 | 1128    | 1303.86 | 1127.26 | 1304.19 | 1127    |
| 1306.22 | 1126.03 | 1306.28 | 1126    | 1307.72 | 1126    | 1307.79 | 1125.97 | 1308.14 | 1125.81 |
| 1309.28 | 1125    | 1310.46 | 1124.8  | 1310.83 | 1124.76 | 1315.48 | 1124    | 1318.15 | 1124    |
| 1318.77 | 1123.76 | 1320.83 | 1123    | 1321.54 | 1122.56 | 1322.59 | 1122    | 1325.52 | 1121.51 |
| 1328.3  | 1121    | 1330.25 | 1120.71 | 1333.54 | 1120.28 | 1334.95 | 1120.08 | 1335.69 | 1120    |
| 1337.65 | 1119.39 | 1338.98 | 1119    | 1342.24 | 1118.81 | 1342.66 | 1118.79 | 1353.58 | 1118.16 |
| 1355.74 | 1118    | 1370.94 | 1118    | 1413.67 | 1119    | 1461.18 | 1119    | 1513.72 | 1120    |
| 1558.47 | 1120    | 1563.88 | 1120.38 | 1584.21 | 1122    | 1593.09 | 1122.85 | 1594.79 | 1123    |
| 1596.37 | 1123.25 | 1601.48 | 1124.85 | 1634.48 | 1124.55 | 1638.21 | 1122.3  | 1638.88 | 1122    |
| 1640.81 | 1121.12 | 1641.07 | 1121    | 1643.2  | 1120.03 | 1643.27 | 1120    | 1643.52 | 1119.89 |
| 1645.46 | 1119    | 1646.28 | 1118.63 | 1654.2  | 1115    | 1656.42 | 1114    | 1658.46 | 1113.1  |
| 1658.68 | 1113    | 1658.86 | 1112.92 | 1663.23 | 1111    | 1663.58 | 1110.85 | 1665.51 | 1110    |
| 1668.12 | 1109    | 1671.24 | 1108    | 1671.72 | 1107.97 | 1682.1  | 1107.23 | 1685.63 | 1107    |
| 1771.1  | 1107    | 1773.79 | 1106    | 1775.59 | 1105.35 | 1776.54 | 1105    | 1779.3  | 1104    |
| 1779.48 | 1103.94 | 1782.14 | 1103    | 1783.18 | 1102.64 | 1784.99 | 1102    | 1786.54 | 1101.41 |
| 1787.67 | 1101    | 1801.68 | 1101    | 1802.51 | 1101.78 | 1802.79 | 1102    | 1805.36 | 1103    |
| 1805.89 | 1103.2  | 1808.14 | 1104    | 1812.55 | 1105.77 | 1813.06 | 1106    | 1813.53 | 1106.22 |
| 1815.32 | 1107    | 1816.63 | 1107.26 | 1948    | 1105.87 | 2001.03 | 1097.86 | 2108.87 | 1098.23 |
| 2239.88 | 1098.13 | 2376.57 | 1098.38 | 2589.37 | 1098.33 | 2648.78 | 1125.54 | 2665.69 | 1125.82 |
| 2668.72 | 1125.07 | 2669.28 | 1125.07 | 2670.78 | 1125.09 | 2694.79 | 1125.41 | 2699.87 | 1125.45 |
| 2709.7  | 1125.61 | 2712.43 | 1125.67 | 2714.76 | 1125.7  | 2716.83 | 1125.75 | 2720.4  | 1125.8  |
| 2721.83 | 1125.81 | 2722.08 | 1125.81 | 2723.29 | 1125.83 | 2760.41 | 1126    | 2795.49 | 1126    |
| 2806.87 | 1127    | 2845.62 | 1128    | 2873.28 | 1129    | 2941.44 | 1130    | 3048.17 | 1130.96 |
| 3048.99 | 1130.96 | 3051.59 | 1130.99 | 3051.96 | 1130.99 | 3052.94 | 1131    | 3072.21 | 1131    |
| 3151.08 | 1131.86 | 3151.59 | 1131.86 | 3162.31 | 1131.99 | 3162.4  | 1131.99 | 3255.25 | 1133    |
| 3403.5  | 1133    | 3478.4  | 1132    | 3485.52 | 1131.86 | 3486.41 | 1131.85 | 3502.8  | 1131.53 |
| 3504.47 | 1131.52 | 3551.48 | 1131    | 3560.2  | 1131    | 3562.75 | 1130.93 | 3563.2  | 1130.93 |
| 3568.94 | 1130.79 | 3569.81 | 1130.79 | 3572.01 | 1130.74 | 3573.95 | 1130.74 | 3577.05 | 1130.68 |
| 3578.8  | 1130.68 | 3586.44 | 1130.53 | 3646.83 | 1130.57 | 3650.65 | 1130.62 | 3652.98 | 1130.63 |
| 3657.35 | 1130.7  | 3659.1  | 1130.7  | 3663.62 | 1130.77 | 3664.56 | 1130.78 | 3671.72 | 1130.89 |
| 3672.01 | 1130.89 | 3675.43 | 1130.95 | 3675.56 | 1130.95 | 3679.12 | 1131    | 3796.12 | 1131    |
| 3798.54 | 1130.96 | 3798.94 | 1130.95 | 3840.03 | 1130.35 | 3845.07 | 1130.32 | 3847.79 | 1130.27 |
| 3862.72 | 1130.17 | 3864    | 1130.15 | 3871.5  | 1130.07 | 3883.4  | 1130.06 | 3884.09 | 1130.07 |
| 3884.9  | 1130.07 | 3885.6  | 1130.08 | 3891.13 | 1130.1  | 3970.83 | 1130.67 |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .04 1634.48 .035 2648.78 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1634.48 2648.78 253.35 246.8 240.24 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1634.48 1124 F  
 2651.29 3970.83 1124.84 F  
 Left Levee Station= 1634.48 Elevation= 1124

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 218.09

INPUT  
 Description:

|                        |         |          |         |        |         |        |         |        |         |
|------------------------|---------|----------|---------|--------|---------|--------|---------|--------|---------|
| Station Elevation Data |         | num= 453 |         |        |         |        |         |        |         |
| Sta                    | Elev    | Sta      | Elev    | Sta    | Elev    | Sta    | Elev    | Sta    | Elev    |
| 0                      | 1125.35 | 89.26    | 1126    | 236.2  | 1126    | 267.21 | 1125.72 | 268.63 | 1125.7  |
| 280.23                 | 1125.63 | 326.07   | 1125    | 328.63 | 1125    | 332.89 | 1124.91 | 338.14 | 1124.77 |
| 353.88                 | 1124.4  | 359.63   | 1124.21 | 366.53 | 1124    | 372.68 | 1123    | 373.49 | 1122.97 |
| 380.52                 | 1122.75 | 402.99   | 1122    | 414.89 | 1122    | 455.81 | 1122.41 | 456.75 | 1122.43 |
| 459.41                 | 1122.43 | 460.1    | 1122.44 | 463.06 | 1122.44 | 463.73 | 1122.46 | 474.92 | 1122.42 |
| 476.64                 | 1122.41 | 477.97   | 1122.41 | 480.38 | 1122.38 | 482.29 | 1122.37 | 482.35 | 1122.37 |
| 485.27                 | 1122.35 | 489.33   | 1122.33 | 494.65 | 1122.29 | 498.51 | 1122.21 | 505.22 | 1122.18 |
| 506.18                 | 1122.16 | 513.62   | 1122.12 | 514.64 | 1122.11 | 521.87 | 1122.08 | 522.59 | 1122.07 |
| 534.67                 | 1122.06 | 535.15   | 1122.05 | 541.36 | 1122.06 | 543.24 | 1122.04 | 571.01 | 1122.02 |
| 584.99                 | 1122.06 | 592.54   | 1122.07 | 619.9  | 1122.04 | 620.25 | 1122.04 | 624.7  | 1122.02 |
| 624.9                  | 1122.02 | 631.29   | 1122    | 666.64 | 1122    | 670.43 | 1122.02 | 671.06 | 1122.02 |
| 684.47                 | 1122.12 | 686.7    | 1122.15 | 701.56 | 1122.29 | 718.93 | 1122.53 | 727.49 | 1122.63 |
| 753.7                  | 1123    | 754.03   | 1123.93 | 754.05 | 1124    | 754.15 | 1124.25 | 754.43 | 1125    |
| 754.5                  | 1125.17 | 754.81   | 1126    | 759.97 | 1126.84 | 760.98 | 1127    | 773.13 | 1127    |
| 776.07                 | 1126.87 | 778.09   | 1126.8  | 790.93 | 1126    | 812.27 | 1126    | 832.11 | 1125.53 |
| 832.66                 | 1125.52 | 851.75   | 1125    | 922.49 | 1125    | 929.52 | 1124.85 | 930.33 | 1124.86 |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 936.27  | 1124.75 | 937.61  | 1124.76 | 952.1   | 1124.84 | 953.07  | 1124.85 | 960.42  | 1124.98 |
| 960.53  | 1124.98 | 961.41  | 1125    | 1046.72 | 1125    | 1061.7  | 1125.11 | 1064.72 | 1125.11 |
| 1065.39 | 1125.12 | 1067.06 | 1125.12 | 1070.22 | 1125.13 | 1071.71 | 1125.13 | 1075.75 | 1125.14 |
| 1076.08 | 1125.14 | 1087.17 | 1125.17 | 1089.42 | 1125.17 | 1095.02 | 1125.19 | 1095.62 | 1125.19 |
| 1100.33 | 1125.2  | 1137.76 | 1125.47 | 1141.77 | 1125.49 | 1145.61 | 1125.5  | 1153.33 | 1125.54 |
| 1162.2  | 1125.57 | 1164.67 | 1125.57 | 1169.61 | 1125.59 | 1172.01 | 1125.59 | 1174.32 | 1125.6  |
| 1176.57 | 1125.6  | 1178.75 | 1125.61 | 1180.82 | 1125.63 | 1187.59 | 1125.65 | 1191.1  | 1125.65 |
| 1192.92 | 1125.66 | 1194.65 | 1125.66 | 1196.23 | 1125.67 | 1199.28 | 1125.67 | 1222.77 | 1126    |
| 1244.11 | 1125.41 | 1261.64 | 1125.3  | 1284.65 | 1125.08 | 1288.88 | 1125.06 | 1293.54 | 1125    |
| 1297.74 | 1124.59 | 1300.57 | 1124.1  | 1301.17 | 1124    | 1301.89 | 1123.79 | 1304.55 | 1123    |
| 1307.71 | 1122.1  | 1308.12 | 1122    | 1308.99 | 1121.77 | 1309.6  | 1121.65 | 1310.54 | 1121.53 |
| 1313.3  | 1121.07 | 1313.45 | 1121.05 | 1313.79 | 1121    | 1315.33 | 1120.8  | 1315.56 | 1120.76 |
| 1316.02 | 1120.71 | 1317.07 | 1120.44 | 1318.74 | 1120.32 | 1319.52 | 1120.18 | 1321.58 | 1120    |
| 1323.33 | 1120    | 1323.67 | 1119.89 | 1325.14 | 1119.36 | 1326.47 | 1119    | 1364.99 | 1119    |
| 1365.46 | 1119.06 | 1373.38 | 1120    | 1376.86 | 1121    | 1378.08 | 1121.31 | 1381.27 | 1122    |
| 1383.6  | 1122.26 | 1385.88 | 1122.42 | 1389.25 | 1122.74 | 1393.94 | 1122.98 | 1394.04 | 1122.99 |
| 1394.33 | 1123    | 1398.07 | 1123.11 | 1400.48 | 1123.17 | 1402.32 | 1123.2  | 1404.13 | 1123.21 |
| 1405.37 | 1123.29 | 1408.7  | 1123.3  | 1411.63 | 1123.57 | 1411.98 | 1123.59 | 1413.8  | 1123.76 |
| 1416.27 | 1124    | 1418.65 | 1124.73 | 1419.48 | 1125    | 1421.49 | 1125.72 | 1422.18 | 1126    |
| 1423.94 | 1126.97 | 1424.13 | 1127.23 | 1424.67 | 1128    | 1424.75 | 1128.24 | 1424.96 | 1129    |
| 1432.75 | 1129    | 1438.18 | 1128    | 1438.48 | 1127.94 | 1442.83 | 1127    | 1447.98 | 1126.02 |
| 1448.1  | 1126    | 1451.61 | 1125.48 | 1454.88 | 1125.01 | 1455.25 | 1124.96 | 1462.99 | 1124    |
| 1464.8  | 1123.7  | 1466.44 | 1123.4  | 1467.57 | 1123.2  | 1468.73 | 1123    | 1475.72 | 1122.31 |
| 1477.96 | 1122.11 | 1478.39 | 1122.07 | 1479.3  | 1122    | 1540.95 | 1122    | 1548.69 | 1122.24 |
| 1570.24 | 1123    | 1572.82 | 1123    | 1577.53 | 1122.84 | 1577.78 | 1122.84 | 1578.58 | 1122.81 |
| 1578.87 | 1122.8  | 1582.09 | 1122.74 | 1610.24 | 1122    | 1611.8  | 1122    | 1612.93 | 1121.81 |
| 1617.79 | 1121    | 1619.96 | 1121    | 1621.57 | 1121.45 | 1623.58 | 1122    | 1648.06 | 1122    |
| 1650.71 | 1122.14 | 1652.3  | 1122.23 | 1654.88 | 1122.39 | 1664.31 | 1122.93 | 1664.85 | 1122.96 |
| 1665.55 | 1123    | 1668.61 | 1123.39 | 1673.5  | 1124    | 1673.84 | 1124.06 | 1675.26 | 1124.26 |
| 1680.29 | 1125    | 1684.99 | 1125    | 1715.94 | 1124    | 1716.17 | 1123.9  | 1718.14 | 1123    |
| 1718.3  | 1122.93 | 1720.34 | 1122    | 1720.42 | 1121.96 | 1722.39 | 1121.07 | 1722.55 | 1120.99 |
| 1724.73 | 1120    | 1725.02 | 1119.87 | 1726.92 | 1119    | 1727.54 | 1118.72 | 1729.11 | 1118    |
| 1730.13 | 1117.53 | 1731.3  | 1117    | 1732.19 | 1116.59 | 1733.48 | 1116    | 1734.95 | 1115.38 |
| 1735.83 | 1115    | 1736.76 | 1114.62 | 1738.27 | 1114    | 1739.35 | 1113.55 | 1740.7  | 1113    |
| 1741.91 | 1112.5  | 1743.14 | 1112    | 1744.48 | 1111.45 | 1747.05 | 1110.39 | 1748    | 1110    |
| 1749.61 | 1109.33 | 1750.42 | 1109    | 1757.43 | 1108.43 | 1758.74 | 1108.32 | 1764.4  | 1107.9  |
| 1766.11 | 1107.74 | 1771.71 | 1107.29 | 1774.47 | 1107    | 1798.59 | 1107    | 1814.71 | 1107.74 |
| 1821.74 | 1108    | 1822.83 | 1108    | 1823.52 | 1108.34 | 1823.7  | 1108.43 | 1824.97 | 1109    |
| 1826.94 | 1109    | 1827.22 | 1108.88 | 1829.13 | 1108    | 1829.64 | 1107.73 | 1830.34 | 1107.39 |
| 1831.04 | 1107    | 1831.5  | 1106.61 | 1832.15 | 1106    | 1832.45 | 1105.8  | 1833.59 | 1105    |
| 1834.38 | 1104.57 | 1835.61 | 1104    | 1837.2  | 1103.29 | 1837.89 | 1103    | 1838.68 | 1102.75 |
| 1840.84 | 1102    | 1844.73 | 1101.2  | 1845.67 | 1101    | 1847.79 | 1100.66 | 1851.99 | 1100    |
| 1853.48 | 1100    | 1858.05 | 1100.6  | 1860.36 | 1101    | 1862.82 | 1101.95 | 1862.95 | 1102    |
| 1863.09 | 1102.05 | 1863.55 | 1102.17 | 1866.45 | 1103    | 1866.58 | 1103    | 1867.16 | 1103.72 |
| 1867.37 | 1104    | 1867.87 | 1104.67 | 1868.12 | 1105    | 1869.62 | 1105    | 1869.99 | 1104.95 |
| 1870.69 | 1105    | 1875.29 | 1105    | 1878.07 | 1105.29 | 1879    | 1105.41 | 1880.21 | 1107.19 |
| 1998.76 | 1105.87 | 2054.02 | 1097.36 | 2101.08 | 1097.55 | 2173.55 | 1097.49 | 2292.3  | 1097.63 |
| 2421.29 | 1097.63 | 2553.51 | 1098.02 | 2609.9  | 1124.63 | 2622    | 1124.83 | 2623.92 | 1123.42 |
| 2625.29 | 1123.43 | 2626.68 | 1123.45 | 2633.72 | 1123.52 | 2636.14 | 1123.54 | 2638.57 | 1123.57 |
| 2653.34 | 1123.71 | 2654.54 | 1123.73 | 2664.39 | 1123.83 | 2720.42 | 1124.39 | 2721.97 | 1124.41 |
| 2725.81 | 1124.45 | 2729.72 | 1124.48 | 2733.69 | 1124.53 | 2735.36 | 1124.54 | 2742.8  | 1124.62 |
| 2746.55 | 1124.65 | 2750.03 | 1124.69 | 2759.38 | 1124.78 | 2763.48 | 1124.83 | 2764.04 | 1124.83 |
| 2768.07 | 1124.87 | 2768.81 | 1124.88 | 2772.66 | 1124.92 | 2775.22 | 1124.94 | 2775.54 | 1124.95 |
| 2779.12 | 1124.98 | 2780.59 | 1125    | 2780.74 | 1125    | 2783.02 | 1125.02 | 2783.42 | 1125.03 |
| 2806.86 | 1126    | 2885.79 | 1126    | 2887.73 | 1125.9  | 2890.51 | 1125.75 | 2908.09 | 1125.68 |
| 2909.2  | 1125.8  | 2911.08 | 1126    | 2913.83 | 1126.14 | 2929.15 | 1126.94 | 2930.25 | 1127    |
| 2982.82 | 1128    | 3030.73 | 1129    | 3082.91 | 1129    | 3092.52 | 1128.88 | 3103.11 | 1128.71 |
| 3137.21 | 1128.22 | 3138.11 | 1128.21 | 3140.93 | 1128.17 | 3143.7  | 1128.14 | 3144.89 | 1128.13 |
| 3146.28 | 1128.11 | 3152.52 | 1128.01 | 3152.65 | 1128.01 | 3153.3  | 1128    | 3154.77 | 1128    |
| 3164.92 | 1127.75 | 3172.35 | 1127.58 | 3176.59 | 1127.49 | 3177.89 | 1127.45 | 3181.49 | 1127.38 |
| 3183.95 | 1127.32 | 3185.43 | 1127.3  | 3186.87 | 1127.27 | 3194.93 | 1127.14 | 3196.62 | 1127.12 |
| 3197.98 | 1127.09 | 3200.35 | 1127.09 | 3200.77 | 1127.08 | 3204.06 | 1127.12 | 3204.89 | 1127.15 |
| 3205.88 | 1127.18 | 3208.27 | 1127.21 | 3209.73 | 1127.26 | 3212.23 | 1127.31 | 3219.88 | 1127.63 |
| 3221.57 | 1127.69 | 3228.64 | 1128    | 3264.37 | 1128.91 | 3265.1  | 1128.93 | 3268.14 | 1129    |
| 3316.26 | 1129.96 | 3317.07 | 1129.97 | 3317.4  | 1129.98 | 3318.45 | 1130    | 3339.37 | 1130.79 |
| 3344.63 | 1131    | 3351.28 | 1131.32 | 3363.23 | 1131.87 | 3366.32 | 1132    | 3399.01 | 1132.71 |
| 3402.52 | 1132.78 | 3412.52 | 1133    | 3497.02 | 1133    | 3547.09 | 1132    | 3573.42 | 1131    |
| 3575.82 | 1130.94 | 3617.14 | 1130    | 3649    | 1129.49 | 3654.57 | 1129.39 | 3663.46 | 1129.29 |
| 3670.22 | 1129.17 | 3671.75 | 1129.15 | 3679.82 | 1129    | 3685.15 | 1129    | 3687.88 | 1129.07 |
| 3688.27 | 1129.07 | 3694.12 | 1129.08 | 3694.49 | 1129.08 | 3699.8  | 1129.1  | 3714.04 | 1129.36 |
| 3715.53 | 1129.39 | 3719.52 | 1129.44 | 3721.68 | 1129.49 | 3724.02 | 1129.53 | 3725.83 | 1129.57 |
| 3729.64 | 1129.63 | 3744.02 | 1130    | 3757.92 | 1130    | 3801.14 | 1130.49 | 3802.44 | 1130.51 |
| 3803.44 | 1130.51 | 3815.68 | 1130.64 | 3817.35 | 1130.66 | 3831.95 | 1130.8  | 3835.45 | 1130.84 |
| 3850.25 | 1130.99 | 3851.07 | 1131    | 3872.47 | 1131    | 3877.59 | 1130.93 | 3941.34 | 1130    |
| 3979.02 | 1129    | 4015.12 | 1129    | 4016.99 | 1129.03 |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 1715.94 .035 2609.9 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1715.94 2609.9 279.89 271.93 263.97 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1715.94 1124 F  
 2608.68 4016.99 1123.27 F  
 Left Levee Station= 1680.29 Elevation= 1125

CROSS SECTION

RIVER: Salt  
 REACH: 1

RS: 218.04

INPUT

Description:

| Station | Elevation | Data    | num=    | 471     | Sta     | Elev    | Sta     | Elev    | Sta     | Elev | Sta | Elev |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|------|-----|------|
| 0       | 1125      | 414.61  | 1125    | 414.73  | 1124.51 | 414.81  | 1124    | 414.92  | 1123.59 |      |     |      |
| 415.03  | 1123      | 415.16  | 1122.28 | 415.27  | 1122    | 415.37  | 1121.35 | 415.49  | 1121.05 |      |     |      |
| 415.54  | 1121.05   | 417     | 1121.34 | 417.12  | 1121.34 | 418.33  | 1121.57 | 418.85  | 1121.69 |      |     |      |
| 419.5   | 1121.83   | 420.24  | 1122    | 420.39  | 1122.03 | 421.09  | 1122.18 | 421.25  | 1122.22 |      |     |      |
| 422.09  | 1122.41   | 422.42  | 1122.49 | 422.92  | 1122.6  | 423.94  | 1122.83 | 424.19  | 1122.89 |      |     |      |
| 424.66  | 1123      | 425.41  | 1123.17 | 425.66  | 1123.19 | 426.28  | 1123.31 | 426.75  | 1123.39 |      |     |      |
| 426.89  | 1123.19   | 428.77  | 1123.34 | 429.26  | 1123.15 | 430.42  | 1123    | 438.14  | 1123    |      |     |      |
| 438.36  | 1122.88   | 438.71  | 1122.9  | 447.02  | 1122    | 451.44  | 1122    | 464.53  | 1121.67 |      |     |      |
| 466.54  | 1121.66   | 477.17  | 1121.49 | 479.51  | 1121.49 | 525.87  | 1121.04 | 528.23  | 1121    |      |     |      |
| 538.64  | 1120      | 609.66  | 1120    | 625.75  | 1120.08 | 626.54  | 1120.09 | 630.45  | 1120.11 |      |     |      |
| 631.87  | 1120.13   | 661.58  | 1120.37 | 690.45  | 1120.47 | 691.1   | 1120.46 | 692.25  | 1120.46 |      |     |      |
| 693.88  | 1120.48   | 697.08  | 1120.47 | 699.14  | 1120.5  | 699.94  | 1120.5  | 707.11  | 1120.59 |      |     |      |
| 711.76  | 1120.61   | 716.13  | 1120.66 | 717.54  | 1120.66 | 734.78  | 1120.84 | 735.75  | 1120.84 |      |     |      |
| 740.39  | 1120.91   | 740.85  | 1120.91 | 746.3   | 1121    | 751.48  | 1121.05 | 751.95  | 1121.06 |      |     |      |
| 776.77  | 1121.33   | 778.83  | 1121.37 | 791.83  | 1121.5  | 795.31  | 1121.56 | 800.06  | 1121.59 |      |     |      |
| 806.04  | 1121.71   | 807.25  | 1121.72 | 808.06  | 1121.72 | 816.93  | 1121.91 | 817.13  | 1121.91 |      |     |      |
| 821.27  | 1122      | 848.88  | 1122.38 | 878.29  | 1122.96 | 880.92  | 1123    | 929.71  | 1123    |      |     |      |
| 935.54  | 1122.11   | 936.29  | 1122    | 961.47  | 1122    | 965.56  | 1122.09 | 965.9   | 1122.1  |      |     |      |
| 968.39  | 1122.14   | 968.88  | 1122.15 | 971.48  | 1122.18 | 972.68  | 1122.21 | 978.57  | 1122.23 |      |     |      |
| 980.34  | 1122.28   | 987.94  | 1122.46 | 988.77  | 1122.47 | 991.13  | 1122.54 | 994.03  | 1122.54 |      |     |      |
| 994.81  | 1122.56   | 995.39  | 1122.57 | 997.48  | 1122.64 | 998.88  | 1122.66 | 1001.27 | 1122.71 |      |     |      |
| 1004.24 | 1122.74   | 1005.54 | 1122.73 | 1013.8  | 1122.8  | 1016.04 | 1123    | 1075.9  | 1123    |      |     |      |
| 1100.86 | 1123.21   | 1105.31 | 1123.32 | 1105.76 | 1123.32 | 1116.86 | 1123.62 | 1123.42 | 1123.7  |      |     |      |
| 1129.82 | 1124      | 1130.03 | 1124.19 | 1130.86 | 1125    | 1131.37 | 1125.53 | 1131.87 | 1126    |      |     |      |
| 1133.55 | 1126.24   | 1135.39 | 1126.49 | 1137.33 | 1126.44 | 1140.12 | 1126.54 | 1141.09 | 1126.53 |      |     |      |
| 1143.93 | 1126.55   | 1147.67 | 1126.54 | 1148.49 | 1126.55 | 1150.29 | 1126.6  | 1150.43 | 1126.6  |      |     |      |
| 1154.74 | 1126.7    | 1157    | 1126.8  | 1157.16 | 1126.8  | 1157.51 | 1126.82 | 1176.41 | 1126.91 |      |     |      |
| 1178.3  | 1126.94   | 1178.38 | 1126.94 | 1179.41 | 1126.96 | 1179.55 | 1126.96 | 1180.28 | 1126.97 |      |     |      |
| 1180.44 | 1126.97   | 1181.41 | 1127    | 1201.97 | 1127    | 1205.82 | 1126.67 | 1216.19 | 1126    |      |     |      |
| 1251.29 | 1126      | 1303.6  | 1125    | 1443.14 | 1124.97 | 1443.28 | 1124.96 | 1447.46 | 1124.97 |      |     |      |
| 1448.75 | 1125      | 1453.08 | 1125    | 1524.95 | 1124    | 1548.02 | 1124    | 1553.77 | 1123.69 |      |     |      |
| 1558.01 | 1123.66   | 1561.48 | 1123.55 | 1583.35 | 1123.86 | 1583.69 | 1123.84 | 1584.51 | 1124    |      |     |      |
| 1584.68 | 1124.51   | 1584.84 | 1125    | 1585.05 | 1125.63 | 1585.17 | 1126    | 1585.38 | 1126.63 |      |     |      |
| 1585.5  | 1127      | 1585.58 | 1127.22 | 1585.84 | 1128    | 1585.96 | 1128.37 | 1586.17 | 1129    |      |     |      |
| 1594.47 | 1129      | 1608.49 | 1129.44 | 1609.66 | 1129.42 | 1613.54 | 1129.32 | 1614.51 | 1129.33 |      |     |      |
| 1616.64 | 1129.22   | 1617.28 | 1129.22 | 1621.12 | 1129    | 1623.12 | 1128.81 | 1623.85 | 1128.72 |      |     |      |
| 1624.02 | 1128.7    | 1626.67 | 1128.62 | 1628.01 | 1128.72 | 1628.72 | 1128.75 | 1629.13 | 1128.78 |      |     |      |
| 1629.49 | 1128.78   | 1629.96 | 1128.73 | 1631.26 | 1128    | 1632.13 | 1127.45 | 1633.93 | 1126.27 |      |     |      |
| 1634.33 | 1126      | 1635.03 | 1125.52 | 1635.81 | 1125    | 1642.55 | 1124.02 | 1642.67 | 1124    |      |     |      |
| 1643.11 | 1123.97   | 1658.51 | 1123    | 1685.07 | 1122    | 1692.42 | 1121.84 | 1693.46 | 1121.83 |      |     |      |
| 1731.17 | 1121.68   | 1731.64 | 1121.66 | 1735.26 | 1121    | 1765.59 | 1121    | 1766.09 | 1121.05 |      |     |      |
| 1771.43 | 1121.62   | 1774.57 | 1122    | 1783.56 | 1123    | 1823.68 | 1123    | 1825.74 | 1122    |      |     |      |
| 1826.14 | 1121.81   | 1829.86 | 1120    | 1830.16 | 1119.85 | 1831.9  | 1119    | 1832.28 | 1118.81 |      |     |      |
| 1835.68 | 1117.14   | 1836.36 | 1116.81 | 1839.43 | 1115.3  | 1840.96 | 1114.53 | 1842.04 | 1114    |      |     |      |
| 1846.08 | 1112      | 1847.25 | 1111.55 | 1851.38 | 1110    | 1856.62 | 1108    | 1857.07 | 1107.82 |      |     |      |
| 1859.18 | 1107      | 1862.68 | 1107    | 1898.53 | 1107    | 1900.56 | 1106.11 | 1900.8  | 1106    |      |     |      |
| 1903.09 | 1105      | 1903.45 | 1104.84 | 1905.39 | 1104    | 1907.63 | 1103.17 | 1908.12 | 1103    |      |     |      |
| 1908.47 | 1102.87   | 1910.73 | 1102    | 1913.29 | 1101    | 1915.49 | 1100.24 | 1916.2  | 1100    |      |     |      |
| 1933.85 | 1100      | 1934.11 | 1100.08 | 1937.28 | 1101    | 1940.23 | 1101.92 | 1940.49 | 1102    |      |     |      |
| 1941.03 | 1102.19   | 1943.37 | 1103    | 1946.2  | 1104    | 1948.95 | 1105    | 1949.47 | 1105.17 |      |     |      |
| 1951.93 | 1106      | 1954.24 | 1106.71 | 1955.23 | 1107    | 1958.6  | 1107.53 | 2039.96 | 1105.87 |      |     |      |
| 2107.28 | 1096.48   | 2255.98 | 1096.32 | 2369.7  | 1096.56 | 2484.53 | 1096.72 | 2583.78 | 1094.77 |      |     |      |
| 2633.77 | 1097.35   | 2688.17 | 1123.64 | 2701.09 | 1123.97 | 2701.19 | 1122.72 | 2701.26 | 1122.73 |      |     |      |
| 2702.37 | 1122.73   | 2702.53 | 1122.74 | 2703.79 | 1122.74 | 2703.85 | 1122.75 | 2704.9  | 1122.75 |      |     |      |
| 2705.12 | 1122.76   | 2706.33 | 1122.76 | 2706.53 | 1122.77 | 2707.72 | 1122.77 | 2708.07 | 1122.78 |      |     |      |
| 2709.03 | 1122.78   | 2709.13 | 1122.79 | 2710.16 | 1122.79 | 2710.36 | 1122.8  | 2711.53 | 1122.8  |      |     |      |
| 2711.84 | 1122.81   | 2712.7  | 1122.81 | 2713.01 | 1122.82 | 2713.95 | 1122.82 | 2714.26 | 1122.83 |      |     |      |
| 2715.34 | 1122.83   | 2715.77 | 1122.84 | 2716.87 | 1122.84 | 2717.2  | 1122.85 | 2717.95 | 1122.85 |      |     |      |
| 2718.47 | 1122.86   | 2719.31 | 1122.86 | 2719.52 | 1122.87 | 2720.42 | 1122.87 | 2720.94 | 1122.88 |      |     |      |
| 2721.67 | 1122.88   | 2722.18 | 1122.89 | 2723.17 | 1122.89 | 2723.79 | 1122.9  | 2724.65 | 1122.9  |      |     |      |
| 2725.26 | 1122.91   | 2725.88 | 1122.91 | 2726.12 | 1122.92 | 2727.06 | 1122.92 | 2727.42 | 1122.93 |      |     |      |
| 2728    | 1122.93   | 2728.66 | 1122.94 | 2729.57 | 1122.94 | 2730.46 | 1122.95 | 2730.71 | 1122.95 |      |     |      |
| 2731.27 | 1122.96   | 2732.08 | 1122.96 | 2732.63 | 1122.97 | 2733.74 | 1122.97 | 2734.61 | 1122.98 |      |     |      |
| 2735.04 | 1122.98   | 2735.19 | 1122.99 | 2736.2  | 1122.99 | 2736.63 | 1123    | 2737.7  | 1123    |      |     |      |
| 2737.9  | 1123.01   | 2738.7  | 1123.01 | 2739.3  | 1123.02 | 2740.12 | 1123.02 | 2740.69 | 1123.03 |      |     |      |
| 2741.49 | 1123.03   | 2741.64 | 1123.04 | 2742.68 | 1123.04 | 2744.72 | 1123.06 | 2744.94 | 1123.06 |      |     |      |
| 2745.77 | 1123.07   | 2745.99 | 1123.07 | 2747.65 | 1123.08 | 2748.1  | 1123.08 | 2748.89 | 1123.09 |      |     |      |
| 2749.12 | 1123.09   | 2749.91 | 1123.1  | 2750.13 | 1123.1  | 2750.93 | 1123.11 | 2751.95 | 1123.11 |      |     |      |
| 2752.17 | 1123.12   | 2753.18 | 1123.12 | 2753.98 | 1123.13 | 2754.19 | 1123.13 | 2754.99 | 1123.14 |      |     |      |
| 2755.4  | 1123.14   | 2756.21 | 1123.15 | 2757.12 | 1123.15 | 2757.34 | 1123.16 | 2758.48 | 1123.16 |      |     |      |
| 2759.83 | 1123.17   | 2760.29 | 1123.18 | 2761.09 | 1123.18 | 2761.31 | 1123.19 | 2762.33 | 1123.19 |      |     |      |
| 2763.92 | 1123.21   | 2764.38 | 1123.21 | 2765.56 | 1123.22 | 2765.85 | 1123.22 | 2767.03 | 1123.23 |      |     |      |
| 2767.31 | 1123.23   | 2767.8  | 1123.24 | 2768.74 | 1123.24 | 2769.02 | 1123.25 | 2770.25 | 1123.25 |      |     |      |
| 2771.89 | 1123.27   | 2772.48 | 1123.27 | 2774.05 | 1123.28 | 2774.55 | 1123.29 | 2777.87 | 1123.31 |      |     |      |
| 2778.39 | 1123.32   | 2780.01 | 1123.33 | 2780.43 | 1123.33 | 2781.45 | 1123.34 | 2781.87 | 1123.34 |      |     |      |
| 2784.9  | 1123.37   | 2785.52 | 1123.37 | 2787.55 | 1123.39 | 2788.16 | 1123.39 | 2789.18 | 1123.4  |      |     |      |
| 2789.56 | 1123.4    | 2790.57 | 1123.41 | 2790.95 | 1123.41 | 2793.76 | 1123.43 | 2794.37 | 1123.44 |      |     |      |
| 2795.78 | 1123.45   | 2796.38 | 1123.45 | 2797.79 | 1123.47 | 2800.08 | 1123.48 | 2800.71 | 1123.49 |      |     |      |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2801.22 | 1123.49 | 2802.37 | 1123.5  | 2802.99 | 1123.51 | 2804.65 | 1123.52 | 2805.11 | 1123.52 |
| 2807.61 | 1123.54 | 2808.07 | 1123.54 | 2809.32 | 1123.55 | 2809.78 | 1123.56 | 2812.27 | 1123.58 |
| 2812.74 | 1123.58 | 2813.99 | 1123.59 | 2814.53 | 1123.59 | 2817.02 | 1123.61 | 2817.57 | 1123.62 |
| 2819.22 | 1123.63 | 2819.77 | 1123.63 | 2823.07 | 1123.66 | 2823.62 | 1123.66 | 2825.27 | 1123.68 |
| 2825.8  | 1123.68 | 2827.45 | 1123.69 | 2827.99 | 1123.7  | 2829.37 | 1123.71 | 2829.64 | 1123.71 |
| 2835.83 | 1123.76 | 2836.34 | 1123.76 | 2838.16 | 1123.78 | 2838.67 | 1123.78 | 2847.98 | 1123.85 |
| 2848.3  | 1123.85 | 2862.93 | 1123.97 | 2863.12 | 1123.97 | 2875.94 | 1124.07 | 2876.99 | 1124.07 |
| 2885.09 | 1124.14 | 2886.13 | 1124.14 | 2889.11 | 1124.17 | 2890.14 | 1124.17 | 2893.13 | 1124.2  |
| 2902.73 | 1125    | 2975.61 | 1126    | 2983.41 | 1126    | 3036.34 | 1125    | 3048.78 | 1125    |
| 3070.05 | 1126    | 3097.64 | 1127    | 3141.07 | 1128    | 3141.43 | 1128.01 | 3149.14 | 1128.14 |
| 3149.21 | 1128.14 | 3168.12 | 1128.43 | 3326.52 | 1128.98 | 3328.52 | 1129    | 3392.26 | 1130    |
| 3392.73 | 1130    | 3393.72 | 1130.02 | 3469.66 | 1131.09 | 3470.25 | 1131.09 | 3470.93 | 1131.1  |
| 3471.32 | 1131.11 | 3472.43 | 1131.12 | 3474.12 | 1131.15 | 3527.28 | 1131.88 | 3527.81 | 1131.89 |
| 3536.58 | 1132    | 3538.23 | 1132    | 3547.36 | 1132.12 | 3547.79 | 1132.13 | 3556.58 | 1132.23 |
| 3578.91 | 1132.55 | 3634.78 | 1132.4  | 3656.93 | 1132.09 | 3656.99 | 1132.09 | 3663.8  | 1132    |
| 3718.12 | 1131    | 3720.85 | 1131    | 3780.84 | 1130    | 3802.94 | 1130    | 3825.2  | 1129.75 |
| 3837.57 | 1129.69 |         |         |         |         |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .04 1823.68 .035 2688.17 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1823.68 2688.17 239.83 231.25 222.67 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1823.68 1123 F  
 2688.84 3837.57 1122.63 F  
 Left Levee Station= 1823.68 Elevation= 1123

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 218

INPUT  
 Description:

| Station | Elevation | Data    | num=    | 437     | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0       | 1127      | 113.8   | 1127    | 139.33  | 1126.36 | 140.02  | 1126.35 | 155.23  | 1126    | 1126    |
| 178.32  | 1126      | 184.17  | 1125.81 | 184.76  | 1125.65 | 184.92  | 1125.68 | 186.47  | 1125.26 | 1125.26 |
| 186.96  | 1125.19   | 187.59  | 1125    | 191.47  | 1125    | 270.72  | 1124    | 273.62  | 1123.82 | 1123.82 |
| 288.67  | 1123.32   | 288.96  | 1123.32 | 299.41  | 1123    | 321.14  | 1123    | 343.1   | 1122.62 | 1122.62 |
| 352.06  | 1122.8    | 358.65  | 1122.79 | 362.12  | 1122.65 | 362.55  | 1122.64 | 378.79  | 1122    | 1122    |
| 409.49  | 1122      | 411.49  | 1121.83 | 420.15  | 1121    | 428.34  | 1121    | 486.75  | 1120.69 | 1120.69 |
| 523.94  | 1120.69   | 525.31  | 1120.68 | 588.84  | 1120.55 | 669.65  | 1120    | 703.37  | 1119    | 1119    |
| 709.11  | 1119      | 723.26  | 1119.98 | 723.53  | 1120    | 736.51  | 1120    | 739.41  | 1119.73 | 1119.73 |
| 741.21  | 1119.62   | 741.9   | 1119.55 | 742.92  | 1119.46 | 745.86  | 1119.23 | 746.58  | 1119.16 | 1119.16 |
| 748.08  | 1119.06   | 748.31  | 1119.04 | 749.37  | 1119    | 750.56  | 1119    | 759.17  | 1119.39 | 1119.39 |
| 777.34  | 1120      | 863.48  | 1120    | 865.41  | 1120.03 | 865.69  | 1120.04 | 865.81  | 1120.04 | 1120.04 |
| 880.62  | 1120.37   | 899.95  | 1120.97 | 900.43  | 1120.98 | 901.05  | 1121    | 901.38  | 1121.02 | 1121.02 |
| 901.73  | 1121.03   | 923.22  | 1122    | 963.39  | 1122    | 1045.12 | 1122.9  | 1051.14 | 1123    | 1123    |
| 1158.6  | 1124      | 1170.56 | 1124    | 1172.82 | 1125    | 1175.03 | 1126    | 1175.11 | 1126.04 | 1126.04 |
| 1175.16 | 1126.04   | 1177.28 | 1126.49 | 1179.04 | 1126.57 | 1181.26 | 1127    | 1186.8  | 1127    | 1127    |
| 1187.59 | 1126.57   | 1188.01 | 1126.54 | 1188.3  | 1126.48 | 1188.65 | 1126.36 | 1188.8  | 1126.31 | 1126.31 |
| 1189.47 | 1126      | 1196.82 | 1126    | 1198.11 | 1125.43 | 1199.14 | 1125.1  | 1199.4  | 1125    | 1125    |
| 1202.46 | 1125      | 1203.28 | 1124.72 | 1203.4  | 1124.7  | 1203.91 | 1124.66 | 1204.18 | 1124.62 | 1124.62 |
| 1204.63 | 1124.64   | 1205.09 | 1124.54 | 1206.07 | 1124.64 | 1206.4  | 1124.58 | 1206.57 | 1124.53 | 1124.53 |
| 1207.84 | 1124.66   | 1220.71 | 1124    | 1232.31 | 1124    | 1234.79 | 1123    | 1290.87 | 1123    | 1123    |
| 1309.71 | 1123.5    | 1312.36 | 1123.55 | 1317.81 | 1123.71 | 1319.84 | 1123.75 | 1320.42 | 1123.77 | 1123.77 |
| 1321.34 | 1123.79   | 1326.24 | 1123.87 | 1331.25 | 1124    | 1529.56 | 1124    | 1574.58 | 1123.07 | 1123.07 |
| 1575.24 | 1123.05   | 1584.58 | 1122.9  | 1606.24 | 1123    | 1633.59 | 1123    | 1639.1  | 1124    | 1124    |
| 1642.38 | 1124.36   | 1648.81 | 1125    | 1649.27 | 1125.03 | 1715.17 | 1125    | 1716.1  | 1126    | 1126    |
| 1716.54 | 1126.48   | 1717.03 | 1127    | 1717.73 | 1127.08 | 1726.29 | 1128    | 1736.56 | 1129    | 1129    |
| 1749.61 | 1129      | 1750.7  | 1128.27 | 1751.09 | 1128    | 1752.31 | 1127.18 | 1752.59 | 1127    | 1127    |
| 1752.77 | 1126.89   | 1754.14 | 1126    | 1755    | 1125.48 | 1755.86 | 1125    | 1760.39 | 1123.29 | 1123.29 |
| 1761.13 | 1123      | 1765.15 | 1123    | 1767.77 | 1123.98 | 1767.84 | 1124    | 1768.92 | 1124    | 1124    |
| 1769.58 | 1123.97   | 1769.8  | 1123.95 | 1772.32 | 1123.74 | 1773.07 | 1123.65 | 1774.75 | 1123.46 | 1123.46 |
| 1777.51 | 1123.06   | 1777.76 | 1123    | 1777.93 | 1123    | 1780.42 | 1122.62 | 1782    | 1122.33 | 1122.33 |
| 1782.64 | 1122.23   | 1782.97 | 1122.17 | 1783.17 | 1122.11 | 1787.27 | 1122.77 | 1788.35 | 1123    | 1123    |
| 1788.44 | 1123.03   | 1788.67 | 1123    | 1797.28 | 1123    | 1799.31 | 1123.67 | 1800.81 | 1124    | 1124    |
| 1803.2  | 1124      | 1804.7  | 1123.73 | 1807.55 | 1123    | 1808.25 | 1122.94 | 1813.44 | 1122.66 | 1122.66 |
| 1814.14 | 1122.61   | 1816.54 | 1122.57 | 1817.15 | 1122.54 | 1817.96 | 1122.51 | 1818.47 | 1122.5  | 1122.5  |
| 1818.77 | 1122.48   | 1819.02 | 1122.46 | 1819.38 | 1122.47 | 1819.59 | 1122.45 | 1819.76 | 1122.42 | 1122.42 |
| 1820.08 | 1122.45   | 1820.32 | 1122.41 | 1821.32 | 1122.53 | 1839.92 | 1122.52 | 1855.05 | 1122.99 | 1122.99 |
| 1855.16 | 1122.99   | 1855.32 | 1123    | 1855.48 | 1123    | 1866.6  | 1123.65 | 1870.82 | 1124    | 1124    |
| 1917.61 | 1124      | 1919.28 | 1123.39 | 1920.27 | 1123    | 1921.91 | 1122.38 | 1923.42 | 1121.79 | 1121.79 |
| 1925.49 | 1121      | 1927.23 | 1120.19 | 1927.63 | 1120    | 1927.93 | 1119.85 | 1935.75 | 1116    | 1116    |
| 1936.89 | 1115.45   | 1937.8  | 1115    | 1938.97 | 1114.44 | 1939.93 | 1114    | 1940.8  | 1113.58 | 1113.58 |
| 1942.05 | 1113      | 1944.12 | 1112    | 1948.35 | 1110.06 | 1948.47 | 1110    | 1948.6  | 1109.94 | 1109.94 |
| 1950.66 | 1109      | 1950.93 | 1108.88 | 1952.85 | 1108    | 1953.3  | 1107.8  | 1956.58 | 1106.29 | 1106.29 |
| 1957.22 | 1106      | 1962.58 | 1106    | 1965.85 | 1105.95 | 1987.76 | 1105.61 | 1987.83 | 1105.62 | 1105.62 |
| 1988.99 | 1105.35   | 1991.67 | 1104.76 | 1994.54 | 1104    | 1996.7  | 1103.22 | 1997.32 | 1103    | 1103    |
| 1999.88 | 1102.03   | 1999.94 | 1102.01 | 2002.58 | 1101    | 2004.93 | 1100.04 | 2005.04 | 1100    | 1100    |
| 2005.18 | 1099.94   | 2007.29 | 1099    | 2010.71 | 1098.35 | 2011.45 | 1098.29 | 2013.28 | 1098.16 | 1098.16 |
| 2014.59 | 1098.08   | 2014.65 | 1098.09 | 2015.24 | 1098.06 | 2016.51 | 1098.06 | 2017.65 | 1098.11 | 1098.11 |
| 2017.77 | 1098.11   | 2017.91 | 1098.12 | 2018.08 | 1098.13 | 2019.17 | 1098.21 | 2019.6  | 1098.25 | 1098.25 |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2021.06 | 1098.45 | 2022.01 | 1098.56 | 2024.12 | 1098.87 | 2024.43 | 1098.92 | 2024.98 | 1099    |
| 2030.39 | 1099    | 2031    | 1099.02 | 2031.75 | 1099.02 | 2033.22 | 1099.07 | 2037.08 | 1099.28 |
| 2037.89 | 1099.34 | 2040.78 | 1099.32 | 2041.73 | 1099.24 | 2041.96 | 1099.24 | 2045.02 | 1099.61 |
| 2047.39 | 1099.93 | 2047.46 | 1108.24 | 2099.7  | 1105.86 | 2157.46 | 1096.22 | 2330.1  | 1095.63 |
| 2432.58 | 1095.97 | 2534.17 | 1095.87 | 2624.74 | 1094.77 | 2698.78 | 1096.39 | 2753.54 | 1123.07 |
| 2766.13 | 1123.26 | 2766.5  | 1122.2  | 2766.6  | 1122.21 | 2767.71 | 1122.21 | 2767.83 | 1122.22 |
| 2768.92 | 1122.22 | 2768.97 | 1122.23 | 2770.16 | 1122.23 | 2770.31 | 1122.24 | 2771.28 | 1122.24 |
| 2771.49 | 1122.25 | 2772.61 | 1122.25 | 2772.88 | 1122.26 | 2773.58 | 1122.26 | 2773.83 | 1122.27 |
| 2774.96 | 1122.27 | 2775.17 | 1122.28 | 2776.24 | 1122.28 | 2776.46 | 1122.29 | 2777.39 | 1122.29 |
| 2777.63 | 1122.3  | 2778.59 | 1122.3  | 2778.8  | 1122.31 | 2779.8  | 1122.31 | 2780    | 1122.32 |
| 2781.09 | 1122.32 | 2781.29 | 1122.33 | 2782.23 | 1122.33 | 2782.57 | 1122.34 | 2783.55 | 1122.34 |
| 2783.89 | 1122.35 | 2784.79 | 1122.35 | 2784.99 | 1122.36 | 2785.76 | 1122.36 | 2786.1  | 1122.37 |
| 2786.86 | 1122.37 | 2787.28 | 1122.38 | 2788.3  | 1122.38 | 2788.63 | 1122.39 | 2789.41 | 1122.39 |
| 2789.85 | 1122.4  | 2790.53 | 1122.4  | 2790.88 | 1122.41 | 2791.91 | 1122.41 | 2792.26 | 1122.42 |
| 2793.11 | 1122.42 | 2793.45 | 1122.43 | 2794.3  | 1122.43 | 2794.65 | 1122.44 | 2795.37 | 1122.44 |
| 2796.06 | 1122.45 | 2796.81 | 1122.45 | 2797.06 | 1122.46 | 2797.89 | 1122.46 | 2798.26 | 1122.47 |
| 2799.09 | 1122.47 | 2799.51 | 1122.48 | 2800.39 | 1122.48 | 2800.72 | 1122.49 | 2801.85 | 1122.49 |
| 2802.24 | 1122.5  | 2802.93 | 1122.5  | 2803.32 | 1122.51 | 2804.04 | 1122.51 | 2804.6  | 1122.52 |
| 2805.36 | 1122.52 | 2805.92 | 1122.53 | 2806.3  | 1122.53 | 2806.99 | 1122.54 | 2807.9  | 1122.54 |
| 2808.34 | 1122.55 | 2808.81 | 1122.55 | 2809.36 | 1122.56 | 2810.29 | 1122.56 | 2811.78 | 1122.58 |
| 2812.76 | 1122.58 | 2813.27 | 1122.59 | 2813.74 | 1122.59 | 2814.25 | 1122.6  | 2814.99 | 1122.6  |
| 2815.51 | 1122.61 | 2816.02 | 1122.61 | 2816.76 | 1122.62 | 2817.28 | 1122.62 | 2817.79 | 1122.63 |
| 2818.83 | 1122.63 | 2819.34 | 1122.64 | 2819.87 | 1122.64 | 2820.39 | 1122.65 | 2820.98 | 1122.65 |
| 2821.52 | 1122.66 | 2822.05 | 1122.66 | 2822.65 | 1122.67 | 2823.21 | 1122.67 | 2823.77 | 1122.68 |
| 2824.61 | 1122.68 | 2825.16 | 1122.69 | 2825.7  | 1122.69 | 2826.54 | 1122.7  | 2827.09 | 1122.7  |
| 2827.64 | 1122.71 | 2828.17 | 1122.71 | 2829.12 | 1122.72 | 2829.67 | 1122.72 | 2830.18 | 1122.73 |
| 2831.12 | 1122.74 | 2832.17 | 1122.74 | 2832.7  | 1122.75 | 2833.47 | 1122.75 | 2834    | 1122.76 |
| 2834.52 | 1122.76 | 2838.55 | 1122.8  | 2839.54 | 1122.8  | 2844.48 | 1122.85 | 2845.28 | 1122.85 |
| 2848.18 | 1122.88 | 2848.97 | 1122.88 | 2850.91 | 1122.9  | 2851.63 | 1122.9  | 2860.38 | 1122.98 |
| 2861.36 | 1122.98 | 2864.2  | 1123.01 | 2865.08 | 1123.01 | 2868.89 | 1123.05 | 2869.74 | 1123.05 |
| 2872.68 | 1123.08 | 2873.59 | 1123.08 | 2877.59 | 1123.12 | 2878.55 | 1123.12 | 2906.54 | 1123.35 |
| 2907.91 | 1123.37 | 2961.65 | 1123.81 | 2962.39 | 1123.81 | 2989.32 | 1124.03 | 2990.76 | 1124.05 |
| 2991.81 | 1124.05 | 3039.34 | 1125    | 3186.16 | 1125    | 3209.26 | 1126    | 3243.39 | 1127    |
| 3283.67 | 1128    | 3440.82 | 1128    | 3454.91 | 1128.17 | 3456.04 | 1128.19 | 3458.49 | 1128.21 |
| 3459.77 | 1128.23 | 3465.37 | 1128.27 | 3467.4  | 1128.31 | 3471.34 | 1128.34 | 3471.73 | 1128.35 |
| 3472.04 | 1128.35 | 3475.34 | 1128.42 | 3478.98 | 1128.45 | 3482.5  | 1128.53 | 3485.28 | 1128.56 |
| 3489.22 | 1128.65 | 3491.03 | 1128.67 | 3496.16 | 1128.8  | 3498.49 | 1128.83 | 3499.95 | 1128.86 |
| 3504.97 | 1129    | 3505.51 | 1129    | 3560.49 | 1129.98 | 3560.71 | 1129.98 | 3560.92 | 1129.99 |
| 3685.96 | 1132    | 3744.28 | 1132    | 3819.15 | 1131    | 3885.11 | 1130    | 3949.27 | 1128    |
| 4000.25 | 1128    | 4028.47 | 1129    |         |         |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 1917.61 .035 2753.54 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1917.61 2753.54 286.33 279.22 271.92 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1919.28 1123.39 F  
 2753.73 4028.47 1122.1 F  
 Left Levee Station= 1919.28 Elevation= 1123.39

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 217.95

INPUT Description:

|         |           |         |         |         |         |         |         |         |         |  |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|--|
| Station | Elevation | Data    | num=    | 437     |         |         |         |         |         |  |
| Sta     | Elev      | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    |  |
| 0       | 1128      | 81.55   | 1128    | 113.54  | 1127    | 142.28  | 1126    | 164.92  | 1126    |  |
| 182.42  | 1126.35   | 234.58  | 1126.12 | 242     | 1126    | 291.96  | 1126    | 350.7   | 1125    |  |
| 405.81  | 1125      | 406.53  | 1124.99 | 406.63  | 1124.99 | 419.47  | 1124.76 | 451.18  | 1124    |  |
| 452.06  | 1124      | 452.7   | 1123.68 | 453.17  | 1123.36 | 453.59  | 1123.02 | 453.69  | 1122.23 |  |
| 453.71  | 1122      | 454.56  | 1121.26 | 454.67  | 1121.17 | 454.86  | 1121    | 461.15  | 1120    |  |
| 471.41  | 1120      | 472.49  | 1120.04 | 554.71  | 1120    | 576.73  | 1120.35 | 586.64  | 1120.63 |  |
| 597.57  | 1120.79   | 599.55  | 1120.84 | 606.61  | 1120.88 | 608.24  | 1120.91 | 618.33  | 1120.88 |  |
| 620.16  | 1120.91   | 648.49  | 1121    | 704.53  | 1120.52 | 709.15  | 1120.55 | 712.84  | 1120.41 |  |
| 713.31  | 1120.41   | 722.52  | 1120.26 | 723.71  | 1120.22 | 736.14  | 1120.15 | 737.88  | 1120.17 |  |
| 747.12  | 1120.15   | 748.24  | 1120.18 | 752.5   | 1120.16 | 753.2   | 1120.17 | 783.95  | 1120    |  |
| 788.07  | 1119.8    | 789.47  | 1119.71 | 791.5   | 1119.46 | 793.78  | 1119.02 | 793.87  | 1119    |  |
| 795.11  | 1119      | 795.98  | 1119.18 | 799.67  | 1119.64 | 801.43  | 1119.89 | 801.91  | 1119.94 |  |
| 802.03  | 1119.95   | 804.39  | 1119.95 | 807.79  | 1119.9  | 807.94  | 1119.91 | 811.2   | 1119.84 |  |
| 811.31  | 1119.85   | 812.05  | 1119.83 | 812.26  | 1119.86 | 823.64  | 1120    | 926.13  | 1120    |  |
| 982.06  | 1120.29   | 1023.82 | 1121    | 1048.18 | 1121    | 1086.61 | 1121.64 | 1088.21 | 1121.65 |  |
| 1091.22 | 1121.73   | 1092.64 | 1121.75 | 1097.14 | 1121.87 | 1106.78 | 1122    | 1106.9  | 1122.01 |  |
| 1108.62 | 1122.08   | 1110    | 1122.11 | 1110.33 | 1122.13 | 1111.7  | 1122.13 | 1111.89 | 1122.14 |  |
| 1117.24 | 1122      | 1136.13 | 1121.96 | 1136.53 | 1121.97 | 1227.31 | 1121.81 | 1241.44 | 1122    |  |
| 1653.44 | 1122      | 1660.21 | 1121.69 | 1703.85 | 1121.61 | 1722.91 | 1121    | 1808.69 | 1121    |  |
| 1843.57 | 1120.22   | 1848.36 | 1120    | 1894.07 | 1120    | 1898.2  | 1120.38 | 1912.28 | 1120.32 |  |
| 1916.08 | 1120.25   | 1921.56 | 1120.24 | 1922.67 | 1120.25 | 1927.61 | 1120.45 | 1930.77 | 1120.43 |  |
| 1932.87 | 1120.68   | 1933.96 | 1120.84 | 1934.18 | 1120.84 | 1934.91 | 1120.87 | 1935.32 | 1120.91 |  |
| 1937.19 | 1121      | 1937.63 | 1121    | 1938.22 | 1121.06 | 1938.51 | 1121.07 | 1961.19 | 1122.49 |  |
| 1964.78 | 1122.63   | 1968.96 | 1122.94 | 1969.03 | 1122.94 | 1969.85 | 1123    | 1970.76 | 1123    |  |
| 1976.39 | 1122      | 1976.91 | 1121.92 | 1977.31 | 1121.85 | 1979.53 | 1121.55 | 1982.34 | 1121.37 |  |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1982.78 | 1121.37 | 1984.91 | 1121.45 | 1985.66 | 1121.51 | 1986.76 | 1121.64 | 1989.06 | 1122    |
| 1990.45 | 1122.24 | 1991.29 | 1122.44 | 1992.81 | 1122.75 | 1993.75 | 1123    | 1994.64 | 1123.12 |
| 1995.02 | 1123.12 | 1995.88 | 1123.21 | 1998.86 | 1123.49 | 1999.67 | 1123.55 | 2001.42 | 1123.44 |
| 2026.74 | 1123    | 2039.43 | 1123    | 2042.83 | 1121.18 | 2043.15 | 1121    | 2045.06 | 1120    |
| 2045.9  | 1119.54 | 2047.01 | 1119    | 2048.63 | 1118.26 | 2049.17 | 1118    | 2049.5  | 1117.85 |
| 2051.31 | 1117    | 2051.97 | 1116.7  | 2054.46 | 1115.49 | 2055.41 | 1115    | 2057.33 | 1114.32 |
| 2058.35 | 1114    | 2059.2  | 1113.77 | 2060.08 | 1113.6  | 2061.29 | 1113.43 | 2063.31 | 1113.05 |
| 2063.49 | 1113.02 | 2063.65 | 1113    | 2067.29 | 1112.49 | 2069.84 | 1112.36 | 2071.36 | 1112.23 |
| 2073.97 | 1112.15 | 2074.58 | 1112.11 | 2078.81 | 1112    | 2080.02 | 1111.9  | 2081.88 | 1111.64 |
| 2082.91 | 1111.55 | 2086.11 | 1111.04 | 2086.2  | 1111.02 | 2086.4  | 1111    | 2087.81 | 1110.89 |
| 2087.98 | 1110.88 | 2088.99 | 1110.68 | 2089.39 | 1110.61 | 2090.97 | 1110.25 | 2092.6  | 1109.68 |
| 2093.66 | 1109.35 | 2094.18 | 1109.21 | 2095.03 | 1109.02 | 2095.14 | 1109    | 2098    | 1108.55 |
| 2101.96 | 1108    | 2106.91 | 1107.41 | 2107.58 | 1107.35 | 2109.46 | 1107.26 | 2110.15 | 1107.24 |
| 2112.82 | 1107.12 | 2112.99 | 1107.11 | 2114.99 | 1106.92 | 2119.05 | 1106.38 | 2123.09 | 1105.75 |
| 2126.29 | 1105.54 | 2127.65 | 1105.58 | 2132.43 | 1105.48 | 2134.29 | 1105.34 | 2137.15 | 1105.28 |
| 2137.83 | 1105.28 | 2138.79 | 1105.33 | 2141.39 | 1105.32 | 2141.87 | 1105.4  | 2143.6  | 1105.85 |
| 2143.99 | 1105.96 | 2144.12 | 1106    | 2145.7  | 1106.53 | 2147.65 | 1107    | 2147.77 | 1107.04 |
| 2148.83 | 1107.32 | 2150.98 | 1107.93 | 2151.24 | 1108    | 2153.28 | 1108.24 | 2153.58 | 1108.23 |
| 2155.36 | 1108.37 | 2156.21 | 1108.45 | 2163.38 | 1107.52 | 2187.07 | 1105.86 | 2287.86 | 1096.58 |
| 2393.86 | 1095.01 | 2498.1  | 1094.86 | 2608.79 | 1095.56 | 2676.68 | 1094.77 | 2765.16 | 1095.04 |
| 2821.12 | 1122.18 | 2834.65 | 1122.41 | 2834.93 | 1121.57 | 2835.4  | 1121.57 | 2835.98 | 1121.58 |
| 2837.98 | 1121.59 | 2838.44 | 1121.6  | 2838.86 | 1121.6  | 2840.47 | 1121.62 | 2841.32 | 1121.62 |
| 2841.7  | 1121.63 | 2844.4  | 1121.65 | 2844.84 | 1121.66 | 2845.71 | 1121.66 | 2845.98 | 1121.67 |
| 2846.98 | 1121.67 | 2847.36 | 1121.68 | 2847.53 | 1121.68 | 2851.79 | 1121.72 | 2852.44 | 1121.72 |
| 2852.93 | 1121.73 | 2853.72 | 1121.73 | 2854.11 | 1121.74 | 2854.65 | 1121.74 | 2855.32 | 1121.75 |
| 2855.59 | 1121.75 | 2856.25 | 1121.76 | 2857.09 | 1121.76 | 2857.45 | 1121.77 | 2857.96 | 1121.77 |
| 2858.5  | 1121.78 | 2860.45 | 1121.79 | 2860.52 | 1121.8  | 2861.56 | 1121.8  | 2861.61 | 1121.81 |
| 2862.61 | 1121.81 | 2863.22 | 1121.82 | 2863.36 | 1121.82 | 2863.88 | 1121.83 | 2864.93 | 1121.83 |
| 2864.99 | 1121.84 | 2866.02 | 1121.84 | 2866.1  | 1121.85 | 2869.38 | 1121.87 | 2869.45 | 1121.88 |
| 2870.51 | 1121.88 | 2870.57 | 1121.89 | 2871.63 | 1121.89 | 2871.71 | 1121.9  | 2872.73 | 1121.9  |
| 2872.8  | 1121.91 | 2873.88 | 1121.91 | 2873.95 | 1121.92 | 2875.03 | 1121.92 | 2875.1  | 1121.93 |
| 2876.11 | 1121.93 | 2876.18 | 1121.94 | 2877.25 | 1121.94 | 2877.32 | 1121.95 | 2881.7  | 1121.98 |
| 2881.78 | 1121.99 | 2882.59 | 1121.99 | 2883.17 | 1122    | 2883.94 | 1122    | 2884.04 | 1122.01 |
| 2885.91 | 1122.02 | 2886.36 | 1122.03 | 2887.35 | 1122.03 | 2887.46 | 1122.04 | 2888.41 | 1122.04 |
| 2888.57 | 1122.05 | 2889.55 | 1122.05 | 2889.67 | 1122.06 | 2890.66 | 1122.06 | 2890.88 | 1122.07 |
| 2891.76 | 1122.07 | 2891.98 | 1122.08 | 2892.92 | 1122.08 | 2893.02 | 1122.09 | 2893.99 | 1122.09 |
| 2894.3  | 1122.1  | 2895.18 | 1122.1  | 2895.53 | 1122.11 | 2896.32 | 1122.11 | 2896.44 | 1122.12 |
| 2897.4  | 1122.12 | 2897.68 | 1122.13 | 2898.36 | 1122.13 | 2898.64 | 1122.14 | 2899.53 | 1122.14 |
| 2899.91 | 1122.15 | 2902.99 | 1122.17 | 2903.41 | 1122.18 | 2904.11 | 1122.18 | 2904.32 | 1122.19 |
| 2905.2  | 1122.19 | 2905.4  | 1122.2  | 2906.13 | 1122.2  | 2906.64 | 1122.21 | 2907.43 | 1122.21 |
| 2907.99 | 1122.22 | 2908.12 | 1122.22 | 2908.68 | 1122.23 | 2909.77 | 1122.23 | 2910.19 | 1122.24 |
| 2910.73 | 1122.24 | 2911.19 | 1122.25 | 2911.79 | 1122.25 | 2912.17 | 1122.26 | 2912.68 | 1122.26 |
| 2913.28 | 1122.27 | 2915.36 | 1122.28 | 2915.62 | 1122.29 | 2920.91 | 1122.33 | 2921.42 | 1122.34 |
| 2921.95 | 1122.34 | 2922.47 | 1122.35 | 2923.02 | 1122.35 | 2923.55 | 1122.36 | 2924.09 | 1122.36 |
| 2924.7  | 1122.37 | 2925.3  | 1122.37 | 2925.87 | 1122.38 | 2926.45 | 1122.38 | 2927    | 1122.39 |
| 2927.57 | 1122.39 | 2928.95 | 1122.41 | 2929.74 | 1122.41 | 2930.13 | 1122.42 | 2931.02 | 1122.42 |
| 2931.21 | 1122.43 | 2932.1  | 1122.43 | 2932.63 | 1122.44 | 2932.83 | 1122.44 | 2933.36 | 1122.45 |
| 2934.08 | 1122.45 | 2934.62 | 1122.46 | 2939.94 | 1122.5  | 2940.12 | 1122.51 | 2943.35 | 1122.53 |
| 2943.63 | 1122.54 | 2945.6  | 1122.55 | 2945.94 | 1122.56 | 2969.26 | 1122.77 | 2969.65 | 1122.77 |
| 2977.27 | 1122.84 | 2977.69 | 1122.84 | 2979.54 | 1122.86 | 2979.96 | 1122.86 | 2981.89 | 1122.88 |
| 2982.15 | 1122.88 | 2984.09 | 1122.9  | 2984.35 | 1122.9  | 2985.3  | 1122.91 | 2985.58 | 1122.91 |
| 2987.47 | 1122.93 | 2987.75 | 1122.93 | 2990.95 | 1122.96 | 2991.31 | 1122.96 | 2993.21 | 1122.98 |
| 2993.76 | 1122.98 | 2997.92 | 1123.02 | 2998.32 | 1123.03 | 3008.39 | 1123.11 | 3008.8  | 1123.12 |
| 3012.61 | 1123.15 | 3013.01 | 1123.16 | 3021.81 | 1123.23 | 3022.28 | 1123.24 | 3029.48 | 1123.3  |
| 3029.9  | 1123.31 | 3038.24 | 1123.38 | 3038.76 | 1123.39 | 3046.45 | 1123.45 | 3046.86 | 1123.46 |
| 3050.83 | 1123.49 | 3051.25 | 1123.5  | 3060.03 | 1123.58 | 3060.42 | 1123.58 | 3068.02 | 1123.65 |
| 3068.8  | 1123.65 | 3072.74 | 1123.69 | 3073.14 | 1123.69 | 3075.08 | 1123.71 | 3075.48 | 1123.71 |
| 3075.83 | 1123.72 | 3086.17 | 1123.81 | 3086.56 | 1123.81 | 3089.42 | 1123.84 | 3090.2  | 1123.84 |
| 3096.87 | 1123.9  | 3097.27 | 1123.91 | 3108.88 | 1124.01 | 3158.76 | 1125    | 3274.67 | 1125    |
| 3346.38 | 1126    | 3400.06 | 1127    | 3510.67 | 1127    | 3539.24 | 1126    | 3598.19 | 1126    |
| 3650.03 | 1127    | 3683.72 | 1128    | 3721.29 | 1129    | 3744.78 | 1130    | 3799.97 | 1131    |
| 3909.17 | 1131    | 3957.72 | 1130    | 3985.68 | 1129    | 4048.48 | 1128    | 4089.05 | 1127    |
| 4126.78 | 1127    | 4177.42 | 1127.99 |         |         |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 2039.43 .035 2821.12 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 2039.43 2821.12 250.17 250.17 250.36 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 2039.43 1123 F  
 2821.79 4177.42 1121.45 F  
 Left Levee Station= 2039.43 Elevation= 1123

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 217.91

INPUT

Description:

|  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|
| Station Elevation Data num= 367                                      |  |  |  |  |  |  |  |  |  |
| Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev                         |  |  |  |  |  |  |  |  |  |
| 0 1128 24.12 1128 28.28 1127.93 28.52 1127.94 28.8 1127.95           |  |  |  |  |  |  |  |  |  |
| 36.28 1127.86 36.69 1127.87 40.64 1127.83 41.02 1127.84 41.3 1127.83 |  |  |  |  |  |  |  |  |  |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 66.44   | 1127    | 237.01  | 1127    | 240.91  | 1126.65 | 248.03  | 1126    | 448.86  | 1126    |
| 453.13  | 1125.69 | 455.27  | 1125.54 | 457.01  | 1125.44 | 462.92  | 1125    | 468.38  | 1124.94 |
| 469.05  | 1124.94 | 511.53  | 1124.56 | 519.23  | 1124.51 | 553.3   | 1124.18 | 568.2   | 1124    |
| 568.55  | 1124    | 569.11  | 1123.95 | 569.99  | 1123.88 | 580.26  | 1123    | 580.32  | 1122.34 |
| 580.35  | 1122    | 580.38  | 1121.24 | 580.39  | 1121    | 586.25  | 1120    | 814.94  | 1120    |
| 838.86  | 1121    | 960.48  | 1121    | 968.52  | 1120.73 | 992.23  | 1120    | 1022.11 | 1120    |
| 1072.35 | 1121    | 1243.09 | 1121    | 1258.2  | 1120.41 | 1267.77 | 1120    | 1292.67 | 1120    |
| 1294.31 | 1120.09 | 1307.12 | 1120.73 | 1307.38 | 1120.74 | 1313.98 | 1120.78 | 1315.68 | 1120.73 |
| 1317.56 | 1120.68 | 1321.95 | 1120.54 | 1328.87 | 1120.34 | 1331.43 | 1120.26 | 1333.19 | 1120.21 |
| 1333.57 | 1120.21 | 1339.15 | 1120.16 | 1340.23 | 1120.17 | 1340.53 | 1120.17 | 1356.27 | 1120.37 |
| 1360.24 | 1120.46 | 1364.1  | 1120.51 | 1370.7  | 1120.69 | 1373.37 | 1120.73 | 1380.51 | 1120.93 |
| 1381.06 | 1120.94 | 1382.93 | 1121    | 1388.42 | 1121    | 1392.32 | 1120.37 | 1394.67 | 1120    |
| 1400.25 | 1119    | 1415.46 | 1119    | 1417.07 | 1119.2  | 1417.41 | 1119.19 | 1417.8  | 1119.18 |
| 1420.8  | 1119.42 | 1452.24 | 1119.96 | 1453.73 | 1120    | 1484.63 | 1121.2  | 1487.48 | 1121.3  |
| 1498.52 | 1121.46 | 1511.55 | 1121.77 | 1513.02 | 1121.8  | 1541.32 | 1122    | 1751.5  | 1122    |
| 1754.28 | 1121.96 | 1755.88 | 1121.94 | 1818.08 | 1121    | 1971.4  | 1121    | 1974.32 | 1120.9  |
| 2004.7  | 1120    | 2005.06 | 1120    | 2007.55 | 1119.62 | 2011.31 | 1119    | 2016.64 | 1118.25 |
| 2018.4  | 1118    | 2022.94 | 1118    | 2028.83 | 1118.66 | 2031.22 | 1118.92 | 2031.8  | 1119    |
| 2033.52 | 1119.43 | 2035.83 | 1120    | 2037.57 | 1120.42 | 2039.91 | 1121    | 2040.65 | 1121.2  |
| 2043.44 | 1122    | 2046.89 | 1123    | 2051.86 | 1124    | 2052.02 | 1124.03 | 2056.84 | 1125    |
| 2057.42 | 1125.15 | 2060.56 | 1126    | 2062.33 | 1126.88 | 2062.57 | 1127    | 2062.86 | 1127.14 |
| 2064.52 | 1128    | 2093.62 | 1128    | 2095.5  | 1127.1  | 2095.7  | 1127    | 2095.87 | 1126.91 |
| 2097.76 | 1126    | 2098.33 | 1125.71 | 2099.87 | 1125    | 2102.42 | 1124.06 | 2102.61 | 1124    |
| 2124.8  | 1123    | 2128.19 | 1122.11 | 2128.6  | 1122    | 2128.71 | 1121.95 | 2130.68 | 1121    |
| 2130.8  | 1120.94 | 2132.76 | 1120    | 2132.88 | 1119.94 | 2134.85 | 1119    | 2134.97 | 1118.94 |
| 2136.93 | 1118    | 2137.88 | 1117.55 | 2139.01 | 1117    | 2139.22 | 1116.9  | 2141.1  | 1116    |
| 2141.36 | 1115.87 | 2143.04 | 1115.06 | 2143.17 | 1115    | 2145.18 | 1114.04 | 2145.26 | 1114    |
| 2145.33 | 1113.96 | 2147.34 | 1113    | 2147.54 | 1112.9  | 2149.43 | 1112    | 2150.41 | 1111.53 |
| 2152.34 | 1110.6  | 2155.4  | 1109.14 | 2157.35 | 1108.2  | 2157.77 | 1108    | 2158.12 | 1107.83 |
| 2159.84 | 1107    | 2167.38 | 1106.24 | 2169.78 | 1106    | 2188.24 | 1105.08 | 2189.9  | 1105    |
| 2190.07 | 1104.9  | 2191.81 | 1104    | 2193.52 | 1103.09 | 2193.66 | 1103    | 2193.81 | 1102.9  |
| 2195.24 | 1102    | 2195.63 | 1101.85 | 2197.69 | 1101    | 2197.96 | 1100.9  | 2200.27 | 1100    |
| 2200.97 | 1099.73 | 2202.88 | 1099    | 2204.67 | 1098.36 | 2205.58 | 1098    | 2206.22 | 1097.73 |
| 2208.18 | 1097    | 2215.64 | 1096.25 | 2218.62 | 1096    | 2223.58 | 1096    | 2226.16 | 1096.9  |
| 2226.44 | 1097    | 2226.75 | 1097.17 | 2228.29 | 1098    | 2230.13 | 1099    | 2231.24 | 1099.4  |
| 2232.68 | 1100    | 2235.64 | 1100.67 | 2237.28 | 1101    | 2238.74 | 1101.26 | 2242.32 | 1101.39 |
| 2243.02 | 1101.34 | 2243.08 | 1101.34 | 2243.34 | 1101.35 | 2243.65 | 1101.32 | 2245.38 | 1101    |
| 2246.16 | 1101    | 2249.91 | 1100.93 | 2251.32 | 1105.28 | 2275.61 | 1105.86 | 2319.1  | 1095.07 |
| 2437.61 | 1094.21 | 2539.35 | 1094.41 | 2644.56 | 1094.26 | 2807.93 | 1094.68 | 2862.74 | 1121.46 |
| 2876.02 | 1121.64 | 2881.09 | 1120.99 | 2881.94 | 1120.99 | 2882.25 | 1121    | 2888.72 | 1121.06 |
| 2889.26 | 1121.06 | 2889.48 | 1121.07 | 2893.61 | 1121.1  | 2893.76 | 1121.11 | 2894.08 | 1121.11 |
| 2898.18 | 1121.15 | 2898.99 | 1121.15 | 2904.05 | 1121.2  | 2904.28 | 1121.2  | 2904.39 | 1121.21 |
| 2904.8  | 1121.21 | 2909.86 | 1121.26 | 2910.55 | 1121.26 | 2917.29 | 1121.33 | 2918    | 1121.33 |
| 2918.3  | 1121.34 | 2925.04 | 1121.4  | 2925.71 | 1121.4  | 2926    | 1121.41 | 2926.28 | 1121.41 |
| 2935.71 | 1121.5  | 2936.39 | 1121.5  | 2936.65 | 1121.51 | 2936.9  | 1121.51 | 2946.27 | 1121.6  |
| 2946.92 | 1121.6  | 2947.22 | 1121.61 | 2947.51 | 1121.61 | 2951.33 | 1121.64 | 2951.55 | 1121.65 |
| 2952.05 | 1121.65 | 2958.72 | 1121.71 | 2959.05 | 1121.72 | 2959.59 | 1121.72 | 2966.24 | 1121.78 |
| 2966.81 | 1121.79 | 2967.23 | 1121.79 | 2967.63 | 1121.8  | 2980.47 | 1121.92 | 2981.09 | 1121.92 |
| 2981.67 | 1121.93 | 2982.05 | 1121.93 | 2982.4  | 1121.94 | 2990.72 | 1122.01 | 2991.27 | 1122.02 |
| 2991.72 | 1122.02 | 3000    | 1122.1  | 3000.49 | 1122.11 | 3000.91 | 1122.11 | 3001.58 | 1122.12 |
| 3009.92 | 1122.19 | 3010.28 | 1122.2  | 3010.62 | 1122.2  | 3018.9  | 1122.28 | 3019.64 | 1122.28 |
| 3019.99 | 1122.29 | 3020.33 | 1122.29 | 3020.8  | 1122.3  | 3031.93 | 1122.4  | 3032.46 | 1122.4  |
| 3033.58 | 1122.42 | 3044.71 | 1122.52 | 3045.05 | 1122.52 | 3045.38 | 1122.53 | 3046.02 | 1122.53 |
| 3057.11 | 1122.64 | 3057.97 | 1122.64 | 3058.78 | 1122.65 | 3069.88 | 1122.76 | 3070.6  | 1122.76 |
| 3071.29 | 1122.77 | 3081.86 | 1122.87 | 3082.78 | 1122.88 | 3083.65 | 1122.88 | 3094.24 | 1122.98 |
| 3095.56 | 1123    | 3106.13 | 1123.09 | 3107.68 | 1123.11 | 3118.26 | 1123.21 | 3118.99 | 1123.22 |
| 3119.7  | 1123.22 | 3120.39 | 1123.23 | 3130.52 | 1123.32 | 3131.23 | 1123.33 | 3141.31 | 1123.42 |
| 3142.51 | 1123.44 | 3153.69 | 1123.54 | 3154.31 | 1123.55 | 3159.36 | 1123.59 | 3159.98 | 1123.6  |
| 3160.48 | 1123.6  | 3164.96 | 1123.65 | 3165.54 | 1123.65 | 3166.04 | 1123.66 | 3171.5  | 1123.71 |
| 3172.17 | 1123.71 | 3177.63 | 1123.76 | 3178.31 | 1123.77 | 3183.76 | 1123.82 | 3184.44 | 1123.83 |
| 3185.1  | 1123.83 | 3190.57 | 1123.89 | 3191.21 | 1123.89 | 3193.84 | 1123.92 | 3196.46 | 1123.94 |
| 3197.1  | 1123.95 | 3199.73 | 1123.97 | 3200.37 | 1123.98 | 3201.58 | 1123.99 | 3201.87 | 1123.99 |
| 3202.46 | 1124    | 3307.77 | 1124    | 3398.06 | 1124.87 | 3414.1  | 1125    | 3427.51 | 1125    |
| 3512.63 | 1126.29 | 3522.79 | 1126.45 | 3524.28 | 1126.45 | 3526.35 | 1126.48 | 3594.95 | 1126.42 |
| 3604.29 | 1126.28 | 3612.54 | 1126.15 | 3612.64 | 1126.15 | 3621.57 | 1126.03 | 3623.48 | 1126    |
| 3659.5  | 1125    | 3706.5  | 1125    | 3746.25 | 1126    | 3800.54 | 1127    | 3801.12 | 1127.01 |
| 3802.01 | 1127.04 | 3841.74 | 1128    | 3847.69 | 1128.38 | 3857    | 1129    | 3858.05 | 1129.03 |
| 3858.8  | 1129.06 | 3882.03 | 1129.8  | 3888.58 | 1130    | 3900.44 | 1130.15 | 3901.39 | 1130.17 |
| 3923.48 | 1130.46 | 3924.36 | 1130.47 | 3936.64 | 1130.63 | 3942.79 | 1130.7  | 3947.14 | 1130.76 |
| 3949.6  | 1130.77 | 3950.6  | 1130.77 | 3951.58 | 1130.78 | 3976.62 | 1130.78 | 4026.65 | 1130    |
| 4064.32 | 1129    | 4064.39 | 1129    | 4064.99 | 1128.98 | 4096.64 | 1128    | 4161.35 | 1127    |
| 4180.48 | 1126.38 | 4189.79 | 1126.15 |         |         |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 2124.8 .035 2862.74 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 2124.8 2862.74 240.68 241.89 243.11 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 2124.8 1123 F  
 2863.27 4189.79 1120.82 F  
 Left Levee Station= 2124.8 Elevation= 1123

CROSS SECTION

RIVER: Salt  
REACH: 1

RS: 217.86

INPUT  
Description:

| Station | Elevation | Data    | num=    | 407     | Station | Elevation | Station | Elevation | Station | Elevation |      |
|---------|-----------|---------|---------|---------|---------|-----------|---------|-----------|---------|-----------|------|
| Sta     | Elev      | Sta     | Elev    | Sta     | Elev    | Sta       | Elev    | Sta       | Elev    | Sta       | Elev |
| 0       | 1127      | 20.46   | 1127    | 24.51   | 1126.99 | 49.92     | 1126.98 | 53.03     | 1127    |           |      |
| 166.73  | 1127      | 317.87  | 1126.03 | 318.22  | 1126.03 | 323.32    | 1126.02 | 324.32    | 1126    |           |      |
| 397.25  | 1126      | 529.72  | 1125.07 | 535.64  | 1125.02 | 535.7     | 1125.02 | 536.67    | 1125.01 |           |      |
| 537.48  | 1125      | 560.55  | 1124    | 640.36  | 1124    | 662.01    | 1124.06 | 667.75    | 1124    |           |      |
| 682.7   | 1124      | 683.74  | 1123.77 | 685.63  | 1123    | 685.97    | 1122.87 | 686.17    | 1122.76 |           |      |
| 687.33  | 1122      | 687.38  | 1121.91 | 687.79  | 1121    | 687.95    | 1120.63 | 688.18    | 1120    |           |      |
| 691.59  | 1119.41   | 692.55  | 1119.25 | 692.76  | 1119.22 | 693.92    | 1119    | 762.13    | 1119    |           |      |
| 812.38  | 1119.65   | 841.16  | 1120    | 841.29  | 1120    | 845.28    | 1120.13 | 845.45    | 1120.13 |           |      |
| 845.71  | 1120.14   | 848.25  | 1120.21 | 848.53  | 1120.2  | 849.97    | 1120.24 | 870.64    | 1120.18 |           |      |
| 873.23  | 1120.2    | 934.18  | 1120    | 1076.13 | 1120    | 1096.28   | 1119    | 1122.77   | 1119    |           |      |
| 1123.38 | 1119.03   | 1140.46 | 1120    | 1142.14 | 1120    | 1154.4    | 1120.29 | 1161.54   | 1120.43 |           |      |
| 1166.88 | 1120.59   | 1171.49 | 1120.69 | 1179.64 | 1120.97 | 1180.58   | 1121    | 1199.01   | 1121    |           |      |
| 1231.08 | 1120.21   | 1235.61 | 1120.2  | 1240.96 | 1120.21 | 1266.06   | 1120.16 | 1270.11   | 1120.16 |           |      |
| 1280.63 | 1120.14   | 1288.59 | 1120.25 | 1292.43 | 1120.23 | 1294.33   | 1120.29 | 1299.8    | 1120.26 |           |      |
| 1301.61 | 1120.32   | 1308.01 | 1120.28 | 1309.42 | 1120.33 | 1316.02   | 1120.28 | 1317.02   | 1120.31 |           |      |
| 1323.06 | 1120.27   | 1324.81 | 1120.27 | 1329.84 | 1120.24 | 1330.69   | 1120.24 | 1334.49   | 1120.23 |           |      |
| 1335.26 | 1120.23   | 1336.37 | 1120.22 | 1338.89 | 1120.23 | 1340.29   | 1120.24 | 1347.41   | 1120.04 |           |      |
| 1347.69 | 1120.04   | 1348.99 | 1120    | 1352.62 | 1120    | 1356.39   | 1119.86 | 1360.6    | 1119.78 |           |      |
| 1360.76 | 1119.77   | 1365.78 | 1119.66 | 1368.33 | 1119.58 | 1372.52   | 1119.44 | 1374.81   | 1119.35 |           |      |
| 1378.06 | 1119.25   | 1379.15 | 1119.21 | 1385.44 | 1119.04 | 1385.61   | 1119.03 | 1386.59   | 1119    |           |      |
| 1407.93 | 1119      | 1409.28 | 1118.98 | 1409.8  | 1118.96 | 1412.8    | 1118.89 | 1422.63   | 1118.59 |           |      |
| 1438.85 | 1118      | 1451.85 | 1118    | 1484.76 | 1118.77 | 1489.03   | 1118.86 | 1493.81   | 1118.97 |           |      |
| 1494.15 | 1118.98   | 1495.07 | 1119    | 1499.18 | 1119    | 1505.13   | 1118.21 | 1506.64   | 1118    |           |      |
| 1512.05 | 1118      | 1515.01 | 1118.31 | 1520.68 | 1119    | 1555.68   | 1120    | 1585.54   | 1121    |           |      |
| 1757.39 | 1121      | 1759.42 | 1120.96 | 1783.26 | 1120.7  | 1793.41   | 1120.55 | 1807.76   | 1120.44 |           |      |
| 1822.57 | 1120.16   | 1826.08 | 1120.14 | 1831.22 | 1120    | 1833.93   | 1119.32 | 1834.85   | 1119    |           |      |
| 1838.87 | 1119      | 1839.69 | 1119.74 | 1839.98 | 1120    | 1840.63   | 1120.6  | 1841.07   | 1121    |           |      |
| 1841.76 | 1121      | 1841.91 | 1120.14 | 1841.94 | 1119.96 | 1842.04   | 1119.09 | 1842.05   | 1119    |           |      |
| 1867.51 | 1119      | 1871.59 | 1119.3  | 1883.47 | 1119.62 | 1892.76   | 1120    | 1909.25   | 1120    |           |      |
| 1920.12 | 1120.19   | 1924.35 | 1120.28 | 1947.42 | 1120.72 | 1948.93   | 1120.76 | 1950.1    | 1120.77 |           |      |
| 1964.59 | 1120.99   | 1964.98 | 1121    | 1972.28 | 1121.28 | 1974.56   | 1121.42 | 1983.67   | 1122    |           |      |
| 1993    | 1122      | 2030.83 | 1121.18 | 2033.15 | 1121.12 | 2034.75   | 1121.09 | 2038.85   | 1121    |           |      |
| 2047.03 | 1120.73   | 2050.48 | 1120.64 | 2055.98 | 1120.51 | 2064.56   | 1120.26 | 2074      | 1120.06 |           |      |
| 2074.61 | 1120.05   | 2074.93 | 1120.04 | 2076.98 | 1120    | 2080.41   | 1119.92 | 2080.88   | 1119.91 |           |      |
| 2081.56 | 1119.89   | 2095.1  | 1119.58 | 2104.86 | 1119.26 | 2111.51   | 1119.02 | 2111.61   | 1119.01 |           |      |
| 2111.86 | 1119.01   | 2115.45 | 1118.15 | 2116.14 | 1118    | 2119.36   | 1117.27 | 2120.54   | 1117    |           |      |
| 2123.32 | 1117      | 2124.97 | 1117.46 | 2126.95 | 1118    | 2128.63   | 1118.47 | 2130.58   | 1119    |           |      |
| 2134.04 | 1120      | 2134.43 | 1120.12 | 2137.24 | 1121    | 2138.72   | 1121.45 | 2140.48   | 1122    |           |      |
| 2142.68 | 1122.67   | 2143.74 | 1123    | 2147.09 | 1123.54 | 2150.01   | 1124    | 2152.3    | 1124.53 |           |      |
| 2154.15 | 1125      | 2155.71 | 1125.64 | 2156.6  | 1126    | 2168.13   | 1126    | 2168.21   | 1125.97 |           |      |
| 2170.47 | 1125      | 2171.71 | 1124.64 | 2173.84 | 1124    | 2211.24   | 1123    | 2212.54   | 1122.65 |           |      |
| 2214.84 | 1122      | 2216.53 | 1121.24 | 2217.07 | 1121    | 2218.79   | 1120.22 | 2219.29   | 1120    |           |      |
| 2220.15 | 1119.62   | 2221.51 | 1119    | 2222.87 | 1118.39 | 2223.73   | 1118    | 2225.84   | 1117.05 |           |      |
| 2225.95 | 1117      | 2226.02 | 1116.97 | 2228.12 | 1116    | 2230.14   | 1115.02 | 2232.23   | 1114    |           |      |
| 2234.17 | 1113.06   | 2234.29 | 1113    | 2235.35 | 1112.49 | 2236.35   | 1112    | 2236.49   | 1111.93 |           |      |
| 2238.41 | 1111      | 2238.83 | 1110.8  | 2240.47 | 1110    | 2241.14   | 1109.68 | 2242.53   | 1109    |           |      |
| 2243.42 | 1108.57   | 2244.59 | 1108    | 2245.69 | 1107.47 | 2247.94   | 1106.37 | 2248.71   | 1106    |           |      |
| 2250.72 | 1105.91   | 2257.67 | 1105.62 | 2272.01 | 1105    | 2273.12   | 1104.62 | 2274.76   | 1104    |           |      |
| 2276.31 | 1103.41   | 2277.41 | 1103    | 2278.81 | 1102.46 | 2280.03   | 1102    | 2282.44   | 1101.31 |           |      |
| 2283.4  | 1101      | 2287.37 | 1099.79 | 2289.94 | 1099    | 2293.41   | 1098    | 2295.51   | 1097.43 |           |      |
| 2297.12 | 1097      | 2298.44 | 1096.64 | 2300.84 | 1096    | 2303.16   | 1096    | 2307.43   | 1096.54 |           |      |
| 2310.96 | 1097      | 2315.22 | 1098.57 | 2316.4  | 1099    | 2317.69   | 1099.45 | 2319.25   | 1100    |           |      |
| 2320.71 | 1100.55   | 2321.94 | 1101    | 2324.41 | 1101.92 | 2324.62   | 1102    | 2324.92   | 1101.93 |           |      |
| 2328.97 | 1101      | 2332.64 | 1105.25 | 2358.68 | 1105.86 | 2406.07   | 1094.47 | 2611.53   | 1093.85 |           |      |
| 2662.56 | 1094.12   | 2713.35 | 1093.88 | 2841.54 | 1093.6  | 2899.1    | 1120.58 | 2912.48   | 1120.9  |           |      |
| 2913.01 | 1120.31   | 2919.13 | 1120.36 | 2920.26 | 1120.36 | 2924.7    | 1120.4  | 2929.11   | 1120.43 |           |      |
| 2929.22 | 1120.43   | 2938.47 | 1120.5  | 2938.63 | 1120.5  | 2948.34   | 1120.57 | 2948.76   | 1120.57 |           |      |
| 2959.35 | 1120.65   | 2959.59 | 1120.65 | 2971.22 | 1120.74 | 2971.82   | 1120.74 | 2978.62   | 1120.79 |           |      |
| 2978.96 | 1120.79   | 2985.72 | 1120.84 | 2986.1  | 1120.85 | 2998.9    | 1120.94 | 2999.78   | 1120.95 |           |      |
| 3013.46 | 1121.05   | 3014.5  | 1121.05 | 3047.36 | 1121.29 | 3049      | 1121.31 | 3065.95   | 1121.43 |           |      |
| 3067.87 | 1121.44   | 3075.81 | 1121.5  | 3078.02 | 1121.52 | 3134.11   | 1121.93 | 3138.94   | 1121.96 |           |      |
| 3145.2  | 1122.01   | 3148.71 | 1122.03 | 3165.31 | 1122.16 | 3181.24   | 1122.27 | 3185.79   | 1122.31 |           |      |
| 3205.93 | 1122.45   | 3211.29 | 1122.49 | 3213.24 | 1122.51 | 3222.88   | 1122.58 | 3223.75   | 1122.58 |           |      |
| 3229.15 | 1122.62   | 3229.49 | 1122.62 | 3229.7  | 1122.63 | 3230.35   | 1122.63 | 3234.41   | 1122.66 |           |      |
| 3234.92 | 1122.66   | 3235.49 | 1122.67 | 3236.34 | 1122.67 | 3236.81   | 1122.68 | 3237.31   | 1122.68 |           |      |
| 3241.56 | 1122.71   | 3243.51 | 1122.72 | 3245    | 1122.74 | 3245.82   | 1122.74 | 3246.7    | 1122.75 |           |      |
| 3248.15 | 1122.76   | 3248.28 | 1122.76 | 3249.03 | 1122.76 | 3250.6    | 1122.78 | 3251.65   | 1122.78 |           |      |
| 3252.78 | 1122.79   | 3253.01 | 1122.79 | 3254.42 | 1122.8  | 3254.53   | 1122.8  | 3255.1    | 1122.81 |           |      |
| 3255.24 | 1122.81   | 3256.2  | 1122.82 | 3257.66 | 1122.83 | 3257.76   | 1122.83 | 3259.14   | 1122.84 |           |      |
| 3260.27 | 1122.84   | 3261.16 | 1122.85 | 3261.46 | 1122.85 | 3263.5    | 1122.87 | 3264.04   | 1122.87 |           |      |
| 3265.26 | 1122.88   | 3265.64 | 1122.88 | 3266.32 | 1122.89 | 3267.18   | 1122.89 | 3267.98   | 1122.9  |           |      |
| 3268.65 | 1122.9    | 3269.69 | 1122.91 | 3270.35 | 1122.92 | 3271.62   | 1122.92 | 3272.04   | 1122.93 |           |      |
| 3272.86 | 1122.93   | 3273.28 | 1122.94 | 3274.46 | 1122.94 | 3274.92   | 1122.95 | 3275.62   | 1122.95 |           |      |
| 3276.1  | 1122.96   | 3277.29 | 1122.96 | 3277.83 | 1122.97 | 3278.45   | 1122.97 | 3279.43   | 1122.98 |           |      |
| 3281.14 | 1122.99   | 3281.9  | 1123    | 3283.8  | 1123.01 | 3284.4    | 1123.02 | 3317.63   | 1123.65 |           |      |
| 3318.42 | 1123.67   | 3335.57 | 1124    | 3369.82 | 1124    | 3377.47   | 1123.92 | 3382.89   | 1123.85 |           |      |
| 3384.5  | 1123.85   | 3388.78 | 1123.81 | 3394.13 | 1123.75 | 3506.11   | 1123.63 | 3507.96   | 1123.62 |           |      |
| 3513.93 | 1123.72   | 3515.13 | 1123.72 | 3530.24 | 1124    | 3560.5    | 1125    | 3599.44   | 1126    |           |      |
| 3722.14 | 1126      | 3755.58 | 1125    | 3835.8  | 1125    | 3885.33   | 1126    | 3886.48   | 1126.02 |           |      |
| 3887.57 | 1126.05   | 3931.62 | 1127    | 3932.52 | 1127.04 | 3933.73   | 1127.1  | 3952.93   | 1127.98 |           |      |
| 3953.27 | 1128      | 3953.32 | 1128    | 4015.19 | 1130    | 4089.27   | 1130    | 4149.49   | 1129    |           |      |

4175.27 1128 4196.75 1127.29

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 2211.24 .035 2899.1 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 2211.24 2899.1 205.72 207.12 208.52 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 2211.24 1123 F  
 2900.53 4196.75 1120.22 F  
 Left Levee Station= 2211.24 Elevation= 1123

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 217.81

INPUT

Description:

| Station | Elevation | Data    | num=    | 436     | Sta     | Elev    | Sta     | Elev    | Sta     | Elev | Sta | Elev |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|------|-----|------|
| 0       | 1126      | 87.53   | 1126    | 95.31   | 1126.05 | 96.93   | 1126.07 | 153.3   | 1126.45 |      |     |      |
| 165.09  | 1126.58   | 171     | 1126.63 | 195.12  | 1126.89 | 195.93  | 1126.9  | 196.59  | 1126.91 |      |     |      |
| 197.23  | 1126.91   | 204.75  | 1127    | 335.85  | 1127    | 375.45  | 1126.66 | 378.67  | 1126.65 |      |     |      |
| 391.86  | 1126.53   | 432.52  | 1126    | 438.02  | 1126    | 440.54  | 1125.65 | 445.38  | 1125    |      |     |      |
| 560.37  | 1125      | 572.8   | 1124.79 | 574.32  | 1124.77 | 575.77  | 1124.76 | 590.73  | 1124.53 |      |     |      |
| 592.98  | 1124.52   | 633.76  | 1124    | 751.12  | 1124    | 755.24  | 1123.13 | 755.78  | 1123    |      |     |      |
| 764.05  | 1122      | 765.38  | 1121.82 | 771.01  | 1121    | 773.39  | 1120.55 | 776.22  | 1120    |      |     |      |
| 777.61  | 1119.46   | 778.81  | 1119    | 838.85  | 1118    | 854.86  | 1118    | 858.96  | 1118.2  |      |     |      |
| 859.93  | 1118.25   | 862.76  | 1118.4  | 874.55  | 1119    | 914.07  | 1119    | 915.46  | 1119.08 |      |     |      |
| 916.02  | 1119.1    | 920.16  | 1119.3  | 920.77  | 1119.32 | 925.05  | 1119.53 | 925.58  | 1119.54 |      |     |      |
| 943.31  | 1120      | 1105.07 | 1120    | 1117.81 | 1119.33 | 1124.52 | 1119    | 1159.08 | 1118    |      |     |      |
| 1160.36 | 1117.53   | 1162.11 | 1117    | 1163.52 | 1116.78 | 1163.63 | 1116.79 | 1178.92 | 1116.43 |      |     |      |
| 1186    | 1116.18   | 1186.62 | 1116.16 | 1191.77 | 1116    | 1192.24 | 1116    | 1198.19 | 1115.85 |      |     |      |
| 1199.04 | 1115.85   | 1207.47 | 1115.65 | 1210.19 | 1115.64 | 1214.17 | 1115.56 | 1217.91 | 1115.56 |      |     |      |
| 1220.21 | 1115.51   | 1223.22 | 1115.46 | 1227.07 | 1115.45 | 1230.1  | 1115.41 | 1233.96 | 1115.4  |      |     |      |
| 1236.24 | 1115.37   | 1264.4  | 1115.24 | 1271.17 | 1115.24 | 1273.45 | 1115.25 | 1279.72 | 1115.25 |      |     |      |
| 1280.84 | 1115.26   | 1286.54 | 1115.26 | 1295.64 | 1115.3  | 1313.84 | 1115.33 | 1315.45 | 1115.33 |      |     |      |
| 1321.38 | 1115.34   | 1323.31 | 1115.35 | 1324.48 | 1115.35 | 1329.9  | 1115.36 | 1331.25 | 1115.36 |      |     |      |
| 1332.74 | 1115.37   | 1334.23 | 1115.37 | 1338.49 | 1115.38 | 1351.05 | 1115.42 | 1354.84 | 1115.44 |      |     |      |
| 1357.17 | 1115.44   | 1359.58 | 1115.45 | 1371.66 | 1115.47 | 1374.47 | 1115.48 | 1377.01 | 1115.47 |      |     |      |
| 1401.34 | 1115.47   | 1407.58 | 1115.45 | 1411.46 | 1115.45 | 1415.29 | 1115.43 | 1416.11 | 1115.43 |      |     |      |
| 1446.51 | 1115.14   | 1449.14 | 1115.14 | 1450.29 | 1115.12 | 1451.87 | 1115.12 | 1452.63 | 1115.11 |      |     |      |
| 1457.02 | 1115.11   | 1457.43 | 1115.12 | 1458.09 | 1115.12 | 1499.04 | 1116    | 1524.19 | 1116    |      |     |      |
| 1525.72 | 1116.07   | 1529.19 | 1116.24 | 1531.44 | 1116.34 | 1536.07 | 1116.44 | 1539.08 | 1116.47 |      |     |      |
| 1544.89 | 1116.44   | 1546.86 | 1116.48 | 1549.46 | 1116.52 | 1552.86 | 1116.55 | 1555.7  | 1116.6  |      |     |      |
| 1558.3  | 1116.62   | 1561.26 | 1116.67 | 1562.77 | 1116.69 | 1565.81 | 1116.76 | 1569.23 | 1116.85 |      |     |      |
| 1569.69 | 1116.86   | 1573.34 | 1116.97 | 1573.5  | 1116.97 | 1574.34 | 1117    | 1613.69 | 1117    |      |     |      |
| 1614.05 | 1117.01   | 1621.57 | 1117.11 | 1621.85 | 1117.12 | 1622.64 | 1117.13 | 1631.76 | 1117.29 |      |     |      |
| 1632.23 | 1117.3    | 1651.36 | 1117.34 | 1652.17 | 1117.35 | 1652.4  | 1117.34 | 1653.45 | 1117.35 |      |     |      |
| 1660.14 | 1117.49   | 1661.05 | 1117.52 | 1661.87 | 1117.54 | 1663.52 | 1117.56 | 1664.37 | 1117.59 |      |     |      |
| 1665.67 | 1117.6    | 1668.5  | 1117.69 | 1669.75 | 1117.69 | 1678.73 | 1117    | 1860.45 | 1117    |      |     |      |
| 1860.94 | 1117.02   | 1861.02 | 1117.02 | 1864.73 | 1117.14 | 1865.36 | 1117.14 | 1904.67 | 1118    |      |     |      |
| 1933.07 | 1118      | 1938.54 | 1118.13 | 1940.27 | 1118.15 | 1940.45 | 1118.14 | 1943    | 1118.2  |      |     |      |
| 1945    | 1118.24   | 1947.87 | 1118.29 | 1948.15 | 1118.28 | 1951.15 | 1118.33 | 2048.99 | 1119    |      |     |      |
| 2050.91 | 1119      | 2058.63 | 1118.99 | 2060.52 | 1119    | 2084.4  | 1119    | 2142.46 | 1118.01 |      |     |      |
| 2142.87 | 1118      | 2146.27 | 1118    | 2155.97 | 1117.66 | 2180.23 | 1117    | 2180.35 | 1117    |      |     |      |
| 2180.48 | 1116.96   | 2184.1  | 1116    | 2185.15 | 1115.59 | 2186.77 | 1115    | 2189.55 | 1114.3  |      |     |      |
| 2190.75 | 1114      | 2202.83 | 1114    | 2203.27 | 1114.13 | 2206.1  | 1115    | 2208.85 | 1116    |      |     |      |
| 2211.49 | 1116.97   | 2211.58 | 1117    | 2214.22 | 1118    | 2215.56 | 1118.51 | 2216.87 | 1119    |      |     |      |
| 2217.73 | 1119.32   | 2219.55 | 1120    | 2222.24 | 1121    | 2224.49 | 1121.83 | 2224.94 | 1122    |      |     |      |
| 2225.3  | 1122.16   | 2227.25 | 1123    | 2228.47 | 1123.65 | 2229.13 | 1124    | 2230.12 | 1124.52 |      |     |      |
| 2231.03 | 1125      | 2231.25 | 1125.11 | 2233.07 | 1126    | 2239.63 | 1126.75 | 2242.03 | 1126.91 |      |     |      |
| 2243.19 | 1126.95   | 2243.7  | 1126.84 | 2244.9  | 1126.8  | 2247.68 | 1126    | 2248.2  | 1125.68 |      |     |      |
| 2249.26 | 1125      | 2250.53 | 1124.64 | 2252.56 | 1124    | 2254.57 | 1124    | 2256.62 | 1123.82 |      |     |      |
| 2260.29 | 1123.77   | 2262.22 | 1123.34 | 2262.64 | 1123.31 | 2263.77 | 1123    | 2264.32 | 1123    |      |     |      |
| 2277.2  | 1122.43   | 2283.7  | 1122    | 2287.02 | 1121    | 2288.9  | 1120.1  | 2289.1  | 1120    |      |     |      |
| 2291.8  | 1118.58   | 2292.92 | 1118    | 2294.53 | 1117.16 | 2294.84 | 1117    | 2296.76 | 1116    |      |     |      |
| 2299.21 | 1114.73   | 2301.72 | 1113.45 | 2302.59 | 1113    | 2304.43 | 1112.07 | 2304.56 | 1112    |      |     |      |
| 2304.86 | 1111.85   | 2306.58 | 1111    | 2308.1  | 1110.26 | 2309.16 | 1109.75 | 2310.84 | 1109    |      |     |      |
| 2312.81 | 1108.13   | 2313.11 | 1108    | 2313.36 | 1107.89 | 2315.4  | 1107    | 2317.08 | 1106.3  |      |     |      |
| 2317.82 | 1106      | 2319.78 | 1105.64 | 2321.26 | 1105.37 | 2324.19 | 1104.84 | 2328.9  | 1104    |      |     |      |
| 2329.98 | 1104      | 2331.76 | 1104.44 | 2334.14 | 1105    | 2341.05 | 1105    | 2342.45 | 1104.48 |      |     |      |
| 2345.03 | 1103.51   | 2346.46 | 1103    | 2348.63 | 1102.23 | 2349.27 | 1102    | 2351.4  | 1101.23 |      |     |      |
| 2352.03 | 1101      | 2352.29 | 1100.9  | 2354.77 | 1100    | 2356.23 | 1099.46 | 2356.8  | 1099.25 |      |     |      |
| 2357.5  | 1099      | 2358.23 | 1098.75 | 2359.74 | 1098.25 | 2360.46 | 1098    | 2360.88 | 1097.9  |      |     |      |
| 2362.24 | 1097.57   | 2364.08 | 1097.12 | 2364.55 | 1097    | 2365    | 1096.89 | 2368.51 | 1096    |      |     |      |
| 2370.73 | 1095.45   | 2372.73 | 1095    | 2375.61 | 1095    | 2376.13 | 1095.11 | 2380.11 | 1096    |      |     |      |
| 2381.94 | 1096.5    | 2383.61 | 1097    | 2386.88 | 1097.99 | 2386.93 | 1098.01 | 2390.06 | 1099    |      |     |      |
| 2390.5  | 1099.15   | 2391.9  | 1099.62 | 2393.04 | 1100    | 2393.35 | 1100.12 | 2395.65 | 1101    |      |     |      |
| 2399.15 | 1101      | 2405.28 | 1104.67 | 2430.46 | 1105.87 | 2483.88 | 1093.69 | 2629.48 | 1093.64 |      |     |      |
| 2672.46 | 1093.61   | 2795.14 | 1093.12 | 2876.43 | 1093.47 | 2933.7  | 1119.87 | 2947.64 | 1120.19 |      |     |      |
| 2951.87 | 1119.85   | 2953.66 | 1119.86 | 2958.37 | 1119.91 | 2960.56 | 1119.92 | 2962.82 | 1119.94 |      |     |      |
| 2964.04 | 1119.96   | 2965.17 | 1119.96 | 2966.46 | 1119.98 | 2979.51 | 1120.09 | 2980.41 | 1120.1  |      |     |      |
| 2981.19 | 1120.1    | 2981.88 | 1120.11 | 2982.28 | 1120.11 | 2982.66 | 1120.12 | 2983.34 | 1120.12 |      |     |      |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2997.67 | 1120.25 | 2998.59 | 1120.26 | 3028.29 | 1120.51 | 3028.83 | 1120.51 | 3029.05 | 1120.52 |
| 3037.08 | 1120.57 | 3039.09 | 1120.59 | 3041.65 | 1120.6  | 3041.96 | 1120.61 | 3043.19 | 1120.61 |
| 3043.46 | 1120.62 | 3045.74 | 1120.63 | 3046.47 | 1120.64 | 3053.18 | 1120.69 | 3054.82 | 1120.7  |
| 3055.75 | 1120.7  | 3056.45 | 1120.71 | 3057.1  | 1120.71 | 3058.12 | 1120.72 | 3066.18 | 1120.78 |
| 3066.86 | 1120.78 | 3083.06 | 1120.91 | 3084.76 | 1120.93 | 3112.67 | 1121.15 | 3117.94 | 1121.2  |
| 3141.36 | 1121.38 | 3144.43 | 1121.4  | 3146.63 | 1121.41 | 3147.92 | 1121.42 | 3149.75 | 1121.43 |
| 3150.51 | 1121.44 | 3150.91 | 1121.44 | 3156.27 | 1121.48 | 3158.56 | 1121.49 | 3162.02 | 1121.52 |
| 3165.14 | 1121.54 | 3165.47 | 1121.54 | 3167.63 | 1121.55 | 3169.18 | 1121.57 | 3170.56 | 1121.57 |
| 3170.88 | 1121.58 | 3175.71 | 1121.61 | 3178.2  | 1121.62 | 3181.49 | 1121.65 | 3184.02 | 1121.66 |
| 3188.64 | 1121.69 | 3188.83 | 1121.7  | 3189.31 | 1121.7  | 3196.71 | 1121.75 | 3197.5  | 1121.76 |
| 3203.09 | 1121.79 | 3211.35 | 1121.85 | 3212.24 | 1121.85 | 3212.93 | 1121.86 | 3215.37 | 1121.87 |
| 3216.53 | 1121.88 | 3218.06 | 1121.89 | 3221.45 | 1121.92 | 3221.89 | 1121.92 | 3221.95 | 1121.92 |
| 3228.15 | 1121.96 | 3230.45 | 1121.98 | 3233.02 | 1121.99 | 3237.09 | 1122.02 | 3237.61 | 1122.02 |
| 3239.93 | 1122.04 | 3240.63 | 1122.04 | 3240.98 | 1122.05 | 3243.3  | 1122.06 | 3244.59 | 1122.07 |
| 3245.94 | 1122.09 | 3247.72 | 1122.1  | 3248.46 | 1122.11 | 3249.5  | 1122.11 | 3251.48 | 1122.13 |
| 3253.96 | 1122.15 | 3255    | 1122.16 | 3255.74 | 1122.16 | 3259.91 | 1122.19 | 3261.09 | 1122.19 |
| 3264.96 | 1122.21 | 3265.53 | 1122.22 | 3266.88 | 1122.23 | 3267.21 | 1122.23 | 3268.79 | 1122.24 |
| 3269.5  | 1122.28 | 3269.7  | 1122.29 | 3270.49 | 1122.34 | 3279.34 | 1123    | 3611.62 | 1123    |
| 3630.2  | 1123.53 | 3642.5  | 1123.85 | 3643.11 | 1123.86 | 3643.85 | 1123.88 | 3644.45 | 1123.9  |
| 3644.83 | 1123.91 | 3646.45 | 1124    | 3666.31 | 1125    | 3670.31 | 1125.09 | 3673.03 | 1125.16 |
| 3706.82 | 1125.94 | 3707.88 | 1125.96 | 3709.56 | 1126    | 3780.96 | 1126    | 3851.62 | 1125    |
| 3937.94 | 1125    | 3995.25 | 1126    | 3995.79 | 1126    | 3999.99 | 1126.1  | 4035.73 | 1127    |
| 4043.97 | 1127.44 | 4054.89 | 1128    | 4060.71 | 1128.11 | 4063.6  | 1128.16 | 4108.55 | 1129    |
| 4201.74 | 1129    |         |         |         |         |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .04 2283.7 .035 2933.7 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 2283.7 2933.7 296.66 307.65 318.63 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 2283.7 1122 F  
 2934.53 4201.74 1119.7 F  
 Left Levee Station= 2283.7 Elevation= 1122

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 217.76

INPUT Description:

|         |           |         |         |         |         |         |         |         |         |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|
| Station | Elevation | Data    | num=    | 211     |         |         |         |         |         |
| Sta     | Elev      | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    |
| 0       | 1125      | .98     | 1125.01 | 41.36   | 1125.14 | 147.32  | 1125.27 | 190.1   | 1125.44 |
| 272.12  | 1125      | 481.35  | 1124.58 | 485.92  | 1124.51 | 500.97  | 1124.31 | 520.37  | 1124    |
| 524     | 1123.82   | 558.93  | 1123.63 | 576.5   | 1124    | 649.26  | 1123.95 | 652.35  | 1123.92 |
| 726.74  | 1123      | 800.09  | 1122.8  | 800.81  | 1122.79 | 812.72  | 1122.77 | 813.38  | 1122.76 |
| 828.36  | 1122.69   | 829.21  | 1122.67 | 840.43  | 1122.56 | 869.22  | 1122    | 870.51  | 1121.96 |
| 870.54  | 1121.84   | 870.76  | 1121    | 870.9   | 1120.48 | 871.03  | 1120    | 871.2   | 1119.45 |
| 871.33  | 1119      | 871.51  | 1118.84 | 872.01  | 1118.41 | 872.17  | 1118.27 | 872.35  | 1118.11 |
| 872.47  | 1118      | 962.95  | 1117.63 | 1006.99 | 1118    | 1034.18 | 1118.02 | 1038.28 | 1118.08 |
| 1116.66 | 1118.6    | 1127.93 | 1118.59 | 1188.16 | 1118    | 1251.56 | 1117.9  | 1266.05 | 1117    |
| 1287.32 | 1116      | 1333.39 | 1114    | 1337.77 | 1113.82 | 1356.95 | 1113    | 1377.24 | 1113.47 |
| 1377.41 | 1114      | 1377.53 | 1114.39 | 1377.71 | 1115    | 1405.03 | 1115.18 | 1593.35 | 1116    |
| 1669.19 | 1115.3    | 1671.08 | 1115.26 | 1673.2  | 1115.23 | 1673.65 | 1115.22 | 1676.24 | 1115.19 |
| 1687.15 | 1115.04   | 1689.57 | 1115    | 1696.78 | 1114.01 | 1704.09 | 1114.19 | 1707.94 | 1115    |
| 1711.69 | 1115.65   | 1713.74 | 1116    | 1786.38 | 1115.02 | 1786.47 | 1115    | 1801.45 | 1115.89 |
| 1802.16 | 1116      | 1802.53 | 1116.02 | 1849.72 | 1117    | 1912.9  | 1117.17 | 1919.38 | 1117.2  |
| 1929.27 | 1117.27   | 1932.57 | 1117.3  | 1934.92 | 1117.33 | 1937.98 | 1117.39 | 1939.56 | 1117.41 |
| 1942.01 | 1117.47   | 1942.99 | 1117.48 | 1946.2  | 1117.56 | 1947.04 | 1117.57 | 1954.38 | 1117.73 |
| 1964.74 | 1118      | 2283.29 | 1118.95 | 2283.49 | 1119    | 2283.64 | 1119.09 | 2285.18 | 1120    |
| 2285.71 | 1120.27   | 2287.21 | 1121    | 2289.47 | 1121.8  | 2289.98 | 1122    | 2352.26 | 1121.41 |
| 2353.22 | 1121      | 2354.2  | 1120.57 | 2355.52 | 1120    | 2357.04 | 1119.32 | 2357.8  | 1119    |
| 2360.13 | 1118      | 2361.22 | 1117.53 | 2362.46 | 1117    | 2363.15 | 1116.7  | 2364.73 | 1116    |
| 2366.15 | 1115.36   | 2366.93 | 1115    | 2368.82 | 1114.03 | 2368.98 | 1113.95 | 2370.82 | 1113    |
| 2371.97 | 1112.4    | 2372.73 | 1112    | 2373.82 | 1111.43 | 2374.67 | 1111    | 2376.15 | 1110.22 |
| 2376.49 | 1110.04   | 2376.66 | 1109.95 | 2378.51 | 1109    | 2380.15 | 1108.15 | 2380.43 | 1108    |
| 2380.89 | 1107.83   | 2383.01 | 1107    | 2384.82 | 1106.46 | 2386.27 | 1106    | 2393.13 | 1105.92 |
| 2398.37 | 1105.71   | 2398.56 | 1105.7  | 2400.63 | 1105.71 | 2402.28 | 1105.68 | 2407.17 | 1105.44 |
| 2412.83 | 1105      | 2413.39 | 1104.83 | 2416.1  | 1104    | 2419.25 | 1103.02 | 2419.37 | 1102.99 |
| 2422.63 | 1102      | 2425.34 | 1101.2  | 2426.05 | 1101    | 2427.04 | 1100.7  | 2429.33 | 1100    |
| 2432.56 | 1099      | 2433.76 | 1098.62 | 2435.62 | 1098    | 2438.35 | 1097.23 | 2439.17 | 1097    |
| 2440.23 | 1096.72   | 2443.07 | 1096    | 2445.89 | 1095.3  | 2447.06 | 1095    | 2453.72 | 1095.25 |
| 2456.02 | 1096      | 2459.04 | 1097    | 2461.99 | 1098    | 2465.29 | 1099    | 2468.83 | 1100    |
| 2472.37 | 1101      | 2481.82 | 1104.42 | 2507.33 | 1105.87 | 2561.83 | 1094.83 | 2621.43 | 1093.48 |
| 2684.77 | 1093.94   | 2731.56 | 1093.12 | 2872.59 | 1092.68 | 2979.31 | 1093.39 | 3036.05 | 1119.79 |
| 3049.86 | 1120.06   | 3242.72 | 1123    | 3579.54 | 1122.75 | 3664.11 | 1122    | 3718.66 | 1121.97 |
| 3719.33 | 1122      | 3739.67 | 1122.79 | 3743.59 | 1123    | 3761.33 | 1123.78 | 3767.39 | 1124    |
| 3788.64 | 1124.63   | 3798.33 | 1125    | 3812.76 | 1125.27 | 3814.72 | 1125.29 | 3826.55 | 1125.5  |
| 3829.02 | 1125.52   | 3835.67 | 1125.63 | 3837.68 | 1125.64 | 3842.51 | 1125.72 | 3847.44 | 1125.78 |
| 3883.61 | 1125.75   | 3933.91 | 1125.3  | 3935.99 | 1125.29 | 3967.66 | 1125    | 3979.03 | 1125.03 |
| 3988.7  | 1125.11   | 3990.16 | 1125.13 | 3994.01 | 1125.17 | 3995.88 | 1125.2  | 4002.95 | 1125.3  |
| 4006.26 | 1125.34   | 4039.57 | 1125.81 | 4040.82 | 1125.83 | 4051.65 | 1125.98 | 4052.57 | 1125.99 |
| 4053.24 | 1126      | 4068.92 | 1126.2  | 4069.76 | 1126.22 | 4073.26 | 1126.27 | 4077.47 | 1126.34 |

4084.9 1126.45 4087.57 1126.5 4094.53 1126.61 4098.79 1126.69 4149.49 1127.34  
 4182.34 1127.84

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .04 2352.26 .035 3036.05 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 2352.26 3036.05 221.68 229.76 237.84 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 2352.26 1121.41 F  
 3037.97 4182.34 1123 F  
 Left Levee Station= 2352.26 Elevation= 1121.41

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 217.71

INPUT

Description:

| Station | Elevation | Data    | num=    | 308     | Sta     | Elev    | Sta     | Elev    | Sta     | Elev |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|------|
| 0       | 1125      | 223.03  | 1125    | 245.54  | 1124.87 | 249.8   | 1124.87 | 274.67  | 1125    |      |
| 525.76  | 1125      | 533.07  | 1124.84 | 535.69  | 1124.79 | 572.64  | 1124    | 573.25  | 1124    |      |
| 573.83  | 1123.96   | 586.58  | 1123    | 678.94  | 1123    | 687.49  | 1122.94 | 687.72  | 1122.94 |      |
| 723.26  | 1122.68   | 724.11  | 1122.67 | 730.19  | 1122.63 | 732.28  | 1122.62 | 735.39  | 1122.62 |      |
| 747.2   | 1122.55   | 749.91  | 1122.52 | 755.24  | 1122.49 | 757.4   | 1122.46 | 764.21  | 1122.43 |      |
| 765.91  | 1122.41   | 772.46  | 1122.38 | 774.89  | 1122.34 | 782.98  | 1122.32 | 783.98  | 1122.3  |      |
| 785.71  | 1122.27   | 787.52  | 1122.25 | 816.32  | 1122    | 848.61  | 1122    | 849.32  | 1121.98 |      |
| 849.48  | 1121.97   | 849.73  | 1121.97 | 854.49  | 1121.8  | 856.36  | 1121.77 | 859.52  | 1121.71 |      |
| 864.23  | 1121.63   | 871.29  | 1121.44 | 877.82  | 1121.33 | 889.5   | 1121.09 | 896.46  | 1121.01 |      |
| 896.58  | 1121.01   | 897.55  | 1121    | 908.52  | 1120.76 | 910.5   | 1120.69 | 919.99  | 1120.5  |      |
| 921.68  | 1120.42   | 924.24  | 1120.37 | 926.67  | 1120.23 | 929.19  | 1120.18 | 931.56  | 1120    |      |
| 936.39  | 1120      | 936.55  | 1119.61 | 936.79  | 1119    | 937.3   | 1118.39 | 937.56  | 1118    |      |
| 990.44  | 1117.09   | 993.09  | 1117.05 | 993.77  | 1117.03 | 995.71  | 1117    | 1014.74 | 1117    |      |
| 1027.03 | 1117.32   | 1027.67 | 1117.32 | 1036.8  | 1117.55 | 1061.29 | 1117.59 | 1064.09 | 1117.53 |      |
| 1066.89 | 1117.46   | 1072.17 | 1117.34 | 1072.95 | 1117.33 | 1074.93 | 1117.28 | 1077.65 | 1117.24 |      |
| 1078.99 | 1117.2    | 1079.34 | 1117.2  | 1085.37 | 1117.09 | 1085.49 | 1117.09 | 1086.58 | 1117.07 |      |
| 1091.03 | 1117      | 1144.08 | 1117    | 1176.35 | 1117.1  | 1177    | 1117.1  | 1177.61 | 1117.09 |      |
| 1178.33 | 1117.09   | 1180.52 | 1117.1  | 1181.64 | 1117.1  | 1182.86 | 1117.09 | 1196.94 | 1117.14 |      |
| 1198.41 | 1117.14   | 1199.17 | 1117.13 | 1199.99 | 1117.14 | 1202.13 | 1117.16 | 1205.63 | 1117.2  |      |
| 1275.57 | 1117.64   | 1282.15 | 1117.69 | 1314.04 | 1118    | 1318.46 | 1118    | 1329.08 | 1117.26 |      |
| 1332.91 | 1117      | 1378.12 | 1115    | 1391.96 | 1114.42 | 1393.75 | 1114.4  | 1399.02 | 1114.33 |      |
| 1404.64 | 1114.16   | 1412.43 | 1114.08 | 1420.42 | 1114.04 | 1420.77 | 1114.05 | 1428.69 | 1114    |      |
| 1429.54 | 1113.35   | 1429.97 | 1113    | 1447.81 | 1113    | 1447.83 | 1113.11 | 1447.95 | 1113.13 |      |
| 1448.36 | 1114      | 1453.87 | 1114.1  | 1454.71 | 1114.11 | 1503.26 | 1115    | 1507.19 | 1115    |      |
| 1515.8  | 1115.06   | 1676.01 | 1116    | 1703.8  | 1116    | 1761.84 | 1115    | 1864.29 | 1115    |      |
| 1867.93 | 1116      | 1869.07 | 1116.28 | 1871.93 | 1117    | 1996.33 | 1117.77 | 2001.74 | 1117.79 |      |
| 2002.95 | 1117.79   | 2033.07 | 1118    | 2139.66 | 1118    | 2157.21 | 1117.56 | 2158.02 | 1117.56 |      |
| 2160.6  | 1117.52   | 2162.67 | 1117.52 | 2163.46 | 1117.52 | 2167.02 | 1117.45 | 2167.18 | 1117.45 |      |
| 2175.91 | 1118      | 2188.55 | 1118    | 2235.78 | 1117.51 | 2240.97 | 1117.48 | 2243.67 | 1117.45 |      |
| 2246.41 | 1117.43   | 2249.33 | 1117.4  | 2255.61 | 1117.35 | 2285.82 | 1117.23 | 2286.04 | 1117.23 |      |
| 2295.88 | 1117.43   | 2300.87 | 1117.6  | 2313.28 | 1118    | 2316.58 | 1118.92 | 2316.86 | 1119    |      |
| 2318.87 | 1119.88   | 2319.14 | 1120    | 2319.76 | 1120.26 | 2321.56 | 1121    | 2322.75 | 1121.46 |      |
| 2324.13 | 1122      | 2326.21 | 1122.81 | 2326.7  | 1123    | 2372.33 | 1123    | 2381.92 | 1122.38 |      |
| 2386.03 | 1122      | 2387.22 | 1121.44 | 2388.24 | 1121    | 2390.22 | 1120.08 | 2390.39 | 1120    |      |
| 2390.54 | 1119.93   | 2392.66 | 1119    | 2393.78 | 1118.48 | 2394.88 | 1118    | 2396.22 | 1117.42 |      |
| 2397.2  | 1117      | 2399.29 | 1116.02 | 2399.34 | 1116    | 2399.41 | 1115.97 | 2401.51 | 1115    |      |
| 2402.58 | 1114.5    | 2403.64 | 1114    | 2404.99 | 1113.36 | 2405.74 | 1113    | 2407.25 | 1112.26 |      |
| 2407.79 | 1112      | 2408.11 | 1111.85 | 2409.93 | 1111    | 2411.92 | 1110.08 | 2412.09 | 1110    |      |
| 2413.14 | 1109.55   | 2414.44 | 1109    | 2416.37 | 1108.78 | 2425.62 | 1108.14 | 2426.76 | 1108    |      |
| 2428.78 | 1107.14   | 2429.09 | 1107    | 2429.96 | 1106.62 | 2431.44 | 1106    | 2433.78 | 1105    |      |
| 2436.11 | 1104.7    | 2438.29 | 1104.58 | 2440.22 | 1104.4  | 2441.85 | 1104.25 | 2446.9  | 1104    |      |
| 2473.21 | 1104      | 2476.04 | 1103    | 2476.48 | 1102.85 | 2478.88 | 1102    | 2481.44 | 1101.1  |      |
| 2481.71 | 1101      | 2482.02 | 1100.89 | 2487.23 | 1099.06 | 2487.4  | 1099    | 2487.66 | 1098.91 |      |
| 2490.25 | 1098      | 2494.15 | 1097.03 | 2494.27 | 1097    | 2498.47 | 1096.05 | 2498.66 | 1096    |      |
| 2499.92 | 1095.71   | 2502.98 | 1095    | 2511.47 | 1095    | 2514.04 | 1095.89 | 2514.37 | 1096    |      |
| 2516.68 | 1096.79   | 2517.84 | 1097.19 | 2520.24 | 1098    | 2522.52 | 1098.81 | 2523.05 | 1099    |      |
| 2523.59 | 1099.19   | 2525.87 | 1100    | 2527.83 | 1100.6  | 2529.15 | 1101    | 2532.48 | 1101    |      |
| 2536    | 1103.57   | 2565.91 | 1105.86 | 2622.8  | 1093.1  | 2791.51 | 1092.8  | 2944.88 | 1092.58 |      |
| 3059.47 | 1091.49   | 3116.16 | 1119.83 | 3129.41 | 1120.09 | 3129.45 | 1120.58 | 3130.26 | 1120.59 |      |
| 3131.68 | 1120.6    | 3132.07 | 1120.6  | 3132.45 | 1120.61 | 3133.79 | 1120.61 | 3134.34 | 1120.62 |      |
| 3134.9  | 1120.62   | 3135.45 | 1120.63 | 3136.57 | 1120.63 | 3136.66 | 1120.64 | 3137.12 | 1120.64 |      |
| 3138.03 | 1120.65   | 3139.41 | 1120.65 | 3139.86 | 1120.66 | 3140.79 | 1120.66 | 3141.72 | 1120.67 |      |
| 3143.88 | 1120.69   | 3144.88 | 1120.69 | 3145.42 | 1120.7  | 3145.97 | 1120.7  | 3148.12 | 1120.72 |      |
| 3149.23 | 1120.72   | 3150.8  | 1120.74 | 3161.58 | 1120.81 | 3161.82 | 1120.81 | 3174.42 | 1120.9  |      |
| 3177.57 | 1120.93   | 3218.47 | 1121.22 | 3219.14 | 1121.27 | 3227.54 | 1122    | 3363.76 | 1122    |      |
| 3367.93 | 1122.05   | 3389.78 | 1122.28 | 3396.27 | 1122.36 | 3460.92 | 1123    | 3466.42 | 1123    |      |
| 3469.93 | 1123.05   | 3525.62 | 1124    | 3572.39 | 1124    | 3599.31 | 1123.61 | 3610.3  | 1123.42 |      |
| 3618.79 | 1123.3    | 3635.8  | 1123    | 3702.47 | 1122.18 | 3715.77 | 1122    | 3767.92 | 1121    |      |
| 3810.4  | 1121      | 3810.46 | 1121.01 | 3821.31 | 1122    | 3823.86 | 1122.21 | 3833.3  | 1123    |      |
| 3864.69 | 1124      | 3891.88 | 1125    | 4008.42 | 1125    | 4033.43 | 1124    | 4066.89 | 1123    |      |
| 4118.33 | 1123      | 4119.13 | 1123.02 | 4120.22 | 1123.05 | 4138.32 | 1123.48 | 4162.87 | 1124    |      |
| 4163.3  | 1124.02   | 4163.54 | 1124.03 | 4164.91 | 1124.11 |         |         |         |         |      |

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
0 .04 2381.92 .035 3116.16 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
2381.92 3116.16 259.33 269.03 278.74 .1 .3
Ineffective Flow num= 2
Sta L Sta R Elev Permanent
0 2381.92 1122.38 F
3117.64 4164.91 1120.5 F
Left Levee Station= 2381.92 Elevation= 1122.38

CROSS SECTION

RIVER: Salt REACH: 1 RS: 217.66

INPUT Description:

Table with 11 columns: Station, Elevation, Data, num=, 331, Sta, Elev, Sta, Elev, Sta, Elev. It contains a long list of station and elevation data points.

4142.03 1122.81

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 2419.16 .035 3207.61 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 2419.16 3207.61 228.6 237.65 246.71 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 2419.16 1121.44 F  
 3208.35 4142.03 1120.3 F  
 Left Levee Station= 2419.16 Elevation= 1121.44

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 217.62

INPUT

Description:

| Station Elevation Data |         | num= 492 |         |         |         |         |         |         |         |     |      |
|------------------------|---------|----------|---------|---------|---------|---------|---------|---------|---------|-----|------|
| Sta                    | Elev    | Sta      | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta | Elev |
| 0                      | 1123.64 | 53.35    | 1124    | 81.15   | 1124    | 219.03  | 1124.97 | 219.24  | 1124.97 |     |      |
| 222.91                 | 1125    | 265.25   | 1125    | 266.25  | 1124.42 | 266.99  | 1124    | 281.63  | 1123.26 |     |      |
| 286.46                 | 1123    | 291.27   | 1123    | 297.91  | 1123.14 | 299.36  | 1123.14 | 306.7   | 1123.26 |     |      |
| 311.8                  | 1123.36 | 315.71   | 1123.34 | 401.73  | 1123.38 | 426.76  | 1123.12 | 428.77  | 1123.11 |     |      |
| 437.92                 | 1123    | 490.36   | 1123    | 527.07  | 1122.78 | 545.02  | 1122.73 | 555.48  | 1122.65 |     |      |
| 562.25                 | 1122.63 | 567.99   | 1122.58 | 582.42  | 1122.52 | 590.38  | 1122.46 | 595.37  | 1122.44 |     |      |
| 605.14                 | 1122.36 | 607.83   | 1122.35 | 618.91  | 1122.27 | 619.65  | 1122.26 | 626.92  | 1122.21 |     |      |
| 627.5                  | 1122.21 | 648.9    | 1122.04 | 649.13  | 1122.04 | 654.19  | 1122    | 666.74  | 1121.72 |     |      |
| 702.86                 | 1121    | 746      | 1121    | 747.94  | 1121.02 | 868.32  | 1121.22 | 868.64  | 1121.22 |     |      |
| 877.39                 | 1121.19 | 906.16   | 1121    | 931.19  | 1121    | 940.09  | 1120.79 | 945.02  | 1120.69 |     |      |
| 953.95                 | 1120.47 | 977.76   | 1120    | 978.23  | 1120    | 980.18  | 1119.95 | 980.46  | 1119.95 |     |      |
| 984.59                 | 1119.83 | 985.55   | 1119.83 | 990.6   | 1119.7  | 992.26  | 1119.69 | 993.85  | 1119.67 |     |      |
| 1024.66                | 1119    | 1048.35  | 1119    | 1066.25 | 1118    | 1066.47 | 1117.73 | 1067.06 | 1117    |     |      |
| 1068.23                | 1116.84 | 1074     | 1116    | 1103.3  | 1116    | 1114.38 | 1116.23 | 1116.96 | 1116.27 |     |      |
| 1124.69                | 1116.43 | 1126.73  | 1116.46 | 1130.78 | 1116.54 | 1134.21 | 1116.57 | 1136.38 | 1116.61 |     |      |
| 1137.73                | 1116.64 | 1140.63  | 1116.66 | 1143.36 | 1116.71 | 1146.29 | 1116.73 | 1159.32 | 1117    |     |      |
| 1285.26                | 1117    | 1301.94  | 1117.13 | 1302.16 | 1117.13 | 1313.45 | 1117    | 1386.95 | 1117    |     |      |
| 1390.81                | 1116.85 | 1397.19  | 1116.66 | 1399.71 | 1116.56 | 1403.24 | 1116.47 | 1412.39 | 1116.07 |     |      |
| 1412.93                | 1116.05 | 1413.95  | 1116    | 1422.3  | 1116    | 1425.3  | 1116.09 | 1425.61 | 1116.09 |     |      |
| 1430.92                | 1116.24 | 1432.48  | 1116.24 | 1437.3  | 1116.35 | 1438.3  | 1116.34 | 1441.53 | 1116.42 |     |      |
| 1442.57                | 1116.41 | 1444.78  | 1116.45 | 1446.32 | 1116.44 | 1475.26 | 1116    | 1568.44 | 1116    |     |      |
| 1672.12                | 1116.65 | 1678.7   | 1116.68 | 1695.33 | 1116.72 | 1700.15 | 1116.78 | 1704.94 | 1116.78 |     |      |
| 1712.25                | 1116.87 | 1714.31  | 1116.87 | 1724.07 | 1117    | 1761.82 | 1117    | 1764.13 | 1116.47 |     |      |
| 1770.57                | 1116.24 | 1772.21  | 1116.1  | 1777.46 | 1116    | 1779.13 | 1115    | 1779.37 | 1114.87 |     |      |
| 1779.95                | 1114.58 | 1780.7   | 1114.2  | 1780.94 | 1114.69 | 1782.07 | 1114.49 | 1782.59 | 1114.69 |     |      |
| 1783.74                | 1114.59 | 1784.39  | 1114.76 | 1789.89 | 1115    | 1796.56 | 1115    | 1798.55 | 1115.31 |     |      |
| 1803.51                | 1115.45 | 1810.74  | 1115.93 | 1811.94 | 1116    | 1824.28 | 1116    | 1901.95 | 1115    |     |      |
| 1902.22                | 1114.93 | 1905.65  | 1114    | 1908.39 | 1113    | 1909.35 | 1112.7  | 1911.52 | 1112    |     |      |
| 1912.83                | 1112    | 1914.2   | 1112.38 | 1916.48 | 1113    | 1919.67 | 1113.5  | 1922.79 | 1114    |     |      |
| 1941.8                 | 1114.38 | 1976.71  | 1114.31 | 1979.9  | 1114.16 | 1980.02 | 1114.16 | 1984.18 | 1114    |     |      |
| 2001.27                | 1114    | 2003.62  | 1114.14 | 2004.34 | 1114.16 | 2010.36 | 1114.46 | 2014.07 | 1114.5  |     |      |
| 2018.41                | 1114.56 | 2022.98  | 1114.71 | 2028.4  | 1114.79 | 2030.8  | 1114.82 | 2032.53 | 1114.87 |     |      |
| 2033.06                | 1114.87 | 2033.87  | 1114.9  | 2039.45 | 1114.89 | 2040.02 | 1114.9  | 2043.93 | 1114.89 |     |      |
| 2048.49                | 1114.93 | 2048.76  | 1114.93 | 2054.24 | 1114.92 | 2054.74 | 1114.91 | 2061.81 | 1114.89 |     |      |
| 2062.47                | 1114.89 | 2067.84  | 1114.87 | 2068.12 | 1114.87 | 2072.08 | 1114.86 | 2072.45 | 1114.86 |     |      |
| 2078.23                | 1114.85 | 2079.14  | 1114.84 | 2079.99 | 1114.84 | 2086.5  | 1114.82 | 2087.35 | 1114.82 |     |      |
| 2093.02                | 1114.8  | 2094.03  | 1114.8  | 2095.34 | 1114.79 | 2099.19 | 1114.78 | 2101.48 | 1114.78 |     |      |
| 2104.26                | 1114.76 | 2105.55  | 1114.76 | 2107.86 | 1114.74 | 2116.96 | 1114.7  | 2118.56 | 1114.69 |     |      |
| 2125.69                | 1114.66 | 2148.77  | 1114.81 | 2149.95 | 1114.81 | 2153.52 | 1114.85 | 2154.4  | 1114.85 |     |      |
| 2155.15                | 1114.84 | 2155.79  | 1114.84 | 2158.22 | 1115    | 2246.36 | 1115    | 2249.78 | 1114.87 |     |      |
| 2250.26                | 1114.86 | 2250.88  | 1114.84 | 2255.87 | 1114.67 | 2257.92 | 1114.61 | 2260.28 | 1114.53 |     |      |
| 2261.91                | 1114.47 | 2265.31  | 1114.37 | 2267.13 | 1114.31 | 2271.59 | 1114.18 | 2272.11 | 1114.16 |     |      |
| 2276.46                | 1114    | 2289.59  | 1114    | 2293.12 | 1114.17 | 2297.63 | 1114.42 | 2301.2  | 1114.58 |     |      |
| 2303.39                | 1114.69 | 2307.29  | 1114.87 | 2307.44 | 1114.88 | 2308.56 | 1115    | 2308.68 | 1115    |     |      |
| 2318.68                | 1115.81 | 2320.76  | 1116    | 2321.39 | 1116.14 | 2323.06 | 1116.41 | 2324.73 | 1116.69 |     |      |
| 2326.46                | 1117    | 2326.65  | 1117.04 | 2329.78 | 1118    | 2333.17 | 1118.98 | 2333.24 | 1119    |     |      |
| 2333.42                | 1119.05 | 2336.75  | 1120    | 2338.16 | 1120.39 | 2340.24 | 1121    | 2399.75 | 1121    |     |      |
| 2441.12                | 1120    | 2442.55  | 1119.29 | 2443.13 | 1119    | 2444.32 | 1118.41 | 2445.16 | 1118    |     |      |
| 2445.42                | 1117.87 | 2447.18  | 1117    | 2448.18 | 1116.5  | 2449.15 | 1116    | 2450.78 | 1115.2  |     |      |
| 2451.17                | 1115    | 2451.48  | 1114.85 | 2453.18 | 1114    | 2454.88 | 1113.16 | 2455.44 | 1112.88 |     |      |
| 2457.22                | 1112    | 2457.62  | 1111.81 | 2459.26 | 1111    | 2461.31 | 1110    | 2463.21 | 1109.1  |     |      |
| 2463.43                | 1109    | 2463.78  | 1108.85 | 2464.66 | 1108.46 | 2465.71 | 1108    | 2468.02 | 1107    |     |      |
| 2469.23                | 1106.48 | 2470.4   | 1106    | 2471.22 | 1105.67 | 2472.86 | 1105    | 2474.05 | 1104.52 |     |      |
| 2475.3                 | 1104    | 2477.26  | 1103.22 | 2480.26 | 1102    | 2482.08 | 1101.91 | 2487.02 | 1101.86 |     |      |
| 2513.8                 | 1101.6  | 2523.98  | 1101    | 2524.92 | 1101    | 2526.29 | 1100.59 | 2528.29 | 1100    |     |      |
| 2529.35                | 1099.68 | 2531.64  | 1099    | 2534.49 | 1098.14 | 2534.97 | 1098    | 2535.4  | 1097.86 |     |      |
| 2537.99                | 1097    | 2539.81  | 1096.37 | 2540.9  | 1096    | 2550.63 | 1095    | 2558.15 | 1095    |     |      |
| 2562.18                | 1095.84 | 2562.94  | 1096    | 2563.49 | 1096.17 | 2566.13 | 1097    | 2568.55 | 1097.75 |     |      |
| 2569.35                | 1098    | 2570.51  | 1098.37 | 2572.54 | 1099    | 2575.6  | 1100    | 2577.05 | 1100.51 |     |      |
| 2578.47                | 1101    | 2580.34  | 1101.66 | 2582.61 | 1102    | 2584.57 | 1102    | 2598.65 | 1101.73 |     |      |
| 2599.11                | 1101.72 | 2604.15  | 1101.63 | 2605.26 | 1101.63 | 2609.85 | 1101.53 | 2610.07 | 1101.52 |     |      |
| 2614.61                | 1101.43 | 2624.52  | 1100.44 | 2624.57 | 1100.43 | 2629.45 | 1099.95 | 2629.55 | 1099.94 |     |      |
| 2629.6                 | 1099.93 | 2634.53  | 1099.44 | 2634.6  | 1099.43 | 2639.54 | 1098.94 | 2639.59 | 1098.93 |     |      |
| 2644.54                | 1098.44 | 2644.59  | 1098.43 | 2654.52 | 1097.44 | 2654.63 | 1097.43 | 2659.52 | 1096.94 |     |      |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2659.63 | 1096.93 | 2664.53 | 1096.44 | 2664.66 | 1096.43 | 2669.53 | 1095.94 | 2669.8  | 1095.92 |
| 2674.53 | 1095.44 | 2679.21 | 1094.98 | 2679.53 | 1094.94 | 2679.64 | 1094.93 | 2679.78 | 1094.92 |
| 2687.39 | 1094.16 | 2687.53 | 1094.15 | 2687.79 | 1094.15 | 2688.3  | 1094.14 | 2692.52 | 1094.13 |
| 2693.21 | 1094.13 | 2697.53 | 1094.12 | 2697.6  | 1094.12 | 2701.78 | 1094.11 | 2702.61 | 1094.11 |
| 2707.23 | 1094.1  | 2707.72 | 1094.1  | 2717.48 | 1094.08 | 2717.59 | 1094.08 | 2722.53 | 1094.06 |
| 2722.58 | 1094.06 | 2727.54 | 1094.05 | 2727.9  | 1094.05 | 2737.39 | 1094.03 | 2740.1  | 1094.03 |
| 2746.31 | 1094.01 | 2747.57 | 1094.01 | 2751.58 | 1094    | 2794.81 | 1094    | 2812    | 1094.25 |
| 2814.68 | 1094.3  | 2816.9  | 1094.3  | 2831.85 | 1094.51 | 2906.59 | 1094.65 | 2941    | 1094.32 |
| 2944.64 | 1094.3  | 2971.49 | 1094    | 3021.13 | 1093    | 3062.28 | 1092    | 3062.55 | 1091.99 |
| 3062.75 | 1091.99 | 3100.31 | 1091.06 | 3103.04 | 1091    | 3104.13 | 1091    | 3121.74 | 1090.68 |
| 3126.08 | 1090.62 | 3128.01 | 1090.58 | 3131.34 | 1090.53 | 3155.16 | 1090    | 3213.54 | 1090    |
| 3224.47 | 1090.46 | 3226.61 | 1090.53 | 3235.93 | 1090.89 | 3237.02 | 1090.92 | 3238.84 | 1091    |
| 3243.02 | 1091.57 | 3246.01 | 1092    | 3248.59 | 1092.72 | 3249.62 | 1093    | 3252.59 | 1093.73 |
| 3253.66 | 1094    | 3256.23 | 1094.64 | 3257.7  | 1095    | 3258.29 | 1095.16 | 3258.4  | 1095.19 |
| 3265.07 | 1095.96 | 3265.29 | 1095.99 | 3265.37 | 1096    | 3265.54 | 1096.02 | 3276.39 | 1097    |
| 3278.76 | 1097.79 | 3279.41 | 1098    | 3281.07 | 1098.7  | 3281.84 | 1099    | 3282.93 | 1099.7  |
| 3283.38 | 1100    | 3284.95 | 1101    | 3285.66 | 1101.44 | 3286.57 | 1102    | 3287.32 | 1102.47 |
| 3288.16 | 1103    | 3288.47 | 1103.5  | 3288.79 | 1104    | 3289.07 | 1104.8  | 3289.14 | 1105    |
| 3289.21 | 1105.21 | 3289.49 | 1106    | 3289.73 | 1106.67 | 3289.85 | 1107    | 3290.01 | 1107.47 |
| 3290.2  | 1108    | 3290.34 | 1108.38 | 3290.56 | 1109    | 3290.7  | 1109.41 | 3290.91 | 1110    |
| 3291.17 | 1110.72 | 3291.26 | 1111    | 3291.43 | 1111.48 | 3291.62 | 1112    | 3291.81 | 1112.52 |
| 3291.97 | 1113    | 3292.19 | 1113.61 | 3292.33 | 1114    | 3292.62 | 1114.82 | 3292.69 | 1115    |
| 3292.74 | 1115.16 | 3293.04 | 1116    | 3293.22 | 1116.51 | 3293.4  | 1117    | 3293.52 | 1117.35 |
| 3293.75 | 1118    | 3293.96 | 1118.59 | 3294.04 | 1118.81 | 3294.11 | 1119    | 3294.14 | 1119.07 |
| 3294.47 | 1120    | 3480.65 | 1120    | 3482.6  | 1120.03 | 3482.88 | 1120.04 | 3483.34 | 1120.05 |
| 3485    | 1120.08 | 3521.21 | 1121    | 3541.03 | 1122    | 3563.68 | 1122.63 | 3590.22 | 1123.25 |
| 3592.99 | 1123.34 | 3609.36 | 1123.81 | 3615.04 | 1124    | 3643.13 | 1124.79 | 3650.01 | 1125    |
| 3650.27 | 1125    | 3703.13 | 1126    | 3741.79 | 1126    | 3804.19 | 1125    | 3805.98 | 1124.94 |
| 3809.32 | 1124.86 | 3809.58 | 1124.85 | 3810.16 | 1124.83 | 3833.05 | 1124    | 3843.04 | 1123.78 |
| 3880.91 | 1123    | 3882.24 | 1123    | 3942.3  | 1122    | 3951.83 | 1121.76 | 3981.1  | 1121.23 |
| 3981.85 | 1121.23 | 3984.33 | 1121.19 | 3985.11 | 1121.19 | 3987.66 | 1121.25 | 3989.59 | 1121.2  |
| 3990.52 | 1121.24 | 3992.97 | 1121.16 | 3993.72 | 1121.21 | 3994.25 | 1121.2  | 3995.47 | 1121.29 |
| 3998.3  | 1121.48 | 4000.24 | 1121.59 | 4001.28 | 1121.67 | 4005.23 | 1122    | 4006.94 | 1122.08 |
| 4007.01 | 1122.08 | 4019.54 | 1122.6  | 4025.14 | 1122.82 | 4028.44 | 1123    | 4059.17 | 1123.8  |
| 4065.99 | 1124    | 4124.42 | 1124    |         |         |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .04 2441.12 .035 3294.47 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 2441.12 3294.47 265.4 277.83 290.26 .1 .3

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 2441.12 1120 F  
 3294.47 4124.42 1120 F  
 Left Levee Station= 2441.12 Elevation= 1120

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 217.57

INPUT  
 Description:

|         |           |         |         |         |         |         |         |         |         |     |      |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|-----|------|
| Station | Elevation | Data    | num=    | 384     |         |         |         |         |         |     |      |
| Sta     | Elev      | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta | Elev |
| 0       | 1123.63   | 60.03   | 1124    | 217.93  | 1124.37 | 219.52  | 1124.38 | 262.05  | 1124    |     |      |
| 342.87  | 1123.78   | 343.7   | 1123    | 344.31  | 1122.42 | 344.75  | 1122    | 345.01  | 1121.75 |     |      |
| 345.78  | 1121      | 372.96  | 1121.76 | 373     | 1122    | 373.13  | 1122.82 | 373.16  | 1123    |     |      |
| 373.19  | 1123.14   | 373.28  | 1123.7  | 373.33  | 1124    | 435.75  | 1123.55 | 438.83  | 1123.5  |     |      |
| 445.92  | 1123.44   | 451.48  | 1123.33 | 459.8   | 1123.19 | 460.87  | 1123.18 | 475.26  | 1122.83 |     |      |
| 479.64  | 1122.73   | 481.41  | 1122.68 | 559.9   | 1122    | 668.12  | 1121.78 | 672.7   | 1121.49 |     |      |
| 679.45  | 1121.11   | 680.09  | 1121.07 | 681.38  | 1121    | 800.35  | 1120.32 | 801.56  | 1120.3  |     |      |
| 802.38  | 1120.31   | 805.4   | 1120.28 | 810.76  | 1120.25 | 814.58  | 1120.22 | 818.42  | 1120    |     |      |
| 957.39  | 1119.26   | 960.29  | 1119.13 | 964.99  | 1118.89 | 973.52  | 1118.48 | 975.54  | 1118.38 |     |      |
| 976     | 1118.39   | 991.31  | 1118    | 1093.32 | 1117.7  | 1098.34 | 1117    | 1099.21 | 1116.88 |     |      |
| 1101.16 | 1116.6    | 1105.49 | 1116    | 1127.68 | 1115.13 | 1130.86 | 1115    | 1148.43 | 1115.29 |     |      |
| 1154.54 | 1115.46   | 1175.64 | 1115.84 | 1182.85 | 1116    | 1190.11 | 1116.33 | 1191.17 | 1116.37 |     |      |
| 1197.49 | 1116.66   | 1199.13 | 1116.71 | 1201.28 | 1116.81 | 1205.55 | 1116.92 | 1208.12 | 1117    |     |      |
| 1476.76 | 1116.63   | 1497.51 | 1116.11 | 1499.89 | 1116    | 1649.91 | 1115.84 | 1670.44 | 1115    |     |      |
| 1683.09 | 1114.87   | 1711.86 | 1114.29 | 1725.95 | 1114.11 | 1727.88 | 1114.1  | 1733.02 | 1114.03 |     |      |
| 1735.68 | 1114      | 1740.38 | 1113.91 | 1752.3  | 1113.72 | 1753.18 | 1113.7  | 1757.59 | 1113.64 |     |      |
| 1759.72 | 1113.6    | 1763.54 | 1113.55 | 1770.12 | 1113.45 | 1774.07 | 1113.38 | 1780.34 | 1113.28 |     |      |
| 1788.71 | 1113.11   | 1792.73 | 1113.02 | 1793.75 | 1113    | 1843.9  | 1112.14 | 1844.14 | 1112.13 |     |      |
| 1850.14 | 1112      | 1885.16 | 1112.36 | 1885.53 | 1112.38 | 1889.56 | 1113    | 1891.7  | 1113.35 |     |      |
| 1895.59 | 1114      | 1928.79 | 1113.34 | 1934.8  | 1113.2  | 1945.46 | 1113    | 1998.7  | 1113.37 |     |      |
| 2004.46 | 1113.57   | 2021.14 | 1113.53 | 2024.45 | 1113.31 | 2029.48 | 1113    | 2030.74 | 1112.92 |     |      |
| 2032.8  | 1112.8    | 2039.64 | 1112.42 | 2041.56 | 1112.33 | 2042.97 | 1112.27 | 2043.5  | 1112.26 |     |      |
| 2044.4  | 1112.25   | 2047.81 | 1112    | 2064.57 | 1112.06 | 2064.67 | 1112.2  | 2065.2  | 1113    |     |      |
| 2065.38 | 1113.21   | 2065.98 | 1114    | 2140.36 | 1114.6  | 2217.01 | 1115    | 2304.9  | 1114.54 |     |      |
| 2309.35 | 1114      | 2316.11 | 1113.89 | 2318.87 | 1113    | 2339.76 | 1113.72 | 2340.39 | 1114    |     |      |
| 2340.97 | 1114.26   | 2342.65 | 1115    | 2343.11 | 1115.28 | 2344.31 | 1116    | 2344.44 | 1116.08 |     |      |
| 2347.1  | 1117.66   | 2347.67 | 1118    | 2348.72 | 1118.62 | 2349.37 | 1119    | 2351.08 | 1120    |     |      |
| 2389.86 | 1119.96   | 2394.58 | 1119.88 | 2403.37 | 1119.75 | 2433.92 | 1119.33 | 2454.05 | 1119    |     |      |
| 2456.04 | 1118.26   | 2456.6  | 1118    | 2457.23 | 1117.7  | 2458.69 | 1117    | 2459.6  | 1116.57 |     |      |
| 2460.79 | 1116      | 2462.65 | 1115.12 | 2462.9  | 1115    | 2463.11 | 1114.9  | 2464.76 | 1114.12 |     |      |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2465    | 1114    | 2467.1  | 1113    | 2469.08 | 1112.05 | 2469.19 | 1112    | 2469.56 | 1111.82 |
| 2471.25 | 1111    | 2471.9  | 1110.68 | 2472.9  | 1110.19 | 2473.29 | 1110    | 2473.6  | 1109.85 |
| 2475.42 | 1109    | 2476.17 | 1108.69 | 2477.76 | 1108.02 | 2480.18 | 1107    | 2481.07 | 1106.63 |
| 2486.68 | 1104.26 | 2487.3  | 1104    | 2489.29 | 1103.16 | 2489.68 | 1103    | 2491.85 | 1102.09 |
| 2492.05 | 1102    | 2492.85 | 1101.68 | 2494.53 | 1101.02 | 2513.66 | 1100.03 | 2513.94 | 1100.02 |
| 2514.73 | 1100.03 | 2515.58 | 1100    | 2531.14 | 1099.72 | 2533.96 | 1099    | 2536.88 | 1098.27 |
| 2538    | 1098    | 2540.21 | 1097.3  | 2541.17 | 1097    | 2541.46 | 1096.89 | 2544    | 1096    |
| 2546.8  | 1095    | 2567.4  | 1095.88 | 2567.77 | 1096    | 2568.28 | 1096.17 | 2573.92 | 1098    |
| 2575.34 | 1098.58 | 2576.33 | 1099    | 2577.44 | 1099.39 | 2579.22 | 1100    | 2582.78 | 1100.72 |
| 2584.14 | 1101    | 2586.17 | 1100.96 | 2586.81 | 1100.9  | 2597.03 | 1100    | 2625.17 | 1100.18 |
| 2629.16 | 1101    | 2635.48 | 1100.95 | 2655.48 | 1100    | 2657.9  | 1099.36 | 2659.3  | 1099    |
| 2662.93 | 1099.14 | 2669.1  | 1099.58 | 2672.77 | 1099.86 | 2674.22 | 1100    | 2676.48 | 1100.15 |
| 2677.31 | 1100.3  | 2678.14 | 1100.5  | 2679.09 | 1100.74 | 2680.29 | 1101    | 2681.08 | 1101.18 |
| 2683.44 | 1101.66 | 2684.38 | 1101.87 | 2684.48 | 1101.89 | 2685.06 | 1102    | 2687.99 | 1102.2  |
| 2689.18 | 1102.31 | 2695.88 | 1103    | 2699.42 | 1103.01 | 2699.78 | 1103.03 | 2700.82 | 1103    |
| 2706.33 | 1103.22 | 2706.66 | 1103.24 | 2708.62 | 1103.45 | 2711.76 | 1103.57 | 2712.69 | 1103.67 |
| 2713.07 | 1103.73 | 2715.79 | 1104    | 2718.82 | 1103.67 | 2720.43 | 1103    | 2723.21 | 1102    |
| 2724.98 | 1101.18 | 2725.36 | 1101    | 2727.36 | 1100    | 2729.35 | 1099    | 2731.25 | 1098.05 |
| 2731.34 | 1098    | 2732.06 | 1097.87 | 2737.07 | 1097    | 2738.79 | 1096.74 | 2745.63 | 1095.77 |
| 2755.25 | 1095    | 2783.91 | 1094.89 | 2787.67 | 1094.88 | 2793.46 | 1094.85 | 2834.42 | 1094.67 |
| 2936.26 | 1094.4  | 2961.77 | 1094.2  | 2963.83 | 1094.18 | 2973.93 | 1094.11 | 2982.74 | 1094    |
| 2992    | 1093.97 | 3000.37 | 1093.82 | 3007.15 | 1093.68 | 3010.95 | 1093.61 | 3029.8  | 1093.18 |
| 3031.85 | 1093.13 | 3036.85 | 1093    | 3050.98 | 1092.77 | 3059.06 | 1092.66 | 3061.55 | 1092.62 |
| 3106.12 | 1092    | 3142.91 | 1091.89 | 3202.79 | 1091    | 3225.29 | 1091.15 | 3227.04 | 1091.2  |
| 3227.44 | 1091.22 | 3235.98 | 1091.41 | 3242.47 | 1091.57 | 3243.36 | 1091.59 | 3244.04 | 1091.61 |
| 3245.22 | 1091.65 | 3257.73 | 1091.76 | 3258.68 | 1091.75 | 3259.18 | 1091.74 | 3260.05 | 1091.73 |
| 3263.06 | 1091.68 | 3264.08 | 1091.66 | 3273.21 | 1091.59 | 3277.04 | 1091.53 | 3278.08 | 1091.52 |
| 3280.33 | 1091.48 | 3282.5  | 1091.45 | 3298.67 | 1091.29 | 3300.25 | 1091.27 | 3310.34 | 1091    |
| 3332.7  | 1091.12 | 3333.91 | 1091.36 | 3337.1  | 1092    | 3340.68 | 1092.64 | 3342.75 | 1093    |
| 3345.68 | 1093.44 | 3349.35 | 1094    | 3353.83 | 1094.63 | 3356.41 | 1095    | 3356.74 | 1095.04 |
| 3364.07 | 1096    | 3364.2  | 1096.01 | 3364.67 | 1096.03 | 3382.77 | 1097    | 3385.57 | 1097.29 |
| 3392.84 | 1098    | 3393.56 | 1098.95 | 3394.35 | 1100    | 3394.51 | 1100.2  | 3395.1  | 1101    |
| 3395.23 | 1101.17 | 3395.86 | 1102    | 3395.94 | 1102.1  | 3396.63 | 1103    | 3396.85 | 1103.28 |
| 3397.41 | 1104    | 3397.92 | 1104.64 | 3398.2  | 1105    | 3398.34 | 1105.29 | 3398.68 | 1106    |
| 3399.03 | 1106.85 | 3399.09 | 1107    | 3399.33 | 1107.59 | 3399.5  | 1108    | 3399.72 | 1108.54 |
| 3399.91 | 1109    | 3400.27 | 1109.9  | 3400.32 | 1110    | 3400.38 | 1110.16 | 3400.72 | 1111    |
| 3400.81 | 1111.22 | 3401.13 | 1112    | 3401.17 | 1112.09 | 3401.53 | 1113    | 3401.57 | 1113.09 |
| 3401.94 | 1114    | 3401.98 | 1114.09 | 3402.34 | 1115    | 3402.72 | 1115.93 | 3403.15 | 1117    |
| 3403.45 | 1117.73 | 3403.56 | 1118    | 3403.6  | 1118.1  | 3403.96 | 1119    | 3408.23 | 1119.17 |
| 3411.04 | 1119.27 | 3417.29 | 1119.51 | 3427.71 | 1119.87 | 3429.02 | 1119.91 | 3431.74 | 1120    |
| 3534.45 | 1120.12 | 3537.07 | 1120.18 | 3546.46 | 1120.42 | 3550.68 | 1120.51 | 3555.8  | 1120.63 |
| 3558.4  | 1120.7  | 3564.28 | 1120.81 | 3566.35 | 1120.86 | 3572.59 | 1121    | 3609.53 | 1121.05 |
| 3610.22 | 1121.06 | 3624.47 | 1121.34 | 3631.09 | 1121.46 | 3636.77 | 1121.58 | 3639.11 | 1121.62 |
| 3648.12 | 1121.79 | 3649.49 | 1121.82 | 3657.83 | 1121.98 | 3664.15 | 1122.08 | 3668.4  | 1122.14 |
| 3669.69 | 1122.17 | 3677.75 | 1122.3  | 3700.48 | 1122.75 | 3707.27 | 1122.87 | 3708.65 | 1122.89 |
| 3713.58 | 1123    | 3739.18 | 1124    | 3787.56 | 1125    | 3899.48 | 1124.58 | 3977.97 | 1123    |
| 4015.71 | 1122    | 4045.57 | 1121    | 4071.17 | 1120    | 4113.61 | 1120.01 |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .04 2454.05 .035 3403.96 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 2454.05 3403.96 200.22 204.56 208.91 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 2454.05 1119 F  
 3403.96 4113.61 1119 F  
 Left Levee Station= 2454.05 Elevation= 1119

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 217.53

INPUT Description:

| Station | Elevation | Data    | num=    | 309     | Sta     | Elev    | Sta     | Elev    | Sta     | Elev |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|------|
| 0       | 1123.19   | 17.85   | 1123.35 | 18.48   | 1123.37 | 25.54   | 1123.34 | 28.94   | 1123.32 |      |
| 30.27   | 1123.35   | 32.31   | 1123.42 | 37      | 1123.37 | 37.94   | 1123.41 | 40.72   | 1123.52 |      |
| 45.64   | 1123.44   | 48.27   | 1123.64 | 49.44   | 1123.72 | 52.59   | 1123.64 | 53.15   | 1123.68 |      |
| 57.76   | 1123.61   | 60.09   | 1123.6  | 63.52   | 1123.57 | 66.53   | 1123.52 | 75.7    | 1123.41 |      |
| 82.82   | 1123.29   | 88.79   | 1123.15 | 90.33   | 1123.12 | 94.42   | 1123    | 318.83  | 1122.49 |      |
| 322.39  | 1122.46   | 326.17  | 1122.45 | 330.96  | 1122.41 | 333.28  | 1122.4  | 334.85  | 1122.39 |      |
| 360.75  | 1122      | 589.38  | 1121.95 | 595.56  | 1121.91 | 603.71  | 1121.83 | 607.44  | 1121.8  |      |
| 641.61  | 1121      | 689.71  | 1121.33 | 691.09  | 1121.35 | 696.91  | 1121.16 | 697.86  | 1121.17 |      |
| 701.79  | 1121      | 851.74  | 1120.97 | 852.44  | 1121    | 872.63  | 1120.75 | 879.14  | 1120    |      |
| 879.39  | 1119.92   | 882.24  | 1119    | 883.45  | 1118.6  | 885.34  | 1118    | 887.9   | 1117.18 |      |
| 888.46  | 1117      | 889.18  | 1116.83 | 892.81  | 1116    | 895.06  | 1115.73 | 897.98  | 1115.41 |      |
| 899.94  | 1115.19   | 902.09  | 1115    | 996.05  | 1114.97 | 997.76  | 1114.93 | 1016.33 | 1114.62 |      |
| 1018.46 | 1114.6    | 1023.68 | 1114.57 | 1028.6  | 1114.58 | 1034    | 1114.55 | 1091.01 | 1114    |      |
| 1122.27 | 1113.3    | 1130.52 | 1113    | 1140.72 | 1113.32 | 1146.83 | 1114.64 | 1148.53 | 1115    |      |
| 1209.24 | 1115.16   | 1214.25 | 1115.34 | 1217    | 1115.39 | 1220.85 | 1115.51 | 1223.91 | 1115.57 |      |
| 1242.15 | 1116      | 1245.42 | 1116.33 | 1250.38 | 1117    | 1253.59 | 1116.95 | 1254.43 | 1116.93 |      |
| 1264.5  | 1116.64   | 1269.91 | 1116.51 | 1275.48 | 1116.36 | 1290.55 | 1116    | 1308.28 | 1116.22 |      |
| 1324.41 | 1116.53   | 1325.81 | 1116.55 | 1330.69 | 1116.64 | 1367.03 | 1117    | 1519.55 | 1116.02 |      |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1520.1  | 1116    | 1538.19 | 1115.66 | 1568.72 | 1115    | 1587.32 | 1114.41 | 1599.01 | 1114    |
| 1660.76 | 1114.32 | 1699.85 | 1114.8  | 1703.21 | 1114.83 | 1708.11 | 1114.89 | 1718.93 | 1115    |
| 1788.67 | 1114.73 | 1797.39 | 1114.67 | 1897.79 | 1114.22 | 1923.21 | 1114.06 | 1924.55 | 1114.05 |
| 1933.16 | 1114    | 1937.09 | 1113.62 | 1942.67 | 1113    | 1994.6  | 1112.85 | 1999    | 1113    |
| 2039.85 | 1112.85 | 2064.36 | 1112    | 2068.68 | 1112.15 | 2069.01 | 1113    | 2069.48 | 1113.72 |
| 2069.67 | 1114    | 2117.72 | 1114.77 | 2120.43 | 1114.81 | 2143.58 | 1115    | 2308.91 | 1114.99 |
| 2312.67 | 1114.36 | 2315.12 | 1114    | 2319.36 | 1113.56 | 2324.61 | 1113    | 2325.33 | 1112.47 |
| 2325.95 | 1112    | 2346.39 | 1111.41 | 2347.57 | 1111.4  | 2350.17 | 1111.33 | 2364.34 | 1111    |
| 2401.39 | 1111.38 | 2403.29 | 1112    | 2408.46 | 1113.65 | 2409.52 | 1114    | 2412.28 | 1114.88 |
| 2412.66 | 1115    | 2413.13 | 1115.14 | 2416.08 | 1116    | 2417.11 | 1116.28 | 2421.52 | 1117.49 |
| 2423.4  | 1118    | 2426.75 | 1118.37 | 2432.58 | 1119    | 2457.23 | 1118.49 | 2461.75 | 1118    |
| 2462.82 | 1117.48 | 2463.8  | 1117    | 2465.85 | 1116    | 2469.89 | 1114.02 | 2469.99 | 1113.97 |
| 2471.97 | 1113    | 2472.58 | 1112.7  | 2474.01 | 1112    | 2475.27 | 1111.38 | 2476.05 | 1111    |
| 2477.52 | 1110.28 | 2478.09 | 1110    | 2480.3  | 1109    | 2481.96 | 1108.28 | 2482.62 | 1108    |
| 2483.91 | 1107.44 | 2484.93 | 1107    | 2485.4  | 1106.79 | 2487.21 | 1106    | 2488.46 | 1105.45 |
| 2489.31 | 1105.07 | 2489.46 | 1105    | 2489.58 | 1104.95 | 2490.18 | 1104.68 | 2493.46 | 1103.21 |
| 2493.93 | 1103    | 2495.19 | 1102.43 | 2496.15 | 1102    | 2499.5  | 1101.8  | 2501.26 | 1101.7  |
| 2513.05 | 1101    | 2519.33 | 1100.15 | 2520.49 | 1100    | 2522.36 | 1099.84 | 2531.94 | 1099    |
| 2564.95 | 1099.68 | 2567.9  | 1099.89 | 2569.52 | 1100    | 2573.66 | 1099.89 | 2578.02 | 1099    |
| 2578.67 | 1098.79 | 2580.76 | 1098.16 | 2581.3  | 1098    | 2583.7  | 1097.01 | 2583.78 | 1096.98 |
| 2586.31 | 1096    | 2587.22 | 1095.7  | 2589.33 | 1095    | 2590.11 | 1094.86 | 2594.76 | 1094    |
| 2610.52 | 1094.85 | 2611.79 | 1095    | 2612.53 | 1095.18 | 2616.01 | 1096    | 2618.69 | 1096.72 |
| 2619.74 | 1097    | 2622.24 | 1097.76 | 2623.05 | 1098    | 2625.98 | 1098.89 | 2626.34 | 1099    |
| 2628.34 | 1099.05 | 2629.01 | 1099.06 | 2661.74 | 1099.21 | 2662.48 | 1099.26 | 2663.87 | 1099.21 |
| 2666.77 | 1099.47 | 2667.84 | 1099.48 | 2670.44 | 1099.55 | 2672.85 | 1100    | 2680.58 | 1099.92 |
| 2683.3  | 1099    | 2685.63 | 1098.87 | 2703.56 | 1098    | 2703.89 | 1097.95 | 2709.01 | 1097    |
| 2730.19 | 1096.71 | 2748.22 | 1096    | 2785.59 | 1095.05 | 2786.27 | 1095.03 | 2787.64 | 1095    |
| 2868.04 | 1094.38 | 2872.16 | 1094.36 | 2918.2  | 1093.93 | 2920    | 1093.91 | 2983.37 | 1093    |
| 3002.07 | 1092.77 | 3048.48 | 1092    | 3163.32 | 1091.5  | 3227.71 | 1092    | 3250.58 | 1092.3  |
| 3252.24 | 1092.34 | 3263.74 | 1092.58 | 3285.78 | 1093    | 3391.54 | 1093.21 | 3417.46 | 1094    |
| 3425.26 | 1094.38 | 3434.81 | 1095    | 3451.65 | 1095.59 | 3454.23 | 1095.67 | 3463.58 | 1096    |
| 3474.62 | 1097    | 3475.78 | 1098    | 3476.98 | 1099    | 3477.28 | 1099.26 | 3478.09 | 1100    |
| 3478.52 | 1100.38 | 3479.26 | 1101    | 3479.61 | 1101.31 | 3480.2  | 1101.84 | 3480.39 | 1102    |
| 3480.56 | 1102.15 | 3481.49 | 1103    | 3482.11 | 1103.85 | 3482.22 | 1104    | 3482.31 | 1104.12 |
| 3482.94 | 1105    | 3483.39 | 1105.62 | 3483.66 | 1106    | 3483.99 | 1106.46 | 3484.38 | 1107    |
| 3484.71 | 1107.46 | 3485.1  | 1108    | 3485.38 | 1108.4  | 3485.82 | 1109    | 3486.02 | 1109.28 |
| 3486.54 | 1110    | 3486.77 | 1110.32 | 3487.26 | 1111    | 3487.39 | 1111.18 | 3487.98 | 1112    |
| 3488.07 | 1112.12 | 3488.7  | 1113    | 3489.16 | 1113.63 | 3489.41 | 1113.98 | 3490.15 | 1115    |
| 3490.72 | 1115.79 | 3490.88 | 1116    | 3491.29 | 1116.57 | 3492.04 | 1117.61 | 3492.33 | 1118    |
| 3492.62 | 1118.15 | 3494.42 | 1119    | 3502.2  | 1119.35 | 3505.52 | 1119.51 | 3511.65 | 1119.79 |
| 3515.85 | 1119.97 | 3516.64 | 1120    | 3695.47 | 1120.09 | 3697.21 | 1120.14 | 3705.14 | 1120.38 |
| 3716.93 | 1120.79 | 3718.79 | 1120.85 | 3722.97 | 1121    | 3738.91 | 1121.35 | 3771.95 | 1122    |
| 3808.08 | 1123    | 3813.26 | 1123.16 | 3845.68 | 1124    | 3905.92 | 1125    | 3944.58 | 1124.84 |
| 3996.36 | 1124    | 4034.24 | 1123    | 4085.27 | 1122    | 4107.64 | 1121.66 |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .04 2457.23 .035 3494.42 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 2457.23 3494.42 243.29 250.87 258.45 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 2457.23 1118.49 F  
 3494.42 4107.64 1119 F  
 Left Levee Station= 2457.23 Elevation= 1118.49

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 217.48

INPUT

Description:

|         |           |         |         |         |         |         |         |         |         |     |      |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|-----|------|
| Station | Elevation | Data    | num=    | 344     |         |         |         |         |         |     |      |
| Sta     | Elev      | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta | Elev |
| 0       | 1123      | 357.18  | 1122.36 | 361.34  | 1122.24 | 365.51  | 1122.13 | 366.16  | 1122.12 |     |      |
| 371.1   | 1122      | 500.63  | 1121.96 | 505.74  | 1121.98 | 511.07  | 1121.96 | 524.49  | 1121.89 |     |      |
| 595.93  | 1121.27   | 622.73  | 1121    | 776.73  | 1120.63 | 778.52  | 1120    | 809.19  | 1120.62 |     |      |
| 812.3   | 1121      | 838     | 1120.4  | 840.88  | 1120    | 842.48  | 1119.46 | 843.83  | 1119    |     |      |
| 848.07  | 1118      | 852.5   | 1117.17 | 853.44  | 1117    | 854.08  | 1116.3  | 854.55  | 1116    |     |      |
| 860.76  | 1115.71   | 861.69  | 1115.66 | 864.42  | 1115.54 | 865.97  | 1115.48 | 870.21  | 1115.3  |     |      |
| 870.92  | 1115.28   | 871.91  | 1115.24 | 872.84  | 1115.22 | 875.77  | 1115.09 | 876.29  | 1115.07 |     |      |
| 878.33  | 1115      | 1033.82 | 1114.7  | 1128.38 | 1114    | 1140.96 | 1113.44 | 1150    | 1113    |     |      |
| 1153.99 | 1112      | 1161.39 | 1112.98 | 1166    | 1114    | 1210.16 | 1114.17 | 1224.2  | 1114.55 |     |      |
| 1242.01 | 1115      | 1248.57 | 1115.27 | 1263.97 | 1116    | 1386.86 | 1115.79 | 1387.97 | 1115.77 |     |      |
| 1391.63 | 1115.51   | 1395.83 | 1115.27 | 1401.28 | 1115.13 | 1404.9  | 1115.11 | 1422.87 | 1115.08 |     |      |
| 1425.65 | 1115.11   | 1441.3  | 1115.07 | 1441.94 | 1115.08 | 1472.11 | 1115    | 1477.43 | 1114.93 |     |      |
| 1477.98 | 1114.92   | 1486.98 | 1114.8  | 1487.91 | 1114.81 | 1492.55 | 1114.76 | 1493.9  | 1114.77 |     |      |
| 1496.58 | 1114.85   | 1497.71 | 1114.9  | 1497.99 | 1114.91 | 1498.86 | 1115    | 1500.51 | 1115.12 |     |      |
| 1500.68 | 1115.15   | 1500.93 | 1115.17 | 1503.05 | 1115.38 | 1503.58 | 1115.42 | 1504.69 | 1115.53 |     |      |
| 1505.88 | 1115.66   | 1508.98 | 1115.98 | 1509.11 | 1116    | 1511.67 | 1116.32 | 1524.49 | 1116.03 |     |      |
| 1524.92 | 1116      | 1541.14 | 1115    | 1730.56 | 1114.8  | 1743.04 | 1114.17 | 1744.94 | 1114.08 |     |      |
| 1745.41 | 1114.07   | 1746    | 1114.05 | 1746.8  | 1114.04 | 1767.79 | 1114.15 | 1773.46 | 1114.06 |     |      |
| 1777.79 | 1114      | 1781.24 | 1113.9  | 1781.94 | 1113.89 | 1788.08 | 1113.74 | 1790.92 | 1113.73 |     |      |
| 1795.21 | 1113.64   | 1800.13 | 1113.57 | 1813.3  | 1113.52 | 1815.66 | 1113.53 | 1821.47 | 1113.52 |     |      |
| 1824.64 | 1113.53   | 1830.64 | 1113.52 | 1834.8  | 1113.48 | 1840.6  | 1113.56 | 1844.47 | 1113.55 |     |      |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1844.63 | 1113.56 | 1848.1  | 1113.58 | 1851.73 | 1113.57 | 1855.29 | 1113.59 | 1885.7  | 1113.69 |
| 1894.7  | 1113.7  | 1903.57 | 1113.69 | 1908.07 | 1113.67 | 1919.34 | 1114    | 1947.83 | 1113.48 |
| 1950.51 | 1113.47 | 1951.55 | 1113.46 | 1954.06 | 1113.42 | 1954.54 | 1113.41 | 1957.08 | 1113.38 |
| 1963.19 | 1113.33 | 1973.12 | 1113    | 2040.07 | 1113.14 | 2044.58 | 1113.33 | 2045.43 | 1113.34 |
| 2046.9  | 1113.39 | 2048.16 | 1113.4  | 2050.79 | 1113.48 | 2055.71 | 1113.53 | 2058.23 | 1113.6  |
| 2061.17 | 1113.65 | 2062.57 | 1113.69 | 2067.48 | 1113.79 | 2075.18 | 1113.96 | 2077.22 | 1114    |
| 2080.86 | 1114.09 | 2081.5  | 1114.1  | 2085.84 | 1114.21 | 2091.13 | 1114.24 | 2093.95 | 1114.25 |
| 2099.74 | 1114.23 | 2100.42 | 1114.22 | 2102.22 | 1114.19 | 2107.45 | 1114.14 | 2111.11 | 1114.16 |
| 2111.47 | 1114.15 | 2111.71 | 1114.14 | 2121.06 | 1114.11 | 2122.48 | 1114.13 | 2139.35 | 1114.17 |
| 2140.43 | 1114.19 | 2151.87 | 1114.3  | 2155.57 | 1114.29 | 2156.42 | 1114.3  | 2172.77 | 1114.26 |
| 2183.15 | 1114.28 | 2184.01 | 1114.27 | 2196.17 | 1114.24 | 2201.32 | 1114.16 | 2206.56 | 1114.05 |
| 2206.8  | 1114.04 | 2208.44 | 1114    | 2221.69 | 1113.85 | 2222.73 | 1113.86 | 2223.03 | 1113.83 |
| 2229.25 | 1113.8  | 2229.44 | 1113.79 | 2229.66 | 1113.78 | 2232.14 | 1113.62 | 2233.44 | 1113.55 |
| 2237.5  | 1113.29 | 2238.2  | 1113.24 | 2242.12 | 1113    | 2248.73 | 1112.79 | 2250.84 | 1112.69 |
| 2259.7  | 1112.32 | 2261.16 | 1112.25 | 2262.44 | 1112.21 | 2263.51 | 1112.17 | 2267.7  | 1112    |
| 2331.59 | 1111.06 | 2331.94 | 1111    | 2332.69 | 1110.88 | 2337.86 | 1110    | 2369.41 | 1109    |
| 2396.71 | 1109.89 | 2397.11 | 1110    | 2397.31 | 1110.06 | 2397.64 | 1110.15 | 2399.93 | 1110.79 |
| 2400.67 | 1111    | 2401.5  | 1111.23 | 2404.23 | 1112    | 2406.12 | 1112.54 | 2407.77 | 1113    |
| 2409.84 | 1113.64 | 2411.03 | 1114    | 2412.06 | 1114.37 | 2413.77 | 1115    | 2414.58 | 1115.29 |
| 2416.64 | 1116    | 2419.55 | 1116.99 | 2421.26 | 1117.58 | 2422.49 | 1118    | 2425.6  | 1118.36 |
| 2430.12 | 1119    | 2456    | 1118.13 | 2456.28 | 1118    | 2456.75 | 1117.79 | 2458.45 | 1117    |
| 2459.8  | 1116.39 | 2460.65 | 1116    | 2462.01 | 1115.39 | 2462.86 | 1115    | 2463.79 | 1114.57 |
| 2465.01 | 1114    | 2465.57 | 1113.73 | 2467.14 | 1113    | 2468.6  | 1112.31 | 2469.22 | 1112    |
| 2469.9  | 1111.65 | 2471.17 | 1111    | 2473.01 | 1110.03 | 2474.96 | 1109    | 2476.41 | 1108.36 |
| 2477.24 | 1108    | 2478.98 | 1107.23 | 2479.51 | 1107    | 2480.65 | 1106.51 | 2481.81 | 1106    |
| 2483.25 | 1105.37 | 2484.1  | 1105    | 2484.57 | 1104.79 | 2488.26 | 1103.18 | 2488.67 | 1103    |
| 2489.14 | 1102.8  | 2493.24 | 1101    | 2494.09 | 1100.63 | 2495.52 | 1100    | 2513.08 | 1099.37 |
| 2526.48 | 1099    | 2620.5  | 1098.68 | 2629.38 | 1098    | 2631.94 | 1097.71 | 2637.8  | 1097    |
| 2648.92 | 1097.22 | 2659.79 | 1097.66 | 2666.68 | 1098    | 2693.17 | 1097.04 | 2693.86 | 1097    |
| 2759    | 1096.74 | 2766.37 | 1096    | 2787.15 | 1095.77 | 2791.14 | 1095.72 | 2948.3  | 1094    |
| 2953.58 | 1093.86 | 2990.24 | 1093    | 3056.65 | 1091.97 | 3070.17 | 1091.79 | 3072.2  | 1091.77 |
| 3081.98 | 1091.62 | 3141.38 | 1091    | 3216.84 | 1091.82 | 3218.2  | 1091.98 | 3218.39 | 1092    |
| 3411.39 | 1092.38 | 3415.35 | 1092.74 | 3415.53 | 1092.75 | 3418.31 | 1093    | 3425.43 | 1093.48 |
| 3428.91 | 1093.67 | 3434.76 | 1094    | 3479.11 | 1094.3  | 3480.85 | 1094.4  | 3490.42 | 1095    |
| 3491.58 | 1095.56 | 3492.5  | 1096    | 3493.4  | 1096.42 | 3494.61 | 1097    | 3495.85 | 1097.6  |
| 3496.67 | 1098    | 3498.33 | 1098.8  | 3498.89 | 1099.08 | 3500.79 | 1100    | 3502.76 | 1101    |
| 3503.99 | 1101.64 | 3504.67 | 1102    | 3506.07 | 1102.73 | 3506.59 | 1103    | 3508.18 | 1103.83 |
| 3508.51 | 1104    | 3510.32 | 1104.94 | 3510.43 | 1105    | 3510.53 | 1105.05 | 3511.27 | 1105.44 |
| 3512.35 | 1106    | 3512.48 | 1106.07 | 3514.27 | 1107    | 3514.64 | 1107.19 | 3516.2  | 1108    |
| 3516.8  | 1108.31 | 3518.13 | 1109    | 3520.06 | 1109.98 | 3523.68 | 1111.67 | 3524.38 | 1112    |
| 3526.13 | 1112.81 | 3526.53 | 1113    | 3528.48 | 1113.91 | 3528.67 | 1114    | 3529.13 | 1114.21 |
| 3530.82 | 1115    | 3531.68 | 1115.4  | 3532.33 | 1115.7  | 3532.97 | 1116    | 3533.32 | 1116.17 |
| 3535.08 | 1117    | 3535.49 | 1117.19 | 3537.22 | 1118    | 3539.02 | 1118.38 | 3539.19 | 1118.4  |
| 3543.86 | 1119    | 3558.92 | 1119.3  | 3560.08 | 1119.32 | 3592.5  | 1120    | 3852.21 | 1120.22 |
| 3888.79 | 1121    | 3895.09 | 1121.2  | 3896.26 | 1121.24 | 3898.51 | 1121.31 | 3902.22 | 1121.44 |
| 3909.26 | 1121.67 | 3918.58 | 1122    | 3922.33 | 1122.1  | 3946.49 | 1122.71 | 3956.68 | 1123    |
| 4007.21 | 1123.83 | 4016.5  | 1123.95 | 4017.13 | 1123.96 | 4017.58 | 1123.97 | 4020.01 | 1124    |
| 4094.8  | 1123.94 | 4102.66 | 1123.84 | 4103.63 | 1123.82 | 4105.15 | 1123.8  |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 2456 .035 3543.86 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 2456 3543.86 231.21 240.78 250.35 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 2456 1118.13 F  
 3543.86 4105.15 1119 F  
 Left Levee Station= 2456 Elevation= 1118.13

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 217.43

INPUT  
 Description:

|                                 |         |         |         |         |         |         |         |         |         |
|---------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Station Elevation Data num= 351 |         |         |         |         |         |         |         |         |         |
| Sta                             | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    |
| 0                               | 1123    | 119.77  | 1122.22 | 133.21  | 1122    | 155.49  | 1121.72 | 157.37  | 1121.62 |
| 160.34                          | 1121.63 | 161.9   | 1121.53 | 166.96  | 1121.28 | 167.66  | 1121.27 | 168.03  | 1121.26 |
| 170.12                          | 1121    | 175.92  | 1121.57 | 178.71  | 1122    | 183.07  | 1122.81 | 184.15  | 1123    |
| 288.55                          | 1122.94 | 311.56  | 1122.69 | 435.64  | 1121.56 | 483.91  | 1121    | 656.88  | 1120.11 |
| 658.5                           | 1120    | 778.16  | 1119.19 | 778.91  | 1119    | 779.22  | 1118.92 | 782.95  | 1118    |
| 784.89                          | 1117.53 | 786.98  | 1117    | 790.44  | 1116.11 | 790.85  | 1116    | 796.89  | 1115.05 |
| 797.34                          | 1115    | 802.59  | 1114.77 | 806.29  | 1114.57 | 810.33  | 1114.38 | 817.53  | 1114    |
| 863.66                          | 1114.37 | 889.89  | 1115    | 995.57  | 1114.97 | 996.66  | 1114.96 | 997.39  | 1114.95 |
| 999.57                          | 1114.94 | 1000.89 | 1114.93 | 1005.98 | 1114.88 | 1064.38 | 1114.44 | 1072.21 | 1114.36 |
| 1112.29                         | 1114    | 1142.43 | 1113    | 1156.33 | 1112    | 1162.46 | 1112.23 | 1164.91 | 1112.74 |
| 1166.01                         | 1113    | 1217.1  | 1114    | 1256.28 | 1115    | 1306.06 | 1114.43 | 1317.29 | 1114    |
| 1319.29                         | 1113.9  | 1329.21 | 1113.56 | 1332.19 | 1113.54 | 1337.84 | 1113.47 | 1340.7  | 1113.45 |
| 1346.9                          | 1113.32 | 1348.29 | 1113.31 | 1353.75 | 1113.3  | 1357.24 | 1113.32 | 1359.64 | 1113.34 |
| 1363.74                         | 1113.3  | 1366.19 | 1113.31 | 1367.63 | 1113.32 | 1368.4  | 1113.34 | 1382.29 | 1113.61 |
| 1383.52                         | 1113.64 | 1384.46 | 1113.66 | 1385.83 | 1113.7  | 1388.53 | 1113.76 | 1389.76 | 1113.79 |
| 1390.77                         | 1113.82 | 1398.58 | 1114    | 1486.42 | 1113.86 | 1487.45 | 1113.84 | 1497.95 | 1113.85 |
| 1506.49                         | 1114    | 1866.13 | 1113.7  | 1872.98 | 1113.68 | 1932.92 | 1113.32 | 1939.48 | 1113.26 |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1943.78 | 1113.24 | 1946.04 | 1113.22 | 1948.49 | 1113.21 | 1950.91 | 1113.19 | 1958.3  | 1113.17 |
| 1961.92 | 1113.15 | 1967.39 | 1113    | 2104.18 | 1113.05 | 2106.09 | 1113.04 | 2119.13 | 1113    |
| 2126.71 | 1112.95 | 2132.32 | 1112.9  | 2144.82 | 1112.84 | 2162.77 | 1113    | 2307.25 | 1112.91 |
| 2324.62 | 1112.32 | 2335.28 | 1112    | 2361.97 | 1111.03 | 2362.32 | 1111.01 | 2362.66 | 1111    |
| 2389.2  | 1110.75 | 2390.76 | 1110.66 | 2391.37 | 1110.61 | 2392.25 | 1110.57 | 2392.72 | 1110.56 |
| 2397.96 | 1110    | 2411.43 | 1110.33 | 2417.69 | 1112.95 | 2417.81 | 1113    | 2419.19 | 1113.61 |
| 2420    | 1114    | 2420.46 | 1114.22 | 2422.18 | 1115    | 2425.27 | 1116.35 | 2426.75 | 1117    |
| 2427.83 | 1117.47 | 2429.04 | 1118    | 2460.09 | 1117.02 | 2460.21 | 1116.95 | 2462    | 1116    |
| 2462.24 | 1115.87 | 2467.31 | 1113.16 | 2467.6  | 1113    | 2468.49 | 1112.53 | 2469.34 | 1112.07 |
| 2469.47 | 1112    | 2469.63 | 1111.92 | 2471.34 | 1111    | 2471.83 | 1110.74 | 2473.21 | 1110    |
| 2474.92 | 1109.09 | 2475.09 | 1109    | 2475.41 | 1108.83 | 2476.93 | 1108    | 2477.72 | 1107.67 |
| 2479.3  | 1107    | 2481.82 | 1106.01 | 2484.4  | 1105    | 2486.51 | 1104.17 | 2486.95 | 1104    |
| 2489.49 | 1103    | 2490.03 | 1102.79 | 2492.04 | 1102    | 2493.32 | 1101.5  | 2494.58 | 1101    |
| 2495.71 | 1100.74 | 2498.82 | 1100    | 2508.26 | 1099.34 | 2515.39 | 1099    | 2543.83 | 1098.64 |
| 2580.79 | 1098    | 2651.59 | 1097.3  | 2658.29 | 1097    | 2664.6  | 1096.6  | 2674.42 | 1096    |
| 2772.51 | 1096.87 | 2774.4  | 1096.96 | 2775.31 | 1097    | 2807.5  | 1096.44 | 2812.42 | 1096.38 |
| 2837.59 | 1096.13 | 2838.31 | 1096.16 | 2838.98 | 1096.18 | 2839.6  | 1096.21 | 2841.41 | 1096.28 |
| 2843.82 | 1096.3  | 2846.75 | 1096.43 | 2850.59 | 1096.51 | 2857.44 | 1096.86 | 2858.56 | 1096.9  |
| 2860.11 | 1097    | 2861.02 | 1096.9  | 2863.97 | 1096    | 2868.34 | 1095.93 | 2869.42 | 1095.91 |
| 2881.77 | 1095.7  | 2886.31 | 1095.63 | 2893.74 | 1095.5  | 2900.59 | 1095.4  | 2924.32 | 1095    |
| 2935.21 | 1094.79 | 2940.33 | 1094.7  | 2975.82 | 1094    | 3004.25 | 1093.92 | 3006.13 | 1093.93 |
| 3006.68 | 1093.92 | 3011.32 | 1093.88 | 3018.77 | 1093.56 | 3020.67 | 1093.52 | 3024.22 | 1093.29 |
| 3024.79 | 1093.27 | 3028.26 | 1093    | 3061.59 | 1092.15 | 3063.09 | 1092.11 | 3066.54 | 1092    |
| 3093.34 | 1091.56 | 3123.54 | 1091    | 3157.87 | 1091.13 | 3177.82 | 1092    | 3290.2  | 1091.7  |
| 3311.6  | 1091.07 | 3313.87 | 1091    | 3441.39 | 1091.53 | 3460.12 | 1092    | 3460.92 | 1092.08 |
| 3465.93 | 1092.61 | 3466.88 | 1092.72 | 3468.96 | 1092.94 | 3469.26 | 1092.97 | 3469.5  | 1093    |
| 3476.48 | 1093.5  | 3478.49 | 1093.64 | 3479.4  | 1093.7  | 3481.4  | 1093.85 | 3482.14 | 1093.9  |
| 3483.51 | 1094    | 3490.67 | 1094.68 | 3493.82 | 1095    | 3494.49 | 1095.31 | 3496.04 | 1096    |
| 3497.01 | 1096.44 | 3498.26 | 1097    | 3499.54 | 1097.58 | 3500.46 | 1098    | 3501.45 | 1098.48 |
| 3502.51 | 1099    | 3502.79 | 1099.19 | 3503.91 | 1100    | 3505    | 1100.8  | 3505.27 | 1101    |
| 3505.52 | 1101.18 | 3506.65 | 1102    | 3506.93 | 1102.21 | 3508.03 | 1103    | 3508.56 | 1103.39 |
| 3509.4  | 1104    | 3510.22 | 1104.6  | 3510.78 | 1105    | 3511.2  | 1105.31 | 3512.11 | 1106    |
| 3513.24 | 1106.82 | 3513.49 | 1107    | 3513.63 | 1107.1  | 3514.88 | 1108    | 3516.29 | 1109    |
| 3517.65 | 1109.94 | 3517.77 | 1110.02 | 3519.2  | 1111    | 3520.28 | 1111.72 | 3520.69 | 1112    |
| 3521.06 | 1112.24 | 3522.22 | 1113    | 3523.44 | 1113.81 | 3523.72 | 1114    | 3524.83 | 1114.74 |
| 3525.23 | 1115    | 3526.27 | 1115.68 | 3526.75 | 1116    | 3527.71 | 1116.63 | 3528.28 | 1117    |
| 3531.76 | 1117.89 | 3532.1  | 1118    | 3537.01 | 1118.1  | 3537.83 | 1118.14 | 3539.61 | 1118.23 |
| 3548.15 | 1118.63 | 3554.27 | 1119    | 3587.64 | 1119.38 | 3588.91 | 1119.39 | 3594.8  | 1119.47 |
| 3598.53 | 1119.51 | 3599.82 | 1119.53 | 3632.13 | 1119.99 | 3647.65 | 1120.25 | 3662.33 | 1120.42 |
| 3674.38 | 1120.62 | 3674.91 | 1120.63 | 3679.4  | 1120.69 | 3684.68 | 1120.73 | 3685.66 | 1120.74 |
| 3698.35 | 1121    | 3837.39 | 1120.67 | 3838.27 | 1120.65 | 3843.76 | 1120.49 | 3847.16 | 1120.4  |
| 3851.01 | 1120.29 | 3853.5  | 1120.23 | 3855.49 | 1120.19 | 3857.31 | 1120.13 | 3859.54 | 1120.09 |
| 3860.29 | 1120.07 | 3864.79 | 1120    | 3867.12 | 1119.91 | 3867.98 | 1119.85 | 3873.4  | 1119.6  |
| 3874.68 | 1119.51 | 3875.43 | 1119.46 | 3876.82 | 1119.38 | 3877.93 | 1119.3  | 3881.35 | 1119.14 |
| 3881.62 | 1119.12 | 3881.8  | 1119.11 | 3882.06 | 1119.1  | 3884.13 | 1119    | 3887.48 | 1118.85 |
| 3891.89 | 1118.8  | 3895.42 | 1118.82 | 3895.71 | 1118.83 | 3905.69 | 1118.85 | 3908.96 | 1118.87 |
| 3909.09 | 1118.88 | 3912.74 | 1118.86 | 3927.13 | 1119    | 3932.64 | 1119.09 | 3933.15 | 1119.11 |
| 3936.46 | 1119.17 | 3937.58 | 1119.2  | 3941    | 1119.27 | 3947.81 | 1119.51 | 3950.6  | 1119.59 |
| 3951.1  | 1119.61 | 3952.87 | 1119.66 | 3953.91 | 1119.7  | 3959.22 | 1119.84 | 3959.65 | 1119.85 |
| 3965.47 | 1120    | 3983.33 | 1120.23 | 3985.59 | 1120.27 | 3992.77 | 1120.37 | 3995.84 | 1120.43 |
| 3997.81 | 1120.46 | 3998.69 | 1120.47 | 4007.09 | 1120.66 | 4008.14 | 1120.68 | 4014.53 | 1120.82 |
| 4021.79 | 1121    | 4023.5  | 1121.04 | 4025.45 | 1121.09 | 4063.76 | 1122    | 4066.57 | 1122.04 |
| 4067.65 | 1122.05 | 4102.45 | 1122.67 | 4106.33 | 1122.73 | 4119.51 | 1122.96 | 4122.34 | 1123    |
| 4125.94 | 1123.04 |         |         |         |         |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .04 2460.09 .035 3554.27 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 2460.09 3554.27 261.19 270.42 279.65 .1 .3

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 2460.09 1117.02 F  
 3554.27 4125.94 1119 F  
 Left Levee Station= 2460.09 Elevation= 1117.02

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 217.38

INPUT Description:

|         |           |         |         |         |         |         |         |         |         |     |      |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|-----|------|
| Station | Elevation | Data    | num=    | 355     |         |         |         |         |         |     |      |
| Sta     | Elev      | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta | Elev |
| 0       | 1122.3    | 27.12   | 1122.58 | 30.31   | 1122.65 | 47.2    | 1122.97 | 49.08   | 1123    |     |      |
| 339.8   | 1122.57   | 375.57  | 1122    | 427.37  | 1121.42 | 436.64  | 1121.12 | 437.13  | 1121.11 |     |      |
| 440.33  | 1121      | 560.73  | 1120    | 636.01  | 1119.92 | 636.93  | 1119.79 | 642.69  | 1119    |     |      |
| 645.69  | 1118.54   | 648.89  | 1118    | 656.74  | 1117    | 656.94  | 1116.98 | 667.33  | 1116    |     |      |
| 697.21  | 1116.61   | 699.22  | 1117    | 701.25  | 1117.43 | 704.04  | 1118    | 708.59  | 1119    |     |      |
| 719.75  | 1118.35   | 721.83  | 1118    | 724.33  | 1117.16 | 724.81  | 1117    | 725.36  | 1116.82 |     |      |
| 727.8   | 1116      | 728.75  | 1115.26 | 729.09  | 1115    | 731.03  | 1114.94 | 732.3   | 1114.91 |     |      |
| 742.62  | 1114.61   | 748.97  | 1114.45 | 754.06  | 1114.31 | 758.97  | 1114.19 | 761.08  | 1114.13 |     |      |
| 762.26  | 1114.1    | 765.99  | 1114    | 1090.18 | 1113.56 | 1094.55 | 1113.47 | 1114.91 | 1113    |     |      |
| 1135.28 | 1112.08   | 1136.74 | 1112    | 1140.61 | 1112.25 | 1144.49 | 1113    | 1197.82 | 1114    |     |      |
| 1224.85 | 1114.2    | 1244.43 | 1115    | 1268.9  | 1114.94 | 1285.39 | 1114    | 1301.96 | 1113.57 |     |      |

Proposed\_SkyHarbor.rep

|         |          |         |         |         |         |         |         |         |         |
|---------|----------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1303.33 | 1113.55  | 1309.37 | 1113.39 | 1311.34 | 1113.33 | 1325.15 | 1113    | 1377.09 | 1113.88 |
| 1381.95 | 1113.9   | 1389.35 | 1114    | 1920.98 | 1113.93 | 1921.6  | 1113.9  | 1921.87 | 1113.88 |
| 1924.93 | 1113.74  | 1931.79 | 1113.33 | 1932.3  | 1113.31 | 1938.4  | 1113.08 | 1938.68 | 1113.06 |
| 1940.26 | 1113     | 2008.29 | 1113.05 | 2013.88 | 1113.18 | 2015.31 | 1113.2  | 2023.23 | 1113.34 |
| 2023.67 | 1113.33  | 2027.57 | 1113.39 | 2029.77 | 1113.37 | 2034.15 | 1113.42 | 2077.96 | 1113.03 |
| 2079.79 | 1113     | 2144.72 | 1112.35 | 2148.76 | 1112.3  | 2151.52 | 1112.29 | 2153.88 | 1112.27 |
| 2160.04 | 1112.24  | 2161.64 | 1112.23 | 2164.82 | 1112.22 | 2166.13 | 1112.21 | 2167.15 | 1112.2  |
| 2167.88 | 1112.19  | 2186.37 | 1112    | 2269.73 | 1112.68 | 2270.71 | 1112.7  | 2271.23 | 1112.69 |
| 2275.29 | 1112.7   | 2288.12 | 1112.58 | 2289.21 | 1112.56 | 2291.47 | 1112.51 | 2299.43 | 1112.57 |
| 2301.64 | 1112.49  | 2305.04 | 1112.34 | 2310.89 | 1112.01 | 2311.09 | 1112    | 2322.03 | 1111.05 |
| 2322.4  | 1110.79  | 2323.56 | 1110    | 2323.89 | 1109.77 | 2325    | 1109    | 2326.33 | 1108.09 |
| 2327.7  | 1107.14  | 2327.89 | 1107    | 2328.7  | 1106.44 | 2329.34 | 1106    | 2329.44 | 1105.93 |
| 2330.78 | 1105     | 2331.35 | 1104.6  | 2332.21 | 1104    | 2340.01 | 1103.76 | 2344.02 | 1103.79 |
| 2347.89 | 1103.77  | 2353.93 | 1103.72 | 2357.33 | 1103.68 | 2361.21 | 1103.65 | 2365.19 | 1103.61 |
| 2367.28 | 1103.65  | 2370.83 | 1103.56 | 2373.42 | 1103.39 | 2378.96 | 1103.04 | 2379.21 | 1103.03 |
| 2379.64 | 1103     | 2383.94 | 1103.49 | 2384.98 | 1104    | 2385.91 | 1104.55 | 2386.78 | 1105    |
| 2388.43 | 1105.66  | 2389.36 | 1106    | 2391.15 | 1106.57 | 2392.61 | 1107    | 2394.97 | 1107.77 |
| 2395.63 | 1108     | 2395.98 | 1108.12 | 2398.58 | 1109    | 2399.56 | 1109.34 | 2401.51 | 1110    |
| 2402.87 | 1110.45  | 2404.48 | 1111    | 2413.29 | 1113.97 | 2413.37 | 1114    | 2413.46 | 1114.03 |
| 2413.81 | 1114.15  | 2416.37 | 1115    | 2416.82 | 1115.2  | 2418.77 | 1116    | 2419.8  | 1116.47 |
| 2422.38 | 1117.64  | 2423.19 | 1118    | 2462.06 | 1117.31 | 2464.32 | 1117    | 2466.92 | 1115.75 |
| 2468.47 | 1115     | 2469    | 1114.74 | 2471.08 | 1113.74 | 2472.61 | 1113    | 2473.18 | 1112.73 |
| 2474.68 | 1112     | 2475.74 | 1111.49 | 2476.75 | 1111    | 2477.98 | 1110.41 | 2478.83 | 1110    |
| 2480.46 | 1109.21  | 2480.9  | 1109    | 2481.79 | 1108.57 | 2482.96 | 1108    | 2483.63 | 1107.67 |
| 2485.03 | 1107     | 2486.19 | 1106.43 | 2487.03 | 1106    | 2488.09 | 1105.46 | 2490.54 | 1104.22 |
| 2490.98 | 1104     | 2491.75 | 1103.61 | 2492.97 | 1103    | 2494.02 | 1102.47 | 2494.94 | 1102    |
| 2496.15 | 1101.4   | 2496.95 | 1101    | 2497.82 | 1100.68 | 2499.49 | 1100.11 | 2499.83 | 1100    |
| 2501.1  | 1099.7   | 2501.38 | 1099.63 | 2504.2  | 1099    | 2504.76 | 1098.94 | 2512.38 | 1098    |
| 2574.12 | 1097.22  | 2580.79 | 1097    | 2594.94 | 1096.67 | 2600.19 | 1096.54 | 2609.31 | 1096.33 |
| 2621.26 | 1096     | 2623.61 | 1095.75 | 2626.44 | 1095.5  | 2628.86 | 1095.27 | 2632.25 | 1095    |
| 2633.03 | 1094.85  | 2636.39 | 1094    | 2638.05 | 1093.59 | 2640.18 | 1093    | 2646.32 | 1092    |
| 2649.88 | 1092.12  | 2658.58 | 1093    | 2661.62 | 1093.24 | 2662.2  | 1093.29 | 2670.81 | 1094    |
| 2677.48 | 1094.4   | 2679.36 | 1094.51 | 2680.87 | 1094.59 | 2687.52 | 1095    | 2774.68 | 1096    |
| 2919.15 | 1095.38  | 2924.72 | 1095    | 2977.33 | 1095.33 | 2981.73 | 1095.81 | 2982.7  | 1095.92 |
| 2983.49 | 1096     | 2988.22 | 1095.55 | 2990.44 | 1095    | 2995.75 | 1094.52 | 3001.94 | 1094    |
| 3027.29 | 1093     | 3028.87 | 1092.59 | 3030.93 | 1092.05 | 3031.13 | 1092    | 3033.77 | 1091.63 |
| 3038.35 | 1091     | 3087.87 | 1091.59 | 3089.05 | 1091.6  | 3093.27 | 1091.66 | 3107.12 | 1092    |
| 3150.57 | 1091.83  | 3158.51 | 1091.78 | 3163.76 | 1091.76 | 3173    | 1091.69 | 3203.58 | 1091.54 |
| 3253.25 | 1091.12  | 3255.22 | 1091.11 | 3267.68 | 1091    | 3323.56 | 1090    | 3387.85 | 1089    |
| 3431.18 | 1089.01  | 3433.71 | 1089.07 | 3434.79 | 1089.12 | 3438.67 | 1089.27 | 3452.15 | 1089.93 |
| 3452.92 | 1089.96  | 3453.64 | 1090    | 3469.95 | 1090.63 | 3475.93 | 1090.83 | 3477.43 | 1090.89 |
| 3477.54 | 1090.893 | 3480.94 | 1091    | 3484.18 | 1091.43 | 3487.64 | 1092    | 3489.01 | 1092.72 |
| 3489.55 | 1093     | 3491.41 | 1093.97 | 3495.29 | 1096    | 3495.98 | 1096.36 | 3497.19 | 1097    |
| 3497.81 | 1097.33  | 3499.08 | 1098    | 3500.69 | 1098.86 | 3500.97 | 1099    | 3502.72 | 1099.93 |
| 3502.86 | 1100     | 3503.33 | 1100.25 | 3504.25 | 1100.73 | 3504.75 | 1101    | 3505.66 | 1101.48 |
| 3506.63 | 1102     | 3507.09 | 1102.24 | 3508.52 | 1103    | 3510.42 | 1104    | 3511.64 | 1104.63 |
| 3512.35 | 1105     | 3512.69 | 1105.18 | 3515.06 | 1106.41 | 3516.21 | 1107    | 3516.85 | 1107.33 |
| 3518.16 | 1108     | 3519.72 | 1108.78 | 3520.15 | 1109    | 3520.82 | 1109.32 | 3522.24 | 1110    |
| 3523.04 | 1110.37  | 3524.38 | 1111    | 3524.81 | 1111.2  | 3528.71 | 1112.99 | 3530.9  | 1114    |
| 3531.31 | 1114.19  | 3532.82 | 1114.88 | 3533.09 | 1115    | 3534.76 | 1115.76 | 3535.29 | 1116    |
| 3535.75 | 1116.21  | 3537.5  | 1117    | 3538.37 | 1117.21 | 3541.67 | 1118    | 3604.37 | 1118.4  |
| 3623.25 | 1118.91  | 3626.22 | 1119    | 3684.93 | 1118.91 | 3725.54 | 1118.23 | 3729.23 | 1118.16 |
| 3739.25 | 1118     | 3767.87 | 1118.01 | 3784.38 | 1118.3  | 3801.53 | 1118.71 | 3806.93 | 1118.82 |
| 3809.07 | 1118.87  | 3813.23 | 1119    | 3825.81 | 1119.55 | 3836.58 | 1119.99 | 3836.75 | 1120    |
| 3869.15 | 1119.93  | 3869.98 | 1119.95 | 3875.56 | 1120    | 3952.93 | 1119.69 | 3993.43 | 1119    |
| 3995.36 | 1118.95  | 3996.07 | 1118.93 | 3997.65 | 1118.89 | 4010.83 | 1118.54 | 4014.07 | 1118.45 |
| 4031.86 | 1118     | 4035.48 | 1117.88 | 4038.21 | 1117.78 | 4047.28 | 1117.47 | 4059.51 | 1117    |
| 4074.29 | 1117.55  | 4076.77 | 1117.68 | 4083.14 | 1118    | 4090.44 | 1118.01 | 4100.18 | 1118.07 |
| 4101.09 | 1118.09  | 4101.35 | 1118.1  | 4109.77 | 1118.29 | 4117.79 | 1118.54 | 4123.55 | 1118.7  |
| 4127.46 | 1118.82  | 4132.79 | 1118.97 | 4134.06 | 1119    | 4152.6  | 1119.48 | 4153.28 | 1119.5  |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 2462.06 .035 3541.67 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 2462.06 3541.67 254.91 254.63 254.3 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 2462.06 1117.31 F  
 3541.67 4153.28 1118 F  
 Left Levee Station= 2462.06 Elevation= 1117.31

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 217.34

INPUT  
 Description:

|         |           |        |         |        |         |        |         |        |         |
|---------|-----------|--------|---------|--------|---------|--------|---------|--------|---------|
| Station | Elevation | Data   | num=    | 427    |         |        |         |        |         |
| Sta     | Elev      | Sta    | Elev    | Sta    | Elev    | Sta    | Elev    | Sta    | Elev    |
| 0       | 1121.51   | 1.96   | 1121.53 | 4.02   | 1121.54 | 7.35   | 1121.53 | 9.8    | 1121.54 |
| 13.05   | 1121.53   | 15.13  | 1121.54 | 18.19  | 1121.53 | 19.82  | 1121.54 | 22.58  | 1121.53 |
| 26.68   | 1121.56   | 29.14  | 1121.55 | 31.87  | 1121.56 | 33.77  | 1121.55 | 34.61  | 1121.56 |
| 36.7    | 1121.55   | 38.76  | 1121.56 | 74.88  | 1121.45 | 106.92 | 1121.55 | 108.82 | 1121.56 |
| 131.45  | 1121.59   | 134.06 | 1121.64 | 189.84 | 1121.36 | 192.46 | 1121.32 | 193.19 | 1121.31 |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 194.77  | 1121.3  | 196.87  | 1121.25 | 199.27  | 1121.23 | 199.73  | 1121.22 | 202.71  | 1121.2  |
| 206.89  | 1121.14 | 208.87  | 1121.12 | 217.28  | 1121    | 303.64  | 1121.02 | 305.6   | 1121.09 |
| 307.49  | 1121.15 | 311.06  | 1121.27 | 313.83  | 1121.37 | 315.63  | 1121.44 | 317.5   | 1121.5  |
| 318.68  | 1121.53 | 320.03  | 1121.57 | 338.45  | 1121.74 | 430.53  | 1121    | 465.26  | 1120.54 |
| 465.68  | 1120.53 | 484.74  | 1120.2  | 486.88  | 1120.17 | 496.87  | 1120    | 518.61  | 1119.74 |
| 521.3   | 1119.67 | 527.08  | 1119.59 | 532.42  | 1119.44 | 536.01  | 1119.37 | 543.48  | 1119.15 |
| 544.59  | 1119.13 | 548.69  | 1119    | 627.44  | 1118.9  | 631.87  | 1118    | 634.9   | 1117.35 |
| 636.47  | 1117    | 641.32  | 1115    | 644.89  | 1114.64 | 646.56  | 1114.54 | 653.94  | 1114    |
| 992.46  | 1113.91 | 992.67  | 1113.9  | 994.18  | 1113.87 | 1044.05 | 1113    | 1102.23 | 1113.05 |
| 1103.41 | 1113.09 | 1118.3  | 1113.51 | 1123.29 | 1113.66 | 1134.55 | 1113.98 | 1172.13 | 1115    |
| 1196.94 | 1114.26 | 1199.8  | 1114    | 1204.63 | 1113.79 | 1223.75 | 1113    | 1277.75 | 1113.16 |
| 1323.37 | 1114    | 1829.45 | 1113.92 | 1829.83 | 1113.91 | 1830.34 | 1113.9  | 1831.22 | 1113.87 |
| 1831.84 | 1113.86 | 1848.39 | 1113.49 | 1853.6  | 1113.34 | 1855.45 | 1113.3  | 1858.63 | 1113.24 |
| 1863.01 | 1113.13 | 1865.11 | 1113.09 | 1868.39 | 1113    | 1882.74 | 1112.82 | 1883.44 | 1112.81 |
| 1887.15 | 1112.77 | 1891.15 | 1112.71 | 1892.6  | 1112.72 | 1896    | 1112.67 | 1898.38 | 1112.68 |
| 1913.62 | 1112.53 | 1920.95 | 1112.41 | 1926.67 | 1112.34 | 1932.76 | 1112.22 | 1936.34 | 1112.18 |
| 1945.18 | 1112.01 | 1945.98 | 1112    | 2165.58 | 1111.91 | 2179.55 | 1111.75 | 2190.12 | 1111.59 |
| 2205.55 | 1111.4  | 2224.54 | 1111.09 | 2225.59 | 1111.08 | 2230.29 | 1111    | 2231.36 | 1110.39 |
| 2232.05 | 1110    | 2233.56 | 1109.15 | 2233.82 | 1109    | 2234.09 | 1108.85 | 2235.6  | 1108    |
| 2236.13 | 1107.7  | 2237.38 | 1107    | 2238.17 | 1106.55 | 2239.16 | 1106    | 2240.65 | 1105.32 |
| 2241.36 | 1105    | 2243.27 | 1104.21 | 2243.79 | 1104    | 2245.72 | 1103.2  | 2246.21 | 1103    |
| 2250.63 | 1101.18 | 2251.06 | 1101    | 2252.58 | 1100.32 | 2253.27 | 1100    | 2254.18 | 1099.53 |
| 2255.25 | 1099    | 2257.14 | 1098.02 | 2257.22 | 1097.98 | 2257.59 | 1097.78 | 2259.05 | 1097    |
| 2260.67 | 1096.15 | 2260.94 | 1096    | 2261.91 | 1095.48 | 2262.82 | 1095    | 2263.05 | 1094.88 |
| 2264.69 | 1094    | 2265.42 | 1093.54 | 2266.27 | 1093    | 2266.58 | 1092.2  | 2266.65 | 1092    |
| 2266.72 | 1091.83 | 2267.04 | 1091    | 2267.43 | 1090.68 | 2268.44 | 1090    | 2269.26 | 1089.56 |
| 2270.44 | 1089.69 | 2272.55 | 1089.36 | 2275.62 | 1089.27 | 2279.59 | 1089.36 | 2281.83 | 1089.39 |
| 2285.72 | 1089.47 | 2289.01 | 1089.5  | 2291.84 | 1089.56 | 2295.47 | 1089.58 | 2297    | 1089.6  |
| 2298.18 | 1089.61 | 2308.8  | 1089.64 | 2312.02 | 1089.63 | 2315.65 | 1089.65 | 2319.57 | 1089.63 |
| 2320.77 | 1089.62 | 2329.61 | 1090    | 2333.87 | 1090.73 | 2334.3  | 1091    | 2335.15 | 1091.54 |
| 2335.88 | 1092    | 2336.99 | 1092.71 | 2337.45 | 1093    | 2338.77 | 1093.86 | 2338.99 | 1094    |
| 2340.7  | 1094.82 | 2341.01 | 1095    | 2344.17 | 1096    | 2346.49 | 1096.72 | 2347.4  | 1097    |
| 2350.48 | 1097.98 | 2350.59 | 1098.02 | 2350.73 | 1098.06 | 2353.61 | 1099    | 2356.86 | 1100    |
| 2357.44 | 1100.18 | 2360.16 | 1101    | 2362.6  | 1101.75 | 2363.4  | 1102    | 2365.84 | 1102.75 |
| 2366.65 | 1103    | 2367.35 | 1103.22 | 2369.89 | 1104    | 2373.09 | 1105    | 2374.27 | 1105.44 |
| 2375.75 | 1106    | 2378.22 | 1106.78 | 2378.91 | 1107    | 2384.45 | 1108.67 | 2385.52 | 1109    |
| 2386.58 | 1109.31 | 2388.88 | 1110    | 2390.27 | 1110.4  | 2392.38 | 1111    | 2395.16 | 1111.81 |
| 2396.37 | 1112.17 | 2402.91 | 1114    | 2403.98 | 1114.29 | 2406.52 | 1115    | 2408.64 | 1115.9  |
| 2408.77 | 1115.96 | 2409.71 | 1116.48 | 2410.56 | 1116.97 | 2412.45 | 1117.87 | 2412.7  | 1118    |
| 2452.56 | 1117.96 | 2453.97 | 1117.2  | 2454.33 | 1117    | 2456.33 | 1116    | 2458.34 | 1115    |
| 2459.13 | 1114.6  | 2460.34 | 1114    | 2461.03 | 1113.65 | 2462.34 | 1113    | 2463.57 | 1112.38 |
| 2464.34 | 1112    | 2466.06 | 1111.14 | 2466.33 | 1111    | 2466.43 | 1110.95 | 2469.83 | 1109.25 |
| 2470.34 | 1109    | 2472.1  | 1108.12 | 2472.35 | 1108    | 2472.81 | 1107.77 | 2474.36 | 1107    |
| 2475.16 | 1106.61 | 2476.39 | 1106    | 2478.03 | 1105.25 | 2478.57 | 1105    | 2478.97 | 1104.82 |
| 2480.72 | 1104    | 2480.9  | 1103.92 | 2483.43 | 1102.72 | 2486.24 | 1101.38 | 2487.03 | 1101    |
| 2487.19 | 1100.93 | 2487.94 | 1100.56 | 2490.55 | 1099.31 | 2491.19 | 1099    | 2491.48 | 1098.86 |
| 2493.27 | 1098    | 2496.88 | 1097.7  | 2526.58 | 1097    | 2550.77 | 1096.3  | 2554.1  | 1096    |
| 2556.15 | 1095.72 | 2561.98 | 1095    | 2563.07 | 1094.59 | 2565    | 1094    | 2566.69 | 1093.62 |
| 2569.29 | 1093    | 2571.98 | 1092.31 | 2573.26 | 1092    | 2574.36 | 1091.71 | 2577.09 | 1091    |
| 2608.96 | 1091.71 | 2610.45 | 1092    | 2628.35 | 1092.81 | 2629.57 | 1093    | 2641.56 | 1093.81 |
| 2643.93 | 1093.98 | 2644.27 | 1094    | 2644.68 | 1094.01 | 2645.87 | 1094.05 | 2675.82 | 1095    |
| 2753.64 | 1096    | 2852.77 | 1095.68 | 2892.8  | 1095    | 2965.16 | 1094.78 | 2967.42 | 1094    |
| 2970.16 | 1093.08 | 2970.43 | 1093    | 2971.23 | 1092.75 | 2972.46 | 1092.42 | 2973.45 | 1092    |
| 2979.3  | 1092.04 | 2981.4  | 1092.22 | 2997.56 | 1092.25 | 3053.99 | 1093    | 3084.63 | 1092.65 |
| 3124.95 | 1092    | 3134    | 1091.77 | 3136.01 | 1091.75 | 3145    | 1091.54 | 3148.89 | 1091.51 |
| 3182.62 | 1091    | 3201.46 | 1090.95 | 3203.19 | 1090.91 | 3213.07 | 1090.72 | 3243.55 | 1090    |
| 3301.28 | 1089    | 3324.73 | 1088.11 | 3327.83 | 1088    | 3335.18 | 1087.7  | 3341.44 | 1087.46 |
| 3346.26 | 1087.26 | 3353.02 | 1087    | 3360.39 | 1086.75 | 3362.09 | 1086.7  | 3369.97 | 1086.43 |
| 3371.66 | 1086.41 | 3382.45 | 1086.21 | 3383.73 | 1086.22 | 3388.86 | 1086.31 | 3391.26 | 1086.42 |
| 3392.61 | 1086.45 | 3397.93 | 1086.69 | 3398.89 | 1086.73 | 3404.68 | 1087    | 3426.76 | 1087.93 |
| 3427.3  | 1087.95 | 3428.37 | 1088    | 3442.53 | 1088.89 | 3444.13 | 1089    | 3445.98 | 1089.17 |
| 3454.76 | 1090    | 3456.81 | 1090.37 | 3459.96 | 1091    | 3461.96 | 1091.96 | 3462.05 | 1092    |
| 3464.12 | 1093    | 3464.98 | 1093.42 | 3465.4  | 1093.63 | 3466.16 | 1094    | 3467.98 | 1094.9  |
| 3468.18 | 1095    | 3468.33 | 1095.07 | 3471.46 | 1096.62 | 3472.23 | 1097    | 3472.7  | 1097.24 |
| 3474.24 | 1098    | 3475.08 | 1098.43 | 3476.22 | 1099    | 3476.71 | 1099.25 | 3478.09 | 1099.94 |
| 3478.2  | 1100    | 3480.14 | 1100.98 | 3480.32 | 1101.07 | 3482.17 | 1102    | 3483.11 | 1102.48 |
| 3484.15 | 1103    | 3485.46 | 1103.67 | 3486.11 | 1104    | 3486.97 | 1104.45 | 3488.04 | 1105    |
| 3489.63 | 1105.83 | 3490.27 | 1106.16 | 3491.93 | 1107    | 3492.79 | 1107.41 | 3494.01 | 1108    |
| 3497.69 | 1109.72 | 3498.28 | 1110    | 3498.97 | 1110.32 | 3500.43 | 1111    | 3501.45 | 1111.48 |
| 3504.23 | 1112.77 | 3504.71 | 1113    | 3506.47 | 1113.8  | 3506.89 | 1114    | 3508.24 | 1114.6  |
| 3509.16 | 1115    | 3509.45 | 1115.12 | 3511.48 | 1116    | 3513.55 | 1116.7  | 3514.41 | 1117    |
| 3528.72 | 1117.96 | 3529.25 | 1118    | 3603.91 | 1117.84 | 3605.82 | 1117.83 | 3610.11 | 1117.78 |
| 3611.31 | 1117.77 | 3614    | 1117.74 | 3615.3  | 1117.73 | 3627.61 | 1117.59 | 3638.16 | 1117.45 |
| 3641.51 | 1117.4  | 3644.34 | 1117.37 | 3646.34 | 1117.34 | 3670.24 | 1117.04 | 3673.03 | 1117    |
| 3764.34 | 1117.47 | 3767    | 1117.49 | 3769.39 | 1117.5  | 3832.01 | 1117    | 3872.07 | 1116.22 |
| 3877.79 | 1116.09 | 3878.73 | 1116.06 | 3881.67 | 1116.03 | 3882.02 | 1116.04 | 3882.56 | 1116.05 |
| 3883.18 | 1116.08 | 3887.32 | 1116.18 | 3889.09 | 1116.24 | 3892.31 | 1116.38 | 3894.19 | 1116.45 |
| 3896.18 | 1116.53 | 3903.5  | 1116.85 | 3904.45 | 1116.89 | 3906.9  | 1117    | 3912.68 | 1117.18 |
| 3918.96 | 1117.36 | 3922.25 | 1117.44 | 3941.96 | 1118    | 3958.37 | 1118.21 | 3962.92 | 1118.26 |
| 3998.18 | 1118.71 | 4072.8  | 1118.09 | 4079.2  | 1118    | 4117.19 | 1117    | 4117.73 | 1116.98 |
| 4141.05 | 1116    | 4157.4  | 1115    |         |         |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 2452.56 .035 3528.72 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 2452.56 3528.72 241.99 242.93 243.92 .1 .3

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 2452.56 1117.96 F  
 3528.72 4157.4 1117.96 F  
 Left Levee Station= 2452.56 Elevation= 1117.96

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 217.29

INPUT

Description:

| Station | Elevation | Data    | num=    | 475     | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0       | 1122      | 121.95  | 1121.64 | 124.98  | 1121    | 203.12  | 1120.96 | 209.49  | 1120    | 1120    |
| 211.93  | 1119.36   | 213.26  | 1119    | 294.27  | 1119.07 | 299.28  | 1119.17 | 307.4   | 1119.23 | 1119.23 |
| 309.18  | 1119.26   | 349.43  | 1120    | 514.16  | 1119.6  | 517.22  | 1119    | 519.29  | 1118.28 | 1118.28 |
| 520.09  | 1118      | 522.88  | 1117.05 | 523.01  | 1117    | 523.09  | 1116.97 | 525.98  | 1116    | 1116    |
| 528.74  | 1115.11   | 529.07  | 1115    | 529.38  | 1114.89 | 531.93  | 1114.04 | 532.04  | 1114    | 1114    |
| 566.53  | 1113.13   | 570.85  | 1113    | 633.77  | 1113.04 | 639.44  | 1113.05 | 676.68  | 1113.02 | 1113.02 |
| 782.92  | 1112.49   | 789.58  | 1112.52 | 794.02  | 1112.53 | 796.68  | 1112.55 | 799.03  | 1112.58 | 1112.58 |
| 811.87  | 1112.18   | 817.39  | 1112.19 | 821.92  | 1112.21 | 836.89  | 1112.18 | 840.34  | 1112.19 | 1112.19 |
| 844.26  | 1112.24   | 847.12  | 1112.26 | 856.19  | 1112.4  | 866.13  | 1112.48 | 880.03  | 1112.46 | 1112.46 |
| 892.59  | 1112.32   | 892.96  | 1112.31 | 908.31  | 1112.09 | 909.18  | 1112.07 | 913.95  | 1112    | 1112    |
| 923.23  | 1112.57   | 924.84  | 1112.8  | 926.35  | 1113    | 940.49  | 1113.22 | 942.78  | 1113.26 | 1113.26 |
| 970.56  | 1113.68   | 983.13  | 1113.75 | 993.07  | 1113.97 | 994.6   | 1114    | 1026.72 | 1114.34 | 1114.34 |
| 1039.78 | 1114.81   | 1044.63 | 1115    | 1056.68 | 1114.61 | 1065.01 | 1114    | 1133.01 | 1113.8  | 1113.8  |
| 1134.8  | 1113.79   | 1148.37 | 1113.75 | 1149.97 | 1113.74 | 1167.19 | 1113.71 | 1216.55 | 1114    | 1114    |
| 1256.31 | 1113.69   | 1257.34 | 1113.68 | 1292.13 | 1113    | 1311.99 | 1112.93 | 1320.97 | 1112.85 | 1112.85 |
| 1322.35 | 1112.84   | 1329.56 | 1112.77 | 1332.07 | 1112.75 | 1343.48 | 1112.64 | 1345.91 | 1112.61 | 1112.61 |
| 1352.17 | 1112.56   | 1355.94 | 1112.52 | 1357.52 | 1112.51 | 1359.48 | 1112.49 | 1361.53 | 1112.46 | 1112.46 |
| 1373.11 | 1112.34   | 1375.32 | 1112.32 | 1380.36 | 1112.29 | 1381.47 | 1112.27 | 1386.32 | 1112.25 | 1112.25 |
| 1387.4  | 1112.24   | 1397.62 | 1112.13 | 1402.33 | 1112.07 | 1408.64 | 1112.01 | 1409.43 | 1112    | 1112    |
| 1419.2  | 1112.04   | 1436.97 | 1113    | 1580.49 | 1112.28 | 1596.06 | 1112    | 1629.28 | 1111.85 | 1111.85 |
| 1629.72 | 1111.84   | 1630.78 | 1111.83 | 1631.91 | 1111.81 | 1633.43 | 1111.78 | 1636.55 | 1111.73 | 1111.73 |
| 1641.47 | 1111.66   | 1671.16 | 1111    | 1776.06 | 1111.01 | 1809.45 | 1111.14 | 1816.47 | 1111.13 | 1111.13 |
| 1829.06 | 1111.17   | 2097.96 | 1111.02 | 2104.47 | 1111    | 2145.52 | 1110.28 | 2146.07 | 1110    | 1110    |
| 2147.44 | 1109.3    | 2148.02 | 1109    | 2149.36 | 1108.31 | 2149.97 | 1108    | 2151.26 | 1107.34 | 1107.34 |
| 2151.92 | 1107      | 2152.71 | 1106.59 | 2153.86 | 1106    | 2155.68 | 1105.12 | 2155.91 | 1105    | 1105    |
| 2156.11 | 1104.91   | 2158.16 | 1104    | 2159.41 | 1103.43 | 2160.42 | 1103    | 2163.26 | 1101.76 | 1101.76 |
| 2164.46 | 1101.23   | 2165    | 1101    | 2166.68 | 1100.27 | 2167.31 | 1100    | 2169.31 | 1099.13 | 1099.13 |
| 2169.61 | 1099      | 2170.04 | 1098.81 | 2173.4  | 1097.36 | 2174.23 | 1097    | 2174.98 | 1096.67 | 1096.67 |
| 2176.2  | 1096.14   | 2176.53 | 1096    | 2178.79 | 1095.03 | 2178.87 | 1095    | 2179    | 1094.94 | 1094.94 |
| 2181.16 | 1094      | 2182.41 | 1093.42 | 2183.27 | 1093    | 2184.14 | 1092.53 | 2186.35 | 1093    | 1093    |
| 2187.17 | 1092.81   | 2189.33 | 1092    | 2190.56 | 1091.21 | 2190.89 | 1091    | 2191.35 | 1090.69 | 1090.69 |
| 2192.37 | 1090      | 2192.94 | 1089.6  | 2194.47 | 1088.58 | 2195.32 | 1088    | 2196.68 | 1087.08 | 1087.08 |
| 2196.8  | 1087      | 2197.08 | 1086.82 | 2198.57 | 1086    | 2200.04 | 1085.38 | 2200.42 | 1085.23 | 1085.23 |
| 2200.97 | 1085      | 2202.09 | 1084.81 | 2205.64 | 1084.27 | 2206.94 | 1084.13 | 2211.01 | 1084    | 1084    |
| 2213.48 | 1083.94   | 2217.47 | 1083.86 | 2221.06 | 1083.78 | 2227.14 | 1084    | 2242.79 | 1084.08 | 1084.08 |
| 2283.2  | 1085.24   | 2313.2  | 1086    | 2315.76 | 1086.93 | 2315.86 | 1087    | 2316.24 | 1087.26 | 1087.26 |
| 2317.31 | 1088      | 2318.21 | 1088.61 | 2318.78 | 1089    | 2319.34 | 1089.38 | 2320.25 | 1090    | 1090    |
| 2321.7  | 1090.97   | 2323.24 | 1092    | 2324.66 | 1092.88 | 2324.84 | 1093    | 2325.04 | 1093.11 | 1093.11 |
| 2326.6  | 1094      | 2327.58 | 1094.57 | 2328.34 | 1095    | 2329.85 | 1095.88 | 2330.06 | 1096    | 1096    |
| 2332.64 | 1095.33   | 2333.36 | 1095    | 2338.48 | 1095.31 | 2342.85 | 1096.48 | 2344.73 | 1097    | 1097    |
| 2347.99 | 1097.91   | 2348.32 | 1098    | 2348.53 | 1098.06 | 2351.9  | 1099    | 2353.14 | 1099.37 | 1099.37 |
| 2355.14 | 1100      | 2357.21 | 1100.71 | 2358.07 | 1101    | 2359.57 | 1101.51 | 2363.41 | 1102.81 | 1102.81 |
| 2363.98 | 1103      | 2366.06 | 1103.69 | 2367.03 | 1104    | 2369.52 | 1104.82 | 2370.08 | 1105    | 1105    |
| 2370.28 | 1105.07   | 2373.13 | 1106    | 2374.67 | 1106.5  | 2376.19 | 1107    | 2379.12 | 1107.97 | 1107.97 |
| 2379.32 | 1108.03   | 2382.2  | 1109    | 2382.73 | 1109.18 | 2386.39 | 1110.4  | 2388.18 | 1111    | 1111    |
| 2390.94 | 1111.93   | 2391.41 | 1112.08 | 2396.79 | 1113.86 | 2397.21 | 1114    | 2397.68 | 1114.16 | 1114.16 |
| 2397.92 | 1114.24   | 2400.28 | 1115    | 2402.99 | 1116    | 2404.76 | 1116.72 | 2405.44 | 1117    | 1117    |
| 2407.83 | 1117.22   | 2416.47 | 1118    | 2442.85 | 1117.43 | 2446.44 | 1117    | 2447.64 | 1116.4  | 1116.4  |
| 2449.2  | 1115.61   | 2451.66 | 1114.37 | 2454.36 | 1113.02 | 2456.39 | 1112    | 2458.02 | 1111.19 | 1111.19 |
| 2460.4  | 1110      | 2461.73 | 1109.34 | 2462.4  | 1109    | 2463.51 | 1108.44 | 2464.83 | 1107.78 | 1107.78 |
| 2466.38 | 1107      | 2467.12 | 1106.62 | 2468.32 | 1106    | 2469.56 | 1105.33 | 2470.19 | 1105    | 1105    |
| 2471.28 | 1104.42   | 2472.08 | 1104    | 2472.6  | 1103.73 | 2473.99 | 1103    | 2475.27 | 1102.34 | 1102.34 |
| 2475.92 | 1102      | 2476.51 | 1101.69 | 2477.84 | 1101    | 2479.24 | 1100.28 | 2479.64 | 1100.07 | 1100.07 |
| 2479.96 | 1099.91   | 2481.72 | 1099    | 2482.61 | 1098.55 | 2482.74 | 1098.48 | 2484.6  | 1097.52 | 1097.52 |
| 2485.62 | 1097      | 2531.69 | 1096.55 | 2534.12 | 1096    | 2534.62 | 1095.08 | 2536.38 | 1094.05 | 1094.05 |
| 2536.48 | 1094      | 2536.66 | 1093.93 | 2539.07 | 1093    | 2540.69 | 1092.59 | 2542.98 | 1092    | 1092    |
| 2544.46 | 1091.61   | 2546.56 | 1091    | 2550.3  | 1090.64 | 2557.88 | 1090    | 2575.67 | 1089    | 1089    |
| 2590.16 | 1089.4    | 2593.25 | 1089.58 | 2600.28 | 1090    | 2605.24 | 1090.51 | 2609.91 | 1091    | 1091    |
| 2617.81 | 1092      | 2632.42 | 1093    | 2646.84 | 1093.81 | 2650.14 | 1094    | 2668.8  | 1095    | 1095    |
| 2718.08 | 1096      | 2812.22 | 1095.53 | 2851.74 | 1094.35 | 2855.33 | 1094    | 2856.76 | 1093.28 | 1093.28 |
| 2857.32 | 1093      | 2857.85 | 1092.75 | 2859.41 | 1092    | 2860.19 | 1091.71 | 2862.16 | 1091    | 1091    |
| 2875.92 | 1091.27   | 2878.53 | 1091.41 | 2885.65 | 1091.85 | 2887.61 | 1092    | 2909.57 | 1092.5  | 1092.5  |
| 2910.37 | 1092.52   | 2912.4  | 1092.58 | 2928.32 | 1093    | 2933.52 | 1093.17 | 2935.01 | 1093.2  | 1093.2  |
| 2941.37 | 1093.41   | 2945.88 | 1093.55 | 2950.2  | 1093.6  | 2951.24 | 1093.63 | 2951.87 | 1093.65 | 1093.65 |
| 2956.79 | 1093.68   | 2963.5  | 1093.84 | 2969.15 | 1093.83 | 2969.68 | 1093.84 | 2970.12 | 1093.85 | 1093.85 |
| 2970.5  | 1093.86   | 2983.22 | 1093.85 | 2985.26 | 1093.82 | 2992.19 | 1093.78 | 2994.83 | 1093.74 | 1093.74 |
| 2997.11 | 1093.71   | 2999.78 | 1093.66 | 3006.45 | 1093.59 | 3007.53 | 1093.58 | 3012.62 | 1093.52 | 1093.52 |
| 3016.93 | 1093.45   | 3020.2  | 1093.41 | 3031.45 | 1093.22 | 3032.83 | 1093.2  | 3033.7  | 1093.19 | 1093.19 |
| 3044.23 | 1093      | 3131.23 | 1092    | 3171.23 | 1091    | 3252.13 | 1089.1  | 3254.43 | 1089.04 | 1089.04 |
| 3256.08 | 1089      | 3282.84 | 1088    | 3285.29 | 1087.81 | 3294.78 | 1087    | 3299.6  | 1086.87 | 1086.87 |
| 3302.9  | 1086.8    | 3336.4  | 1086    | 3344.58 | 1085.58 | 3354.96 | 1085    | 3419.46 | 1085.33 | 1085.33 |
| 3422.99 | 1086      | 3425.03 | 1087    | 3427.08 | 1088    | 3427.87 | 1088.39 | 3429.12 | 1089    | 1089    |



Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2243.55 | 1072    | 2244.09 | 1072.82 | 2244.22 | 1073    | 2244.42 | 1073.1  | 2245.1  | 1073.38 |
| 2246.03 | 1074    | 2247.27 | 1074.47 | 2248.98 | 1075    | 2250.24 | 1075.95 | 2251.53 | 1076.9  |
| 2251.81 | 1077.1  | 2252.7  | 1077.75 | 2253.03 | 1078    | 2254.35 | 1079    | 2255.21 | 1079.68 |
| 2255.65 | 1080    | 2256.47 | 1080.64 | 2256.96 | 1081    | 2257.49 | 1081.4  | 2258.29 | 1082    |
| 2258.76 | 1082.35 | 2259.62 | 1083    | 2260.05 | 1083.34 | 2260.95 | 1084    | 2287.65 | 1084.74 |
| 2288.12 | 1084.75 | 2296.14 | 1085    | 2297.88 | 1085.57 | 2299.15 | 1086    | 2303.75 | 1086.84 |
| 2304.69 | 1087    | 2308.91 | 1087.7  | 2310.57 | 1088    | 2311.53 | 1088.29 | 2323.63 | 1091.97 |
| 2323.82 | 1092.03 | 2328.7  | 1093.51 | 2331.53 | 1094.39 | 2333.42 | 1095    | 2335.36 | 1095.74 |
| 2336.02 | 1096    | 2338.65 | 1097    | 2344    | 1099    | 2346.46 | 1099.91 | 2346.69 | 1100    |
| 2347.27 | 1100.22 | 2349.37 | 1101    | 2349.81 | 1101.16 | 2352.06 | 1102    | 2360.27 | 1105    |
| 2362.62 | 1105.85 | 2363.04 | 1106    | 2365.82 | 1107    | 2368.25 | 1107.86 | 2368.66 | 1108    |
| 2369.17 | 1108.18 | 2374.38 | 1110    | 2375.2  | 1110.28 | 2377.27 | 1111    | 2378.73 | 1111.47 |
| 2380.35 | 1112    | 2381.64 | 1112.38 | 2383.79 | 1113    | 2389.67 | 1114.73 | 2393.45 | 1115.86 |
| 2393.94 | 1116    | 2394.19 | 1116.08 | 2397.29 | 1117    | 2436.98 | 1116.28 | 2437.8  | 1116    |
| 2438.73 | 1115.51 | 2439.72 | 1115    | 2440.96 | 1114.35 | 2441.64 | 1114    | 2442.88 | 1113.35 |
| 2443.56 | 1113    | 2444.34 | 1112.59 | 2445.48 | 1112    | 2447.24 | 1111.1  | 2447.44 | 1111    |
| 2449.44 | 1110.06 | 2449.83 | 1109.88 | 2451.67 | 1109    | 2452.56 | 1108.57 | 2455.16 | 1107.32 |
| 2455.81 | 1107    | 2457.37 | 1106.24 | 2457.87 | 1106    | 2458.58 | 1105.65 | 2459.91 | 1105    |
| 2461.93 | 1104.04 | 2462.1  | 1103.95 | 2476.49 | 1097.19 | 2476.88 | 1097.01 | 2478.43 | 1096.62 |
| 2480.94 | 1096    | 2503.83 | 1095    | 2506.61 | 1094.59 | 2510.86 | 1094    | 2512.21 | 1093.41 |
| 2513.17 | 1093    | 2514.24 | 1092.6  | 2515.78 | 1092    | 2519.3  | 1091    | 2520.2  | 1090.89 |
| 2527.28 | 1090    | 2531.45 | 1089.45 | 2532.37 | 1089.34 | 2546.82 | 1089    | 2589.3  | 1089.39 |
| 2597.09 | 1089.72 | 2602.37 | 1090    | 2613.5  | 1091    | 2621.03 | 1091.76 | 2623.31 | 1092    |
| 2631.93 | 1093    | 2648.65 | 1094    | 2656.89 | 1094.36 | 2665.16 | 1094.62 | 2669.87 | 1094.8  |
| 2677.8  | 1095    | 2688.74 | 1095.23 | 2697.12 | 1095.48 | 2706.88 | 1095.73 | 2711.24 | 1095.88 |
| 2712.38 | 1095.91 | 2714.72 | 1096    | 2733.87 | 1095.97 | 2735.3  | 1095    | 2737.69 | 1094    |
| 2738.58 | 1093.64 | 2740.15 | 1093    | 2741.49 | 1092.47 | 2742.65 | 1092    | 2744.88 | 1091.29 |
| 2745.77 | 1091    | 2746.85 | 1090.67 | 2748.99 | 1090    | 2750.62 | 1089.45 | 2751.98 | 1089    |
| 2785.65 | 1089.19 | 2787.37 | 1089.22 | 2788.54 | 1089.69 | 2791.92 | 1091    | 2792.76 | 1091.33 |
| 2794.52 | 1092    | 2798.3  | 1092.41 | 2805.79 | 1093    | 2810.5  | 1093.03 | 2811.39 | 1093.04 |
| 2922.49 | 1094    | 3035.88 | 1093.51 | 3092.66 | 1092    | 3122.8  | 1091    | 3137.5  | 1090    |
| 3183.14 | 1089.94 | 3183.77 | 1089.91 | 3186.5  | 1089.77 | 3191.53 | 1089.55 | 3192.51 | 1089.51 |
| 3199.26 | 1089.09 | 3199.37 | 1089.08 | 3200.65 | 1089    | 3207.35 | 1088.63 | 3218.02 | 1088    |
| 3233.95 | 1087    | 3255.01 | 1086    | 3284.4  | 1085    | 3336.95 | 1084.46 | 3385.99 | 1084.51 |
| 3387.1  | 1084.64 | 3387.81 | 1085    | 3391.03 | 1085.37 | 3392.31 | 1086    | 3393.7  | 1086.73 |
| 3394.2  | 1087    | 3394.54 | 1087.19 | 3396    | 1088    | 3398.18 | 1089    | 3399.49 | 1089.62 |
| 3400.32 | 1090    | 3401.94 | 1090.78 | 3402.41 | 1091    | 3403.19 | 1091.38 | 3404.19 | 1091.86 |
| 3404.47 | 1092    | 3406.55 | 1093    | 3407.87 | 1093.64 | 3408.62 | 1094    | 3408.98 | 1094.17 |
| 3410.69 | 1095    | 3412.17 | 1095.71 | 3412.77 | 1096    | 3413.48 | 1096.35 | 3414.84 | 1097    |
| 3415.71 | 1097.42 | 3416.88 | 1098    | 3417.75 | 1098.45 | 3418.85 | 1099    | 3420.16 | 1099.68 |
| 3420.77 | 1100    | 3422.7  | 1101    | 3423.09 | 1101.2  | 3424.62 | 1102    | 3425.41 | 1102.41 |
| 3426.53 | 1103    | 3428.04 | 1103.79 | 3428.45 | 1104    | 3428.79 | 1104.18 | 3431.32 | 1105.5  |
| 3432.27 | 1106    | 3436.96 | 1108.45 | 3438.95 | 1109.48 | 3439.97 | 1110    | 3440.41 | 1110.22 |
| 3442.01 | 1111    | 3442.83 | 1111.41 | 3444    | 1112    | 3445.95 | 1112.97 | 3448.5  | 1114.25 |
| 3449.98 | 1115    | 3451.76 | 1115.46 | 3453.79 | 1116    | 3518.19 | 1116.3  | 3532.32 | 1117    |
| 3569.17 | 1117.33 | 3571.49 | 1117.34 | 3595.35 | 1117.54 | 3596.24 | 1117.55 | 3598.51 | 1117.54 |
| 3673.14 | 1117    | 3724.78 | 1116.97 | 3725.24 | 1116.96 | 3734.34 | 1116.83 | 3770.06 | 1116.21 |
| 3780.43 | 1116.06 | 3781    | 1116.05 | 3781.28 | 1116.04 | 3791.63 | 1115.9  | 3792.81 | 1115.88 |
| 3815.7  | 1115.6  | 3832.92 | 1115.32 | 3838.33 | 1115.21 | 3840.45 | 1115.18 | 3848.87 | 1115    |
| 3890.07 | 1114    | 3904.27 | 1114.34 | 3912.63 | 1115    | 3930.5  | 1115.31 | 3939.73 | 1115.29 |
| 3946.97 | 1115.21 | 3960.69 | 1115    | 4007.38 | 1115.01 | 4067.21 | 1115.41 | 4070.48 | 1115.42 |
| 4111.71 | 1115.73 | 4113.95 | 1115.74 | 4123.44 | 1115.83 | 4125.05 | 1115.84 | 4140.29 | 1116    |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .04 2436.98 .035 3453.79 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 2436.98 3453.79 255.69 257.24 258.79 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 2436.98 1116.28 F  
 3453.79 4140.29 1116 F  
 Left Levee Station= 2436.98 Elevation= 1116.28

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 217.19

INPUT  
 Description:

|         |           |        |         |        |         |        |         |        |         |
|---------|-----------|--------|---------|--------|---------|--------|---------|--------|---------|
| Station | Elevation | Data   | num=    | 482    |         |        |         |        |         |
| Sta     | Elev      | Sta    | Elev    | Sta    | Elev    | Sta    | Elev    | Sta    | Elev    |
| 0       | 1119.45   | 13.93  | 1119.24 | 21.13  | 1119.26 | 22.03  | 1119.27 | 147.76 | 1119.37 |
| 205.38  | 1119      | 206.22 | 1118.94 | 212.01 | 1118    | 279.27 | 1117.68 | 281.14 | 1117    |
| 281.71  | 1116.75   | 283.45 | 1116    | 285.03 | 1115.3  | 285.69 | 1115    | 287.95 | 1114.02 |
| 290.97  | 1113      | 291.94 | 1112.68 | 292.73 | 1112.43 | 293.98 | 1112    | 331.54 | 1112.42 |
| 337.6   | 1112.83   | 338.39 | 1112.87 | 341.73 | 1113.11 | 348.7  | 1113.52 | 351.2  | 1113.71 |
| 354.79  | 1113.86   | 355.98 | 1113.89 | 358.22 | 1113.99 | 361.02 | 1114.1  | 367.46 | 1114.27 |
| 369.29  | 1114.33   | 370.99 | 1114.35 | 373.35 | 1114.34 | 374.42 | 1114.36 | 377.94 | 1114.27 |
| 380.23  | 1114.24   | 386.73 | 1114    | 388.7  | 1113.91 | 389.22 | 1113.88 | 392.66 | 1113.71 |
| 393.41  | 1113.7    | 395.07 | 1113.57 | 400.87 | 1113    | 401.44 | 1112.96 | 401.79 | 1112.94 |
| 409.65  | 1112.41   | 415.78 | 1112.04 | 416.54 | 1112    | 445.05 | 1112.08 | 445.55 | 1112.06 |
| 448.73  | 1112.23   | 450.51 | 1112.21 | 454.07 | 1112.33 | 489.49 | 1113    | 504.65 | 1113.19 |
| 522.81  | 1113.79   | 524.73 | 1113.84 | 527.85 | 1113.94 | 528.2  | 1113.95 | 563.7  | 1114.59 |
| 577.81  | 1115      | 618.56 | 1114.81 | 621.04 | 1114.76 | 633.57 | 1114.46 | 666.09 | 1113.84 |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 668.45  | 1113.81 | 711.78  | 1113.77 | 712.6   | 1113.73 | 714.99  | 1113.4  | 716.6   | 1113.13 |
| 717.52  | 1113    | 719.34  | 1112.86 | 720.44  | 1112.75 | 723.44  | 1112.25 | 724.13  | 1112.14 |
| 724.91  | 1112    | 729.35  | 1111.49 | 733.4   | 1111    | 771.11  | 1111.24 | 772.47  | 1111.31 |
| 774.5   | 1111.37 | 776.37  | 1111.4  | 780.06  | 1111.43 | 782.74  | 1111.47 | 785.73  | 1111.48 |
| 795.92  | 1111.45 | 807.65  | 1111.29 | 811.91  | 1111.21 | 812.77  | 1111.18 | 816.16  | 1111.09 |
| 818.58  | 1111    | 837.68  | 1111.1  | 838.56  | 1111.16 | 852.22  | 1112    | 939.83  | 1112.44 |
| 941.66  | 1112.46 | 950.33  | 1112.5  | 951.33  | 1112.51 | 976.61  | 1112    | 1050.13 | 1111.8  |
| 1055.85 | 1111.61 | 1056.42 | 1111.57 | 1057.14 | 1111.53 | 1060.46 | 1111.41 | 1061.56 | 1111.36 |
| 1071.51 | 1111    | 1214.55 | 1111.76 | 1232.3  | 1111.98 | 1235.73 | 1112    | 1559.86 | 1111.62 |
| 1565.48 | 1111    | 1611.26 | 1110.12 | 1643.1  | 1109.28 | 1648.34 | 1109.22 | 1653.15 | 1109.12 |
| 1664.07 | 1109.09 | 1665.08 | 1109.11 | 1671.52 | 1109.36 | 1674.83 | 1109.4  | 1681.33 | 1109.51 |
| 1683.09 | 1109.59 | 1684.11 | 1109.63 | 1691.85 | 1109.9  | 1694.28 | 1110    | 1717.83 | 1110.09 |
| 1718.18 | 1110.1  | 1722.34 | 1110.19 | 1723.46 | 1110.22 | 1727.22 | 1110.29 | 1730.73 | 1110.39 |
| 1732.97 | 1110.44 | 1737.46 | 1110.58 | 1741.18 | 1110.65 | 1743.31 | 1110.72 | 1758.73 | 1110.99 |
| 1883.71 | 1110.19 | 1887    | 1108.66 | 1888.49 | 1108    | 1889.67 | 1107.47 | 1890.69 | 1107    |
| 1895.16 | 1105    | 1897.27 | 1104    | 1899.01 | 1103.19 | 1899.51 | 1102.96 | 1903    | 1101.3  |
| 1903.64 | 1101    | 1904.94 | 1100.38 | 1906.67 | 1099.57 | 1921.95 | 1092.33 | 1922.64 | 1092    |
| 1924.75 | 1091    | 1927.58 | 1089.71 | 1931.39 | 1088    | 1932.89 | 1087.32 | 1933.61 | 1087    |
| 1935.4  | 1086.19 | 1935.83 | 1086    | 1937.78 | 1085.11 | 1938.21 | 1084.92 | 1942.05 | 1083.18 |
| 1942.44 | 1083    | 1946.88 | 1081    | 1960.66 | 1080.49 | 1962    | 1080.45 | 1964.8  | 1080.35 |
| 1967.38 | 1080.28 | 1969.16 | 1080.22 | 1977.61 | 1080    | 1979.35 | 1079.78 | 1979.72 | 1079.59 |
| 1980.74 | 1079    | 1981.64 | 1078.43 | 1982.34 | 1078    | 1983.89 | 1077    | 1986.16 | 1075.49 |
| 1986.91 | 1075    | 1988.18 | 1074.16 | 1989.89 | 1073    | 1990.81 | 1072.2  | 1991.42 | 1071.69 |
| 1992.27 | 1071    | 1993.25 | 1070.19 | 1994.28 | 1069.4  | 1994.79 | 1069    | 1995.78 | 1068.21 |
| 1997.21 | 1067.17 | 1997.89 | 1066.71 | 1998.96 | 1066    | 1999.63 | 1065.53 | 2000.42 | 1065    |
| 2001.31 | 1064.36 | 2001.82 | 1064    | 2003.25 | 1063    | 2004.14 | 1062.35 | 2004.64 | 1062    |
| 2005    | 1061.75 | 2006.07 | 1061    | 2011.54 | 1057.21 | 2013.96 | 1056    | 2015.87 | 1055    |
| 2016.44 | 1054.64 | 2017.62 | 1054    | 2018.2  | 1053.54 | 2018.83 | 1053    | 2020.03 | 1052.03 |
| 2020.66 | 1051.67 | 2021.96 | 1050.94 | 2023.83 | 1049.79 | 2025.43 | 1049    | 2026.44 | 1048.54 |
| 2027.38 | 1048.09 | 2029.18 | 1047.27 | 2030.1  | 1047    | 2030.61 | 1046.67 | 2031.66 | 1046    |
| 2032.23 | 1045.59 | 2032.66 | 1045.35 | 2033.83 | 1045    | 2034.29 | 1044.7  | 2034.47 | 1044    |
| 2036.12 | 1043    | 2037.8  | 1042    | 2038.7  | 1041.47 | 2039.52 | 1041    | 2041.25 | 1040    |
| 2042.31 | 1039.38 | 2042.97 | 1039    | 2044.69 | 1038    | 2046.72 | 1037.09 | 2047.25 | 1036.83 |
| 2048.74 | 1036.12 | 2128.1  | 1036.03 | 2132.22 | 1036.06 | 2134.47 | 1036.11 | 2138.45 | 1036.22 |
| 2138.91 | 1036.23 | 2139.69 | 1036.27 | 2140.24 | 1036.31 | 2142.02 | 1036.38 | 2142.49 | 1036.43 |
| 2143.6  | 1036.5  | 2147.4  | 1037    | 2147.95 | 1037.12 | 2148.81 | 1037.33 | 2150.77 | 1038    |
| 2151.75 | 1038.63 | 2152.32 | 1039    | 2153.38 | 1039.71 | 2153.83 | 1040    | 2155.37 | 1041    |
| 2155.9  | 1041.34 | 2156.94 | 1042    | 2157.57 | 1042.43 | 2158.43 | 1043    | 2159.25 | 1043.53 |
| 2159.97 | 1044    | 2160.66 | 1044.46 | 2161.42 | 1045    | 2162.62 | 1045.94 | 2163.94 | 1047    |
| 2164.83 | 1047.7  | 2165.2  | 1048    | 2165.96 | 1048.64 | 2166.4  | 1049    | 2167.57 | 1050    |
| 2167.93 | 1050.29 | 2168.85 | 1051    | 2170.03 | 1051.94 | 2170.59 | 1052.41 | 2171.25 | 1052.98 |
| 2172.57 | 1054    | 2173.54 | 1054.62 | 2175.66 | 1055.96 | 2177.29 | 1057    | 2177.74 | 1057.29 |
| 2178.86 | 1058    | 2179.89 | 1058.66 | 2180.43 | 1059    | 2181.99 | 1060    | 2182.48 | 1060.32 |
| 2184.59 | 1061.66 | 2185.11 | 1062    | 2185.93 | 1062.53 | 2186.67 | 1063    | 2189.63 | 1064.92 |
| 2195.84 | 1069    | 2197.34 | 1070    | 2199.53 | 1071.45 | 2200.35 | 1072    | 2201.46 | 1072.73 |
| 2201.86 | 1073    | 2203.09 | 1073.82 | 2203.51 | 1074.09 | 2206.2  | 1075.87 | 2206.9  | 1076.32 |
| 2207.93 | 1077    | 2208.52 | 1077.38 | 2212.52 | 1080    | 2213.6  | 1080.69 | 2214.09 | 1081    |
| 2214.7  | 1081.37 | 2215.75 | 1082    | 2217.58 | 1083    | 2222.25 | 1083.42 | 2222.84 | 1083.45 |
| 2228.27 | 1083.57 | 2228.89 | 1083.55 | 2232.06 | 1083.47 | 2244.97 | 1084    | 2249.87 | 1084.98 |
| 2252.96 | 1086    | 2259.3  | 1087    | 2259.75 | 1087.12 | 2263.18 | 1088    | 2265.95 | 1089    |
| 2267.79 | 1089.65 | 2268.75 | 1090    | 2269.45 | 1090.25 | 2271.52 | 1091    | 2272.28 | 1091.27 |
| 2276.4  | 1092.76 | 2279.93 | 1093.97 | 2283.24 | 1095    | 2286.14 | 1095.88 | 2286.71 | 1096.06 |
| 2292.88 | 1097.94 | 2293.46 | 1098.11 | 2299.65 | 1100    | 2307.98 | 1102.83 | 2308.46 | 1103    |
| 2309.04 | 1103.2  | 2314.33 | 1105    | 2317.54 | 1106    | 2320.27 | 1106.87 | 2320.7  | 1107    |
| 2321.12 | 1107.13 | 2326.32 | 1108.77 | 2327.07 | 1109    | 2327.82 | 1109.24 | 2336.64 | 1112    |
| 2339.6  | 1113    | 2342.98 | 1114.39 | 2349.04 | 1116.84 | 2349.43 | 1117    | 2389.07 | 1116.46 |
| 2396.09 | 1113.12 | 2398.46 | 1112    | 2400.5  | 1111    | 2402.3  | 1110    | 2403.03 | 1109.6  |
| 2405.17 | 1108.41 | 2405.93 | 1108    | 2406.86 | 1107.48 | 2407.75 | 1107    | 2408.27 | 1106.71 |
| 2409.58 | 1106    | 2410.56 | 1105.46 | 2412.99 | 1104.15 | 2415.16 | 1103    | 2418.43 | 1101.37 |
| 2419.18 | 1101    | 2426.5  | 1097.35 | 2427.19 | 1097    | 2429.19 | 1096    | 2445.09 | 1095    |
| 2446.84 | 1094.53 | 2449.19 | 1094    | 2450.42 | 1093.74 | 2453.7  | 1093    | 2465.33 | 1090.28 |
| 2466.56 | 1090    | 2468.59 | 1089.63 | 2472.22 | 1089    | 2476.51 | 1088.21 | 2477.68 | 1088    |
| 2496.39 | 1087.48 | 2525.57 | 1087.43 | 2534.59 | 1087.69 | 2535.84 | 1087.7  | 2544.3  | 1087.96 |
| 2545.45 | 1088    | 2556.01 | 1089    | 2557.67 | 1089.39 | 2560.07 | 1090    | 2561.05 | 1090.23 |
| 2564.57 | 1091    | 2573.33 | 1090.48 | 2575.55 | 1090    | 2580.04 | 1089.68 | 2590.4  | 1089    |
| 2593.52 | 1088.75 | 2601.22 | 1088.22 | 2604.2  | 1088    | 2644.11 | 1088.47 | 2645.76 | 1089    |
| 2646.33 | 1089.19 | 2648.85 | 1090    | 2650.61 | 1090.58 | 2651.91 | 1091    | 2652.51 | 1091.08 |
| 2658.01 | 1092    | 2685.97 | 1092.13 | 2689.08 | 1092.51 | 2692.9  | 1093    | 2705.62 | 1093.7  |
| 2707.32 | 1093.77 | 2709.24 | 1093.87 | 2711.02 | 1093.92 | 2712.96 | 1093.96 | 2715.02 | 1093.99 |
| 2727.61 | 1094.05 | 2738.17 | 1094.22 | 2762.49 | 1094.27 | 2806.91 | 1094.58 | 2836.14 | 1095    |
| 2902.05 | 1094.94 | 2955.18 | 1094    | 2995.64 | 1093    | 3021.98 | 1092    | 3025.45 | 1091    |
| 3043.15 | 1090.96 | 3076.87 | 1090    | 3089.39 | 1089.26 | 3093.46 | 1089    | 3102.08 | 1088    |
| 3134.03 | 1087.45 | 3137.14 | 1087.34 | 3143.91 | 1087    | 3158.63 | 1086    | 3169.12 | 1085    |
| 3321.18 | 1085.31 | 3324.76 | 1087    | 3325.23 | 1087.22 | 3333.12 | 1091    | 3334.32 | 1091.58 |
| 3335.2  | 1092    | 3336.29 | 1092.53 | 3338.64 | 1093.66 | 3343.45 | 1096    | 3344.66 | 1096.6  |
| 3345.45 | 1097    | 3346.13 | 1097.36 | 3347.37 | 1098    | 3348.63 | 1098.7  | 3349.18 | 1099    |
| 3349.63 | 1099.25 | 3356.17 | 1102.92 | 3360.14 | 1105.17 | 3361.63 | 1106    | 3363.61 | 1107    |
| 3365.31 | 1107.84 | 3367.51 | 1108.92 | 3369.72 | 1110    | 3370.71 | 1110.49 | 3372.98 | 1111.59 |
| 3374.82 | 1112.5  | 3375.85 | 1113    | 3377.89 | 1114    | 3382.49 | 1115    | 3439.15 | 1115.17 |
| 3440.42 | 1115.53 | 3442.28 | 1116    | 3505.24 | 1116.02 | 3512.02 | 1116.09 | 3512.54 | 1116.1  |
| 3536.07 | 1116.42 | 3538.31 | 1116.43 | 3582.05 | 1117    | 3676.12 | 1116.44 | 3679.03 | 1116.27 |
| 3680.28 | 1116.21 | 3683.75 | 1116    | 3687.54 | 1115.28 | 3687.94 | 1115.21 | 3689.18 | 1115    |
| 3691.94 | 1115.03 | 3694.26 | 1115.21 | 3694.93 | 1115.23 | 3695.97 | 1115.31 | 3697.43 | 1115.44 |
| 3699.31 | 1115.67 | 3710.12 | 1116    |         |         |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 2389.07 .035 3382.49 .04

Proposed\_SkyHarbor.rep

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 2389.07 3382.49 224.36 226.25 228.15 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 2389.07 1116.46 F  
 3382.49 3710.12 1115 F  
 Left Levee Station= 2389.07 Elevation= 1116.46

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 217.15

INPUT

Description:

| Station | Elevation | Data    | num=    | 491     | Sta     | Elev    | Sta     | Elev    | Sta     | Elev | Sta | Elev |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|------|-----|------|
| 0       | 1119.66   | 8.13    | 1119.63 | 82.57   | 1119    | 90.85   | 1116    | 92.11   | 1115.55 |      |     |      |
| 92.45   | 1115.42   | 93.62   | 1115    | 95.62   | 1114.17 | 96.04   | 1114    | 97.16   | 1113.5  |      |     |      |
| 98.31   | 1113      | 99.26   | 1112.58 | 100.6   | 1112    | 167.21  | 1111.89 | 177.71  | 1111.96 |      |     |      |
| 194.67  | 1112.06   | 194.94  | 1112.07 | 282.52  | 1112.11 | 289.51  | 1112.07 | 289.92  | 1112.08 |      |     |      |
| 293.44  | 1112      | 369.59  | 1112.49 | 376.59  | 1113    | 387.57  | 1114    | 457.37  | 1113.51 |      |     |      |
| 487.73  | 1113.01   | 488.5   | 1113    | 574.64  | 1113.59 | 580.3   | 1113.7  | 603.26  | 1114    |      |     |      |
| 1043.16 | 1113.94   | 1043.75 | 1113.93 | 1068.82 | 1113.6  | 1157.42 | 1113    | 1169.03 | 1112.17 |      |     |      |
| 1170.34 | 1112.07   | 1170.68 | 1112.05 | 1171.39 | 1112    | 1293.11 | 1111.94 | 1294.15 | 1111.95 |      |     |      |
| 1306.48 | 1111.66   | 1309.51 | 1111.62 | 1317.37 | 1111.46 | 1321.18 | 1111.4  | 1323.88 | 1111.33 |      |     |      |
| 1332.92 | 1111      | 1341.29 | 1110.41 | 1342.34 | 1110.36 | 1342.89 | 1110.37 | 1351.84 | 1110    |      |     |      |
| 1557.25 | 1109.95   | 1570.09 | 1110    | 1577.95 | 1110.08 | 1578.9  | 1110.1  | 1579.48 | 1110.12 |      |     |      |
| 1586.72 | 1110.29   | 1587.87 | 1110.33 | 1588.9  | 1110.35 | 1590.74 | 1110.41 | 1605.5  | 1110.79 |      |     |      |
| 1606.66 | 1110.81   | 1609.25 | 1110.87 | 1615.11 | 1110.97 | 1615.76 | 1111    | 1629.37 | 1111.57 |      |     |      |
| 1630.87 | 1111.39   | 1635.42 | 1111.83 | 1636.45 | 1111.84 | 1638.46 | 1111.8  | 1639.26 | 1111.81 |      |     |      |
| 1641.09 | 1111.77   | 1664.1  | 1111.94 | 1666.34 | 1112    | 1675.17 | 1111.99 | 1678.22 | 1111.91 |      |     |      |
| 1701.51 | 1111      | 1703.21 | 1110.69 | 1707.2  | 1110    | 1707.44 | 1109.9  | 1709.79 | 1109    |      |     |      |
| 1712.57 | 1108      | 1712.78 | 1107.92 | 1714.34 | 1107.34 | 1715.08 | 1107    | 1716.29 | 1106.45 |      |     |      |
| 1717.31 | 1106      | 1719.46 | 1105    | 1719.96 | 1104.76 | 1721.57 | 1104    | 1722.76 | 1103.31 |      |     |      |
| 1723.3  | 1103      | 1723.7  | 1102.82 | 1725.36 | 1102    | 1727.57 | 1101    | 1728.11 | 1100.75 |      |     |      |
| 1729.77 | 1100      | 1730.06 | 1099.87 | 1733.91 | 1098.13 | 1734.19 | 1098    | 1742.86 | 1094.08 |      |     |      |
| 1743.4  | 1093.83   | 1745.24 | 1093    | 1747.34 | 1092    | 1748.51 | 1091.43 | 1754.09 | 1088.68 |      |     |      |
| 1755.18 | 1088.15   | 1755.69 | 1087.89 | 1760.57 | 1085.48 | 1761.53 | 1085    | 1762.89 | 1084.33 |      |     |      |
| 1763.55 | 1084      | 1764.34 | 1083.61 | 1765.56 | 1083    | 1767.44 | 1082.07 | 1797.57 | 1081    |      |     |      |
| 1799.01 | 1080.11   | 1801.27 | 1078.52 | 1801.72 | 1078.2  | 1802.01 | 1078    | 1803.35 | 1077.1  |      |     |      |
| 1803.63 | 1076.91   | 1805    | 1076    | 1805.88 | 1075.43 | 1806.53 | 1075    | 1807.1  | 1074.63 |      |     |      |
| 1809.5  | 1073.08   | 1811.11 | 1072.05 | 1812.75 | 1071    | 1812.97 | 1070.86 | 1814.29 | 1070    |      |     |      |
| 1814.51 | 1069.86   | 1815.78 | 1069    | 1817.28 | 1068    | 1818.48 | 1067.19 | 1818.77 | 1067    |      |     |      |
| 1820.25 | 1066      | 1820.57 | 1065.78 | 1821.74 | 1065    | 1822.45 | 1064.52 | 1824.67 | 1063    |      |     |      |
| 1825.94 | 1062.12   | 1826.27 | 1061.9  | 1827.57 | 1061    | 1830.2  | 1059.17 | 1830.61 | 1058.88 |      |     |      |
| 1831.87 | 1058      | 1832.42 | 1057.62 | 1833.31 | 1057    | 1834.52 | 1056.15 | 1834.74 | 1056    |      |     |      |
| 1836.18 | 1055      | 1836.58 | 1054.72 | 1837.17 | 1054.31 | 1837.61 | 1054    | 1838.18 | 1053.62 |      |     |      |
| 1839.14 | 1053      | 1840.06 | 1052.51 | 1841.64 | 1051.69 | 1846.46 | 1049.16 | 1846.77 | 1049    |      |     |      |
| 1849.49 | 1047.57   | 1850.59 | 1047    | 1850.81 | 1046.88 | 1852.51 | 1046    | 1852.85 | 1045.83 |      |     |      |
| 1854.42 | 1045      | 1855.93 | 1044.27 | 1856.48 | 1044    | 1857.81 | 1043.23 | 1858.2  | 1043    |      |     |      |
| 1858.6  | 1042.26   | 1858.75 | 1042    | 1863.88 | 1040    | 1866.11 | 1039.12 | 1866.41 | 1039    |      |     |      |
| 1870    | 1037.53   | 1871.26 | 1037    | 1873.45 | 1036.14 | 1873.79 | 1036    | 2054.43 | 1036.76 |      |     |      |
| 2054.98 | 1037      | 2056.23 | 1037.56 | 2057.2  | 1038    | 2058.75 | 1038.75 | 2059.26 | 1039    |      |     |      |
| 2061.25 | 1040      | 2061.54 | 1040.14 | 2071.23 | 1045    | 2071.84 | 1045.31 | 2073.21 | 1046    |      |     |      |
| 2076.69 | 1047.77   | 2077.37 | 1048.11 | 2081.08 | 1050    | 2082.29 | 1050.7  | 2082.83 | 1051    |      |     |      |
| 2083.17 | 1051.24   | 2084.24 | 1052    | 2086.8  | 1053.83 | 2087.72 | 1054.48 | 2088.44 | 1055    |      |     |      |
| 2088.66 | 1055.16   | 2089.84 | 1056    | 2090.29 | 1056.33 | 2091.23 | 1057    | 2092.61 | 1058    |      |     |      |
| 2093.67 | 1058.76   | 2094    | 1059    | 2095.33 | 1059.96 | 2095.64 | 1060.19 | 2096.75 | 1061    |      |     |      |
| 2097.29 | 1061.39   | 2098.85 | 1062.54 | 2099.49 | 1063    | 2099.89 | 1063.29 | 2100.86 | 1064    |      |     |      |
| 2102.25 | 1065      | 2103.1  | 1065.62 | 2103.61 | 1066    | 2104.04 | 1066.3  | 2105.02 | 1067    |      |     |      |
| 2106.12 | 1067.76   | 2106.47 | 1068    | 2107.84 | 1068.9  | 2108.56 | 1069.36 | 2109.54 | 1070    |      |     |      |
| 2110.05 | 1070.33   | 2111.1  | 1071    | 2112.34 | 1071.78 | 2112.68 | 1072    | 2115.4  | 1073.58 |      |     |      |
| 2116.13 | 1074      | 2116.34 | 1074.12 | 2118.81 | 1075.56 | 2119.58 | 1076    | 2119.81 | 1076.14 |      |     |      |
| 2121.3  | 1077      | 2121.65 | 1077.2  | 2123.02 | 1078    | 2123.67 | 1078.37 | 2126.03 | 1079.74 |      |     |      |
| 2126.47 | 1080      | 2126.91 | 1080.25 | 2129.21 | 1081.59 | 2129.92 | 1082    | 2133.37 | 1084    |      |     |      |
| 2161.09 | 1085      | 2164.05 | 1085.8  | 2164.7  | 1086    | 2168.23 | 1087    | 2170.7  | 1087.55 |      |     |      |
| 2172.5  | 1088      | 2174.93 | 1088.76 | 2175.71 | 1089    | 2178.68 | 1089.93 | 2178.92 | 1090    |      |     |      |
| 2191.79 | 1094      | 2194.94 | 1095    | 2195.19 | 1095.07 | 2205.14 | 1098    | 2208.48 | 1099    |      |     |      |
| 2210.11 | 1099.56   | 2213.69 | 1100.8  | 2214.26 | 1101    | 2216.85 | 1101.89 | 2217.16 | 1102    |      |     |      |
| 2243.36 | 1111      | 2244.16 | 1111.27 | 2251.1  | 1113.65 | 2252.11 | 1114    | 2254.78 | 1114.91 |      |     |      |
| 2255.04 | 1115      | 2258.02 | 1116    | 2261.08 | 1117    | 2301.76 | 1116.33 | 2304.01 | 1115.25 |      |     |      |
| 2304.51 | 1115      | 2304.94 | 1114.79 | 2306.54 | 1114    | 2307.2  | 1113.67 | 2308.56 | 1113    |      |     |      |
| 2309.84 | 1112.36   | 2310.57 | 1112    | 2311.4  | 1111.58 | 2312.58 | 1111    | 2314.46 | 1110    |      |     |      |
| 2318.3  | 1108      | 2320.2  | 1107    | 2321.01 | 1106.57 | 2322.11 | 1106    | 2322.46 | 1105.81 |      |     |      |
| 2324    | 1105      | 2325.31 | 1104.3  | 2325.88 | 1104    | 2327.76 | 1103    | 2328.99 | 1102.36 |      |     |      |
| 2329.67 | 1102      | 2330.03 | 1101.82 | 2332.06 | 1100.83 | 2333.74 | 1100    | 2334.09 | 1099.83 |      |     |      |
| 2335.78 | 1099      | 2336.11 | 1098.83 | 2337.81 | 1098    | 2338.15 | 1097.84 | 2339.85 | 1097    |      |     |      |
| 2340.18 | 1096.84   | 2341.89 | 1096    | 2342.69 | 1095.88 | 2348.33 | 1095    | 2355.28 | 1094    |      |     |      |
| 2357.12 | 1093      | 2358.46 | 1092.14 | 2358.67 | 1092    | 2359.4  | 1091.15 | 2359.8  | 1090    |      |     |      |
| 2360.15 | 1089      | 2363.12 | 1088.41 | 2364.87 | 1088    | 2366.22 | 1087.73 | 2369.95 | 1087    |      |     |      |
| 2371.33 | 1086.72   | 2375.01 | 1086    | 2417.7  | 1086.22 | 2430.66 | 1086    | 2452.33 | 1086.46 |      |     |      |
| 2462.46 | 1087      | 2477.56 | 1088    | 2479.82 | 1088.65 | 2480.85 | 1089    | 2483.85 | 1090    |      |     |      |
| 2488.12 | 1090.31   | 2509.09 | 1092    | 2510.37 | 1092.13 | 2521.09 | 1093    | 2523.7  | 1093.19 |      |     |      |
| 2525.77 | 1093.48   | 2528.51 | 1093.8  | 2529.61 | 1094    | 2545.15 | 1093.04 | 2558.55 | 1093.15 |      |     |      |
| 2572.6  | 1093.8    | 2577.35 | 1094    | 2672.95 | 1093.26 | 2674.06 | 1093.03 | 2674.57 | 1092.94 |      |     |      |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2680.15 | 1092    | 2687.18 | 1092.42 | 2693.68 | 1093    | 2696.68 | 1094    | 2703.54 | 1093.52 |
| 2705.13 | 1093    | 2707.25 | 1092.41 | 2708.68 | 1092    | 2709.18 | 1091.85 | 2709.56 | 1091.76 |
| 2710.96 | 1091.41 | 2712.19 | 1091.09 | 2714.4  | 1090.67 | 2714.72 | 1090.62 | 2717.91 | 1090.07 |
| 2718.19 | 1090    | 2719.91 | 1089.61 | 2720.58 | 1089.49 | 2723.09 | 1089.03 | 2723.31 | 1089    |
| 2725.75 | 1088.65 | 2726.21 | 1088.62 | 2726.89 | 1088.57 | 2727.85 | 1088.56 | 2728.87 | 1088.54 |
| 2731.65 | 1088.42 | 2732.32 | 1088.34 | 2733.31 | 1088    | 2734.12 | 1087.56 | 2734.62 | 1087.26 |
| 2735.38 | 1087    | 2736.39 | 1086.64 | 2738.6  | 1086    | 2739.78 | 1085.63 | 2740.8  | 1085.35 |
| 2741.25 | 1085.23 | 2742.45 | 1085    | 2743.56 | 1084.78 | 2745.68 | 1084    | 2781.78 | 1083.72 |
| 2814.69 | 1083.87 | 2822.77 | 1084    | 2823.29 | 1084.04 | 2826.28 | 1085.41 | 2827.53 | 1086    |
| 2828.03 | 1086.24 | 2829.64 | 1087    | 2830.96 | 1087.65 | 2831.68 | 1088    | 2833.02 | 1088.69 |
| 2833.65 | 1089    | 2835.11 | 1089.8  | 2835.48 | 1090    | 2837.11 | 1090.95 | 2841.03 | 1092    |
| 2841.93 | 1092.05 | 2883.22 | 1091.81 | 2890.38 | 1091.5  | 2893.47 | 1091.38 | 2902.13 | 1091.1  |
| 2902.64 | 1091.08 | 2905.2  | 1091    | 2907.74 | 1090.8  | 2913.31 | 1090.2  | 2914.67 | 1090.07 |
| 2915.25 | 1090    | 2917.2  | 1089.75 | 2922.84 | 1089    | 2926.79 | 1088.87 | 2948.82 | 1088    |
| 2978.62 | 1087    | 3062.89 | 1085    | 3146.43 | 1085.19 | 3196.54 | 1085.88 | 3198.75 | 1085.89 |
| 3199.48 | 1085.91 | 3202.66 | 1085.84 | 3202.97 | 1085.84 | 3203.75 | 1086    | 3209.87 | 1086.23 |
| 3213.6  | 1087    | 3219.5  | 1088    | 3222.17 | 1088.88 | 3222.54 | 1089    | 3224.85 | 1089.97 |
| 3227.28 | 1091    | 3228.54 | 1091.64 | 3229.26 | 1092    | 3232.68 | 1093.78 | 3233.11 | 1094    |
| 3233.59 | 1094.24 | 3235.05 | 1095    | 3235.95 | 1095.46 | 3238.15 | 1096.6  | 3238.93 | 1097    |
| 3240.41 | 1097.77 | 3241.37 | 1098.26 | 3242.79 | 1099    | 3244.73 | 1100    | 3245.24 | 1100.27 |
| 3246.6  | 1101    | 3247.62 | 1101.56 | 3248.41 | 1102    | 3250.04 | 1102.9  | 3250.57 | 1103.19 |
| 3253.84 | 1105    | 3255.12 | 1105.7  | 3255.65 | 1106    | 3257.48 | 1107    | 3258.19 | 1107.38 |
| 3259.36 | 1108    | 3260.1  | 1108.37 | 3261.38 | 1109    | 3262.67 | 1109.61 | 3263.48 | 1110    |
| 3265.46 | 1110.9  | 3265.69 | 1111    | 3267.73 | 1111.9  | 3269.97 | 1112.88 | 3270.25 | 1113    |
| 3270.53 | 1113.06 | 3274.76 | 1114    | 3332.97 | 1114.82 | 3333.8  | 1115    | 3395.96 | 1115.76 |
| 3410.66 | 1116    | 3416.68 | 1116.57 | 3419.29 | 1116.82 | 3419.96 | 1116.89 | 3422.74 | 1117    |
| 3439.06 | 1116.44 | 3440.58 | 1116.45 | 3441.92 | 1116.43 | 3444.3  | 1116.45 | 3446.83 | 1116.42 |
| 3452.87 | 1116.46 | 3481.61 | 1116    | 3496.49 | 1116.3  | 3502.69 | 1117    | 3706.64 | 1116.13 |
| 3708.05 | 1116    | 3789.38 | 1116.2  | 3790.27 | 1116.21 | 3862.19 | 1116.7  | 3938.35 | 1116.3  |
| 3984.79 | 1116    |         |         |         |         |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .04 2301.76 .035 3274.76 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 2301.76 3274.76 277.43 279.89 282.34 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 2301.76 1116.33 F  
 3274.76 3984.79 1114 F  
 Left Levee Station= 2301.76 Elevation= 1116.33

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 217.1

INPUT Description:

|         |           |         |         |         |         |         |         |         |         |     |      |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|-----|------|
| Station | Elevation | Data    | num=    | 458     |         |         |         |         |         |     |      |
| Sta     | Elev      | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta     | Elev    | Sta | Elev |
| 0       | 1112      | 69.48   | 1111.92 | 70.19   | 1111.9  | 79.35   | 1111.72 | 81.12   | 1111.67 |     |      |
| 96.03   | 1111.33   | 146.52  | 1111.85 | 155.58  | 1112    | 181.66  | 1113    | 193.22  | 1113.79 |     |      |
| 193.65  | 1113.8    | 194.14  | 1113.79 | 195.33  | 1114    | 212.01  | 1113.71 | 232.95  | 1113    |     |      |
| 290.31  | 1112      | 303.81  | 1112.23 | 308.26  | 1112.44 | 315.72  | 1112.74 | 320.45  | 1113    |     |      |
| 347.07  | 1112.96   | 347.38  | 1112.95 | 351.21  | 1112.94 | 351.48  | 1112.93 | 432.44  | 1112    |     |      |
| 541.13  | 1111.81   | 542.67  | 1111.82 | 550.1   | 1111.79 | 581.51  | 1112    | 762.59  | 1111.58 |     |      |
| 765.14  | 1111.51   | 768.97  | 1111.53 | 773.08  | 1111.35 | 774.23  | 1111.36 | 775.5   | 1111.34 |     |      |
| 776.92  | 1111.3    | 777.42  | 1111.29 | 777.79  | 1111.28 | 783.08  | 1111.21 | 784.53  | 1111.17 |     |      |
| 796.63  | 1111      | 850.44  | 1111.02 | 851.96  | 1111.06 | 852.81  | 1111.05 | 860.46  | 1111.17 |     |      |
| 861.58  | 1111.18   | 867.51  | 1111.26 | 869.19  | 1111.27 | 882.01  | 1111.42 | 885.85  | 1111.44 |     |      |
| 889.07  | 1111.49   | 890.54  | 1111.5  | 913.14  | 1112    | 943.51  | 1111.82 | 951.49  | 1111.83 |     |      |
| 952.94  | 1111.82   | 975.32  | 1111.9  | 996.3   | 1112.04 | 996.54  | 1112.05 | 1006.63 | 1112.13 |     |      |
| 1013.94 | 1112.11   | 1014.74 | 1112.1  | 1018.23 | 1112.09 | 1019.15 | 1112.1  | 1030.12 | 1112.13 |     |      |
| 1030.82 | 1112.14   | 1044.77 | 1112.18 | 1045.66 | 1112.16 | 1046.29 | 1112.15 | 1054.43 | 1112.13 |     |      |
| 1054.99 | 1112.12   | 1063.63 | 1112.08 | 1064.15 | 1112.07 | 1065.74 | 1112.08 | 1076.58 | 1112.01 |     |      |
| 1080.37 | 1112.04   | 1087.5  | 1112    | 1126.73 | 1111.34 | 1130.2  | 1111    | 1138.76 | 1110    |     |      |
| 1144.36 | 1110.24   | 1147.01 | 1110.39 | 1151.57 | 1110.73 | 1155.11 | 1110.94 | 1156    | 1111    |     |      |
| 1235.65 | 1110.86   | 1264.35 | 1110.42 | 1266.66 | 1110.4  | 1275.68 | 1110.25 | 1276.47 | 1110.26 |     |      |
| 1286.17 | 1110.07   | 1286.92 | 1110.06 | 1290.33 | 1110    | 1329.4  | 1110.12 | 1341.34 | 1111    |     |      |
| 1348    | 1110.32   | 1350.21 | 1110    | 1351.58 | 1109.62 | 1354.04 | 1109    | 1354.79 | 1108.78 |     |      |
| 1355.5  | 1108.62   | 1356.28 | 1108.45 | 1357.99 | 1108.2  | 1358.96 | 1108    | 1368.86 | 1107.12 |     |      |
| 1370.3  | 1107      | 1376.43 | 1107.15 | 1380.02 | 1107.21 | 1380.79 | 1107.22 | 1388.32 | 1107.4  |     |      |
| 1391.99 | 1107.36   | 1392.92 | 1107.32 | 1394.57 | 1107.22 | 1394.82 | 1107.21 | 1397.54 | 1107    |     |      |
| 1406.49 | 1107.54   | 1409.45 | 1108    | 1411.41 | 1108.42 | 1413.04 | 1108.82 | 1413.48 | 1108.93 |     |      |
| 1413.72 | 1109      | 1419.48 | 1109.73 | 1420.97 | 1109.84 | 1422.37 | 1109.91 | 1422.64 | 1109.94 |     |      |
| 1468.15 | 1109.93   | 1469.05 | 1109.94 | 1472.47 | 1110    | 1495.82 | 1109.57 | 1498.03 | 1109    |     |      |
| 1498.94 | 1108.5    | 1499.83 | 1108    | 1500.98 | 1107.34 | 1501.56 | 1107    | 1502.33 | 1106.56 |     |      |
| 1503.3  | 1106      | 1503.92 | 1105.65 | 1506.27 | 1104.3  | 1506.8  | 1104    | 1508.55 | 1103    |     |      |
| 1510.32 | 1102      | 1510.88 | 1101.69 | 1513.81 | 1100.05 | 1514.08 | 1099.91 | 1519.35 | 1097    |     |      |
| 1521.19 | 1096      | 1522.84 | 1095.2  | 1523.26 | 1095    | 1523.94 | 1094.7  | 1526.28 | 1093.64 |     |      |
| 1527.71 | 1093      | 1528.39 | 1092.69 | 1529.92 | 1092    | 1530.6  | 1091.69 | 1532.13 | 1091    |     |      |
| 1536.52 | 1089      | 1538.04 | 1088.29 | 1538.68 | 1088    | 1539.37 | 1087.68 | 1542.43 | 1086.28 |     |      |
| 1544.94 | 1085.14   | 1545.27 | 1085    | 1547.5  | 1084    | 1552.04 | 1082    | 1553.81 | 1081.59 |     |      |
| 1556.48 | 1081      | 1570.21 | 1080.49 | 1571.83 | 1080.42 | 1583.14 | 1080    | 1584.01 | 1079.27 |     |      |
| 1584.27 | 1079      | 1584.5  | 1078.78 | 1585.72 | 1078    | 1587.75 | 1077    | 1589.85 | 1076    |     |      |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1590.1  | 1075.88 | 1591.57 | 1075.13 | 1591.96 | 1074.89 | 1593.22 | 1074    | 1593.45 | 1073.84 |
| 1597.64 | 1071.07 | 1598.01 | 1070.83 | 1600.17 | 1069.44 | 1600.86 | 1069    | 1601.22 | 1068.78 |
| 1604.96 | 1066.38 | 1605.56 | 1066    | 1605.91 | 1065.77 | 1611.57 | 1062.17 | 1612.03 | 1061.87 |
| 1614.97 | 1060    | 1615.8  | 1059.5  | 1617.9  | 1058.22 | 1618.12 | 1058.09 | 1619.9  | 1057    |
| 1620.22 | 1056.8  | 1621.52 | 1056    | 1622.19 | 1055.58 | 1623.14 | 1055    | 1624.34 | 1054.26 |
| 1624.75 | 1054    | 1626.21 | 1053.09 | 1626.58 | 1052.86 | 1629.22 | 1051.2  | 1629.54 | 1051    |
| 1631.31 | 1050    | 1631.55 | 1049.88 | 1633.28 | 1049    | 1637.29 | 1047    | 1638.02 | 1046.63 |
| 1639.22 | 1046.04 | 1642.8  | 1044.23 | 1643.21 | 1044    | 1644.48 | 1043.28 | 1644.96 | 1043    |
| 1645.53 | 1042.64 | 1646.51 | 1042    | 1646.9  | 1041.76 | 1648.04 | 1041    | 1649.48 | 1040.05 |
| 1651.09 | 1039    | 1651.54 | 1038.7  | 1652.65 | 1038    | 1653.13 | 1037.77 | 1654.59 | 1037    |
| 1655.59 | 1036.5  | 1656.48 | 1036    | 1946.85 | 1036.92 | 1947.24 | 1037.14 | 1948.83 | 1038    |
| 1951.14 | 1038.96 | 1954.11 | 1040    | 1955.96 | 1040.77 | 1956.49 | 1041    | 1958.53 | 1041.98 |
| 1960.51 | 1043    | 1962.01 | 1043.84 | 1962.29 | 1044    | 1962.62 | 1044.18 | 1965.75 | 1045.93 |
| 1974.86 | 1050.95 | 1976.61 | 1052    | 1978.07 | 1052.95 | 1978.53 | 1053.26 | 1979.89 | 1054.15 |
| 1985.45 | 1057.81 | 1985.73 | 1058    | 1985.94 | 1058.14 | 1987.24 | 1059    | 1987.45 | 1059.14 |
| 1990.08 | 1060.88 | 1990.6  | 1061.24 | 1994.13 | 1063.62 | 1996.16 | 1065    | 1996.55 | 1065.26 |
| 1997.56 | 1065.94 | 1998.97 | 1066.9  | 1999.43 | 1067.2  | 2000.62 | 1068    | 2004.28 | 1070.43 |
| 2005.13 | 1071    | 2006.31 | 1071.77 | 2006.65 | 1072    | 2007.1  | 1072.3  | 2008.99 | 1073.55 |
| 2009.68 | 1074    | 2011.2  | 1075    | 2012.7  | 1076    | 2014.14 | 1076.97 | 2015.67 | 1078    |
| 2016.2  | 1078.36 | 2018.37 | 1079.82 | 2018.63 | 1080    | 2019.11 | 1080.33 | 2020.11 | 1081    |
| 2020.92 | 1081.55 | 2021.59 | 1082    | 2024.54 | 1084    | 2024.78 | 1084.16 | 2026.02 | 1085    |
| 2056.68 | 1085.94 | 2057.02 | 1086    | 2063.25 | 1087    | 2064.96 | 1087.58 | 2070.59 | 1089.51 |
| 2077.98 | 1092    | 2079.59 | 1092.55 | 2086.93 | 1095    | 2087.67 | 1095.25 | 2091.52 | 1096.5  |
| 2093.09 | 1097    | 2095.47 | 1097.78 | 2096.15 | 1098    | 2098.72 | 1098.93 | 2098.93 | 1099    |
| 2099.25 | 1099.11 | 2101.75 | 1100    | 2104.35 | 1100.91 | 2104.61 | 1101    | 2116.12 | 1104.98 |
| 2125.01 | 1108    | 2125.91 | 1108.3  | 2130.46 | 1109.85 | 2131.38 | 1110.15 | 2135.08 | 1111.4  |
| 2138.43 | 1112.51 | 2139.88 | 1113    | 2145.9  | 1115    | 2148.15 | 1115.76 | 2148.87 | 1116    |
| 2151.35 | 1116.88 | 2151.71 | 1117    | 2188.24 | 1116.51 | 2191.67 | 1116    | 2199.7  | 1112    |
| 2200.29 | 1111.71 | 2203.71 | 1110    | 2205.63 | 1109    | 2206.3  | 1108.66 | 2211.26 | 1106.17 |
| 2211.61 | 1106    | 2216.72 | 1103.43 | 2217.44 | 1103.06 | 2219.52 | 1102    | 2219.77 | 1101.88 |
| 2221.46 | 1101    | 2223.34 | 1100    | 2224.52 | 1099.38 | 2226.1  | 1098.56 | 2227.16 | 1098    |
| 2230.86 | 1096.08 | 2231.39 | 1095.81 | 2232.61 | 1095.18 | 2232.97 | 1095    | 2236.71 | 1094    |
| 2242.71 | 1093.02 | 2244.72 | 1091.62 | 2245.56 | 1091    | 2246.36 | 1090.42 | 2247.64 | 1089.48 |
| 2248.3  | 1089    | 2249.01 | 1088.5  | 2249.7  | 1088    | 2250.12 | 1087.17 | 2250.45 | 1086.51 |
| 2250.7  | 1086    | 2287.6  | 1086.03 | 2317.27 | 1087    | 2321.62 | 1087.31 | 2327    | 1087.62 |
| 2328.45 | 1087.67 | 2339.6  | 1087.99 | 2356.41 | 1088.04 | 2358.15 | 1088    | 2372.22 | 1088.43 |
| 2384.96 | 1089    | 2396.73 | 1089.23 | 2397.66 | 1089.3  | 2400.33 | 1089.23 | 2400.84 | 1089.32 |
| 2401.39 | 1089.41 | 2403.83 | 1090    | 2405.19 | 1090.17 | 2409.65 | 1091    | 2412.69 | 1091.45 |
| 2416.1  | 1092    | 2418.55 | 1092.14 | 2419.03 | 1092.16 | 2425.03 | 1092.46 | 2439.74 | 1093    |
| 2452.86 | 1092.17 | 2453.09 | 1092    | 2454.45 | 1091.23 | 2454.88 | 1091    | 2457.68 | 1090.09 |
| 2457.96 | 1090    | 2460.34 | 1089.52 | 2463.18 | 1089    | 2464.18 | 1088.68 | 2464.86 | 1088.37 |
| 2465.57 | 1088    | 2466.74 | 1087.62 | 2468.51 | 1087    | 2472.1  | 1086.36 | 2474.19 | 1086    |
| 2482.61 | 1085.08 | 2483.44 | 1085    | 2510.95 | 1085.13 | 2515.54 | 1085.28 | 2525.18 | 1085.52 |
| 2529.26 | 1085.67 | 2536.53 | 1086    | 2542.85 | 1086.97 | 2544.99 | 1087.53 | 2545.36 | 1087.61 |
| 2547.26 | 1088    | 2742.56 | 1087.67 | 2759.45 | 1087.8  | 2762.95 | 1087.81 | 2847.12 | 1087.64 |
| 2928.8  | 1087.06 | 2929.02 | 1087.05 | 2934.41 | 1087.01 | 2959.41 | 1087.29 | 2964.29 | 1087.32 |
| 2967.77 | 1087.36 | 2999.8  | 1087.41 | 3006.1  | 1087.37 | 3009.93 | 1087.39 | 3010.29 | 1087.38 |
| 3012.23 | 1087.4  | 3012.88 | 1087.38 | 3014.1  | 1087.39 | 3062.19 | 1087.57 | 3084.48 | 1087.88 |
| 3085.85 | 1087.89 | 3092.84 | 1088    | 3094.53 | 1088.88 | 3094.77 | 1089    | 3095.29 | 1089.27 |
| 3098.33 | 1090.87 | 3098.57 | 1091    | 3100.02 | 1091.76 | 3100.47 | 1092    | 3108.02 | 1095.92 |
| 3108.53 | 1096.19 | 3110.81 | 1097.36 | 3113.77 | 1098.9  | 3114.29 | 1099.17 | 3115.87 | 1100    |
| 3116.22 | 1100.18 | 3119.37 | 1101.83 | 3121.47 | 1102.95 | 3121.79 | 1103.11 | 3125.32 | 1105    |
| 3126.34 | 1105.5  | 3127.38 | 1106    | 3128.04 | 1106.3  | 3130.98 | 1107.58 | 3133.71 | 1108.78 |
| 3136.35 | 1109.92 | 3136.75 | 1110.1  | 3140.94 | 1111.91 | 3143.45 | 1113    | 3225.55 | 1113.18 |
| 3250.23 | 1114.09 | 3251.86 | 1114.16 | 3274.17 | 1115    | 3399.22 | 1116    | 3573.94 | 1116.15 |
| 3576.03 | 1116.19 | 3597.41 | 1116.7  | 3605.7  | 1116.86 | 3606.22 | 1116.88 | 3613.05 | 1117    |
| 3967.29 | 1116.12 | 3968.49 | 1116.11 | 3991.5  | 1116    |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 2188.24 .035 3143.45 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 2188.24 3143.45 233.66 233.6 233.55 .1 .3

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 2188.24 1116.51 F  
 3143.45 3991.5 1113 F  
 Left Levee Station= 2188.24 Elevation= 1116.51

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 217.05

INPUT  
 Description:

|                                 |         |        |         |         |         |        |         |         |         |     |      |
|---------------------------------|---------|--------|---------|---------|---------|--------|---------|---------|---------|-----|------|
| Station Elevation Data num= 498 |         |        |         |         |         |        |         |         |         |     |      |
| Sta                             | Elev    | Sta    | Elev    | Sta     | Elev    | Sta    | Elev    | Sta     | Elev    | Sta | Elev |
| 0                               | 1112.04 | .86    | 1112.06 | 51.95   | 1112.35 | 66.94  | 1112    | 184.5   | 1112.02 |     |      |
| 185.41                          | 1112.11 | 187.31 | 1112.31 | 191.67  | 1112.8  | 194.69 | 1113    | 502.48  | 1112.35 |     |      |
| 508.61                          | 1112.26 | 520.53 | 1112.13 | 523.81  | 1112.05 | 532.92 | 1112    | 533.36  | 1111.61 |     |      |
| 534.22                          | 1111    | 534.56 | 1110.67 | 534.89  | 1110.34 | 535.24 | 1110    | 562.05  | 1110.2  |     |      |
| 563.7                           | 1110    | 564.03 | 1110.92 | 564.1   | 1111.12 | 564.42 | 1112    | 600.82  | 1111.71 |     |      |
| 609.1                           | 1111.33 | 613.27 | 1111.13 | 616.45  | 1111    | 618.97 | 1110.91 | 624.99  | 1110.73 |     |      |
| 646.38                          | 1111    | 768.74 | 1110.03 | 770.58  | 1110.01 | 771.89 | 1110    | 793.97  | 1110.04 |     |      |
| 795.41                          | 1110.05 | 869.65 | 1111    | 1020.15 | 1110.95 | 1020.4 | 1110.96 | 1030.14 | 1111    |     |      |

## Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1170.36 | 1110.66 | 1186.88 | 1110.2  | 1194.61 | 1110    | 1267.01 | 1110.09 | 1283.85 | 1111    |
| 1296.77 | 1110.41 | 1297.79 | 1110    | 1298.25 | 1109.74 | 1299.55 | 1109    | 1301.25 | 1108    |
| 1302.24 | 1107.43 | 1304.09 | 1106.34 | 1304.69 | 1106    | 1306.35 | 1105.03 | 1308.12 | 1104    |
| 1309.73 | 1103.07 | 1309.85 | 1103    | 1311.57 | 1102    | 1313.31 | 1101    | 1314.41 | 1100.35 |
| 1315.02 | 1100    | 1316.17 | 1099.33 | 1316.71 | 1099    | 1317    | 1098.82 | 1318.35 | 1098    |
| 1318.66 | 1097.81 | 1319.61 | 1097.24 | 1320.02 | 1097    | 1320.15 | 1096.92 | 1321.71 | 1096    |
| 1322.78 | 1095.36 | 1323.4  | 1095    | 1324.71 | 1094.23 | 1325.08 | 1094.02 | 1325.21 | 1093.95 |
| 1326.81 | 1093    | 1328.11 | 1092.26 | 1328.56 | 1092    | 1329.22 | 1091.65 | 1330.46 | 1091    |
| 1331    | 1090.71 | 1333.58 | 1089.21 | 1333.93 | 1089    | 1334.56 | 1088.63 | 1335.62 | 1088    |
| 1336.52 | 1087.47 | 1337.34 | 1087    | 1337.68 | 1086.81 | 1339.08 | 1086    | 1340.17 | 1085.38 |
| 1340.83 | 1085    | 1342.14 | 1084.26 | 1342.59 | 1084    | 1343.02 | 1083.75 | 1344.36 | 1083    |
| 1344.74 | 1082.78 | 1346.12 | 1082    | 1346.74 | 1081.84 | 1349.94 | 1081    | 1357.2  | 1080.75 |
| 1361.85 | 1080.6  | 1379.44 | 1080    | 1379.85 | 1079.73 | 1380.97 | 1079    | 1382.51 | 1078    |
| 1383.31 | 1077.49 | 1384.07 | 1077    | 1385.34 | 1076.19 | 1385.66 | 1076    | 1387.11 | 1075.12 |
| 1388.86 | 1074.07 | 1388.99 | 1074    | 1389.34 | 1073.8  | 1390.7  | 1073    | 1392.29 | 1072.09 |
| 1392.44 | 1072    | 1392.55 | 1071.94 | 1394.23 | 1071    | 1395.35 | 1070.37 | 1396    | 1070.01 |
| 1397.83 | 1069    | 1398.91 | 1068.45 | 1399.78 | 1068    | 1400.56 | 1067.6  | 1401.71 | 1067    |
| 1402.27 | 1066.7  | 1403.59 | 1066    | 1405.46 | 1065    | 1407    | 1064.17 | 1407.31 | 1064    |
| 1408.73 | 1063.23 | 1409.16 | 1063    | 1410.07 | 1062.51 | 1411    | 1062    | 1412.21 | 1061.36 |
| 1412.88 | 1061    | 1414.09 | 1060.39 | 1414.88 | 1060    | 1415.52 | 1059.68 | 1418.42 | 1058.22 |
| 1420.38 | 1057.24 | 1420.85 | 1057    | 1421.07 | 1056.89 | 1422.84 | 1056    | 1424.32 | 1055.25 |
| 1424.82 | 1055    | 1425.73 | 1054.54 | 1426.79 | 1054    | 1427.49 | 1053.64 | 1428.76 | 1053    |
| 1429.96 | 1052.39 | 1430.38 | 1052.17 | 1430.7  | 1052    | 1432.6  | 1051    | 1434.23 | 1050.13 |
| 1434.47 | 1050    | 1434.82 | 1049.8  | 1437.22 | 1048.44 | 1437.94 | 1048    | 1438.86 | 1047.44 |
| 1440.22 | 1046.62 | 1441.18 | 1046    | 1442.05 | 1045.45 | 1442.75 | 1045    | 1443.25 | 1044.72 |
| 1444.39 | 1044    | 1445.98 | 1043    | 1447.84 | 1042    | 1449.95 | 1041    | 1451.22 | 1040.33 |
| 1451.84 | 1040    | 1453    | 1039.48 | 1454.09 | 1039    | 1454.81 | 1038.65 | 1456.14 | 1038    |
| 1456.58 | 1037.45 | 1456.95 | 1037    | 1458.12 | 1036.66 | 1460.03 | 1036    | 1822.29 | 1036.33 |
| 1823.53 | 1037    | 1824.31 | 1037.43 | 1825.34 | 1038    | 1826.31 | 1038.51 | 1827.26 | 1039    |
| 1829.21 | 1039.98 | 1831.25 | 1041    | 1831.8  | 1041.28 | 1833.25 | 1042    | 1834.65 | 1042.69 |
| 1835.27 | 1043    | 1836.84 | 1043.78 | 1837.29 | 1044    | 1837.95 | 1044.33 | 1839.31 | 1045    |
| 1840.74 | 1045.71 | 1841.64 | 1046.16 | 1843.35 | 1047    | 1844.33 | 1047.49 | 1845.38 | 1048    |
| 1846.62 | 1048.61 | 1847.41 | 1049    | 1849    | 1049.78 | 1849.44 | 1050    | 1850.09 | 1050.4  |
| 1851.08 | 1051    | 1852.4  | 1051.88 | 1852.57 | 1052    | 1852.88 | 1052.21 | 1854.06 | 1053    |
| 1855.47 | 1053.95 | 1855.62 | 1054.05 | 1857.01 | 1055    | 1857.91 | 1055.61 | 1858.48 | 1056    |
| 1859.41 | 1056.64 | 1859.94 | 1057    | 1860.56 | 1057.43 | 1861.39 | 1058    | 1862.07 | 1058.48 |
| 1862.83 | 1059    | 1863.57 | 1059.51 | 1864.27 | 1060    | 1864.72 | 1060.31 | 1865.71 | 1061    |
| 1865.89 | 1061.13 | 1867.14 | 1062    | 1868.22 | 1062.76 | 1868.56 | 1063    | 1868.8  | 1063.17 |
| 1869.98 | 1064    | 1870.9  | 1064.65 | 1872.6  | 1065.84 | 1872.82 | 1066    | 1873.02 | 1066.14 |
| 1874.23 | 1067    | 1874.37 | 1067.1  | 1875.64 | 1068    | 1876.38 | 1068.53 | 1877.02 | 1069    |
| 1877.57 | 1069.4  | 1878.41 | 1070    | 1879.27 | 1070.63 | 1879.79 | 1071    | 1881.2  | 1072    |
| 1881.64 | 1072.31 | 1882.61 | 1073    | 1884.04 | 1074    | 1885.35 | 1074.91 | 1885.48 | 1075    |
| 1886.92 | 1076    | 1887.55 | 1076.43 | 1889.08 | 1077.48 | 1889.85 | 1078    | 1891.26 | 1078.83 |
| 1891.55 | 1079    | 1893.35 | 1079.99 | 1895.22 | 1081    | 1896.08 | 1081.46 | 1897.08 | 1082    |
| 1897.79 | 1082.38 | 1898.94 | 1083    | 1899.85 | 1083.48 | 1900.81 | 1084    | 1926.21 | 1085    |
| 1929.31 | 1085.56 | 1931.72 | 1086    | 1935.18 | 1086.72 | 1936.51 | 1087    | 1938.62 | 1087.59 |
| 1940.06 | 1088    | 1947.52 | 1090.51 | 1948.95 | 1091    | 1950.16 | 1091.4  | 1953.69 | 1092.6  |
| 1954.89 | 1093    | 1956.07 | 1093.39 | 1957.82 | 1094    | 1958.61 | 1094.26 | 1960.78 | 1095    |
| 1962.78 | 1095.65 | 1963.9  | 1096    | 1965.13 | 1096.39 | 1967.03 | 1097    | 1968.91 | 1097.61 |
| 1970.14 | 1098    | 1973.05 | 1098.93 | 1973.26 | 1099    | 1973.99 | 1099.24 | 1976.35 | 1100    |
| 1977.57 | 1100.4  | 1979.44 | 1101    | 1982.37 | 1102    | 1982.87 | 1102.17 | 1986.92 | 1103.56 |
| 1988.22 | 1104    | 1990.23 | 1104.69 | 1991.16 | 1105    | 1992.82 | 1105.57 | 1995.8  | 1106.57 |
| 1997.07 | 1107    | 1998.21 | 1107.38 | 2001.81 | 1108.59 | 2003.04 | 1109    | 2004.65 | 1109.53 |
| 2006.12 | 1110    | 2009.25 | 1110.93 | 2009.46 | 1111    | 2009.8  | 1111.1  | 2012.69 | 1112    |
| 2013.35 | 1112.21 | 2015.87 | 1113    | 2017.77 | 1113.73 | 2018.45 | 1114    | 2020.31 | 1114.73 |
| 2020.96 | 1115    | 2023.03 | 1115.83 | 2023.45 | 1116    | 2026.19 | 1116.27 | 2033.8  | 1117    |
| 2058.05 | 1116.91 | 2064.29 | 1116    | 2066.19 | 1115.04 | 2066.49 | 1114.89 | 2068.23 | 1114    |
| 2069.37 | 1113.42 | 2070.2  | 1113    | 2070.65 | 1112.77 | 2073.06 | 1111.55 | 2075.26 | 1110.43 |
| 2078.87 | 1108.6  | 2080.05 | 1108    | 2081.95 | 1107.09 | 2082.14 | 1107    | 2082.4  | 1106.88 |
| 2084.26 | 1106    | 2085.37 | 1105.48 | 2086.38 | 1105    | 2088.3  | 1104.1  | 2088.5  | 1104    |
| 2088.59 | 1103.96 | 2091.91 | 1102.39 | 2092.73 | 1102    | 2094.09 | 1101.36 | 2094.85 | 1101    |
| 2095.56 | 1100.6  | 2096.63 | 1100    | 2097.89 | 1099.44 | 2098.87 | 1099    | 2100.81 | 1098    |
| 2101.17 | 1097.81 | 2102.75 | 1097    | 2103.7  | 1096.52 | 2104.71 | 1096    | 2106.31 | 1095.18 |
| 2106.67 | 1095    | 2108.28 | 1094.19 | 2108.66 | 1094    | 2114.1  | 1093.08 | 2114.53 | 1093    |
| 2115.5  | 1092.81 | 2119.55 | 1092    | 2120.9  | 1091.19 | 2121.22 | 1091    | 2122.8  | 1090.05 |
| 2122.89 | 1090    | 2123.03 | 1089.92 | 2124.57 | 1089    | 2125.41 | 1088.46 | 2126.11 | 1088    |
| 2126.23 | 1087.36 | 2126.29 | 1087    | 2126.38 | 1086.51 | 2126.48 | 1086    | 2126.66 | 1085.26 |
| 2126.68 | 1085.14 | 2126.72 | 1085    | 2281.02 | 1085.84 | 2282.08 | 1086    | 2323.06 | 1086.13 |
| 2326.23 | 1086.2  | 2334.59 | 1086.42 | 2345.68 | 1086.66 | 2347.3  | 1086.7  | 2361.76 | 1087    |
| 2390.36 | 1087.27 | 2409.47 | 1087.46 | 2417.48 | 1087.56 | 2421.63 | 1087.59 | 2424.75 | 1087.62 |
| 2455.57 | 1088    | 2503.09 | 1088.81 | 2506.68 | 1088.86 | 2511.03 | 1088.95 | 2514.03 | 1089    |
| 2643.38 | 1088.75 | 2648.07 | 1088.54 | 2651.52 | 1088.4  | 2653.9  | 1088.32 | 2678.63 | 1088.1  |
| 2680.77 | 1088.11 | 2682.31 | 1088.12 | 2684.72 | 1088.14 | 2713.81 | 1088.29 | 2717.41 | 1088.32 |
| 2731.25 | 1088.39 | 2734.79 | 1088.42 | 2743.39 | 1088.46 | 2752.8  | 1088.53 | 2757.81 | 1088.55 |
| 2764.84 | 1088.61 | 2770.72 | 1088.64 | 2795.79 | 1088.81 | 2797.59 | 1088.82 | 2816.48 | 1088.94 |
| 2816.57 | 1088.95 | 2823.98 | 1089    | 2901.54 | 1088.75 | 2908.13 | 1088.6  | 2919.93 | 1088.36 |
| 2932.22 | 1088.06 | 2932.53 | 1088.05 | 2934.73 | 1088    | 2962.87 | 1088.52 | 2963.87 | 1089    |
| 2965.94 | 1090    | 2968    | 1091    | 2969.57 | 1091.77 | 2970.05 | 1092    | 2971.9  | 1092.91 |
| 2972.09 | 1093    | 2974    | 1093.96 | 2974.09 | 1094    | 2974.32 | 1094.12 | 2976.02 | 1095    |
| 2976.76 | 1095.38 | 2977.95 | 1096    | 2978.78 | 1096.44 | 2979.87 | 1097    | 2980.96 | 1097.58 |
| 2981.78 | 1098    | 2983.08 | 1098.69 | 2983.68 | 1099    | 2984.26 | 1099.31 | 2986.16 | 1100.31 |
| 2987.46 | 1101    | 2989.13 | 1101.88 | 2989.35 | 1102    | 2989.61 | 1102.14 | 2991.24 | 1103    |
| 2992.42 | 1103.62 | 2993.14 | 1104    | 2993.93 | 1104.42 | 2995.03 | 1105    | 2996.12 | 1105.56 |
| 2996.98 | 1106    | 2998.18 | 1106.58 | 2999.02 | 1107    | 2999.89 | 1107.41 | 3001.16 | 1108    |
| 3002.82 | 1108.76 | 3003.34 | 1109    | 3004.32 | 1109.44 | 3006.07 | 1110.23 | 3007.79 | 1111    |
| 3010.04 | 1112    | 3011.87 | 1112.82 | 3012.28 | 1113    | 3014.33 | 1113.08 | 3023.47 | 1113.44 |
| 3052.62 | 1114    | 3296.45 | 1114.7  | 3299.46 | 1114.72 | 3304.94 | 1114.74 | 3415.04 | 1115.71 |
| 3417.48 | 1115.76 | 3419.07 | 1115.8  | 3424.21 | 1115.89 | 3424.65 | 1115.9  | 3425.32 | 1115.92 |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 3428.76 | 1116    | 3503.07 | 1116.05 | 3510.77 | 1116.11 | 3521.13 | 1116.17 | 3555.94 | 1117    |
| 3802.83 | 1116.97 | 3810.12 | 1116.87 | 3814.3  | 1116.83 | 3815.97 | 1116.82 | 3816.8  | 1116.81 |
| 3817.17 | 1116.82 | 3817.84 | 1116.8  | 3818.04 | 1116.81 | 3818.34 | 1116.79 | 3854.62 | 1116.77 |
| 3935.04 | 1116.32 | 3939.78 | 1116.3  | 3941.3  | 1116.29 |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 2058.05 .035 3014.33 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 2058.05 3014.33 243.17 244.48 245.79 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 2058.05 1116.91 F  
 3014.33 3941.3 1113.08 F  
 Left Levee Station= 2058.05 Elevation= 1116.91

CROSS SECTION

RIVER: Salt REACH: 1 RS: 217

INPUT Description:

| Station | Elevation | Data    | num=    | 490     | Sta     | Elev    | Sta     | Elev    | Sta     | Elev | Sta | Elev |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|------|-----|------|
| 0       | 1111.49   | 3.9     | 1111.57 | 30.32   | 1111.7  | 36.99   | 1111.65 | 40      | 1111.6  |      |     |      |
| 40.24   | 1111.59   | 42.05   | 1111.61 | 48.48   | 1111.72 | 52.32   | 1111.77 | 56.06   | 1111.78 |      |     |      |
| 72.79   | 1111.89   | 73.17   | 1111.9  | 115.25  | 1112.04 | 116.86  | 1112.02 | 136.2   | 1112    |      |     |      |
| 171.2   | 1112.08   | 173.16  | 1112.12 | 206.25  | 1112.89 | 210.41  | 1113    | 336.18  | 1112.95 |      |     |      |
| 337.6   | 1112.91   | 367.21  | 1112    | 368.28  | 1111.97 | 368.7   | 1111.96 | 369.04  | 1111.95 |      |     |      |
| 430.21  | 1110      | 430.99  | 1109.89 | 437.49  | 1109    | 444.22  | 1109.17 | 448.25  | 1110    |      |     |      |
| 449.17  | 1110.16   | 450.2   | 1110.3  | 454.1   | 1110.88 | 455.93  | 1110.96 | 457.92  | 1110.93 |      |     |      |
| 463.84  | 1110.77   | 466.11  | 1110.69 | 505.46  | 1111    | 743.66  | 1110.99 | 756.93  | 1110.7  |      |     |      |
| 799.51  | 1110.02   | 800.34  | 1110    | 869.67  | 1109.95 | 887.66  | 1110.06 | 888.23  | 1110.07 |      |     |      |
| 904.36  | 1110.19   | 935.35  | 1110.18 | 937.48  | 1110.19 | 938.41  | 1110.2  | 940.52  | 1110.21 |      |     |      |
| 943.37  | 1110.23   | 946.28  | 1110.28 | 948.5   | 1110.29 | 950.97  | 1110.33 | 984.53  | 1110    |      |     |      |
| 1000.97 | 1109.38   | 1001.57 | 1109.36 | 1039.42 | 1109.48 | 1064.79 | 1109.91 | 1069.3  | 1109.95 |      |     |      |
| 1070.16 | 1110      | 1084.8  | 1109.39 | 1085.79 | 1109    | 1089.03 | 1106.98 | 1090.26 | 1106.21 |      |     |      |
| 1090.59 | 11106     | 1091.17 | 1105.65 | 1092.21 | 1105    | 1093.76 | 1104.04 | 1096.7  | 1102.21 |      |     |      |
| 1097.04 | 11102     | 1097.18 | 1101.91 | 1098.65 | 1101    | 1099.45 | 1100.5  | 1100.26 | 1100    |      |     |      |
| 1100.84 | 1099.64   | 1101.86 | 1099    | 1102.98 | 1098.31 | 1103.47 | 1098    | 1103.78 | 1097.81 |      |     |      |
| 1106.46 | 1096.13   | 1106.68 | 1096    | 1107.03 | 1095.78 | 1108.28 | 1095    | 1108.58 | 1094.81 |      |     |      |
| 1109.89 | 1094      | 1111.07 | 1093.26 | 1111.49 | 1093    | 1113.04 | 1092.11 | 1113.24 | 1092    |      |     |      |
| 1113.5  | 1091.85   | 1116.81 | 1090    | 1117.32 | 1089.72 | 1118.6  | 1089    | 1120.4  | 1088    |      |     |      |
| 1122.23 | 1087      | 1122.49 | 1086.86 | 1124.1  | 1086    | 1126    | 1085    | 1127.92 | 1084    |      |     |      |
| 1128.98 | 1083.49   | 1130.01 | 1083    | 1133.99 | 1082    | 1137.9  | 1081    | 1169.92 | 1080.54 |      |     |      |
| 1171.96 | 1080.79   | 1172.53 | 1080.39 | 1173.04 | 1080    | 1174.33 | 1079.19 | 1174.64 | 1079    |      |     |      |
| 1175.86 | 1078.24   | 1176.25 | 1078    | 1176.41 | 1077.9  | 1178.79 | 1076.39 | 1179.41 | 1076    |      |     |      |
| 1179.86 | 1075.71   | 1180.99 | 1075    | 1182.57 | 1074    | 1183.19 | 1073.61 | 1184.15 | 1073    |      |     |      |
| 1187.33 | 1071      | 1188.01 | 1070.58 | 1189.86 | 1069.45 | 1191.43 | 1068.51 | 1192.27 | 1068    |      |     |      |
| 1193.02 | 1067.56   | 1193.95 | 1067    | 1194.68 | 1066.62 | 1195.9  | 1066    | 1197.05 | 1065.44 |      |     |      |
| 1197.97 | 1065      | 1199.36 | 1064.33 | 1200.03 | 1064    | 1200.82 | 1063.62 | 1203.76 | 1062.19 |      |     |      |
| 1204.14 | 1062      | 1204.39 | 1061.88 | 1207.29 | 1060.43 | 1208.17 | 1060    | 1209.12 | 1059.53 |      |     |      |
| 1210.17 | 1059      | 1211.57 | 1058.3  | 1212.16 | 1058    | 1213.34 | 1057.41 | 1214.14 | 1057    |      |     |      |
| 1214.5  | 1056.82   | 1218.07 | 1055    | 1219.69 | 1054.19 | 1220.06 | 1054    | 1221.96 | 1053.03 |      |     |      |
| 1223.66 | 1052.21   | 1224.08 | 1052    | 1225.15 | 1051.58 | 1226.68 | 1051    | 1227.49 | 1050.56 |      |     |      |
| 1228.5  | 1050      | 1229.67 | 1049.13 | 1229.9  | 1049    | 1230.53 | 1048.73 | 1232.26 | 1048    |      |     |      |
| 1232.66 | 1047.83   | 1234.22 | 1047.15 | 1234.55 | 1047    | 1236.71 | 1046.06 | 1236.84 | 1046    |      |     |      |
| 1237.14 | 1045.86   | 1238.96 | 1045    | 1239.86 | 1044.29 | 1240.23 | 1044    | 1240.38 | 1043.37 |      |     |      |
| 1240.47 | 1043      | 1240.99 | 1042.58 | 1241.68 | 1042    | 1242.47 | 1041.76 | 1246.27 | 1040.58 |      |     |      |
| 1248.19 | 1040      | 1249.28 | 1039.66 | 1250.64 | 1039.22 | 1251.34 | 1039    | 1252.68 | 1038.64 |      |     |      |
| 1255    | 1038      | 1257.07 | 1037.34 | 1258.07 | 1037    | 1261.81 | 1036.08 | 1262.14 | 1036    |      |     |      |
| 1691.63 | 1036.75   | 1692.14 | 1037    | 1692.48 | 1037.17 | 1695.2  | 1038.54 | 1696.13 | 1039    |      |     |      |
| 1697.42 | 1039.69   | 1697.94 | 1040    | 1701.1  | 1040.92 | 1701.37 | 1041    | 1701.52 | 1041.07 |      |     |      |
| 1703.61 | 1042      | 1704.25 | 1042.63 | 1704.66 | 1043    | 1705.43 | 1043.68 | 1705.73 | 1044    |      |     |      |
| 1706.33 | 1044.56   | 1706.72 | 1045    | 1707.16 | 1045.3  | 1708.11 | 1046    | 1708.53 | 1046.28 |      |     |      |
| 1709.45 | 1047      | 1710.25 | 1047.59 | 1710.77 | 1048    | 1712.09 | 1048.98 | 1713.46 | 1049.95 |      |     |      |
| 1714.9  | 1051      | 1715.38 | 1051.34 | 1716.29 | 1052    | 1717.45 | 1052.8  | 1717.72 | 1053    |      |     |      |
| 1718.78 | 1053.76   | 1719.12 | 1054    | 1720.52 | 1055    | 1721.86 | 1055.97 | 1722.62 | 1056.5  |      |     |      |
| 1723.33 | 1057      | 1724.8  | 1058    | 1725.43 | 1058.42 | 1726.28 | 1059    | 1727.28 | 1059.67 |      |     |      |
| 1727.78 | 1060      | 1729.27 | 1060.99 | 1730.7  | 1062    | 1730.96 | 1062.18 | 1732.1  | 1063    |      |     |      |
| 1732.66 | 1063.39   | 1733.51 | 1064    | 1734.14 | 1064.44 | 1734.93 | 1065    | 1736.35 | 1066    |      |     |      |
| 1737.68 | 1066.93   | 1739.2  | 1068    | 1739.33 | 1068.09 | 1742.08 | 1070    | 1742.61 | 1070.37 |      |     |      |
| 1743.53 | 1071      | 1744.98 | 1072    | 1745.8  | 1072.57 | 1747.38 | 1073.65 | 1747.88 | 1074    |      |     |      |
| 1749.1  | 1074.84   | 1749.32 | 1075    | 1750.83 | 1076    | 1751.34 | 1076.33 | 1752.37 | 1077    |      |     |      |
| 1752.95 | 1077.38   | 1755    | 1078.7  | 1755.48 | 1079    | 1756    | 1079.32 | 1757.09 | 1080    |      |     |      |
| 1758.25 | 1080.71   | 1759.16 | 1081.26 | 1760.4  | 1082    | 1761.65 | 1082.74 | 1761.99 | 1082.93 |      |     |      |
| 1762.1  | 1083      | 1767.86 | 1083.24 | 1784.84 | 1084    | 1788.71 | 1084.57 | 1790.45 | 1085    |      |     |      |
| 1794.05 | 1085.91   | 1794.4  | 1086    | 1802.49 | 1088    | 1805.1  | 1088.72 | 1806.09 | 1089    |      |     |      |
| 1807.23 | 1089.35   | 1809.31 | 1090    | 1811.74 | 1090.73 | 1812.58 | 1091    | 1814.3  | 1091.53 |      |     |      |
| 1816.4  | 1092.26   | 1819.5  | 1093.31 | 1821.48 | 1094    | 1824.37 | 1095    | 1827.18 | 1095.96 |      |     |      |
| 1827.31 | 1096      | 1830.23 | 1097    | 1830.62 | 1097.13 | 1833.15 | 1098    | 1833.7  | 1098.18 |      |     |      |
| 1836.1  | 1099      | 1837.1  | 1099.33 | 1839.05 | 1100    | 1841.32 | 1100.77 | 1844.7  | 1101.93 |      |     |      |
| 1844.9  | 1102      | 1846.4  | 1102.51 | 1847.8  | 1103    | 1847.93 | 1103.04 | 1850.7  | 1104    |      |     |      |
| 1851.05 | 1104.12   | 1856.49 | 1106    | 1857.16 | 1106.23 | 1859.38 | 1107    | 1860.23 | 1107.31 |      |     |      |
| 1862.18 | 1108      | 1863.34 | 1108.43 | 1867.54 | 1110    | 1869.11 | 1110.58 | 1870.22 | 1111    |      |     |      |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1875.13 | 1112.83 | 1878.04 | 1113.91 | 1878.27 | 1114    | 1878.43 | 1114.06 | 1880.96 | 1115    |
| 1881.52 | 1115.21 | 1883.65 | 1116    | 1901.3  | 1117    | 1926.21 | 1116.57 | 1929.02 | 1115.09 |
| 1929.19 | 1115    | 1931.03 | 1114.03 | 1931.15 | 1113.97 | 1932.99 | 1113    | 1934.31 | 1112.31 |
| 1934.89 | 1112    | 1935.09 | 1111.9  | 1937.3  | 1110.73 | 1938.7  | 1110    | 1940.29 | 1109.16 |
| 1940.6  | 1109    | 1941.02 | 1108.78 | 1942.5  | 1108    | 1946.47 | 1106    | 1948.07 | 1105.2  |
| 1948.46 | 1105    | 1949.47 | 1104.5  | 1950.47 | 1104    | 1950.93 | 1103.78 | 1952.5  | 1103    |
| 1953.1  | 1102.71 | 1956.46 | 1101.07 | 1956.61 | 1101    | 1958.2  | 1100.23 | 1958.67 | 1100    |
| 1959.16 | 1099.77 | 1960.73 | 1099    | 1961.39 | 1098.66 | 1962.7  | 1098    | 1963.34 | 1097.68 |
| 1964.67 | 1097    | 1965.72 | 1096.47 | 1968.28 | 1095.19 | 1968.67 | 1095    | 1969.56 | 1094.58 |
| 1970.77 | 1094    | 1972.58 | 1093.19 | 1972.99 | 1093    | 1975.16 | 1092.87 | 1989.13 | 1092    |
| 1990.18 | 1091.03 | 1990.57 | 1090.86 | 1991.94 | 1090.32 | 1992.74 | 1090    | 1993.48 | 1089.7  |
| 1995.24 | 1089    | 1995.7  | 1088.8  | 1997.39 | 1088    | 1997.91 | 1087.61 | 1999.04 | 1087    |
| 2001.82 | 1086.53 | 2004.81 | 1086    | 2007.6  | 1085.24 | 2008.33 | 1085    | 2018.36 | 1084.52 |
| 2018.85 | 1084.53 | 2021.13 | 1084.68 | 2022.2  | 1084.72 | 2022.89 | 1084.74 | 2023.88 | 1084.75 |
| 2024.29 | 1084.77 | 2029.77 | 1084.74 | 2031.86 | 1084.67 | 2034.36 | 1084.57 | 2040.05 | 1084.37 |
| 2043.14 | 1084.25 | 2044.53 | 1084.21 | 2050.26 | 1084    | 2222.23 | 1084.94 | 2222.45 | 1085    |
| 2223.45 | 1085.23 | 2224.07 | 1085.35 | 2226.89 | 1086    | 2229.46 | 1086.37 | 2232.48 | 1087    |
| 2268.81 | 1088    | 2325.59 | 1089    | 2412.94 | 1088.91 | 2419.89 | 1088.81 | 2422.05 | 1088.79 |
| 2427.22 | 1088.71 | 2429.28 | 1088.69 | 2432.96 | 1088.63 | 2439.39 | 1088.57 | 2443.23 | 1088.51 |
| 2482.31 | 1088.08 | 2483.43 | 1088.07 | 2484.12 | 1088.06 | 2492.71 | 1088    | 2507.94 | 1087.83 |
| 2508.6  | 1087.82 | 2521.91 | 1087.7  | 2522.62 | 1087.69 | 2538.85 | 1088    | 2567.87 | 1088.43 |
| 2569.82 | 1088.48 | 2577.58 | 1088.73 | 2578.99 | 1088.77 | 2586.19 | 1089    | 2628.83 | 1089.6  |
| 2631.29 | 1089.62 | 2632.27 | 1089.61 | 2699.5  | 1089.46 | 2705.92 | 1089.43 | 2724.01 | 1089.28 |
| 2724.68 | 1089.27 | 2757    | 1089    | 2825.4  | 1089.04 | 2825.77 | 1089.23 | 2827.28 | 1090    |
| 2828.89 | 1090.85 | 2829.18 | 1091    | 2829.39 | 1091.11 | 2831.08 | 1092    | 2832.34 | 1092.67 |
| 2836.14 | 1094.66 | 2836.78 | 1095    | 2837.04 | 1095.13 | 2840.54 | 1096.96 | 2840.71 | 1097.04 |
| 2842.56 | 1098    | 2844.16 | 1098.81 | 2844.53 | 1099    | 2845.84 | 1099.65 | 2848.58 | 1101    |
| 2850.27 | 1101.85 | 2850.58 | 1102    | 2852.49 | 1102.95 | 2854.59 | 1104    | 2855.2  | 1104.3  |
| 2856.65 | 1105    | 2857.96 | 1105.62 | 2858.74 | 1106    | 2860.61 | 1106.88 | 2860.87 | 1107    |
| 2867.3  | 1110    | 2867.89 | 1110.27 | 2871.47 | 1111.94 | 2871.59 | 1112    | 2873.6  | 1112.58 |
| 2875.16 | 1113    | 2894.54 | 1113.75 | 2901.06 | 1113.91 | 2960.54 | 1113    | 2962.57 | 1113.02 |
| 2962.82 | 1113.03 | 2963.72 | 1113.02 | 2966.25 | 1113    | 3021.24 | 1113.17 | 3089.3  | 1114    |
| 3201.77 | 1114.04 | 3220.61 | 1114.12 | 3234.95 | 1115    | 3330.52 | 1115.03 | 3358.52 | 1115.4  |
| 3362.79 | 1115.44 | 3371.4  | 1115.55 | 3412.92 | 1116    | 3442.14 | 1117    | 3504.26 | 1116.91 |
| 3515.61 | 1116.6  | 3531.55 | 1116.12 | 3538.34 | 1116    | 3563.28 | 1116.13 | 3568.78 | 1116.88 |
| 3569.74 | 1117    | 3571.32 | 1117.26 | 3575.95 | 1118    | 3747.09 | 1117.7  | 3782.33 | 1117.61 |
| 3784.05 | 1117.59 | 3818.25 | 1117    | 3846.84 | 1116.33 | 3848.39 | 1116.29 | 3851.32 | 1116.23 |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 1926.21 .035 2875.16 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1926.21 2875.16 250.02 250.02 250.02 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1926.21 1116.57 F  
 2875.16 3851.32 1113 F  
 Left Levee Station= 1926.21 Elevation= 1116.57

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 216.96

INPUT

Description:  
 Station Elevation Data num= 495

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Sta     | Elev    |
| 0       | 1111    | 59.56   | 1110.3  | 60.22   | 1110.31 | 63.29   | 1110.17 | 64.05   | 1110.18 |
| 66.88   | 1110    | 67.08   | 1109.96 | 72      | 1109    | 77.23   | 1108.55 | 83.19   | 1108    |
| 93.18   | 1108.79 | 94.41   | 1108.94 | 94.84   | 1109    | 95.33   | 1109.08 | 100.42  | 1110    |
| 292.75  | 1110.55 | 308.5   | 1111    | 515.43  | 1110.47 | 520.04  | 1110.43 | 531.61  | 1110.31 |
| 534.78  | 1110.29 | 541.08  | 1110.21 | 542.71  | 1110.2  | 549.17  | 1110.11 | 554.88  | 1110    |
| 754.52  | 1109    | 856.87  | 1108.75 | 858.82  | 1107.48 | 859.57  | 1107    | 860.09  | 1106.67 |
| 861.13  | 1106    | 862.27  | 1105.28 | 862.7   | 1105    | 863.58  | 1104.44 | 864.28  | 1104    |
| 865.7   | 1103.1  | 865.86  | 1103    | 866.09  | 1102.85 | 867.44  | 1102    | 868.59  | 1101.27 |
| 869.02  | 1101    | 870.47  | 1100.08 | 872.19  | 1099    | 872.85  | 1098.58 | 873.77  | 1098    |
| 874.59  | 1097.49 | 875.36  | 1097    | 876.72  | 1096.14 | 876.94  | 1096    | 877.5   | 1095.64 |
| 878.23  | 1095.18 | 878.92  | 1094.75 | 880.11  | 1094    | 880.77  | 1093.58 | 885.65  | 1090.51 |
| 886.47  | 1090    | 888.05  | 1089    | 889.76  | 1088    | 891.92  | 1087    | 892.71  | 1086.63 |
| 894.07  | 1086    | 894.53  | 1085.78 | 896.87  | 1084.7  | 898.36  | 1084    | 898.71  | 1083.87 |
| 901.1   | 1083    | 903.68  | 1082.22 | 904.44  | 1082    | 907.78  | 1081    | 936.47  | 1080.62 |
| 937.49  | 1080    | 938.74  | 1079.26 | 939.15  | 1079    | 940.54  | 1078.09 | 941.91  | 1077    |
| 942.7   | 1076.36 | 943.14  | 1076    | 944.3   | 1075    | 945.11  | 1074.29 | 945.45  | 1074    |
| 945.78  | 1073.7  | 946.63  | 1073    | 947.35  | 1072.39 | 947.9   | 1072    | 948.7   | 1071.46 |
| 949.36  | 1071    | 949.6   | 1070.84 | 950.92  | 1070    | 952.19  | 1069.24 | 952.58  | 1069    |
| 953.22  | 1068.6  | 954.23  | 1068    | 954.84  | 1067.63 | 955.9   | 1067    | 957.07  | 1066.28 |
| 957.53  | 1066    | 958.68  | 1065.29 | 959.16  | 1065    | 960.34  | 1064.34 | 960.88  | 1064    |
| 965.85  | 1061.53 | 966.91  | 1061    | 967.66  | 1060.63 | 968.92  | 1060    | 969.43  | 1059.74 |
| 970.92  | 1059    | 971.16  | 1058.88 | 972.43  | 1058.25 | 974.92  | 1057    | 975.69  | 1056.62 |
| 976.91  | 1056    | 979.03  | 1054.94 | 979.42  | 1054.74 | 980.89  | 1054    | 984.8   | 1052    |
| 984.96  | 1051.92 | 987.79  | 1050.47 | 988.72  | 1050    | 990.69  | 1049.29 | 991.14  | 1049.13 |
| 991.46  | 1049    | 993.47  | 1048.63 | 996.97  | 1048    | 998.08  | 1047.69 | 1000.48 | 1047    |
| 1001.88 | 1046.54 | 1003.71 | 1046    | 1004.34 | 1045.26 | 1004.86 | 1045    | 1005.41 | 1044.57 |
| 1006.04 | 1044    | 1006.57 | 1043.55 | 1006.99 | 1043.33 | 1007.47 | 1043    | 1007.83 | 1042.3  |
| 1008.18 | 1042    | 1008.48 | 1041    | 1008.68 | 1040.3  | 1008.74 | 1040.08 | 1008.83 | 1039.9  |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1009.74 | 1039    | 1010.06 | 1038.85 | 1010.85 | 1038.82 | 1011.17 | 1038.67 | 1011.9  | 1038.51 |
| 1012.56 | 1038.06 | 1013.64 | 1037.3  | 1014.06 | 1037    | 1014.65 | 1037    | 1015.84 | 1037.23 |
| 1016.42 | 1037.74 | 1016.61 | 1037.84 | 1016.75 | 1038    | 1018.37 | 1037.74 | 1018.48 | 1037.48 |
| 1018.62 | 1037    | 1018.79 | 1036.55 | 1018.84 | 1036.29 | 1018.89 | 1036    | 1541.5  | 1036.23 |
| 1541.82 | 1037    | 1542.21 | 1037.82 | 1542.29 | 1038    | 1542.66 | 1038.15 | 1545.6  | 1039.28 |
| 1547.45 | 1040    | 1548.59 | 1040.45 | 1549.96 | 1041    | 1552.28 | 1042    | 1555.9  | 1044    |
| 1556.8  | 1044.49 | 1559.29 | 1045.87 | 1559.66 | 1046.07 | 1562.12 | 1047.43 | 1564.01 | 1048.49 |
| 1564.93 | 1049    | 1566.59 | 1050    | 1566.9  | 1050.26 | 1567.77 | 1051    | 1568.26 | 1051.41 |
| 1568.95 | 1052    | 1570.13 | 1053    | 1571.25 | 1053.94 | 1571.42 | 1054.09 | 1573.47 | 1055.83 |
| 1573.68 | 1056    | 1573.95 | 1056.23 | 1574.87 | 1057    | 1575.48 | 1057.52 | 1576.89 | 1058.69 |
| 1577.26 | 1059    | 1577.54 | 1059.23 | 1578.46 | 1060    | 1579.64 | 1060.98 | 1581.95 | 1062.88 |
| 1582.3  | 1063.16 | 1583.32 | 1064    | 1584.51 | 1064.97 | 1586.98 | 1067    | 1587.4  | 1067.35 |
| 1588.19 | 1068    | 1588.6  | 1068.33 | 1590.37 | 1069.79 | 1590.63 | 1070    | 1590.78 | 1070.09 |
| 1592.23 | 1071    | 1593.99 | 1072    | 1595.56 | 1072.87 | 1595.79 | 1073    | 1597.56 | 1073.96 |
| 1600.04 | 1075.96 | 1601.25 | 1077    | 1602.39 | 1078    | 1602.85 | 1078.4  | 1603.52 | 1079    |
| 1604.04 | 1079.47 | 1604.64 | 1080    | 1605.21 | 1080.57 | 1605.67 | 1081    | 1605.71 | 1081.34 |
| 1605.79 | 1082    | 1606.16 | 1082.85 | 1606.23 | 1083    | 1606.61 | 1083.45 | 1607.02 | 1083.94 |
| 1631.22 | 1084.88 | 1634.65 | 1085    | 1640.63 | 1085.68 | 1643.25 | 1086    | 1647.36 | 1087    |
| 1650.57 | 1088    | 1654.97 | 1089.5  | 1658.29 | 1090.65 | 1660.07 | 1091.25 | 1662.21 | 1092    |
| 1663.55 | 1092.46 | 1665.09 | 1093    | 1667.11 | 1093.69 | 1668    | 1094    | 1670.99 | 1095    |
| 1672.31 | 1095.43 | 1674.02 | 1096    | 1676.88 | 1096.98 | 1681.94 | 1098.84 | 1685.08 | 1099.98 |
| 1685.41 | 1100.09 | 1687.97 | 1101    | 1693.35 | 1102.87 | 1693.7  | 1103    | 1696.51 | 1103.97 |
| 1697.35 | 1104.27 | 1699.47 | 1105    | 1699.72 | 1105.08 | 1708.15 | 1108    | 1709.8  | 1108.56 |
| 1711.05 | 1109    | 1713.11 | 1109.69 | 1714.02 | 1110    | 1720.01 | 1112    | 1721.76 | 1112.59 |
| 1723.06 | 1113    | 1724.29 | 1113.4  | 1729.51 | 1115.07 | 1730.31 | 1115.33 | 1732.43 | 1116    |
| 1774.02 | 1115.14 | 1774.3  | 1115    | 1775.69 | 1114.28 | 1776.24 | 1114    | 1777.37 | 1113.42 |
| 1778.18 | 1113    | 1778.73 | 1112.72 | 1780.11 | 1112    | 1780.68 | 1111.71 | 1782.04 | 1111    |
| 1782.59 | 1110.72 | 1786.85 | 1108.49 | 1787.8  | 1108    | 1788.72 | 1107.52 | 1789.73 | 1107    |
| 1790.75 | 1106.49 | 1792.97 | 1105.36 | 1793.69 | 1105    | 1794.24 | 1104.72 | 1797.21 | 1103.22 |
| 1797.65 | 1103    | 1797.96 | 1102.85 | 1802.95 | 1100.33 | 1803.61 | 1100    | 1804.06 | 1099.77 |
| 1808.51 | 1097.54 | 1811.16 | 1096.19 | 1811.54 | 1096    | 1811.75 | 1095.89 | 1813.5  | 1095    |
| 1814.14 | 1094.66 | 1815.41 | 1094    | 1816.24 | 1093.54 | 1817.25 | 1093    | 1819.33 | 1092.37 |
| 1820.7  | 1092    | 1828.6  | 1091.25 | 1831.33 | 1091.03 | 1831.65 | 1091    | 1834.55 | 1090.18 |
| 1835.12 | 1090    | 1835.27 | 1089.76 | 1835.81 | 1089    | 1835.92 | 1088.63 | 1836.1  | 1088    |
| 1837.13 | 1087.79 | 1841.88 | 1087    | 1846.05 | 1086.55 | 1850.52 | 1086    | 1887    | 1085    |
| 1897.15 | 1084.78 | 1911.21 | 1084    | 1929.32 | 1083.12 | 1931.69 | 1083    | 1993.61 | 1083.68 |
| 2002.29 | 1083.95 | 2003.74 | 1084    | 2024.61 | 1085    | 2115.62 | 1084.52 | 2118.44 | 1084    |
| 2200.56 | 1084.72 | 2204.76 | 1086    | 2210.71 | 1086.88 | 2211.54 | 1087    | 2247.34 | 1086.99 |
| 2247.72 | 1086.98 | 2274.71 | 1086.06 | 2275.73 | 1086.02 | 2276.39 | 1086    | 2296.79 | 1085    |
| 2299.72 | 1084.84 | 2314.3  | 1084    | 2340.96 | 1084.1  | 2343.19 | 1084.29 | 2348.39 | 1084.76 |
| 2350.46 | 1085    | 2358.49 | 1084.96 | 2358.88 | 1084.93 | 2369.97 | 1084    | 2370.4  | 1083.9  |
| 2371.37 | 1083.71 | 2374.28 | 1083.36 | 2375.9  | 1083.15 | 2376.87 | 1083    | 2378.17 | 1082.82 |
| 2379.53 | 1082.68 | 2380.88 | 1082.61 | 2381.23 | 1082.62 | 2382.97 | 1082.6  | 2385.17 | 1082.63 |
| 2385.4  | 1082.66 | 2387.62 | 1082.71 | 2391.52 | 1083    | 2394.31 | 1083.24 | 2397.93 | 1084    |
| 2398.24 | 1084.03 | 2408.81 | 1085    | 2409.13 | 1085.15 | 2411.12 | 1086    | 2412    | 1086.36 |
| 2413.51 | 1087    | 2415.86 | 1087.96 | 2416.17 | 1088.02 | 2422.17 | 1089    | 2433.25 | 1090    |
| 2439.64 | 1090.17 | 2476.37 | 1090.37 | 2477.1  | 1090.38 | 2483.41 | 1090.04 | 2484.03 | 1090    |
| 2486.56 | 1089.28 | 2487.57 | 1089    | 2491.74 | 1088    | 2507.5  | 1088.5  | 2511.37 | 1089    |
| 2516.76 | 1089.06 | 2526.3  | 1089.3  | 2534.36 | 1089.45 | 2551.83 | 1089.85 | 2555.27 | 1089.91 |
| 2562.36 | 1090    | 2570.75 | 1089.99 | 2573.84 | 1089.95 | 2574.26 | 1089.94 | 2577.85 | 1089.88 |
| 2586.04 | 1089.78 | 2587.72 | 1089.72 | 2591.76 | 1089.67 | 2598.4  | 1089.4  | 2600.91 | 1089.34 |
| 2607.77 | 1089    | 2608.86 | 1089.07 | 2613.28 | 1090    | 2626.11 | 1090.59 | 2627.49 | 1090.49 |
| 2628.7  | 1090.66 | 2628.93 | 1090.65 | 2632.72 | 1091    | 2669.51 | 1091.73 | 2673.64 | 1091.94 |
| 2674.92 | 1092    | 2675.95 | 1092.55 | 2676.78 | 1093    | 2684.06 | 1096.91 | 2684.22 | 1097    |
| 2684.52 | 1097.16 | 2687.61 | 1098.84 | 2687.92 | 1099    | 2688.28 | 1099.2  | 2691.19 | 1100.75 |
| 2693.49 | 1102    | 2695.32 | 1103    | 2695.99 | 1103.36 | 2697.16 | 1104    | 2697.56 | 1104.21 |
| 2699.11 | 1105    | 2699.33 | 1105.1  | 2703.69 | 1107    | 2704    | 1107.14 | 2705.98 | 1108    |
| 2706.41 | 1108.19 | 2714.13 | 1111.55 | 2714.92 | 1111.9  | 2715.15 | 1112    | 2718.45 | 1113    |
| 2788.13 | 1113.11 | 2793.34 | 1114    | 2798.53 | 1114.68 | 2801.64 | 1115    | 2831.9  | 1114.94 |
| 2840    | 1114.81 | 2874.02 | 1114.55 | 2907.82 | 1114.69 | 2916.15 | 1114.65 | 2926.49 | 1114.69 |
| 2927.19 | 1114.68 | 2929.83 | 1114.67 | 2937.88 | 1114.7  | 2939.23 | 1114.69 | 2944.73 | 1114.7  |
| 2969.45 | 1114.16 | 2972.4  | 1114    | 3036.08 | 1114.28 | 3044.16 | 1114.17 | 3050.9  | 1114    |
| 3123.68 | 1114.18 | 3126.36 | 1114.57 | 3128.74 | 1114.67 | 3129.72 | 1114.73 | 3131.44 | 1114.87 |
| 3132.1  | 1114.93 | 3132.95 | 1115    | 3136.27 | 1115.23 | 3138.54 | 1115.41 | 3141.98 | 1115.66 |
| 3146.24 | 1116    | 3208.68 | 1115.8  | 3210.19 | 1115.77 | 3212.81 | 1115.61 | 3213.89 | 1115.57 |
| 3214.75 | 1115.55 | 3218.51 | 1115.56 | 3225.57 | 1115.92 | 3226.98 | 1116    | 3277.36 | 1115.6  |
| 3292.18 | 1115.11 | 3294.27 | 1115.05 | 3295.66 | 1115    | 3334.6  | 1115.81 | 3336.21 | 1116    |
| 3348.53 | 1116.47 | 3349.36 | 1116.46 | 3354.54 | 1116.64 | 3355.09 | 1116.67 | 3357.13 | 1116.8  |
| 3363.72 | 1117.05 | 3367.94 | 1117.15 | 3395.29 | 1118    | 3523.02 | 1117.83 | 3555.21 | 1118    |
| 3643.57 | 1117.59 | 3649.24 | 1117.53 | 3657.69 | 1117.52 | 3665.13 | 1117.45 | 3673.84 | 1117.42 |
| 3692.39 | 1117.24 | 3696.55 | 1117.22 | 3707.74 | 1117    | 3727.8  | 1116.88 | 3747.37 | 1116.65 |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 1774.02 .035 2718.45 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1774.02 2718.45 267.05 264.26 261.47 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1774.02 1115.14 F  
 2718.45 3747.37 1113 F  
 Left Levee Station= 1774.02 Elevation= 1115.14

CROSS SECTION

RIVER: Salt

REACH: 1

RS: 216.91

INPUT

Description:

| Station | Elevation | Data    | num=    | 458     | Station | Elev    | Station | Elev    | Station | Elev | Station | Elev |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|------|---------|------|
| 0       | 1110      | 243.55  | 1110.15 | 294.05  | 1110.84 | 298.79  | 1110.86 | 301.43  | 1110.92 |      |         |      |
| 308.83  | 1110.96   | 333.01  | 1110.96 | 339.01  | 1110.94 | 341.84  | 1110.91 | 355.04  | 1110.73 |      |         |      |
| 361.32  | 1110.57   | 366.71  | 1110.47 | 380.42  | 1110.1  | 383.64  | 1110    | 423.03  | 1109    |      |         |      |
| 561.35  | 1109.11   | 577.77  | 1110    | 588.49  | 1109.33 | 590.57  | 1109    | 591.25  | 1108.6  |      |         |      |
| 592.26  | 1108      | 595.56  | 1106.06 | 595.67  | 1106    | 595.79  | 1105.93 | 597.83  | 1104.73 |      |         |      |
| 600.37  | 1103.27   | 600.85  | 1103    | 601.36  | 1102.71 | 602.6   | 1102    | 604.36  | 1101    |      |         |      |
| 604.93  | 1100.68   | 606.12  | 1100    | 607.89  | 1099    | 611.31  | 1097.08 | 611.45  | 1097    |      |         |      |
| 612.22  | 1096.57   | 613.23  | 1096    | 616.81  | 1094    | 617.09  | 1093.84 | 618.61  | 1093    |      |         |      |
| 620.28  | 1092.07   | 620.41  | 1092    | 622.14  | 1091    | 623.51  | 1090.18 | 623.8   | 1090    |      |         |      |
| 624.19  | 1089.77   | 625.49  | 1089    | 627.24  | 1088    | 629.05  | 1087    | 629.83  | 1086.58 |      |         |      |
| 630.97  | 1086      | 632.02  | 1085.58 | 633.51  | 1085    | 634.21  | 1084.74 | 637.41  | 1083.51 |      |         |      |
| 638.75  | 1083      | 640.35  | 1082.4  | 641.39  | 1082    | 644.04  | 1081.61 | 649.29  | 1081    |      |         |      |
| 655.65  | 1080.84   | 684.44  | 1080    | 685.95  | 1079    | 687.05  | 1078.28 | 687.8   | 1077.78 |      |         |      |
| 690.3   | 1076.18   | 690.57  | 1076    | 690.87  | 1075.79 | 692.04  | 1075    | 693.07  | 1074.27 |      |         |      |
| 693.52  | 1074      | 696.6   | 1072.11 | 696.78  | 1072    | 697.16  | 1071.77 | 698.32  | 1071    |      |         |      |
| 698.69  | 1070.75   | 699.83  | 1070    | 701.05  | 1069.19 | 701.33  | 1069    | 701.82  | 1068.68 |      |         |      |
| 702.84  | 1068      | 704.22  | 1067.09 | 704.36  | 1067    | 704.89  | 1066.63 | 705.68  | 1066.07 |      |         |      |
| 705.79  | 1066      | 705.9   | 1065.92 | 707.25  | 1065    | 708.7   | 1064    | 709.52  | 1063.33 |      |         |      |
| 709.95  | 1063      | 710.33  | 1062.59 | 711.17  | 1062    | 713.01  | 1061    | 713.18  | 1060.94 |      |         |      |
| 715.22  | 1060      | 716     | 1059.57 | 716.98  | 1059    | 720.09  | 1058.1  | 720.34  | 1058.03 |      |         |      |
| 720.45  | 1058      | 720.66  | 1057.92 | 723.13  | 1057    | 725.38  | 1056    | 726.37  | 1055.57 |      |         |      |
| 727.67  | 1055      | 730     | 1054.02 | 730.12  | 1053.98 | 732.64  | 1053    | 734.63  | 1052.26 |      |         |      |
| 735.3   | 1052      | 738.28  | 1051    | 739.79  | 1050.53 | 743.78  | 1049.22 | 744.44  | 1049    |      |         |      |
| 747.01  | 1048.89   | 747.49  | 1048.79 | 747.65  | 1048.72 | 748.5   | 1048.53 | 748.77  | 1048.48 |      |         |      |
| 749.65  | 1048.43   | 749.87  | 1048.53 | 751.85  | 1048.25 | 752.36  | 1048    | 754.1   | 1047.21 |      |         |      |
| 754.66  | 1047      | 754.79  | 1046.81 | 755.64  | 1046    | 755.86  | 1045.51 | 756.09  | 1045    |      |         |      |
| 756.54  | 1044      | 756.84  | 1043.26 | 756.95  | 1043    | 757.05  | 1042.78 | 757.4   | 1042    |      |         |      |
| 757.79  | 1041.15   | 757.85  | 1041    | 757.97  | 1040.77 | 758.16  | 1040.39 | 758.35  | 1040    |      |         |      |
| 758.77  | 1039.12   | 758.83  | 1039    | 759.99  | 1038.05 | 760.33  | 1037.84 | 761.29  | 1037.24 |      |         |      |
| 762.33  | 1037      | 762.94  | 1036.67 | 763.31  | 1036    | 1359.33 | 1036.33 | 1360.24 | 1037    |      |         |      |
| 1360.36 | 1037.17   | 1360.96 | 1038    | 1362.68 | 1038.66 | 1363.59 | 1039    | 1366.26 | 1039.96 |      |         |      |
| 1366.58 | 1040.08   | 1369.14 | 1041    | 1371.21 | 1042    | 1372.85 | 1043    | 1374.91 | 1044.24 |      |         |      |
| 1379.13 | 1046.74   | 1379.89 | 1047.18 | 1382.5  | 1048.71 | 1383    | 1049    | 1384.02 | 1049.72 |      |         |      |
| 1384.41 | 1050      | 1385.62 | 1050.88 | 1385.79 | 1051    | 1385.99 | 1051.15 | 1386.86 | 1051.78 |      |         |      |
| 1387.16 | 1052      | 1387.5  | 1052.24 | 1388.36 | 1052.87 | 1388.54 | 1053    | 1388.83 | 1053.22 |      |         |      |
| 1391.29 | 1055      | 1392.16 | 1055.64 | 1392.66 | 1056    | 1393.81 | 1056.84 | 1394.04 | 1057    |      |         |      |
| 1395.36 | 1057.95   | 1396.81 | 1059    | 1397.82 | 1059.71 | 1398.23 | 1060    | 1399.57 | 1060.97 |      |         |      |
| 1399.67 | 1061.04   | 1401.11 | 1062    | 1401.42 | 1062.21 | 1402.62 | 1063    | 1405.58 | 1065    |      |         |      |
| 1406.49 | 1065.6    | 1407.08 | 1066    | 1409.64 | 1067.71 | 1410.07 | 1068    | 1410.8  | 1068.42 |      |         |      |
| 1411.72 | 1069      | 1413.2  | 1069.96 | 1413.38 | 1070.08 | 1414.8  | 1071    | 1416.02 | 1071.78 |      |         |      |
| 1416.35 | 1072      | 1417.86 | 1073    | 1418.25 | 1073.26 | 1420.04 | 1074.41 | 1420.94 | 1075    |      |         |      |
| 1421.36 | 1075.27   | 1423.38 | 1076.6  | 1424    | 1077    | 1424.69 | 1077.44 | 1425.58 | 1078    |      |         |      |
| 1426.4  | 1078.52   | 1427.17 | 1079    | 1428.44 | 1079.82 | 1429.42 | 1080.43 | 1429.89 | 1080.73 |      |         |      |
| 1430.28 | 1081      | 1431.75 | 1081.96 | 1433.39 | 1082.09 | 1448.64 | 1083    | 1457.24 | 1084    |      |         |      |
| 1464.15 | 1084.98   | 1464.27 | 1085    | 1471.86 | 1087    | 1473.8  | 1087.52 | 1475.63 | 1088    |      |         |      |
| 1477.66 | 1088.57   | 1479.13 | 1089    | 1479.59 | 1089.16 | 1482.16 | 1090    | 1482.42 | 1090.09 |      |         |      |
| 1487.9  | 1091.89   | 1488.25 | 1092    | 1491.02 | 1092.91 | 1491.27 | 1093    | 1494.1  | 1093.93 |      |         |      |
| 1494.3  | 1094      | 1497.17 | 1094.95 | 1497.33 | 1095    | 1497.59 | 1095.09 | 1500.36 | 1096    |      |         |      |
| 1500.75 | 1096.13   | 1503.33 | 1097    | 1504.88 | 1097.58 | 1505.98 | 1098    | 1508.02 | 1098.72 |      |         |      |
| 1508.8  | 1099      | 1511.71 | 1099.93 | 1511.92 | 1100    | 1512.15 | 1100.07 | 1515.02 | 1101    |      |         |      |
| 1516.02 | 1101.32   | 1535.18 | 1107.58 | 1536.42 | 1108    | 1537.14 | 1108.25 | 1539.38 | 1109    |      |         |      |
| 1540.95 | 1109.56   | 1545.06 | 1111    | 1545.48 | 1111.14 | 1550.84 | 1112.99 | 1550.95 | 1113.03 |      |         |      |
| 1555.27 | 1114.52   | 1556.69 | 1115    | 1559.62 | 1116    | 1591.95 | 1115.02 | 1593.8  | 1114    |      |         |      |
| 1594.95 | 1113.39   | 1595.66 | 1113    | 1595.93 | 1112.86 | 1597.56 | 1112    | 1598.99 | 1111.26 |      |         |      |
| 1599.48 | 1111      | 1600.22 | 1110.61 | 1603.28 | 1109.02 | 1607.09 | 1107    | 1608.9  | 1106.08 |      |         |      |
| 1609.06 | 1106      | 1611.49 | 1105    | 1611.63 | 1104.94 | 1618.04 | 1102.27 | 1618.68 | 1102    |      |         |      |
| 1619.13 | 1101.79   | 1620.8  | 1101    | 1621.87 | 1100.43 | 1622.69 | 1100    | 1624.24 | 1099.18 |      |         |      |
| 1624.57 | 1099      | 1624.76 | 1098.9  | 1627.77 | 1097.29 | 1628.3  | 1097    | 1629.05 | 1096.6  |      |         |      |
| 1632    | 1095      | 1634    | 1094    | 1634.13 | 1093.93 | 1636.07 | 1093    | 1638.18 | 1092    |      |         |      |
| 1640.13 | 1091.1    | 1640.36 | 1091    | 1651.99 | 1090.04 | 1652.5  | 1090    | 1653.7  | 1089.64 |      |         |      |
| 1655.9  | 1089      | 1658.95 | 1088.42 | 1661.04 | 1088    | 1662.91 | 1087.84 | 1663.42 | 1087.82 |      |         |      |
| 1664.05 | 1087.8    | 1676.42 | 1087    | 1684.23 | 1086.06 | 1684.66 | 1086    | 1692.1  | 1085    |      |         |      |
| 1696.04 | 1084.66   | 1703.41 | 1084    | 1728.19 | 1083    | 1742.71 | 1083.08 | 1758.33 | 1083.53 |      |         |      |
| 1769.2  | 1083.77   | 1772.7  | 1083.86 | 1780.19 | 1084    | 2086.93 | 1084.06 | 2088.38 | 1084    |      |         |      |
| 2104.68 | 1084.03   | 2129.91 | 1085    | 2223.98 | 1084.78 | 2232.1  | 1085    | 2232.54 | 1085.15 |      |         |      |
| 2235.06 | 1086      | 2235.3  | 1086.1  | 2237.62 | 1087    | 2238.41 | 1087.35 | 2239.53 | 1087.83 |      |         |      |
| 2239.93 | 1088      | 2240.31 | 1088.16 | 2242.32 | 1089    | 2243.07 | 1089.31 | 2244.65 | 1090    |      |         |      |
| 2315.04 | 1089.47   | 2320.89 | 1089    | 2324.83 | 1088    | 2325.06 | 1087.94 | 2328.78 | 1087    |      |         |      |
| 2331.1  | 1086.49   | 2333.26 | 1086    | 2334.81 | 1085.67 | 2338.12 | 1085    | 2359.12 | 1085.52 |      |         |      |
| 2360.68 | 1086      | 2363.56 | 1086.91 | 2363.87 | 1087    | 2364.12 | 1087.07 | 2367.16 | 1088    |      |         |      |
| 2370.05 | 1088.86   | 2370.51 | 1089    | 2370.8  | 1089.09 | 2371.5  | 1089.28 | 2374.18 | 1090    |      |         |      |
| 2386.7  | 1090.23   | 2391.23 | 1090.42 | 2391.76 | 1090.43 | 2393.44 | 1090.47 | 2394.97 | 1090.52 |      |         |      |
| 2407.34 | 1091      | 2408.63 | 1091.02 | 2409.01 | 1091.03 | 2461.93 | 1091.93 | 2464.99 | 1091.96 |      |         |      |
| 2466.48 | 1092      | 2483.8  | 1092.52 | 2496.21 | 1093    | 2497.86 | 1093.77 | 2498.34 | 1094    |      |         |      |
| 2500.48 | 1095      | 2501.17 | 1095.33 | 2502.61 | 1096    | 2506.53 | 1097.85 | 2506.85 | 1098    |      |         |      |
| 2508.88 | 1098.96   | 2509.13 | 1099.08 | 2513.17 | 1101    | 2516.15 | 1102.43 | 2519.1  | 1103.86 |      |         |      |
| 2519.4  | 1104      | 2519.63 | 1104.11 | 2521.45 | 1105    | 2522.81 | 1105.66 | 2524.27 | 1106.38 |      |         |      |
| 2527.31 | 1107.85   | 2527.6  | 1108    | 2529.46 | 1108.9  | 2529.65 | 1109    | 2529.9  | 1109.12 |      |         |      |
| 2533.36 | 1110.81   | 2533.76 | 1111    | 2536.53 | 1111.64 | 2538.12 | 1112    | 2565.54 | 1113    |      |         |      |
| 2612.36 | 1113.66   | 2617.12 | 1114    | 2644.16 | 1115    | 2827.2  | 1114.59 | 2843.3  | 1114.22 |      |         |      |
| 2851.55 | 1114      | 2886.19 | 1114.28 | 2893.73 | 1115    | 2964.47 | 1115.04 | 2966.68 | 1115.03 |      |         |      |
| 2975.49 | 1115.07   | 2980.5  | 1115.11 | 2984.42 | 1115.17 | 3000.45 | 1115.34 | 3036.91 | 1116    |      |         |      |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 3074.25 | 1115.63 | 3074.97 | 1115.62 | 3076.35 | 1115.61 | 3078.81 | 1115.57 | 3084.62 | 1115.51 |
| 3090.59 | 1115.42 | 3108.1  | 1115    | 3115.66 | 1114.95 | 3120.63 | 1115    | 3157.5  | 1114.91 |
| 3185.53 | 1114.06 | 3185.78 | 1114.05 | 3187.36 | 1114    | 3197.37 | 1113.86 | 3198.56 | 1113.85 |
| 3205.85 | 1113.76 | 3222.28 | 1113.71 | 3228.1  | 1113.64 | 3230.31 | 1113.6  | 3237.64 | 1113.51 |
| 3241.32 | 1113.45 | 3252    | 1113.31 | 3272.19 | 1113.72 | 3273.99 | 1113.48 | 3277.57 | 1113    |
| 3299.59 | 1112.81 | 3302.49 | 1112.8  | 3310.55 | 1112.73 | 3312.94 | 1112.72 | 3353.81 | 1112.44 |
| 3439.9  | 1111.96 | 3454.94 | 1111.94 | 3455.97 | 1111.93 | 3469.27 | 1111.86 | 3470.14 | 1111.85 |
| 3472.04 | 1111.84 | 3472.73 | 1111.83 | 3507.48 | 1111.53 | 3509.74 | 1111.52 | 3513.77 | 1111.48 |
| 3515.47 | 1111.47 | 3541.94 | 1111.26 | 3558.03 | 1111.07 | 3562.26 | 1111    | 3576.15 | 1110.78 |
| 3594.98 | 1110.6  | 3596.41 | 1110.59 | 3615.6  | 1110.39 |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 1591.95 .035 2538.12 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1591.95 2538.12 250.09 250.09 250.09 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1591.95 1115.02 F  
 2538.12 3615.6 1112 F  
 Left Levee Station= 1591.95 Elevation= 1115.02

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 216.86

INPUT

Description:  
 Station Elevation Data num= 470

| Sta     | Elev    |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0       | 1108.9  | 31.24   | 1108.86 | 32.59   | 1108.85 | 41.08   | 1108.83 | 42.77   | 1108.82 |
| 49.15   | 1108.8  | 69.08   | 1109    | 122.58  | 1108.48 | 153.84  | 1108.7  | 160.42  | 1108.68 |
| 166.01  | 1108.69 | 167.71  | 1108.7  | 174.12  | 1109    | 226.13  | 1108.82 | 227.69  | 1108.79 |
| 229.32  | 1109    | 251.33  | 1109.01 | 253.19  | 1109    | 352.18  | 1109.2  | 353.18  | 1109    |
| 356.43  | 1108.26 | 357.59  | 1108    | 360.4   | 1107.32 | 361.85  | 1107    | 371.3   | 1106    |
| 394.91  | 1106.77 | 395.59  | 1107    | 395.97  | 1107.17 | 398.02  | 1108    | 398.94  | 1108.39 |
| 400.31  | 1109    | 416.08  | 1108.55 | 417.44  | 1108    | 418.58  | 1107.55 | 421.09  | 1106.54 |
| 422.45  | 1106    | 426.1   | 1104.54 | 427.44  | 1104    | 428.45  | 1103.6  | 429.93  | 1103    |
| 430.74  | 1102.63 | 432.21  | 1102    | 433.79  | 1101.29 | 434.43  | 1101    | 434.97  | 1100.75 |
| 438.72  | 1099.07 | 438.86  | 1099    | 438.99  | 1098.94 | 441.08  | 1098    | 443.01  | 1097.11 |
| 443.26  | 1097    | 444.18  | 1096.56 | 446.68  | 1095.38 | 447.47  | 1095    | 447.69  | 1094.9  |
| 451.36  | 1093.15 | 451.69  | 1093    | 451.94  | 1092.89 | 453.84  | 1092    | 456.02  | 1091.02 |
| 456.14  | 1090.97 | 460.42  | 1089.11 | 460.67  | 1089    | 461.68  | 1088.5  | 462.73  | 1088    |
| 462.94  | 1087.91 | 465.19  | 1087    | 469.71  | 1085.15 | 470.08  | 1085    | 472.49  | 1084.06 |
| 472.66  | 1084    | 473.01  | 1083.88 | 475.52  | 1083    | 477.87  | 1082.2  | 478.44  | 1082    |
| 480.41  | 1081.83 | 490.87  | 1081    | 517.2   | 1080.21 | 517.63  | 1080    | 517.95  | 1079.77 |
| 519.05  | 1079    | 519.49  | 1078.69 | 520.46  | 1078    | 521.75  | 1077.04 | 522.34  | 1076.62 |
| 523.16  | 1076.04 | 523.32  | 1075.93 | 524.61  | 1075    | 525.7   | 1074.22 | 526.01  | 1074    |
| 526.48  | 1073.67 | 527.41  | 1073    | 528.3   | 1072.37 | 528.81  | 1072    | 530.21  | 1071    |
| 531.62  | 1070    | 532.71  | 1069.3  | 533.19  | 1069    | 534.32  | 1068.19 | 534.58  | 1068    |
| 534.86  | 1067.79 | 535.96  | 1067    | 537.32  | 1066    | 538.85  | 1065    | 539.87  | 1064.34 |
| 540.4   | 1064    | 541.43  | 1063.32 | 541.94  | 1063    | 542.55  | 1062.6  | 543.48  | 1062    |
| 544     | 1061.67 | 545.02  | 1061    | 545.98  | 1060.36 | 546.54  | 1060    | 547.32  | 1059.48 |
| 548.06  | 1059    | 548.86  | 1058.47 | 549.58  | 1058    | 551.38  | 1057    | 553.2   | 1056    |
| 553.59  | 1055.79 | 555.05  | 1055    | 560.13  | 1052.3  | 560.71  | 1052    | 564.55  | 1050    |
| 565.96  | 1049.27 | 566.49  | 1049    | 568.03  | 1048.3  | 568.71  | 1048    | 569.61  | 1047.82 |
| 572.34  | 1047.21 | 573.3   | 1047    | 573.73  | 1046.9  | 577.55  | 1046    | 581.75  | 1045.51 |
| 585.57  | 1045    | 594.25  | 1044.38 | 594.84  | 1044.34 | 599.68  | 1044    | 607.01  | 1043.74 |
| 607.22  | 1043    | 607.36  | 1042.47 | 607.48  | 1042    | 607.78  | 1041    | 608.58  | 1040.11 |
| 609.03  | 1040.12 | 609.44  | 1040    | 609.55  | 1039.95 | 610.1   | 1039.55 | 610.54  | 1039    |
| 611.11  | 1038.52 | 611.92  | 1038    | 612.43  | 1037.26 | 612.63  | 1037    | 613.1   | 1036.77 |
| 615.3   | 1036    | 1211.2  | 1036.57 | 1211.85 | 1037    | 1212.25 | 1037.78 | 1212.36 | 1038    |
| 1214.17 | 1039    | 1215.71 | 1039.68 | 1216.44 | 1040    | 1217.18 | 1040.33 | 1220.85 | 1041.93 |
| 1221    | 1042    | 1221.47 | 1042.2  | 1223.27 | 1043    | 1223.53 | 1043.25 | 1224.26 | 1044    |
| 1224.63 | 1044.36 | 1225.24 | 1044.95 | 1225.35 | 1045.05 | 1226.45 | 1046    | 1227.26 | 1046.33 |
| 1228.77 | 1047    | 1229.75 | 1047.46 | 1230.92 | 1048    | 1232.2  | 1048.61 | 1233.04 | 1049    |
| 1233.81 | 1049.43 | 1234.88 | 1050    | 1236.18 | 1051    | 1237.34 | 1051.86 | 1237.53 | 1052    |
| 1237.68 | 1052.12 | 1238.83 | 1053    | 1239.88 | 1053.81 | 1240.12 | 1054    | 1241.25 | 1054.88 |
| 1241.4  | 1055    | 1241.58 | 1055.14 | 1242.91 | 1056.18 | 1243.95 | 1057    | 1244.07 | 1057.09 |
| 1245.19 | 1058    | 1246.38 | 1058.72 | 1246.84 | 1059    | 1247.19 | 1059.21 | 1248.5  | 1060    |
| 1249    | 1060.32 | 1250.14 | 1061    | 1251.44 | 1061.8  | 1251.76 | 1062    | 1253.41 | 1063    |
| 1253.79 | 1063.24 | 1254.93 | 1064    | 1255.92 | 1064.71 | 1256.33 | 1065    | 1257.52 | 1065.85 |
| 1257.74 | 1066    | 1258.85 | 1066.8  | 1259.13 | 1067    | 1260.56 | 1068    | 1261.83 | 1068.87 |
| 1262.01 | 1069    | 1262.72 | 1069.49 | 1263.48 | 1070    | 1263.8  | 1070.21 | 1264.99 | 1071    |
| 1265.87 | 1071.56 | 1266.59 | 1072    | 1267.68 | 1072.67 | 1268.21 | 1073    | 1269.6  | 1073.85 |
| 1269.85 | 1074    | 1270.39 | 1074.34 | 1272.81 | 1075.83 | 1273.08 | 1076    | 1276.71 | 1078.24 |
| 1279.42 | 1079.86 | 1279.66 | 1080    | 1279.83 | 1080.1  | 1281.46 | 1081    | 1284.44 | 1081.81 |
| 1285.17 | 1082    | 1306.15 | 1082.65 | 1308.38 | 1083    | 1314.85 | 1083.98 | 1315.13 | 1084.04 |
| 1319.5  | 1085    | 1321.12 | 1085.42 | 1323.25 | 1086    | 1326.71 | 1086.99 | 1330.23 | 1088    |
| 1333.65 | 1089    | 1336.1  | 1089.73 | 1338    | 1090.31 | 1342.91 | 1091.85 | 1343.35 | 1092    |
| 1348.74 | 1093.77 | 1349.42 | 1094    | 1358.41 | 1097    | 1361.17 | 1098    | 1363    | 1098.68 |
| 1363.87 | 1099    | 1371.31 | 1101.79 | 1371.86 | 1102    | 1374.46 | 1102.98 | 1374.67 | 1103.06 |
| 1378.58 | 1104.5  | 1382.31 | 1105.85 | 1382.72 | 1106    | 1383    | 1106.11 | 1385.41 | 1107    |
| 1388.08 | 1108    | 1390.74 | 1109    | 1393.44 | 1110    | 1398.46 | 1111.84 | 1398.9  | 1112    |
| 1400.59 | 1112.62 | 1401.64 | 1113    | 1402.1  | 1113.17 | 1404.37 | 1114    | 1410.34 | 1115    |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1443.55 | 1114.27 | 1444.05 | 1114    | 1445.58 | 1113.15 | 1445.86 | 1113    | 1447.6  | 1112.03 |
| 1450.74 | 1110.3  | 1451.29 | 1110    | 1452.87 | 1109.31 | 1453.61 | 1109    | 1455.24 | 1108.33 |
| 1456.02 | 1108    | 1457.84 | 1107.25 | 1458.44 | 1107    | 1458.95 | 1106.79 | 1460.85 | 1106    |
| 1461.59 | 1105.69 | 1463.26 | 1105    | 1465.81 | 1104    | 1467.94 | 1103.31 | 1471.93 | 1102    |
| 1474.4  | 1101.1  | 1474.66 | 1101    | 1475.01 | 1100.84 | 1476.8  | 1100    | 1477.57 | 1099.63 |
| 1480.03 | 1098.46 | 1480.99 | 1098    | 1482.55 | 1097.26 | 1483.09 | 1097    | 1485.06 | 1096.06 |
| 1485.19 | 1096    | 1487.28 | 1095    | 1488.48 | 1094.43 | 1489.37 | 1094    | 1489.92 | 1093.74 |
| 1491.46 | 1093    | 1493.11 | 1092.24 | 1493.64 | 1092    | 1495.92 | 1091    | 1496.27 | 1090.84 |
| 1498.16 | 1090    | 1499.33 | 1089.46 | 1500.35 | 1089    | 1509.01 | 1088.42 | 1510    | 1088.35 |
| 1515.36 | 1088    | 1517.46 | 1087.03 | 1517.57 | 1086.99 | 1517.8  | 1086.97 | 1523.62 | 1086.36 |
| 1525.03 | 1086.22 | 1525.46 | 1086.17 | 1526.65 | 1086    | 1537.56 | 1085    | 1538.88 | 1084.9  |
| 1550.19 | 1084    | 1759.41 | 1083.19 | 1769.78 | 1083    | 1774.8  | 1082.84 | 1803.95 | 1082    |
| 1935.9  | 1082.37 | 1938.07 | 1082.58 | 1943.77 | 1083    | 1946.35 | 1083.31 | 1950.35 | 1083.69 |
| 1952.26 | 1083.88 | 1953.96 | 1084    | 1968.38 | 1084.07 | 1993.03 | 1084    | 2042.61 | 1084.65 |
| 2043.44 | 1085    | 2044.67 | 1085.19 | 2046.76 | 1085.47 | 2047.9  | 1085.54 | 2048.88 | 1085.65 |
| 2052.52 | 1085.88 | 2053.02 | 1085.92 | 2054.46 | 1086    | 2057    | 1086.19 | 2057.59 | 1086.23 |
| 2062.57 | 1087    | 2087.99 | 1087.35 | 2099.53 | 1088    | 2158.83 | 1087.86 | 2169.42 | 1087.32 |
| 2174.14 | 1087.11 | 2175.7  | 1087    | 2176.47 | 1086.75 | 2178.69 | 1086    | 2180.43 | 1085.48 |
| 2182.18 | 1085    | 2186.46 | 1084.32 | 2188.9  | 1084    | 2205.2  | 1084.22 | 2213.95 | 1085    |
| 2215.23 | 1085.31 | 2217.97 | 1086    | 2220.1  | 1086.42 | 2222.85 | 1087    | 2226.66 | 1087.76 |
| 2227.79 | 1088    | 2233.64 | 1088.22 | 2253.14 | 1088.79 | 2254.4  | 1088.83 | 2260.71 | 1089    |
| 2293.48 | 1089.78 | 2295.74 | 1089.84 | 2303.42 | 1090    | 2343.4  | 1090.16 | 2343.87 | 1090.36 |
| 2346.62 | 1091.57 | 2347.58 | 1092    | 2349.79 | 1093    | 2351.95 | 1094    | 2353.98 | 1095    |
| 2354.77 | 1095.42 | 2355.85 | 1096    | 2356.91 | 1096.59 | 2357.64 | 1097    | 2357.95 | 1097.18 |
| 2361.22 | 1099    | 2362.51 | 1099.7  | 2363.07 | 1100    | 2363.35 | 1100.14 | 2364.98 | 1101    |
| 2365.62 | 1101.33 | 2366.91 | 1102    | 2367.06 | 1102.08 | 2369.84 | 1103.51 | 2370.8  | 1104    |
| 2371.51 | 1104.37 | 2376.64 | 1106.99 | 2382.64 | 1110    | 2383.01 | 1110.18 | 2384.65 | 1111    |
| 2388.16 | 1112    | 2410.23 | 1112.42 | 2415.59 | 1112.09 | 2426.33 | 1111.37 | 2427.33 | 1111.28 |
| 2427.71 | 1111.25 | 2429.72 | 1111.13 | 2430.89 | 1111.16 | 2451.1  | 1111.1  | 2453.72 | 1111    |
| 2471.03 | 1111.9  | 2472.53 | 1112    | 2481    | 1112.36 | 2491.67 | 1113    | 2510.23 | 1113.17 |
| 2511.47 | 1113.19 | 2521.19 | 1113.45 | 2523.6  | 1113.49 | 2538.13 | 1114    | 2677.88 | 1113.82 |
| 2679.02 | 1113.75 | 2681.47 | 1113.57 | 2683.95 | 1113.42 | 2685.79 | 1113.28 | 2690.7  | 1113.01 |
| 2698.77 | 1112.68 | 2700.05 | 1112.62 | 2706.11 | 1112.32 | 2707.56 | 1112.24 | 2712.85 | 1112    |
| 2743.89 | 1111.78 | 2763.91 | 1112    | 2920.75 | 1112.06 | 2922.66 | 1112.07 | 2960.14 | 1112.47 |
| 3031.51 | 1112.88 | 3032.78 | 1112.89 | 3052.66 | 1113    | 3074.38 | 1112.3  | 3076.58 | 1112    |
| 3077.9  | 1111.77 | 3080.3  | 1111.36 | 3082.29 | 1111    | 3090.49 | 1110.58 | 3093.21 | 1110.45 |
| 3101    | 1110.04 | 3101.83 | 1110    | 3147.33 | 1109.32 | 3150.58 | 1109.26 | 3151.84 | 1109.25 |
| 3158.18 | 1109.14 | 3159.66 | 1109.12 | 3167.21 | 1109    | 3261.92 | 1108.9  | 3266.6  | 1108.83 |
| 3307.88 | 1108    | 3408.16 | 1108.51 | 3440.5  | 1108.98 | 3441.58 | 1109    | 3517.51 | 1110.09 |

Manning's n Values

|      |       |         |       |         |       |
|------|-------|---------|-------|---------|-------|
| num= | 3     |         |       |         |       |
| Sta  | n Val | Sta     | n Val | Sta     | n Val |
| 0    | .04   | 1443.55 | .035  | 2388.16 | .04   |

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

|         |         |        |        |        |    |    |
|---------|---------|--------|--------|--------|----|----|
| 1443.55 | 2388.16 | 249.99 | 250.17 | 250.35 | .1 | .3 |
|---------|---------|--------|--------|--------|----|----|

Ineffective Flow num= 2

|         |         |         |           |
|---------|---------|---------|-----------|
| Sta L   | Sta R   | Elev    | Permanent |
| 0       | 1443.55 | 1114.27 | F         |
| 2388.16 | 3517.51 | 1112    | F         |

Left Levee Station= 1443.55 Elevation= 1114.27

CROSS SECTION

RIVER: Salt  
 REACH: 1  
 RS: 216.81

INPUT

Description:

|                        |         |        |         |        |         |        |         |        |         |
|------------------------|---------|--------|---------|--------|---------|--------|---------|--------|---------|
| Station Elevation Data | num=    | 480    |         |        |         |        |         |        |         |
| Sta                    | Elev    | Sta    | Elev    | Sta    | Elev    | Sta    | Elev    | Sta    | Elev    |
| 0                      | 1108.6  | 27.22  | 1108    | 27.94  | 1107    | 52.63  | 1107.66 | 54.29  | 1108    |
| 62.27                  | 1109    | 223.24 | 1108.77 | 255.48 | 1108.91 | 263.96 | 1109    | 343.21 | 1108.86 |
| 344.96                 | 1108    | 346.07 | 1107.46 | 347.03 | 1107    | 347.5  | 1106.78 | 349.11 | 1106    |
| 349.43                 | 1105.84 | 353.08 | 1104.08 | 353.75 | 1103.75 | 355.32 | 1103    | 357.54 | 1102    |
| 359.52                 | 1101.22 | 360.06 | 1101    | 361.48 | 1100.44 | 362.54 | 1100    | 363.49 | 1099.62 |
| 367.42                 | 1098    | 367.63 | 1097.92 | 369.71 | 1097.05 | 372.3  | 1096    | 372.56 | 1095.89 |
| 374.76                 | 1095    | 375.82 | 1094.56 | 379.04 | 1093.24 | 381.53 | 1092.19 | 382    | 1092    |
| 382.33                 | 1091.86 | 384.39 | 1091    | 386.6  | 1090.06 | 386.94 | 1089.92 | 389.22 | 1089    |
| 391.06                 | 1088.32 | 391.96 | 1088    | 397.71 | 1086    | 399.71 | 1085.33 | 400.76 | 1085    |
| 404.47                 | 1084.07 | 404.73 | 1084    | 408.2  | 1083.24 | 409.23 | 1083    | 418.72 | 1082.48 |
| 426.5                  | 1082    | 429.14 | 1081.41 | 431.24 | 1081    | 452.66 | 1080.52 | 453.53 | 1080    |
| 455.43                 | 1078.82 | 456.73 | 1078    | 457.76 | 1077.34 | 458.3  | 1077    | 458.81 | 1076.7  |
| 459.98                 | 1076    | 460.54 | 1075.68 | 465.19 | 1073.07 | 465.42 | 1072.94 | 467.12 | 1072    |
| 467.87                 | 1071.59 | 468.93 | 1071    | 470.4  | 1070.19 | 470.75 | 1070    | 470.96 | 1069.89 |
| 472.59                 | 1069    | 476.33 | 1067    | 480.05 | 1065    | 480.64 | 1064.68 | 481.92 | 1064    |
| 483.78                 | 1063    | 484.28 | 1062.72 | 485.64 | 1062    | 485.99 | 1061.83 | 487.68 | 1061    |
| 488.24                 | 1060.73 | 489.78 | 1060    | 490.02 | 1059.89 | 490.91 | 1059.46 | 491.89 | 1059    |
| 492.45                 | 1058.73 | 495.71 | 1057.19 | 496.1  | 1057    | 497.62 | 1056.29 | 498.23 | 1056    |
| 499.27                 | 1055.56 | 500.68 | 1055    | 502.36 | 1054.39 | 503.02 | 1054.16 | 503.46 | 1054    |
| 505.84                 | 1053.15 | 506.6  | 1052.89 | 517.21 | 1049.13 | 517.57 | 1049    | 517.88 | 1048.94 |
| 521.18                 | 1048.26 | 522.38 | 1048    | 527.21 | 1047.21 | 528.38 | 1047    | 536.07 | 1046.03 |
| 536.36                 | 1046    | 542.21 | 1045.47 | 545.71 | 1045.19 | 547.77 | 1045    | 552.13 | 1044.42 |
| 553.21                 | 1044.29 | 554.6  | 1044.1  | 554.86 | 1044.06 | 555.45 | 1044    | 558.6  | 1043.49 |
| 559.56                 | 1043.27 | 559.94 | 1043.2  | 560.96 | 1043    | 563.54 | 1042.81 | 565.31 | 1042.01 |
| 565.69                 | 1041    | 568.68 | 1040.08 | 568.99 | 1040    | 570.02 | 1039.73 | 572.76 | 1039    |
| 576.63                 | 1038    | 580.18 | 1037    | 583.35 | 1036.7  | 583.84 | 1036.65 | 589.56 | 1036.12 |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 590.63  | 1036    | 1010.74 | 1036.03 | 1012.83 | 1037    | 1014.74 | 1037.86 | 1015.07 | 1038    |
| 1017.93 | 1038.87 | 1018.31 | 1039    | 1020.37 | 1039.55 | 1021.93 | 1040    | 1023.87 | 1040.6  |
| 1025.1  | 1041    | 1026.61 | 1041.53 | 1027.91 | 1042    | 1028.38 | 1042.22 | 1030.89 | 1043.41 |
| 1032.15 | 1044    | 1034.18 | 1045    | 1034.66 | 1045.2  | 1036.63 | 1046    | 1038.29 | 1046.51 |
| 1039.77 | 1047    | 1040.29 | 1047.17 | 1042.66 | 1048    | 1044.68 | 1048.72 | 1045.33 | 1048.96 |
| 1047.15 | 1050    | 1047.93 | 1050.52 | 1049.33 | 1051.48 | 1050.12 | 1052    | 1050.52 | 1052.27 |
| 1051.65 | 1053    | 1051.91 | 1053.17 | 1053.28 | 1054    | 1053.72 | 1054.27 | 1056.79 | 1056    |
| 1057.47 | 1056.35 | 1058.71 | 1057    | 1059.14 | 1057.2  | 1061.75 | 1058.48 | 1062.75 | 1059    |
| 1063.48 | 1059.36 | 1064.67 | 1060    | 1066.14 | 1060.46 | 1067.91 | 1061    | 1071.23 | 1062    |
| 1072.01 | 1062.24 | 1074.55 | 1063    | 1075.54 | 1063.3  | 1077.38 | 1063.88 | 1078.69 | 1064.27 |
| 1081.03 | 1065    | 1083.52 | 1066    | 1084.58 | 1066.64 | 1085.2  | 1067    | 1086.03 | 1067.49 |
| 1086.91 | 1068    | 1088.61 | 1069    | 1089.25 | 1069.38 | 1091.1  | 1070.45 | 1092.06 | 1071    |
| 1093.37 | 1072    | 1094.53 | 1073    | 1094.79 | 1073.23 | 1095.25 | 1073.63 | 1095.66 | 1074    |
| 1096.31 | 1074.5  | 1097.16 | 1075    | 1097.79 | 1075.31 | 1099.08 | 1076    | 1100.22 | 1076.6  |
| 1100.96 | 1077    | 1102.79 | 1078    | 1103.69 | 1078.33 | 1104.86 | 1078.79 | 1105.36 | 1079    |
| 1107.54 | 1079.61 | 1109.03 | 1080    | 1110.59 | 1080.08 | 1111.04 | 1080.1  | 1116.31 | 1080.37 |
| 1126.24 | 1080.82 | 1127.36 | 1080.86 | 1127.61 | 1080.87 | 1130.37 | 1081    | 1137.68 | 1081.93 |
| 1138.2  | 1082    | 1142.7  | 1082.69 | 1144.65 | 1083    | 1146.77 | 1083.76 | 1147.46 | 1084    |
| 1152.4  | 1085.76 | 1153.06 | 1086    | 1158.68 | 1088    | 1159.68 | 1088.36 | 1161.5  | 1089    |
| 1162.22 | 1089.26 | 1169.96 | 1092    | 1172.48 | 1093    | 1175.04 | 1094    | 1175.85 | 1094.32 |
| 1176.69 | 1094.64 | 1178.95 | 1095.52 | 1180.16 | 1096    | 1182.73 | 1097    | 1182.98 | 1097.1  |
| 1183.65 | 1097.39 | 1184.45 | 1097.73 | 1185.06 | 1098    | 1186.9  | 1098.8  | 1187.35 | 1099    |
| 1189.46 | 1099.95 | 1189.7  | 1100.06 | 1191.86 | 1101    | 1193.32 | 1101.65 | 1194.12 | 1102    |
| 1195.79 | 1102.57 | 1196.96 | 1103    | 1197.74 | 1103.28 | 1202.17 | 1104.83 | 1202.96 | 1105.11 |
| 1205.36 | 1106    | 1206.77 | 1106.61 | 1208.72 | 1107.48 | 1211.35 | 1108.67 | 1212.07 | 1109    |
| 1213.98 | 1109.86 | 1214.3  | 1110    | 1215.68 | 1110.54 | 1218.78 | 1111.66 | 1219.81 | 1112    |
| 1221.63 | 1112.61 | 1222.82 | 1113    | 1224.65 | 1113.48 | 1229.02 | 1114    | 1233.01 | 1113.64 |
| 1234.41 | 1113    | 1235.34 | 1112.87 | 1235.68 | 1112.86 | 1236.13 | 1112.84 | 1236.63 | 1112.81 |
| 1237.57 | 1112.74 | 1246.74 | 1112    | 1277.86 | 1112.35 | 1280.22 | 1113    | 1283.18 | 1113.75 |
| 1284.22 | 1114    | 1301.46 | 1113.78 | 1311.77 | 1109.22 | 1312.28 | 1109    | 1314.94 | 1108    |
| 1315.57 | 1107.78 | 1317.87 | 1107    | 1318.63 | 1106.75 | 1320.85 | 1106    | 1322.37 | 1105.5  |
| 1323.86 | 1105    | 1326.11 | 1104.33 | 1327.24 | 1104    | 1329.86 | 1103.3  | 1331.02 | 1103    |
| 1331.55 | 1102.86 | 1333.76 | 1102.24 | 1334.6  | 1102    | 1335.27 | 1101.69 | 1336.73 | 1101    |
| 1337.03 | 1100.86 | 1340.34 | 1099.3  | 1341    | 1099    | 1341.91 | 1098.58 | 1345.24 | 1097.03 |
| 1347.57 | 1096    | 1348.29 | 1095.77 | 1357.08 | 1093    | 1358.63 | 1092.5  | 1360.14 | 1092    |
| 1361.84 | 1091.27 | 1362.2  | 1091.12 | 1362.47 | 1091    | 1362.91 | 1090.81 | 1364.75 | 1090    |
| 1366.27 | 1089.34 | 1367.03 | 1089    | 1368.61 | 1088.83 | 1369    | 1088.79 | 1370.73 | 1088.62 |
| 1376.64 | 1088    | 1384.58 | 1087    | 1384.93 | 1086.53 | 1385.24 | 1086    | 1391.87 | 1085.64 |
| 1392.23 | 1085.63 | 1398    | 1085.39 | 1409.85 | 1085    | 1418.01 | 1084.65 | 1425.12 | 1084    |
| 1508.35 | 1083.88 | 1508.81 | 1083.89 | 1509.48 | 1083.9  | 1510.25 | 1083.88 | 1510.74 | 1083.87 |
| 1511.48 | 1083.88 | 1512.81 | 1083.84 | 1517.42 | 1083.83 | 1518.14 | 1083.81 | 1519.85 | 1083.8  |
| 1520.43 | 1083.78 | 1522.37 | 1083.76 | 1522.82 | 1083.75 | 1527.36 | 1083.69 | 1528.74 | 1083.66 |
| 1536.16 | 1083.56 | 1539.48 | 1083.49 | 1541.65 | 1083.46 | 1546.26 | 1083.34 | 1546.86 | 1083.33 |
| 1551.35 | 1083.21 | 1551.86 | 1083.2  | 1558.16 | 1083    | 1559.84 | 1082.97 | 1561.65 | 1082.85 |
| 1563.65 | 1082.7  | 1625.21 | 1082.77 | 1643.15 | 1083    | 1831.04 | 1082.07 | 1833.03 | 1082    |
| 1846.37 | 1082.03 | 1847.78 | 1082.06 | 1848.15 | 1082.07 | 1865.53 | 1083    | 1878.52 | 1084    |
| 1891.76 | 1083.7  | 1894.05 | 1083.66 | 1895.03 | 1083.49 | 1895.8  | 1083.46 | 1896.32 | 1083.41 |
| 1897.22 | 1083.23 | 1897.53 | 1083.19 | 1898.57 | 1083.06 | 1899.82 | 1083.02 | 1900.95 | 1083.09 |
| 1901.25 | 1083.14 | 1901.99 | 1083.27 | 1902.69 | 1083.43 | 1903.95 | 1083.78 | 1904.59 | 1084    |
| 1909.17 | 1084.77 | 1910.47 | 1085    | 1916.53 | 1085.82 | 1917.7  | 1086    | 1927.4  | 1085.72 |
| 1928.26 | 1085.62 | 1929.77 | 1085.41 | 1930.38 | 1085.33 | 1931.74 | 1085.2  | 1932    | 1085.17 |
| 1932.36 | 1085.14 | 1933.55 | 1085.08 | 1936.58 | 1085    | 1936.93 | 1085    | 1943.27 | 1085.39 |
| 1947.01 | 1086    | 1960.58 | 1085.78 | 1967.36 | 1085    | 1983.32 | 1084.56 | 1986.22 | 1084    |
| 1991.46 | 1083.59 | 1998.44 | 1083    | 1999.64 | 1082.25 | 2000.02 | 1082    | 2011.68 | 1082.31 |
| 2014.58 | 1083    | 2019.58 | 1084    | 2037.02 | 1085    | 2082.14 | 1085.5  | 2083.12 | 1085.52 |
| 2119.62 | 1086    | 2135.44 | 1086.67 | 2135.86 | 1086.68 | 2142.96 | 1087    | 2186.46 | 1087.35 |
| 2187.72 | 1087.52 | 2189.01 | 1087.46 | 2191.14 | 1088    | 2192.84 | 1088.74 | 2193.43 | 1089    |
| 2195.61 | 1090    | 2197.46 | 1090.83 | 2197.82 | 1091    | 2199.17 | 1091.63 | 2200.04 | 1092.03 |
| 2202.07 | 1093    | 2204.07 | 1094    | 2207.96 | 1095.97 | 2210    | 1097    | 2211.03 | 1097.53 |
| 2211.97 | 1098    | 2215.3  | 1099.69 | 2215.92 | 1100    | 2217.64 | 1100.87 | 2218.18 | 1101.15 |
| 2226.71 | 1105.5  | 2229.52 | 1106.96 | 2235.33 | 1109.92 | 2239.36 | 1111    | 2435.7  | 1111.16 |
| 2436.96 | 1111.17 | 2451.48 | 1111.38 | 2505.69 | 1112    | 2510.57 | 1111.78 | 2521.95 | 1110.91 |
| 2522.27 | 1110.88 | 2523.1  | 1110.82 | 2528.08 | 1110.44 | 2528.3  | 1110.43 | 2531.23 | 1110.23 |
| 2532.01 | 1110.17 | 2532.47 | 1110.14 | 2534.49 | 1110    | 2541.78 | 1109.96 | 2542.16 | 1109.95 |
| 2558.69 | 1109.85 | 2564.15 | 1110    | 2686.4  | 1109.19 | 2715.82 | 1109    | 2729.16 | 1108.53 |
| 2737.5  | 1108.27 | 2747.89 | 1108.01 | 2776.09 | 1108.52 | 2776.35 | 1109    | 2776.61 | 1109.52 |
| 2776.82 | 1110    | 2777.08 | 1110.47 | 2777.36 | 1111    | 2783.82 | 1110.37 | 2786.66 | 1110.48 |
| 2787.74 | 1110.51 | 2812.89 | 1110.52 | 2829.07 | 1110.75 | 2831.6  | 1111    | 2845.85 | 1110.13 |
| 2846.22 | 1109.64 | 2846.7  | 1109    | 2847.24 | 1108.92 | 2847.86 | 1108.95 | 2857.39 | 1108.65 |
| 2865.53 | 1108.61 | 2882.55 | 1108.84 | 3025.4  | 1111    | 3186.88 | 1111.59 | 3420.22 | 1110.58 |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .04 1301.46 .035 2239.36 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1301.46 2239.36 250.13 250.13 250.13 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1301.46 1113.78 F  
 2239.36 3420.22 1111 F  
 Left Levee Station= 1301.46 Elevation= 1113.78

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 216.77

INPUT

Description:

| Station | Elevation | Data    | num=    | 454     | Sta     | Elev    | Sta     | Elev    | Sta     | Elev |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|------|
| 0       | 1109.19   | 14.07   | 1109.31 | 16.89   | 1109.32 | 17.5    | 1109.33 | 22.64   | 1109.34 |      |
| 52.77   | 1109.5    | 95.71   | 1109.54 | 111.23  | 1109.49 | 119.78  | 1109.5  | 142.97  | 1109.63 |      |
| 144.41  | 1109.65   | 150.7   | 1109.61 | 160.16  | 1109.56 | 171.43  | 1110    | 194.67  | 1109.07 |      |
| 195.59  | 1109      | 284.21  | 1109.01 | 290.48  | 1109.18 | 297.07  | 1109.45 | 299.34  | 1109.53 |      |
| 301.75  | 1109.58   | 303.1   | 1109.63 | 306.99  | 1109.72 | 307.75  | 1109.7  | 308.68  | 1109.73 |      |
| 327.46  | 1109.59   | 345.1   | 1109.62 | 350.22  | 1109.58 | 352.31  | 1109.57 | 357.36  | 1109.56 |      |
| 359.27  | 1109.55   | 382.27  | 1110    | 390.54  | 1109.94 | 390.96  | 1109.93 | 391.79  | 1109.9  |      |
| 392.73  | 1109.88   | 394.12  | 1109.79 | 396.4   | 1109.73 | 412.48  | 1109.12 | 422.32  | 1109    |      |
| 425.9   | 1108.52   | 427.81  | 1108.21 | 430.78  | 1107.74 | 433.67  | 1107.22 | 434.92  | 1107    |      |
| 438.47  | 1106.25   | 439.88  | 1106    | 441.76  | 1105.69 | 443.45  | 1105.4  | 446.99  | 1104.85 |      |
| 447.43  | 1104.79   | 448.4   | 1104.64 | 449.75  | 1104.44 | 452.92  | 1104    | 453.48  | 1103.92 |      |
| 453.75  | 1103.89   | 456.03  | 1103.57 | 456.83  | 1103.47 | 458.05  | 1103.29 | 460.71  | 1102.92 |      |
| 461.04  | 1102.87   | 466.01  | 1102.17 | 468.66  | 1101.81 | 469.48  | 1101.69 | 474.1   | 1101.08 |      |
| 474.3   | 1101.05   | 474.7   | 1101    | 480.25  | 1100.27 | 484.06  | 1099.78 | 484.78  | 1099.68 |      |
| 485.95  | 1099.53   | 487.16  | 1099.37 | 487.4   | 1099.34 | 490.89  | 1099.26 | 493.06  | 1099.2  |      |
| 494.1   | 1099.18   | 497.24  | 1099.11 | 500.15  | 1099.08 | 500.47  | 1099.07 | 503.47  | 1099.03 |      |
| 507     | 1099.07   | 507.52  | 1099    | 508.43  | 1098.87 | 508.72  | 1098.82 | 509.53  | 1098.73 |      |
| 509.9   | 1098.6    | 510.7   | 1098    | 510.89  | 1097.73 | 511.44  | 1097    | 511.73  | 1096.02 |      |
| 511.77  | 1095.9    | 512.06  | 1095.14 | 512.12  | 1095    | 512.52  | 1094    | 515.91  | 1094.41 |      |
| 516.19  | 1095      | 516.33  | 1095.37 | 516.62  | 1096    | 516.92  | 1097    | 517.28  | 1097.39 |      |
| 518.6   | 1097      | 520.06  | 1096.76 | 520.25  | 1096.74 | 521.46  | 1096.92 | 522.15  | 1096.99 |      |
| 523.14  | 1096.96   | 523.31  | 1096.94 | 525.8   | 1096.5  | 527.5   | 1096.19 | 528.49  | 1096    |      |
| 531.12  | 1095.52   | 531.94  | 1095.36 | 532.54  | 1095.27 | 533.59  | 1095.15 | 535.27  | 1095    |      |
| 537.05  | 1094.82   | 538.17  | 1094.73 | 540.77  | 1094.5  | 542.9   | 1094.34 | 547.19  | 1094    |      |
| 549.58  | 1093.77   | 550.75  | 1093.68 | 552.57  | 1093.52 | 555.41  | 1093.33 | 556.48  | 1093.25 |      |
| 558.56  | 1093.22   | 581.17  | 1093.25 | 583.4   | 1093.23 | 584.12  | 1093.24 | 586.38  | 1093.22 |      |
| 587.06  | 1093.23   | 588.65  | 1093.21 | 591.02  | 1093.25 | 592.18  | 1093.28 | 602.99  | 1093.47 |      |
| 605.83  | 1093.53   | 607.3   | 1093.55 | 613.13  | 1093.66 | 614.85  | 1093.7  | 615.56  | 1093.73 |      |
| 619.34  | 1093.93   | 619.62  | 1093.94 | 620.55  | 1094    | 627.21  | 1094.41 | 627.79  | 1094.44 |      |
| 629.33  | 1094.54   | 635.49  | 1094.91 | 635.78  | 1094.92 | 641.27  | 1095.25 | 643.78  | 1095.39 |      |
| 653.38  | 1095.94   | 653.63  | 1095.95 | 658.85  | 1096.23 | 660.83  | 1096.53 | 664.03  | 1097    |      |
| 664.24  | 1097.03   | 666.65  | 1097.29 | 667.62  | 1097.4  | 669.12  | 1097.56 | 670.97  | 1097.77 |      |
| 671.52  | 1097.82   | 683.16  | 1099    | 685.8   | 1099.25 | 688.06  | 1099.45 | 689.72  | 1099.58 |      |
| 690.81  | 1099.68   | 694.95  | 1100.22 | 696.37  | 1100.41 | 697.58  | 1100.56 | 700.35  | 1100.93 |      |
| 700.61  | 1100.96   | 700.86  | 1101    | 703.86  | 1101.43 | 705.09  | 1101.59 | 707.58  | 1102    |      |
| 708.1   | 1102.08   | 708.24  | 1102.1  | 710.41  | 1102.45 | 713.24  | 1102.92 | 713.44  | 1102.95 |      |
| 713.75  | 1103      | 715.58  | 1103.31 | 717.92  | 1103.67 | 719.91  | 1104    | 720.39  | 1104.07 |      |
| 720.76  | 1104.11   | 723.15  | 1104.44 | 723.73  | 1104.51 | 724.95  | 1104.65 | 727.74  | 1105    |      |
| 728.18  | 1105.05   | 728.35  | 1105.06 | 731.54  | 1105.26 | 732.43  | 1105.32 | 736.37  | 1105.52 |      |
| 738.05  | 1105.81   | 738.3   | 1105.83 | 739.14  | 1106    | 740.48  | 1106.25 | 741.49  | 1106.45 |      |
| 742.33  | 1106.62   | 744.15  | 1107    | 745.1   | 1107.21 | 745.49  | 1107.29 | 746.67  | 1107.54 |      |
| 748.03  | 1107.82   | 748.25  | 1107.86 | 748.91  | 1108    | 749.92  | 1108.21 | 750.82  | 1108.38 |      |
| 751.68  | 1108.56   | 756.4   | 1109.44 | 759.5   | 1110    | 788.64  | 1109.97 | 808.56  | 1109.74 |      |
| 811.83  | 1109.72   | 841.45  | 1109.83 | 851.04  | 1110    | 1137.09 | 1110.86 | 1137.21 | 1110.87 |      |
| 1137.85 | 1111      | 1141.62 | 1112    | 1154.94 | 1111.01 | 1155.2  | 1110.88 | 1158.88 | 1109    |      |
| 1159.05 | 1108.92   | 1160.84 | 1108    | 1161.16 | 1107.84 | 1162.81 | 1107    | 1164.75 | 1106    |      |
| 1166.79 | 1105.23   | 1167.42 | 1105    | 1171.21 | 1104    | 1172.37 | 1103.69 | 1178.8  | 1102    |      |
| 1180.87 | 1101.44   | 1182.47 | 1101    | 1183.32 | 1100.75 | 1185.92 | 1100    | 1189.14 | 1099.02 |      |
| 1189.26 | 1098.99   | 1189.56 | 1098.88 | 1192.14 | 1098    | 1196.1  | 1096.53 | 1197.51 | 1096    |      |
| 1200.2  | 1095      | 1200.96 | 1094.72 | 1204.64 | 1093.35 | 1205.6  | 1093    | 1208.71 | 1092    |      |
| 1209    | 1091.91   | 1214.12 | 1090.23 | 1214.81 | 1090    | 1215.34 | 1089.82 | 1220.78 | 1088    |      |
| 1222.02 | 1087.69   | 1224.71 | 1087    | 1225.25 | 1086.87 | 1228.8  | 1086    | 1258.85 | 1085.47 |      |
| 1260.47 | 1085.43   | 1261.66 | 1085.37 | 1261.83 | 1085.38 | 1263.81 | 1085.25 | 1267.15 | 1085    |      |
| 1267.44 | 1084.99   | 1280.31 | 1084.73 | 1302.76 | 1084    | 1305.55 | 1083.96 | 1305.9  | 1083.95 |      |
| 1318.33 | 1083.76   | 1319.28 | 1083.74 | 1337.86 | 1083.42 | 1340.14 | 1083.39 | 1345.46 | 1083.29 |      |
| 1366.21 | 1083      | 1374.85 | 1082.8  | 1378.51 | 1082.64 | 1381.17 | 1082.51 | 1390.93 | 1082.01 |      |
| 1391.22 | 1082      | 1469.32 | 1082.24 | 1503.45 | 1083    | 1595.82 | 1082.99 | 1612.24 | 1082.79 |      |
| 1615.8  | 1082.77   | 1620.36 | 1082.72 | 1623.22 | 1082.7  | 1694.1  | 1082.5  | 1696    | 1082.54 |      |
| 1701.19 | 1082.48   | 1702.69 | 1082.51 | 1705.13 | 1082.48 | 1706.8  | 1082.52 | 1708.63 | 1082.49 |      |
| 1712.7  | 1082.44   | 1714.48 | 1082.47 | 1717.47 | 1082.49 | 1720.72 | 1082.53 | 1728.98 | 1082.72 |      |
| 1736.28 | 1082.98   | 1736.92 | 1083    | 1756.66 | 1083.49 | 1763    | 1083.63 | 1765.25 | 1083.69 |      |
| 1767.97 | 1083.75   | 1774.71 | 1083.8  | 1775.64 | 1083.77 | 1776.25 | 1083.81 | 1777.41 | 1083.77 |      |
| 1778    | 1083.8    | 1779.13 | 1083.77 | 1779.91 | 1083.76 | 1780.84 | 1083.73 | 1782.51 | 1083.69 |      |
| 1784.5  | 1083.62   | 1785.63 | 1083.59 | 1787.22 | 1083.57 | 1789.68 | 1083.51 | 1793.92 | 1083.45 |      |
| 1797.21 | 1083.37   | 1798.96 | 1083.35 | 1801.34 | 1083.29 | 1802.62 | 1083.28 | 1805.47 | 1083.22 |      |
| 1809.52 | 1083.15   | 1815.93 | 1083    | 1818.43 | 1082.8  | 1822.57 | 1082.44 | 1823.92 | 1082.29 |      |
| 1824.26 | 1082.21   | 1824.66 | 1082.16 | 1825.83 | 1082    | 1833.79 | 1081.33 | 1834.95 | 1081.22 |      |
| 1836.51 | 1081      | 1837.98 | 1081.03 | 1841.24 | 1081.43 | 1841.93 | 1081.49 | 1848.49 | 1082    |      |
| 1855.1  | 1082.21   | 1855.86 | 1082.38 | 1858.89 | 1083    | 1860.79 | 1083.18 | 1862.41 | 1083.32 |      |
| 1862.76 | 1083.34   | 1864.07 | 1083.44 | 1864.69 | 1083.46 | 1868.41 | 1083.71 | 1868.66 | 1083.73 |      |
| 1869.88 | 1083.78   | 1870.61 | 1083.71 | 1871.96 | 1083.56 | 1941.33 | 1083.82 | 1954.93 | 1084    |      |
| 1955.29 | 1084.07   | 1959.9  | 1085    | 1968.42 | 1084.4  | 1970.06 | 1084    | 1981.08 | 1084.76 |      |
| 1985.38 | 1085      | 1986.09 | 1085.08 | 1988.36 | 1085.32 | 1988.87 | 1085.38 | 1989.31 | 1085.47 |      |
| 2030.77 | 1085.84   | 2038.71 | 1086    | 2041.63 | 1087    | 2042.75 | 1087.39 | 2044.47 | 1088    |      |
| 2046.51 | 1088.87   | 2046.82 | 1089    | 2047.01 | 1089.09 | 2050.73 | 1090.82 | 2051.11 | 1091    |      |
| 2056.52 | 1093.54   | 2057.49 | 1094    | 2058.09 | 1094.28 | 2061.52 | 1095.9  | 2061.92 | 1096.1  |      |
| 2063.77 | 1097      | 2065.27 | 1097.78 | 2065.71 | 1098    | 2066.53 | 1098.43 | 2067.64 | 1099    |      |
| 2069.31 | 1099.87   | 2069.57 | 1100    | 2069.69 | 1100.07 | 2075.1  | 1102.87 | 2075.36 | 1103    |      |
| 2078.21 | 1104.46   | 2079.21 | 1104.98 | 2079.41 | 1105.08 | 2081.21 | 1106    | 2081.87 | 1106.34 |      |
| 2083.94 | 1107.4    | 2085.12 | 1108    | 2086.95 | 1108.94 | 2087.31 | 1109.12 | 2089    | 1110    |      |
| 2092.58 | 1111      | 2146.04 | 1112    | 2149.93 | 1111.97 | 2171.47 | 1111.11 | 2174.07 | 1111    |      |
| 2447.53 | 1111.02   | 2448.26 | 1111    | 2456.79 | 1110.72 | 2458.69 | 1110.76 | 2470.02 | 1110.79 |      |
| 2475.57 | 1110.87   | 2497.08 | 1111.24 | 2501.68 | 1111.3  | 2525.52 | 1111    | 2748.14 | 1110.93 |      |



1004.49 1940.66 255.11 255.9 256.69 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 1004.49 1111.41 F  
 1940.66 2819.56 1110 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 216.67

INPUT

Description:

Station Elevation Data num= 195

| Sta     | Elev    |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0       | 1109    | 310.89  | 1109.1  | 311.09  | 1109.11 | 311.44  | 1109.14 | 311.55  | 1109.15 |
| 321.65  | 1109.69 | 322.42  | 1109.73 | 325.36  | 1109.89 | 325.52  | 1109.9  | 327.41  | 1110    |
| 334.61  | 1109.99 | 334.77  | 1110    | 476.48  | 1110.02 | 528.44  | 1111    | 773.22  | 1110    |
| 834.43  | 1110.49 | 839.08  | 1111    | 839.95  | 1111.27 | 841.57  | 1111.79 | 842.23  | 1112    |
| 856.52  | 1111.52 | 857.79  | 1111    | 858.79  | 1110.55 | 860     | 1110    | 862.11  | 1109.05 |
| 862.21  | 1109    | 862.38  | 1108.92 | 864.4   | 1108    | 866     | 1107.28 | 866.61  | 1107    |
| 867.12  | 1106.77 | 868.78  | 1106    | 869.96  | 1105.53 | 871.27  | 1105    | 872.8   | 1104.47 |
| 874.14  | 1104    | 876.4   | 1103.22 | 877.03  | 1103    | 877.91  | 1102.7  | 879.91  | 1102    |
| 882.81  | 1101    | 883.5   | 1100.76 | 885.7   | 1100    | 886.97  | 1099.5  | 888.14  | 1099    |
| 890.61  | 1098.01 | 892.88  | 1097.08 | 893.07  | 1097    | 895.19  | 1096.13 | 895.51  | 1096    |
| 897.88  | 1095    | 900.16  | 1094    | 900.69  | 1093.77 | 902.4   | 1093    | 903.6   | 1092.45 |
| 904.61  | 1092    | 906.77  | 1091.02 | 906.9   | 1090.96 | 909.01  | 1090    | 909.78  | 1089.76 |
| 912.31  | 1089    | 913.18  | 1088.75 | 915.85  | 1088    | 916.57  | 1087.8  | 922.94  | 1086.01 |
| 923.06  | 1085.98 | 926.48  | 1085    | 927.94  | 1084.62 | 930.4   | 1084    | 1010.47 | 1084.75 |
| 1012.17 | 1084.8  | 1013.13 | 1084.91 | 1014.21 | 1085    | 1063.82 | 1084.67 | 1074.23 | 1084.42 |
| 1087.73 | 1084    | 1095.95 | 1083.6  | 1098.76 | 1083.47 | 1099.85 | 1083.45 | 1101.76 | 1083.37 |
| 1103.56 | 1083.35 | 1105.29 | 1083.28 | 1109.73 | 1083.22 | 1112.97 | 1083.23 | 1128.59 | 1083    |
| 1280.04 | 1083.26 | 1285.56 | 1083.39 | 1309.38 | 1084    | 1326.11 | 1085    | 1334.23 | 1085.44 |
| 1344.96 | 1086    | 1384.33 | 1085.74 | 1396.32 | 1085    | 1399.11 | 1084.75 | 1407.17 | 1084    |
| 1419.17 | 1084.82 | 1420.53 | 1085    | 1507.15 | 1084.47 | 1509.56 | 1084    | 1511.81 | 1083.49 |
| 1513.94 | 1083    | 1516.6  | 1082    | 1517.73 | 1081.42 | 1518.58 | 1081    | 1543.02 | 1081.99 |
| 1547.04 | 1083    | 1547.7  | 1083.19 | 1550.57 | 1084    | 1587.29 | 1084.96 | 1587.74 | 1084.98 |
| 1588.25 | 1084.99 | 1588.88 | 1085    | 1710.67 | 1084.36 | 1722.04 | 1084    | 1724.49 | 1084.49 |
| 1725.66 | 1084.98 | 1725.76 | 1085.02 | 1727.28 | 1085.62 | 1728.19 | 1086    | 1728.91 | 1086.28 |
| 1729.05 | 1086.33 | 1730.78 | 1087    | 1733.35 | 1087.98 | 1733.51 | 1088.04 | 1736.06 | 1089    |
| 1737.99 | 1089.74 | 1738.68 | 1090    | 1741.24 | 1090.95 | 1741.95 | 1091.26 | 1743.62 | 1092    |
| 1745.91 | 1093    | 1746.1  | 1093.08 | 1748.21 | 1094    | 1748.94 | 1094.32 | 1755.86 | 1097.34 |
| 1757.36 | 1098    | 1759.01 | 1098.71 | 1759.66 | 1099    | 1761.82 | 1099.95 | 1761.93 | 1100    |
| 1762.21 | 1100.12 | 1765.08 | 1101.37 | 1766.45 | 1102    | 1768.41 | 1102.87 | 1768.71 | 1103    |
| 1770.44 | 1103.78 | 1770.93 | 1104    | 1771.49 | 1104.25 | 1777.59 | 1107    | 1779.15 | 1107.7  |
| 1779.81 | 1108    | 1780.92 | 1108.28 | 1783.67 | 1109    | 1799.71 | 1110    | 1978.48 | 1109.77 |
| 1981.99 | 1109.78 | 1986.16 | 1109.8  | 1994.08 | 1109.82 | 1994.92 | 1109.83 | 2005.64 | 1109.86 |
| 2078.55 | 1109.89 | 2102.13 | 1109.95 | 2103.82 | 1109.96 | 2108.1  | 1109.97 | 2108.97 | 1109.96 |
| 2110.95 | 1109.97 | 2118.04 | 1109.88 | 2118.67 | 1109.87 | 2119.49 | 1109.85 | 2120.48 | 1109.82 |
| 2121.71 | 1109.79 | 2123.97 | 1109.73 | 2152.71 | 1109    | 2176.89 | 1108.85 | 2179.4  | 1108.82 |
| 2180.84 | 1108.8  | 2183.18 | 1108.76 | 2186.67 | 1108.71 | 2192.29 | 1108.62 | 2196.11 | 1108.58 |
| 2203.56 | 1108.46 | 2211.18 | 1108.38 | 2229.99 | 1108.13 | 2244.87 | 1108.02 | 2247.14 | 1108    |
| 2710.98 | 1108.03 | 2770.98 | 1108.2  | 2772.25 | 1108.21 | 2822.59 | 1108.35 | 2824.31 | 1108.36 |
| 2836.85 | 1108.39 | 2839.92 | 1108.41 | 3034.51 | 1108.9  | 3035.23 | 1108.91 | 3065.54 | 1109    |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 856.52 .035 1799.71 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 856.52 1799.71 247.38 249.57 251.75 .1 .3

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 856.52 1111.52 F  
 1799.71 3065.54 1110 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 216.62

INPUT

Description:

Station Elevation Data num= 239

| Sta    | Elev    |
|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|
| 0      | 1108.72 | .47    | 1108.7  | 1.59   | 1108.66 | 2.37   | 1108.6  | 4.27   | 1108.53 |
| 4.98   | 1108.46 | 11.72  | 1108.21 | 12.66  | 1108.15 | 14.51  | 1108.05 | 16.86  | 1108.02 |
| 19.12  | 1108.01 | 25.45  | 1108    | 55.77  | 1108.02 | 57.69  | 1108.04 | 64.03  | 1108.08 |
| 70.61  | 1108.06 | 76.88  | 1108    | 116.5  | 1108.01 | 120.51 | 1108.03 | 136.37 | 1108.08 |
| 142.23 | 1108.06 | 149.01 | 1108.18 | 149.34 | 1108.2  | 149.7  | 1108.18 | 192.47 | 1109    |
| 246.65 | 1109.61 | 274.06 | 1110    | 356.78 | 1110.75 | 369.56 | 1111    | 567.69 | 1110.07 |
| 568.72 | 1110.06 | 581.43 | 1110    | 689.4  | 1110.5  | 700.33 | 1111    | 724.22 | 1110.16 |
| 724.61 | 1110    | 725.19 | 1109.76 | 727.04 | 1109    | 727.44 | 1108.83 | 729.42 | 1108    |
| 730.12 | 1107.71 | 733.79 | 1106.13 | 734.1  | 1106    | 736.41 | 1105    | 738.57 | 1104.06 |
| 738.87 | 1103.94 | 741.07 | 1103    | 752.49 | 1099    | 755.24 | 1098.03 | 755.33 | 1098    |
| 755.47 | 1097.95 | 758.34 | 1097    | 759.69 | 1096.56 | 761.39 | 1096    | 763.65 | 1095.26 |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 764.48  | 1095    | 766.67  | 1094.32 | 767.67  | 1094    | 768     | 1093.9  | 771.02  | 1093    |
| 772.72  | 1092.5  | 774.21  | 1092    | 776.52  | 1091.17 | 777     | 1091    | 778.66  | 1090.5  |
| 780.3   | 1090    | 780.7   | 1089.91 | 784.55  | 1089    | 788.21  | 1088    | 790.66  | 1087.06 |
| 790.8   | 1087    | 791.43  | 1086.72 | 792.66  | 1086.15 | 793.03  | 1086    | 793.78  | 1085.74 |
| 795.97  | 1085    | 796.79  | 1084.8  | 799.84  | 1084    | 817.91  | 1084.15 | 818.82  | 1084.17 |
| 823.41  | 1084.31 | 825.04  | 1084.35 | 826.7   | 1084.4  | 828.45  | 1084.44 | 830.8   | 1084.52 |
| 833.16  | 1084.57 | 833.98  | 1084.59 | 835.28  | 1084.63 | 845.11  | 1085    | 927.3   | 1084.45 |
| 930.19  | 1084.38 | 944.13  | 1084.07 | 946.89  | 1084    | 949.59  | 1083.91 | 952.1   | 1083.9  |
| 958.96  | 1083.77 | 965.59  | 1083.72 | 985.31  | 1083.43 | 986.94  | 1083.41 | 1002.14 | 1083.33 |
| 1008.28 | 1083.26 | 1023.6  | 1083.2  | 1026.4  | 1083.17 | 1054.26 | 1083    | 1182.5  | 1083.39 |
| 1209.97 | 1083.92 | 1214.89 | 1084    | 1228.98 | 1084.58 | 1233.34 | 1084.79 | 1238    | 1085    |
| 1286.83 | 1084.99 | 1287.14 | 1084.98 | 1294.98 | 1084.71 | 1310.94 | 1084    | 1313.56 | 1083.84 |
| 1329.3  | 1083    | 1330.48 | 1082.9  | 1330.97 | 1082.86 | 1340.65 | 1082    | 1345.83 | 1082.16 |
| 1349.53 | 1082.65 | 1351.49 | 1082.89 | 1352.15 | 1083    | 1354.56 | 1083.69 | 1355.59 | 1084    |
| 1358.88 | 1084.79 | 1359.77 | 1085    | 1440.08 | 1085.01 | 1440.5  | 1085    | 1469.87 | 1084.72 |
| 1473.55 | 1084.69 | 1544.69 | 1084.51 | 1573.66 | 1084.85 | 1580.63 | 1084.99 | 1581.18 | 1085    |
| 1583.65 | 1085.77 | 1584.34 | 1086    | 1584.53 | 1086.06 | 1587.33 | 1087    | 1588.1  | 1087.26 |
| 1592.25 | 1088.65 | 1593.3  | 1089    | 1596.69 | 1089.63 | 1601.53 | 1090    | 1604.16 | 1090.19 |
| 1605.21 | 1090.26 | 1608.34 | 1090.49 | 1610.94 | 1090.73 | 1612.74 | 1091    | 1614.63 | 1091.8  |
| 1615.12 | 1092    | 1617.67 | 1093.09 | 1619.81 | 1094    | 1622.14 | 1095    | 1624.49 | 1096    |
| 1624.92 | 1096.18 | 1625.59 | 1096.47 | 1626.84 | 1097    | 1627.21 | 1097.16 | 1629.19 | 1098    |
| 1629.3  | 1098.05 | 1631.37 | 1099    | 1632.25 | 1099.42 | 1633.47 | 1100    | 1634.68 | 1100.58 |
| 1635.58 | 1101    | 1636.82 | 1101.59 | 1637.69 | 1102    | 1638.23 | 1102.25 | 1639.81 | 1103    |
| 1640.91 | 1103.52 | 1641.94 | 1104    | 1642.98 | 1104.49 | 1644.09 | 1105    | 1650.27 | 1107.86 |
| 1650.57 | 1108    | 1652.5  | 1108.88 | 1652.78 | 1109    | 1654.23 | 1109.67 | 1654.97 | 1110    |
| 1747.98 | 1109.16 | 1762.11 | 1109    | 1857.99 | 1108.88 | 1869.78 | 1108.52 | 1875.09 | 1108.35 |
| 1896.19 | 1108.09 | 1909.31 | 1108.12 | 1911.52 | 1108.13 | 1915.55 | 1108.14 | 2005.42 | 1108.65 |
| 2008.73 | 1108.68 | 2054.47 | 1109    | 2248.13 | 1108.95 | 2257.22 | 1108.88 | 2259.06 | 1108.89 |
| 2266.35 | 1108.85 | 2268.73 | 1108.86 | 2272.91 | 1108.83 | 2277.46 | 1108.84 | 2290.45 | 1108.76 |
| 2329    | 1108.64 | 2335.22 | 1108.66 | 2342.75 | 1108.67 | 2373.97 | 1108.65 | 2484.92 | 1108.92 |
| 2485.55 | 1108.93 | 2563.4  | 1109.25 | 2568.5  | 1109.26 | 2614.89 | 1109.41 | 2621.69 | 1109.42 |
| 2654.39 | 1109.55 | 2656.06 | 1109.56 | 2668.57 | 1109.58 | 2673.83 | 1109.6  | 2677.08 | 1109.62 |
| 2683.9  | 1109.65 | 2685.33 | 1109.66 | 2692.44 | 1109.68 | 2694.08 | 1109.69 | 2699.09 | 1109.7  |
| 2700.44 | 1109.71 | 2705.05 | 1109.72 | 2706.81 | 1109.73 | 2718.48 | 1109.77 | 2719.37 | 1109.78 |
| 2729.51 | 1109.81 | 2731.79 | 1109.82 | 2733.36 | 1109.83 | 2737.71 | 1109.84 | 2771.97 | 1109.96 |
| 2777.62 | 1109.97 | 2778.84 | 1109.98 | 2896.91 | 1110.19 | 2918.23 | 1110.77 | 2922.4  | 1110.81 |
| 2923.04 | 1110.82 | 2926.86 | 1110.86 | 2931.36 | 1110.92 | 2938.93 | 1111    |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 724.22 .035 1654.97 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 724.22 1654.97 510.4 522.26 534.12 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 724.22 1110.16 F  
 1654.97 2938.93 1110 F

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 216.52

INPUT

Description:  
 Station Elevation Data num= 200

| Sta     | Elev    |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0       | 1124.25 | 17.78   | 1124.33 | 21.15   | 1124.35 | 27.78   | 1124.37 | 28.03   | 1124.38 |
| 31.8    | 1124.4  | 44.34   | 1124.56 | 45.65   | 1124.57 | 57.62   | 1125    | 177.84  | 1125.02 |
| 274.4   | 1125.23 | 290.3   | 1125.37 | 300.57  | 1125.36 | 305.36  | 1125.37 | 315.02  | 1125.36 |
| 320.22  | 1125.37 | 342.81  | 1125.35 | 347.73  | 1125.36 | 364.7   | 1125.34 | 381.5   | 1125    |
| 386.71  | 1124.27 | 386.98  | 1124    | 387.55  | 1123.42 | 387.96  | 1123    | 388.66  | 1122.29 |
| 389.82  | 1121.13 | 389.96  | 1121    | 390.99  | 1120    | 391.65  | 1119.46 | 392.2   | 1119    |
| 393.85  | 1118    | 395.03  | 1117.35 | 395.65  | 1117    | 396.62  | 1116.41 | 397.35  | 1116    |
| 397.91  | 1115.63 | 398.7   | 1115    | 399.74  | 1114.09 | 399.83  | 1114    | 400.81  | 1113.14 |
| 401.77  | 1112.35 | 402.2   | 1112    | 402.78  | 1111.69 | 404.05  | 1111    | 405     | 1110.47 |
| 405.85  | 1110    | 407.76  | 1109    | 408.78  | 1108.48 | 409.7   | 1108    | 410.49  | 1107.6  |
| 411.7   | 1107    | 412.92  | 1106.4  | 413.72  | 1106    | 415.06  | 1105.28 | 415.57  | 1105    |
| 417.35  | 1104.05 | 417.45  | 1104    | 417.62  | 1103.91 | 419.38  | 1103    | 420.33  | 1102.53 |
| 421.37  | 1102    | 438.39  | 1101.11 | 440.08  | 1101    | 490.09  | 1100    | 492.48  | 1099.26 |
| 493.28  | 1099    | 496.06  | 1098.12 | 496.42  | 1098    | 497.37  | 1097.7  | 499.61  | 1097    |
| 502.84  | 1096    | 503.34  | 1095.84 | 506.06  | 1095    | 508.33  | 1094.29 | 510.37  | 1093.66 |
| 512.47  | 1093    | 513.66  | 1092.63 | 518.69  | 1091.05 | 518.84  | 1091    | 518.98  | 1090.96 |
| 525.12  | 1089.02 | 528.5   | 1088    | 533.93  | 1087    | 538.11  | 1086.19 | 539.11  | 1086    |
| 543.7   | 1085    | 640.58  | 1084.91 | 646.16  | 1084    | 678.54  | 1083.73 | 685.89  | 1083.49 |
| 687.83  | 1083.45 | 700.74  | 1083    | 700.85  | 1082.89 | 701.81  | 1082    | 739.99  | 1081.78 |
| 745.73  | 1081    | 771.89  | 1081.98 | 1107.14 | 1082.08 | 1108.99 | 1083    | 1127.11 | 1082.92 |
| 1147.78 | 1082.06 | 1149.29 | 1082    | 1248.03 | 1081.92 | 1248.71 | 1081.93 | 1252.75 | 1082    |
| 1286.55 | 1082.82 | 1291.81 | 1082.88 | 1292.98 | 1082.91 | 1299.7  | 1083    | 1300.37 | 1083.02 |
| 1305.91 | 1083.26 | 1306.06 | 1083.25 | 1317.15 | 1083.43 | 1331.48 | 1084    | 1334.49 | 1084.68 |
| 1335.92 | 1085    | 1339.73 | 1085.87 | 1340.33 | 1086    | 1342.68 | 1086.54 | 1344.74 | 1087    |
| 1344.99 | 1087.06 | 1349.17 | 1088    | 1350.08 | 1088.22 | 1353.44 | 1089    | 1357.29 | 1090    |
| 1359.27 | 1090.51 | 1361.15 | 1091    | 1362.56 | 1091.36 | 1365.05 | 1092    | 1365.96 | 1092.23 |
| 1368.98 | 1093    | 1369.55 | 1093.14 | 1372.94 | 1094    | 1376.48 | 1095    | 1379.86 | 1096    |
| 1381.12 | 1096.37 | 1383.24 | 1097    | 1385.56 | 1097.68 | 1386.63 | 1098    | 1389.42 | 1098.82 |
| 1390.01 | 1099    | 1391.66 | 1099.28 | 1395.86 | 1100    | 1397.11 | 1100.24 | 1400.88 | 1101    |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1405.11 | 1102    | 1406.09 | 1102.1  | 1409.77 | 1102.21 | 1426.81 | 1103    | 1427.74 | 1103.4  |
| 1429.09 | 1104    | 1430.08 | 1104.45 | 1431.27 | 1105    | 1432.7  | 1105.7  | 1433.33 | 1106    |
| 1434.73 | 1106.75 | 1435.21 | 1107    | 1435.77 | 1107.33 | 1436.93 | 1108    | 1437.31 | 1108.26 |
| 1438.46 | 1109    | 1439.03 | 1109.38 | 1439.98 | 1110    | 1440.77 | 1110.53 | 1441.49 | 1111    |
| 1442.57 | 1111.73 | 1442.98 | 1112    | 1445.91 | 1114    | 1446.16 | 1114.2  | 1447.29 | 1115    |
| 1451.14 | 1115.72 | 1452.65 | 1116    | 1458.28 | 1116.75 | 1460.3  | 1117    | 1460.71 | 1117.5  |
| 1461.21 | 1118    | 1461.62 | 1118.47 | 1462.12 | 1119    | 1462.78 | 1119.78 | 1462.98 | 1120    |
| 1463.21 | 1120.29 | 1463.87 | 1121    | 1464.54 | 1121.84 | 1464.68 | 1122    | 1464.82 | 1122.19 |
| 1465.03 | 1122.41 | 1465.37 | 1122.74 | 1465.49 | 1122.81 | 1465.85 | 1123    | 1466.22 | 1123.2  |
| 1467.65 | 1123.63 | 1470.06 | 1124    | 1480.39 | 1124.05 | 1481.63 | 1124.06 | 1496.62 | 1125    |
| 1656    | 1125.82 | 1657.13 | 1125.84 | 1660.15 | 1125.87 | 1674.69 | 1125.93 | 1686.05 | 1126    |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 490.09 .035 1405.11 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 490.09 1405.11 206.04 208.89 211.74 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 490.09 1100 F  
 1405.11 1686.05 1102 F

BRIDGE

RIVER: Salt  
 REACH: 1 RS: 216.505

INPUT  
 Description: I-10 Bridge  
 Distance from Upstream XS = 1.28  
 Deck/Roadway Width = 206.33  
 Weir Coefficient = 2.6  
 Upstream Deck/Roadway Coordinates  
 num= 9

| Sta     | Hi      | Cord    | Lo      | Cord    | Sta     | Hi      | Cord    | Lo      | Cord | Sta | Hi | Cord | Lo | Cord |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|------|-----|----|------|----|------|
| 381.5   | 1125    | 1117.92 | 534.06  | 1124.99 | 1117.91 | 669.06  | 1125.11 | 1118.03 |      |     |    |      |    |      |
| 804.06  | 1125.14 | 1118.06 | 939.06  | 1124.82 | 1117.74 | 1074.06 | 1124.9  | 1117.82 |      |     |    |      |    |      |
| 1209.06 | 1124.64 | 1117.56 | 1344.06 | 1124.28 | 1117.2  | 1496.62 | 1125    | 1117.92 |      |     |    |      |    |      |

Upstream Bridge Cross Section Data

| Station | Elevation | Data    | num=    | 200     | Sta     | Elev    | Sta     | Elev    | Sta     | Elev | Sta | Elev | Sta | Elev |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|------|-----|------|-----|------|
| 0       | 1124.25   | 17.78   | 1124.33 | 21.15   | 1124.35 | 27.78   | 1124.37 | 28.03   | 1124.38 |      |     |      |     |      |
| 31.8    | 1124.4    | 44.34   | 1124.56 | 45.65   | 1124.57 | 57.62   | 1125    | 177.84  | 1125.02 |      |     |      |     |      |
| 274.4   | 1125.23   | 290.3   | 1125.37 | 300.57  | 1125.36 | 305.36  | 1125.37 | 315.02  | 1125.36 |      |     |      |     |      |
| 320.22  | 1125.37   | 342.81  | 1125.35 | 347.73  | 1125.36 | 364.7   | 1125.34 | 381.5   | 1125    |      |     |      |     |      |
| 386.71  | 1124.27   | 386.98  | 1124    | 387.55  | 1123.42 | 387.96  | 1123    | 388.66  | 1122.29 |      |     |      |     |      |
| 389.82  | 1121.13   | 389.96  | 1121    | 390.99  | 1120    | 391.65  | 1119.46 | 392.2   | 1119    |      |     |      |     |      |
| 393.85  | 1118      | 395.03  | 1117.35 | 395.65  | 1117    | 396.62  | 1116.41 | 397.35  | 1116    |      |     |      |     |      |
| 397.91  | 1115.63   | 398.7   | 1115    | 399.74  | 1114.09 | 399.83  | 1114    | 400.81  | 1113.14 |      |     |      |     |      |
| 401.77  | 1112.35   | 402.2   | 1112    | 402.78  | 1111.69 | 404.05  | 1111    | 405     | 1110.47 |      |     |      |     |      |
| 405.85  | 1110      | 407.76  | 1109    | 408.78  | 1108.48 | 409.7   | 1108    | 410.49  | 1107.6  |      |     |      |     |      |
| 411.7   | 1107      | 412.92  | 1106.4  | 413.72  | 1106    | 415.06  | 1105.28 | 415.57  | 1105    |      |     |      |     |      |
| 417.35  | 1104.05   | 417.45  | 1104    | 417.62  | 1103.91 | 419.38  | 1103    | 420.33  | 1102.53 |      |     |      |     |      |
| 421.37  | 1102      | 438.39  | 1101.11 | 440.08  | 1101    | 490.09  | 1100    | 492.48  | 1099.26 |      |     |      |     |      |
| 493.28  | 1099      | 496.06  | 1098.12 | 496.42  | 1098    | 497.37  | 1097.7  | 499.61  | 1097    |      |     |      |     |      |
| 502.84  | 1096      | 503.34  | 1095.84 | 506.06  | 1095    | 508.33  | 1094.29 | 510.37  | 1093.66 |      |     |      |     |      |
| 512.47  | 1093      | 513.66  | 1092.63 | 518.69  | 1091.05 | 518.84  | 1091    | 518.98  | 1090.96 |      |     |      |     |      |
| 525.12  | 1089.02   | 528.5   | 1088    | 533.93  | 1087    | 538.11  | 1086.19 | 539.11  | 1086    |      |     |      |     |      |
| 543.7   | 1085      | 640.58  | 1084.91 | 646.16  | 1084    | 678.54  | 1083.73 | 685.89  | 1083.49 |      |     |      |     |      |
| 687.83  | 1083.45   | 700.74  | 1083    | 700.85  | 1082.89 | 701.81  | 1082    | 739.99  | 1081.78 |      |     |      |     |      |
| 745.73  | 1081      | 771.89  | 1081.98 | 1107.14 | 1082.08 | 1108.99 | 1083    | 1127.11 | 1082.92 |      |     |      |     |      |
| 1147.78 | 1082.06   | 1149.29 | 1082    | 1248.03 | 1081.92 | 1248.71 | 1081.93 | 1252.75 | 1082    |      |     |      |     |      |
| 1286.55 | 1082.82   | 1291.81 | 1082.88 | 1292.98 | 1082.91 | 1299.7  | 1083    | 1300.37 | 1083.02 |      |     |      |     |      |
| 1305.91 | 1083.26   | 1306.06 | 1083.25 | 1317.15 | 1083.43 | 1331.48 | 1084    | 1334.49 | 1084.68 |      |     |      |     |      |
| 1335.92 | 1085      | 1339.73 | 1085.87 | 1340.33 | 1086    | 1342.68 | 1086.54 | 1344.74 | 1087    |      |     |      |     |      |
| 1344.99 | 1087.06   | 1349.17 | 1088    | 1350.08 | 1088.22 | 1353.44 | 1089    | 1357.29 | 1090    |      |     |      |     |      |
| 1359.27 | 1090.51   | 1361.15 | 1091    | 1362.56 | 1091.36 | 1365.05 | 1092    | 1365.96 | 1092.23 |      |     |      |     |      |
| 1368.98 | 1093      | 1369.55 | 1093.14 | 1372.94 | 1094    | 1376.48 | 1095    | 1379.86 | 1096    |      |     |      |     |      |
| 1381.12 | 1096.37   | 1383.24 | 1097    | 1385.56 | 1097.68 | 1386.63 | 1098    | 1389.42 | 1098.82 |      |     |      |     |      |
| 1390.01 | 1099      | 1391.66 | 1099.28 | 1395.86 | 1100    | 1397.11 | 1100.24 | 1400.88 | 1101    |      |     |      |     |      |
| 1405.11 | 1102      | 1406.09 | 1102.1  | 1409.77 | 1102.21 | 1426.81 | 1103    | 1427.74 | 1103.4  |      |     |      |     |      |
| 1429.09 | 1104      | 1430.08 | 1104.45 | 1431.27 | 1105    | 1432.7  | 1105.7  | 1433.33 | 1106    |      |     |      |     |      |
| 1434.73 | 1106.75   | 1435.21 | 1107    | 1435.77 | 1107.33 | 1436.93 | 1108    | 1437.31 | 1108.26 |      |     |      |     |      |
| 1438.46 | 1109      | 1439.03 | 1109.38 | 1439.98 | 1110    | 1440.77 | 1110.53 | 1441.49 | 1111    |      |     |      |     |      |
| 1442.57 | 1111.73   | 1442.98 | 1112    | 1445.91 | 1114    | 1446.16 | 1114.2  | 1447.29 | 1115    |      |     |      |     |      |
| 1451.14 | 1115.72   | 1452.65 | 1116    | 1458.28 | 1116.75 | 1460.3  | 1117    | 1460.71 | 1117.5  |      |     |      |     |      |
| 1461.21 | 1118      | 1461.62 | 1118.47 | 1462.12 | 1119    | 1462.78 | 1119.78 | 1462.98 | 1120    |      |     |      |     |      |
| 1463.21 | 1120.29   | 1463.87 | 1121    | 1464.54 | 1121.84 | 1464.68 | 1122    | 1464.82 | 1122.19 |      |     |      |     |      |
| 1465.03 | 1122.41   | 1465.37 | 1122.74 | 1465.49 | 1122.81 | 1465.85 | 1123    | 1466.22 | 1123.2  |      |     |      |     |      |
| 1467.65 | 1123.63   | 1470.06 | 1124    | 1480.39 | 1124.05 | 1481.63 | 1124.06 | 1496.62 | 1125    |      |     |      |     |      |
| 1656    | 1125.82   | 1657.13 | 1125.84 | 1660.15 | 1125.87 | 1674.69 | 1125.93 | 1686.05 | 1126    |      |     |      |     |      |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 490.09 .035 1405.11 .04

Bank Sta: Left Right Coeff Contr. Expan.  
 490.09 1405.11 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 490.09 1100 F  
 1405.11 1686.05 1102 F

Downstream Deck/Roadway Coordinates  
 num= 10  
 Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord  
 255.61 1125 1117.92 407.09 1125.02 1117.94 542.09 1125.12 1118.04  
 677.09 1125.13 1118.05 812.09 1124.8 1117.72 947.09 1124.87 1117.79  
 1082.09 1124.59 1117.51 1217.09 1124.22 1117.14 1368.57 1125 1117.92  
 1434.95 1123.1 1117.92

Downstream Bridge Cross Section Data  
 Station Elevation Data num= 288  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 0 1125 197.78 1125.12 200.93 1125.11 207.81 1125.12 244.57 1124.85  
 250.03 1124.87 250.86 1124.86 255.61 1124.87 255.92 1124.86 256.45 1124.85  
 260.53 1124.84 260.8 1124.83 264.02 1124.81 265.25 1124.71 266.52 1124.51  
 269.65 1124 269.74 1123.97 271.78 1123.72 272.02 1123.59 272.44 1123.46  
 273.27 1123.3 274.44 1123 275.68 1122.74 275.85 1122.67 276.38 1122.49  
 276.68 1122.38 277 1122.21 277.28 1122 278.08 1121.34 278.53 1121  
 279.69 1120.09 279.82 1120 280.71 1119.32 281.14 1119 281.24 1118.93  
 282.46 1118 283.71 1117.21 284.06 1117 284.95 1116.56 285.9 1116  
 286.12 1115.89 286.63 1115.57 287.29 1115.17 287.55 1115 287.85 1114.79  
 288.41 1114.39 289.07 1114 289.4 1113.78 290.49 1113 290.96 1112.63  
 291.68 1112 293.64 1111.09 293.82 1111 293.91 1110.96 296.28 1110  
 296.81 1109.76 298.44 1109 300.15 1108.05 300.25 1108 300.69 1107.76  
 302.05 1107 302.47 1106.76 303.75 1106 304.63 1105.49 305.47 1105  
 306.11 1104.63 308.15 1103.44 308.9 1103 309.5 1102.65 311.62 1101.41  
 312.34 1100.98 377.67 1100 378.59 1099.7 379.85 1099.28 380.72 1099  
 382.71 1098.34 383.75 1098 386.74 1097.01 386.9 1096.96 389.81 1096  
 391.84 1095.32 392.8 1095 393.63 1094.71 395.72 1094 396.9 1093.59  
 400.36 1092.4 401.53 1092 406.34 1090.34 407.34 1090 409.49 1089.26  
 410.24 1089 411.06 1088.72 413.15 1088 413.81 1087.78 416.13 1087  
 417.1 1086.76 420.23 1086 421.03 1085.83 421.86 1085.66 424.97 1085  
 427.49 1084.57 430.9 1084 438.76 1083.28 441.64 1083 454.11 1083.61  
 458 1084 516.13 1085 550.75 1084.34 552.63 1084 566.73 1083.1  
 568.45 1083 574.75 1082.55 582.89 1082 583.35 1081.89 584.71 1081.45  
 586.08 1081 586.21 1080.86 587.09 1080 587.99 1079.79 590.45 1079.66  
 593.57 1079.37 594.97 1079.23 602.34 1079.04 603.27 1079.03 604.29 1079  
 612.58 1079.68 614.09 1080 647.59 1081 653.33 1081.34 663.78 1082  
 665.6 1082.41 668.73 1083 682.55 1082.91 689.49 1082 772.77 1082.28  
 785.84 1083 847.43 1082.65 856.81 1082.19 861.2 1082 949.36 1082.57  
 958.07 1083 983.72 1082.21 987.11 1082 1023.68 1081 1039.18 1080.81  
 1055.15 1081 1081.2 1081.05 1086.69 1082 1117.07 1081.35 1120.21 1081  
 1227.19 1081.95 1228.48 1082 1228.58 1082.09 1229.61 1083 1230.28 1083.12  
 1231.56 1083.31 1234.31 1083.74 1236.24 1084 1241.94 1084.65 1244.63 1085  
 1247.15 1086 1247.92 1086.3 1249.77 1087 1251.6 1087.73 1252.31 1088  
 1254.04 1088.59 1255.23 1089 1255.94 1089.21 1258.67 1090 1262.01 1091  
 1263.6 1091.62 1264.75 1092 1264.96 1092.08 1269.77 1093.89 1270.08 1094  
 1270.51 1094.16 1272.79 1095 1274.19 1095.52 1275.5 1096 1277.52 1096.75  
 1278.83 1097.24 1280.89 1098 1281.74 1098.32 1283.59 1099 1289.2 1099.65  
 1292.02 1100 1312.32 1100.83 1312.66 1101 1314.42 1101.89 1314.63 1102  
 1316.47 1102.93 1316.6 1103 1318.57 1104 1320.62 1105 1322.26 1105.96  
 1322.56 1106.15 1323.88 1107 1324.22 1107.22 1325.46 1108 1325.69 1108.16  
 1326.97 1109 1327.84 1109.46 1328.79 1110 1330.09 1110.71 1330.61 1111  
 1331.16 1111.31 1332.39 1112 1337.82 1115 1341.76 1116 1345.98 1116.59  
 1349.02 1117 1350.27 1117.26 1353.95 1118 1355.62 1118.8 1356.04 1119  
 1357.02 1119.39 1358.51 1120 1359.88 1120.43 1361.73 1121 1364.41 1121.84  
 1364.94 1122 1366.81 1122.56 1368.57 1123 1378.23 1123.18 1385.01 1123.16  
 1434.95 1123.1 1439.15 1123.09 1449.13 1123 1451.55 1122.78 1453.57 1122.67  
 1457.04 1122.65 1459.44 1122.68 1460.54 1122.67 1462.82 1122.72 1465.44 1122.74  
 1465.81 1122.75 1466.09 1122.76 1469.43 1122.91 1469.95 1122.98 1470.24 1123  
 1475.53 1122.97 1477.27 1122.9 1477.45 1122.89 1477.91 1122.86 1478.41 1122.83  
 1481.17 1122.55 1481.8 1122.53 1483.72 1122.42 1484.12 1122.39 1486.26 1122.37  
 1486.5 1122.35 1486.99 1122.34 1490 1122.36 1498.23 1122.25 1500.08 1122.23  
 1504.96 1122.16 1505.94 1122.15 1511.95 1122.05 1515.96 1122 1521.82 1122.01  
 1527.22 1122 1533.85 1121.94 1534.1 1121.95 1540.24 1121.89 1545.11 1121.86  
 1551.06 1121.79 1558.7 1121.91 1558.99 1121.93 1560.52 1121.92 1560.91 1121.94  
 1566.79 1121.83 1567.58 1121.82 1572.37 1121.75 1573.99 1121.71 1578.59 1121.64  
 1582.85 1121.54 1588.82 1121.45 1590.42 1121.42 1593.32 1121.39 1595.3 1121.4  
 1597.47 1121.39 1600.58 1121.43 1602.39 1121.41 1606.09 1121.44 1612.58 1121.34  
 1613.55 1121.33 1621.02 1121.12 1621.23 1121.11

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .04 377.67 .035 1292.02 .04

Bank Sta: Left Right Coeff Contr. Expan.  
 377.67 1292.02 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 377.67 1100 F  
 1292.02 1621.23 1100 F

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .98  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Piers = 7

Pier Data  
 Pier Station Upstream= 534.06 Downstream= 407.09  
 Upstream num= 2  
     width Elev width Elev  
     6 1080 6 1117.91  
 Downstream num= 2  
     width Elev width Elev  
     6 1080 6 1117.94

Pier Data  
 Pier Station Upstream= 669.06 Downstream= 542.09  
 Upstream num= 2  
     width Elev width Elev  
     6 1080 6 1117.91  
 Downstream num= 2  
     width Elev width Elev  
     6 1080 6 1117.94

Pier Data  
 Pier Station Upstream= 804.06 Downstream= 677.09  
 Upstream num= 2  
     width Elev width Elev  
     6 1080 6 1117.91  
 Downstream num= 2  
     width Elev width Elev  
     6 1080 6 1117.94

Pier Data  
 Pier Station Upstream= 939.06 Downstream= 812.09  
 Upstream num= 2  
     width Elev width Elev  
     6 1080 6 1117.91  
 Downstream num= 2  
     width Elev width Elev  
     6 1080 6 1117.94

Pier Data  
 Pier Station Upstream= 1074.06 Downstream= 947.09  
 Upstream num= 2  
     width Elev width Elev  
     6 1080 6 1117.91  
 Downstream num= 2  
     width Elev width Elev  
     6 1080 6 1117.94

Pier Data  
 Pier Station Upstream= 1209.06 Downstream= 1082.09  
 Upstream num= 2  
     width Elev width Elev  
     6 1080 6 1117.56  
 Downstream num= 2  
     width Elev width Elev  
     6 1080 6 1117.51

Pier Data  
 Pier Station Upstream= 1344.06 Downstream= 1217.09  
 Upstream num= 2  
     width Elev width Elev  
     6 1080 6 1117.2  
 Downstream num= 2  
     width Elev width Elev  
     6 1080 6 1117.14

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data  
 Energy  
 Momentum Cd = 1.2  
 Yarnell Kval = 1.05  
 Selected Low Flow Methods = Highest Energy Answer

High Flow Method  
 Pressure and weir flow  
     Submerged Inlet Cd =  
     Submerged Inlet + Outlet Cd = .8  
     Max Low Cord =

Additional Bridge Parameters

Add Friction component to Momentum  
 Do not add weight component to Momentum  
 Class B flow critical depth computations use critical depth  
 inside the bridge at the upstream end  
 Criteria to check for pressure flow = upstream energy grade line

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 216.49

INPUT  
 Description:

| Station Elevation Data |         | num= 288 |         | Sta Elev |         | Sta Elev |         | Sta Elev |         | Sta Elev |      |
|------------------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|------|
| Sta                    | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev    | Sta      | Elev |
| 0                      | 1125    | 197.78   | 1125.12 | 200.93   | 1125.11 | 207.81   | 1125.12 | 244.57   | 1124.85 |          |      |
| 250.03                 | 1124.87 | 250.86   | 1124.86 | 255.61   | 1124.87 | 255.92   | 1124.86 | 256.45   | 1124.85 |          |      |
| 260.53                 | 1124.84 | 260.8    | 1124.83 | 264.02   | 1124.81 | 265.25   | 1124.71 | 266.52   | 1124.51 |          |      |
| 269.65                 | 1124    | 269.74   | 1123.97 | 271.78   | 1123.72 | 272.02   | 1123.59 | 272.44   | 1123.46 |          |      |
| 273.27                 | 1123.3  | 274.44   | 1123    | 275.68   | 1122.74 | 275.85   | 1122.67 | 276.38   | 1122.49 |          |      |
| 276.68                 | 1122.38 | 277      | 1122.21 | 277.28   | 1122    | 278.08   | 1121.34 | 278.53   | 1121    |          |      |
| 279.69                 | 1120.09 | 279.82   | 1120    | 280.71   | 1119.32 | 281.14   | 1119    | 281.24   | 1118.93 |          |      |
| 282.46                 | 1118    | 283.71   | 1117.21 | 284.06   | 1117    | 284.95   | 1116.56 | 285.9    | 1116    |          |      |
| 286.12                 | 1115.89 | 286.63   | 1115.57 | 287.29   | 1115.17 | 287.55   | 1115    | 287.85   | 1114.79 |          |      |
| 288.41                 | 1114.39 | 289.07   | 1114    | 289.4    | 1113.78 | 290.49   | 1113    | 290.96   | 1112.63 |          |      |
| 291.68                 | 1112    | 293.64   | 1111.09 | 293.82   | 1111    | 293.91   | 1110.96 | 296.28   | 1110    |          |      |
| 296.81                 | 1109.76 | 298.44   | 1109    | 300.15   | 1108.05 | 300.25   | 1108    | 300.69   | 1107.76 |          |      |
| 302.05                 | 1107    | 302.47   | 1106.76 | 303.75   | 1106    | 304.63   | 1105.49 | 305.47   | 1105    |          |      |
| 306.11                 | 1104.63 | 308.15   | 1103.44 | 308.9    | 1103    | 309.5    | 1102.65 | 311.62   | 1101.41 |          |      |
| 312.34                 | 1100.98 | 377.67   | 1100    | 378.59   | 1099.7  | 379.85   | 1099.28 | 380.72   | 1099    |          |      |
| 382.71                 | 1098.34 | 383.75   | 1098    | 386.74   | 1097.01 | 386.9    | 1096.96 | 389.81   | 1096    |          |      |
| 391.84                 | 1095.32 | 392.8    | 1095    | 393.63   | 1094.71 | 395.72   | 1094    | 396.9    | 1093.59 |          |      |
| 400.36                 | 1092.4  | 401.53   | 1092    | 406.34   | 1090.34 | 407.34   | 1090    | 409.49   | 1089.26 |          |      |
| 410.24                 | 1089    | 411.06   | 1088.72 | 413.15   | 1088    | 413.81   | 1087.78 | 416.13   | 1087    |          |      |
| 417.1                  | 1086.76 | 420.23   | 1086    | 421.03   | 1085.83 | 421.86   | 1085.66 | 424.97   | 1085    |          |      |
| 427.49                 | 1084.57 | 430.9    | 1084    | 438.76   | 1083.28 | 441.64   | 1083    | 454.11   | 1083.61 |          |      |
| 458                    | 1084    | 516.13   | 1085    | 550.75   | 1084.34 | 552.63   | 1084    | 566.73   | 1083.1  |          |      |
| 568.45                 | 1083    | 574.75   | 1082.55 | 582.89   | 1082    | 583.35   | 1081.89 | 584.71   | 1081.45 |          |      |
| 586.08                 | 1081    | 586.21   | 1080.86 | 587.09   | 1080    | 587.99   | 1079.79 | 590.45   | 1079.66 |          |      |
| 593.57                 | 1079.37 | 594.97   | 1079.23 | 602.34   | 1079.04 | 603.27   | 1079.03 | 604.29   | 1079    |          |      |
| 612.58                 | 1079.68 | 614.09   | 1080    | 647.59   | 1081    | 653.33   | 1081.34 | 663.78   | 1082    |          |      |
| 665.6                  | 1082.41 | 668.73   | 1083    | 682.55   | 1082.91 | 689.49   | 1082    | 772.77   | 1082.28 |          |      |
| 785.84                 | 1083    | 847.43   | 1082.65 | 856.81   | 1082.19 | 861.2    | 1082    | 949.36   | 1082.57 |          |      |
| 958.07                 | 1083    | 983.72   | 1082.21 | 987.11   | 1082    | 1023.68  | 1081    | 1039.18  | 1080.81 |          |      |
| 1055.15                | 1081    | 1081.2   | 1081.05 | 1086.69  | 1082    | 1117.07  | 1081.35 | 1120.21  | 1081    |          |      |
| 1227.19                | 1081.95 | 1228.48  | 1082    | 1228.58  | 1082.09 | 1229.61  | 1083    | 1230.28  | 1083.12 |          |      |
| 1231.56                | 1083.31 | 1234.31  | 1083.74 | 1236.24  | 1084    | 1241.94  | 1084.65 | 1244.63  | 1085    |          |      |
| 1247.15                | 1086    | 1247.92  | 1086.3  | 1249.77  | 1087    | 1251.6   | 1087.73 | 1252.31  | 1088    |          |      |
| 1254.04                | 1088.59 | 1255.23  | 1089    | 1255.94  | 1089.21 | 1258.67  | 1090    | 1262.01  | 1091    |          |      |
| 1263.6                 | 1091.62 | 1264.75  | 1092    | 1264.96  | 1092.08 | 1269.77  | 1093.89 | 1270.08  | 1094    |          |      |
| 1270.51                | 1094.16 | 1272.79  | 1095    | 1274.19  | 1095.52 | 1275.5   | 1096    | 1277.52  | 1096.75 |          |      |
| 1278.83                | 1097.24 | 1280.89  | 1098    | 1281.74  | 1098.32 | 1283.59  | 1099    | 1289.2   | 1099.65 |          |      |
| 1292.02                | 1100    | 1312.32  | 1100.83 | 1312.66  | 1101    | 1314.42  | 1101.89 | 1314.63  | 1102    |          |      |
| 1316.47                | 1102.93 | 1316.6   | 1103    | 1318.57  | 1104    | 1320.62  | 1105    | 1322.26  | 1105.96 |          |      |
| 1322.56                | 1106.15 | 1323.88  | 1107    | 1324.22  | 1107.22 | 1325.46  | 1108    | 1325.69  | 1108.16 |          |      |
| 1326.97                | 1109    | 1327.84  | 1109.46 | 1328.79  | 1110    | 1330.09  | 1110.71 | 1330.61  | 1111    |          |      |
| 1331.16                | 1111.31 | 1332.39  | 1112    | 1337.82  | 1115    | 1341.76  | 1116    | 1345.98  | 1116.59 |          |      |
| 1349.02                | 1117    | 1350.27  | 1117.26 | 1353.95  | 1118    | 1355.62  | 1118.8  | 1356.04  | 1119    |          |      |
| 1357.02                | 1119.39 | 1358.51  | 1120    | 1359.88  | 1120.43 | 1361.73  | 1121    | 1364.41  | 1121.84 |          |      |
| 1364.94                | 1122    | 1366.81  | 1122.56 | 1368.57  | 1123    | 1378.23  | 1123.18 | 1385.01  | 1123.16 |          |      |
| 1434.95                | 1123.1  | 1439.15  | 1123.09 | 1449.13  | 1123    | 1451.55  | 1122.78 | 1453.57  | 1122.67 |          |      |
| 1457.04                | 1122.65 | 1459.44  | 1122.68 | 1460.54  | 1122.67 | 1462.82  | 1122.72 | 1465.44  | 1122.74 |          |      |
| 1465.81                | 1122.75 | 1466.09  | 1122.76 | 1469.43  | 1122.91 | 1469.95  | 1122.98 | 1470.24  | 1123    |          |      |
| 1475.53                | 1122.97 | 1477.27  | 1122.9  | 1477.45  | 1122.89 | 1477.91  | 1122.86 | 1478.41  | 1122.83 |          |      |
| 1481.17                | 1122.55 | 1481.8   | 1122.53 | 1483.72  | 1122.42 | 1484.12  | 1122.39 | 1486.26  | 1122.37 |          |      |
| 1486.5                 | 1122.35 | 1486.99  | 1122.34 | 1490     | 1122.36 | 1498.23  | 1122.25 | 1500.08  | 1122.23 |          |      |
| 1504.96                | 1122.16 | 1505.94  | 1122.15 | 1511.95  | 1122.05 | 1515.96  | 1122    | 1521.82  | 1122.01 |          |      |
| 1527.22                | 1122    | 1533.85  | 1121.94 | 1534.1   | 1121.95 | 1540.24  | 1121.89 | 1545.11  | 1121.86 |          |      |
| 1551.06                | 1121.79 | 1558.7   | 1121.91 | 1558.99  | 1121.93 | 1560.52  | 1121.92 | 1560.91  | 1121.94 |          |      |
| 1566.79                | 1121.83 | 1567.58  | 1121.82 | 1572.37  | 1121.75 | 1573.99  | 1121.71 | 1578.59  | 1121.64 |          |      |
| 1582.85                | 1121.54 | 1588.82  | 1121.45 | 1590.42  | 1121.42 | 1593.32  | 1121.39 | 1595.3   | 1121.4  |          |      |
| 1597.47                | 1121.39 | 1600.58  | 1121.43 | 1602.39  | 1121.41 | 1606.09  | 1121.44 | 1612.58  | 1121.34 |          |      |
| 1613.55                | 1121.33 | 1621.02  | 1121.12 | 1621.23  | 1121.11 |          |         |          |         |          |      |

| Manning's n Values |       | num= 3 |       | Sta n Val |       |
|--------------------|-------|--------|-------|-----------|-------|
| Sta                | n Val | Sta    | n Val | Sta       | n Val |
| 0                  | .04   | 377.67 | .035  | 1292.02   | .04   |

| Bank Sta: | Left   | Right   | Lengths: | Left Channel | Right  | Coeff Contr. | Expan. |
|-----------|--------|---------|----------|--------------|--------|--------------|--------|
|           | 377.67 | 1292.02 |          | 362.67       | 344.08 | 325.49       | .1 .3  |

| Ineffective Flow |         | num= 2 |           | Sta L Sta R Elev Permanent |       |
|------------------|---------|--------|-----------|----------------------------|-------|
| Sta L            | Sta R   | Elev   | Permanent | Sta L                      | Sta R |
| 0                | 377.67  | 1100   | F         |                            |       |
| 1292.02          | 1621.23 | 1100   | F         |                            |       |

CROSS SECTION

RIVER: Salt  
REACH: 1

RS: 216.42

INPUT  
Description:

| Station | Elevation | Data    | num=    | 493     | Sta     | Elev    | Sta     | Elev    | Sta     | Elev | Sta | Elev |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|------|-----|------|
| 0       | 1101.63   | 92.91   | 1101.05 | 97.93   | 1101    | 101.53  | 1100.85 | 104.87  | 1100.67 |      |     |      |
| 111.32  | 1100.37   | 116.9   | 1100    | 137     | 1099.81 | 142.73  | 1098.38 | 147.58  | 1097.13 |      |     |      |
| 148.05  | 1097      | 149.19  | 1096.69 | 150.5   | 1096.32 | 151.69  | 1096    | 154.92  | 1095.08 |      |     |      |
| 155.57  | 1094.9    | 161.59  | 1093.09 | 161.88  | 1093    | 164.89  | 1092    | 175.91  | 1088.11 |      |     |      |
| 176.21  | 1088      | 179.37  | 1087    | 182.67  | 1086    | 183.39  | 1085.67 | 185.06  | 1085    |      |     |      |
| 187.22  | 1084      | 199.21  | 1083.68 | 200.6   | 1083.55 | 205.15  | 1083    | 255.53  | 1083.53 |      |     |      |
| 264.16  | 1083.86   | 266.02  | 1083.94 | 266.35  | 1083.96 | 268.16  | 1083.99 | 285.27  | 1083.7  |      |     |      |
| 294.45  | 1083.21   | 296.76  | 1083    | 316.49  | 1082.32 | 324.22  | 1082.01 | 324.53  | 1082    |      |     |      |
| 325.96  | 1081      | 327.48  | 1080.16 | 328.23  | 1079.83 | 330.75  | 1079    | 331.15  | 1078.65 |      |     |      |
| 331.79  | 1078      | 359.96  | 1078.11 | 364.47  | 1078.87 | 365.15  | 1078.99 | 373.81  | 1080    |      |     |      |
| 408.63  | 1081      | 489.41  | 1081.19 | 519.78  | 1082    | 558.99  | 1082.48 | 572.49  | 1082.87 |      |     |      |
| 574.14  | 1082-91   | 576.83  | 1083    | 681.89  | 1083.78 | 685.08  | 1084    | 772.13  | 1083.51 |      |     |      |
| 777.31  | 1083      | 779.28  | 1082.54 | 781.88  | 1082    | 784.74  | 1081.11 | 785.07  | 1081    |      |     |      |
| 785.45  | 1080.88   | 790.62  | 1079.34 | 791.81  | 1079    | 978.93  | 1079.84 | 979.32  | 1080    |      |     |      |
| 979.79  | 1080.18   | 981.79  | 1081    | 1000.63 | 1082    | 1006.49 | 1082.19 | 1010.7  | 1083    |      |     |      |
| 1013.34 | 1083.49   | 1015.78 | 1084    | 1022.44 | 1084.82 | 1023.85 | 1085    | 1026.9  | 1085.62 |      |     |      |
| 1028.63 | 1086      | 1030.01 | 1086.4  | 1032.15 | 1087    | 1035.37 | 1087.92 | 1035.67 | 1088    |      |     |      |
| 1039.33 | 1089      | 1040.61 | 1089.31 | 1045.62 | 1090.49 | 1047.73 | 1091    | 1050.2  | 1091.57 |      |     |      |
| 1051.98 | 1092      | 1058.26 | 1093.72 | 1059.25 | 1094    | 1066.37 | 1095.98 | 1066.86 | 1096.11 |      |     |      |
| 1069.63 | 1096.89   | 1070.05 | 1097    | 1070.52 | 1097.13 | 1088.14 | 1101.91 | 1088.48 | 1102    |      |     |      |
| 1088.85 | 1102.08   | 1093.45 | 1103    | 1096.74 | 1103.68 | 1098.33 | 1104    | 1100.02 | 1104.41 |      |     |      |
| 1102.3  | 1105      | 1104.97 | 1105.94 | 1107.57 | 1107    | 1111.46 | 1108.63 | 1112.36 | 1109    |      |     |      |
| 1140.19 | 1108.84   | 1145.12 | 1108    | 1146.57 | 1107.55 | 1149.84 | 1106.55 | 1155.07 | 1105    |      |     |      |
| 1155.5  | 1104.87   | 1158.51 | 1104    | 1161.82 | 1103.1  | 1162.27 | 1103    | 1165.41 | 1102.38 |      |     |      |
| 1167.48 | 1102      | 1173.33 | 1101    | 1174.84 | 1100.91 | 1187.74 | 1100    | 1207.63 | 1100.12 |      |     |      |
| 1208.23 | 1100.13   | 1224.62 | 1100.33 | 1227.99 | 1100.35 | 1229.02 | 1100.37 | 1250.19 | 1100.57 |      |     |      |
| 1253.29 | 1100.61   | 1255.89 | 1100.66 | 1266.62 | 1101    | 1271.47 | 1101.23 | 1272.62 | 1101.3  |      |     |      |
| 1277.96 | 1101.77   | 1283.15 | 1102    | 1337.31 | 1102.07 | 1341.6  | 1102.03 | 1345.67 | 1102.02 |      |     |      |
| 1348.93 | 1102.03   | 1357.2  | 1102    | 1377.23 | 1102.56 | 1380.78 | 1103    | 1382.49 | 1102.97 |      |     |      |
| 1422.72 | 1102      | 1441.69 | 1101.8  | 1442.77 | 1100    | 1443    | 1099.63 | 1443.37 | 1099    |      |     |      |
| 1443.81 | 1098.27   | 1443.97 | 1098    | 1444.31 | 1097.44 | 1444.49 | 1097.13 | 1444.92 | 1096.42 |      |     |      |
| 1445.17 | 1096      | 1445.42 | 1095.57 | 1445.76 | 1095    | 1445.95 | 1094.69 | 1446.36 | 1094    |      |     |      |
| 1446.78 | 1093.29   | 1446.95 | 1093    | 1447.3  | 1092.43 | 1447.55 | 1092    | 1448.14 | 1091    |      |     |      |
| 1448.74 | 1090      | 1449.31 | 1089.03 | 1449.93 | 1088    | 1450.27 | 1087.42 | 1450.52 | 1087    |      |     |      |
| 1450.87 | 1086.42   | 1451.11 | 1086    | 1451.44 | 1085.46 | 1451.71 | 1085    | 1451.99 | 1084.52 |      |     |      |
| 1452.3  | 1084      | 1452.89 | 1083    | 1454.07 | 1081    | 1454.5  | 1080.28 | 1454.66 | 1080.01 |      |     |      |
| 1455.25 | 1079      | 1455.74 | 1078.18 | 1456.82 | 1076.33 | 1457.02 | 1076    | 1457.6  | 1075    |      |     |      |
| 1458.03 | 1074.27   | 1458.19 | 1074    | 1458.66 | 1073.2  | 1458.97 | 1072.67 | 1459.36 | 1072    |      |     |      |
| 1459.95 | 1071      | 1461.66 | 1070    | 1463.23 | 1069.19 | 1463.59 | 1069    | 1465.03 | 1068.22 |      |     |      |
| 1465.34 | 1068.11   | 1469.62 | 1069    | 1472.38 | 1069.14 | 1474.83 | 1069.48 | 1481.07 | 1069.33 |      |     |      |
| 1481.56 | 1069.3    | 1483.25 | 1069.23 | 1484.58 | 1069    | 1494.13 | 1068.92 | 1494.43 | 1068.9  |      |     |      |
| 1494.99 | 1069      | 1528.93 | 1069.88 | 1529.76 | 1070    | 1541.28 | 1070.03 | 1543.4  | 1070.14 |      |     |      |
| 1544.79 | 1070.15   | 1545.09 | 1070.13 | 1545.83 | 1070    | 1566.79 | 1070.8  | 1569.16 | 1071    |      |     |      |
| 1571.13 | 1071.42   | 1574.6  | 1072    | 1575.84 | 1072.3  | 1578.86 | 1073    | 1580.1  | 1073.42 |      |     |      |
| 1581.51 | 1073.93   | 1592.05 | 1073.38 | 1592.81 | 1073    | 1598.95 | 1070    | 1612.13 | 1070.85 |      |     |      |
| 1612.93 | 1071      | 1623.38 | 1071.33 | 1624.17 | 1071.39 | 1629.94 | 1072    | 1638.62 | 1072.8  |      |     |      |
| 1639.2  | 1072.64   | 1641.96 | 1071.91 | 1642.39 | 1071.79 | 1643.74 | 1071.36 | 1644.84 | 1071    |      |     |      |
| 1646.16 | 1070.6    | 1647.57 | 1070.23 | 1648.07 | 1070.09 | 1648.49 | 1070    | 1650.89 | 1069.42 |      |     |      |
| 1652.04 | 1069.17   | 1652.72 | 1069    | 1653.49 | 1068.68 | 1654.83 | 1068    | 1655.28 | 1067.78 |      |     |      |
| 1655.78 | 1067.53   | 1657.27 | 1066.77 | 1658.05 | 1066.4  | 1658.51 | 1066.17 | 1658.88 | 1066    |      |     |      |
| 1662.77 | 1066.68   | 1663.26 | 1067    | 1663.76 | 1067.35 | 1664.18 | 1067.57 | 1664.98 | 1068    |      |     |      |
| 1666.48 | 1068.79   | 1666.87 | 1069    | 1668.65 | 1069.9  | 1670.76 | 1070.98 | 1672.35 | 1072    |      |     |      |
| 1673.25 | 1072.75   | 1673.57 | 1073    | 1674.3  | 1073.69 | 1674.64 | 1074    | 1675.27 | 1074.63 |      |     |      |
| 1675.66 | 1075      | 1676.48 | 1075.79 | 1676.83 | 1076.21 | 1677.25 | 1077    | 1677.32 | 1077.4  |      |     |      |
| 1677.43 | 1078      | 1677.52 | 1078.5  | 1677.62 | 1079    | 1677.66 | 1079.39 | 1677.72 | 1080    |      |     |      |
| 1677.79 | 1080.42   | 1677.89 | 1081    | 1678    | 1081.7  | 1678.04 | 1082    | 1678.11 | 1082.55 |      |     |      |
| 1678.16 | 1083      | 1678.35 | 1083.68 | 1678.45 | 1084    | 1678.74 | 1084.73 | 1678.84 | 1085    |      |     |      |
| 1679.13 | 1085.85   | 1679.4  | 1086.73 | 1679.49 | 1087    | 1679.65 | 1087.58 | 1679.78 | 1088    |      |     |      |
| 1679.85 | 1088.34   | 1679.98 | 1089    | 1680.14 | 1089.93 | 1680.32 | 1091    | 1680.4  | 1091.52 |      |     |      |
| 1680.48 | 1092      | 1680.58 | 1092.67 | 1680.63 | 1093    | 1680.73 | 1093.44 | 1680.85 | 1094    |      |     |      |
| 1681.16 | 1094.23   | 1682.19 | 1095    | 1682.9  | 1095.49 | 1683.6  | 1096    | 1685.15 | 1097    |      |     |      |
| 1685.78 | 1098      | 1685.88 | 1098.56 | 1685.95 | 1099    | 1686.14 | 1099.99 | 1686.34 | 1100.59 |      |     |      |
| 1686.5  | 1101      | 1686.64 | 1101.3  | 1686.95 | 1102    | 1687.27 | 1102.83 | 1687.49 | 1103.44 |      |     |      |
| 1687.65 | 1103.89   | 1687.89 | 1104.62 | 1688.03 | 1105    | 1688.25 | 1105.56 | 1688.4  | 1106    |      |     |      |
| 1691.61 | 1106.29   | 1693.82 | 1106.4  | 1700.37 | 1106.79 | 1703.39 | 1106.92 | 1704.56 | 1107    |      |     |      |
| 1706.26 | 1107.06   | 1711.08 | 1108    | 1731.61 | 1107.29 | 1733.24 | 1107    | 1741.14 | 1106    |      |     |      |
| 1742.02 | 1105.9    | 1742.58 | 1105.85 | 1746.71 | 1105.42 | 1747.57 | 1105.34 | 1748.14 | 1105.3  |      |     |      |
| 1750.6  | 1105.14   | 1751.24 | 1105.12 | 1753.4  | 1105    | 1754.39 | 1104.93 | 1756.08 | 1104.84 |      |     |      |
| 1758.51 | 1104.81   | 1759.38 | 1104.79 | 1762.9  | 1104.83 | 1768.15 | 1104.93 | 1770.84 | 1105    |      |     |      |
| 1775.8  | 1104.93   | 1777.45 | 1104.73 | 1778.7  | 1104.62 | 1780.89 | 1104.5  | 1785.97 | 1104    |      |     |      |
| 1802.37 | 1103.55   | 1805    | 1102.59 | 1806.48 | 1102.04 | 1808.35 | 1101.32 | 1809.15 | 1101    |      |     |      |
| 1810.36 | 1100.6    | 1811.21 | 1100.31 | 1812.16 | 1100    | 1813.1  | 1099.79 | 1816.53 | 1099    |      |     |      |
| 1820.47 | 1098      | 1821.68 | 1097.82 | 1826.23 | 1097.18 | 1827.59 | 1097    | 1832.61 | 1097.28 |      |     |      |
| 1839.92 | 1098      | 1843.89 | 1098.9  | 1844.17 | 1098.96 | 1847.35 | 1099.73 | 1848.44 | 1100    |      |     |      |
| 1852.4  | 1101      | 1852.98 | 1101.15 | 1863.67 | 1103.85 | 1864.28 | 1104    | 1868.25 | 1105    |      |     |      |
| 1868.66 | 1105.1    | 1870.79 | 1105.64 | 1872.06 | 1105.95 | 1876.25 | 1107    | 1880.45 | 1108    |      |     |      |
| 1882.21 | 1108.41   | 1884.81 | 1109    | 1885.54 | 1109.17 | 1888.63 | 1109.87 | 1888.96 | 1109.95 |      |     |      |
| 1897.48 | 1111.9    | 1897.93 | 1112    | 1900.74 | 1112.64 | 1901.25 | 1112.76 | 1905.11 | 1113.63 |      |     |      |
| 1906.13 | 1113.87   | 1906.72 | 1114    | 1910.11 | 1114.77 | 1910.65 | 1114.89 | 1911.07 | 1115    |      |     |      |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1915.13 | 1116    | 1916.86 | 1116.4  | 1919.61 | 1117    | 1920.51 | 1117.16 | 1925.09 | 1118    |
| 1930.27 | 1118.1  | 1931.72 | 1118.12 | 1947.36 | 1118.4  | 1990.84 | 1119    | 1991.18 | 1119.01 |
| 1996.74 | 1119.12 | 1997.74 | 1119.13 | 2038.63 | 1120.01 | 2048.94 | 1120.18 | 2049.83 | 1120.19 |
| 2051.06 | 1120.22 | 2136.99 | 1121.53 | 2151.18 | 1121.68 | 2153.21 | 1121.69 | 2162.66 | 1121.81 |
| 2163.82 | 1121.82 | 2175.7  | 1122    | 2177.54 | 1122.04 | 2182.95 | 1122.19 | 2184.55 | 1122.22 |
| 2190.11 | 1122.39 | 2192.39 | 1122.42 | 2197.81 | 1122.55 | 2200.23 | 1122.57 | 2202.75 | 1122.61 |
| 2205.58 | 1122.63 | 2224.46 | 1122.88 | 2225.49 | 1122.89 | 2232.23 | 1123    | 2237.5  | 1123.12 |
| 2237.86 | 1123.13 | 2247.85 | 1123.33 | 2253.27 | 1123    | 2287.37 | 1122.49 | 2294.89 | 1121.2  |
| 2296.03 | 1121    | 2301.87 | 1120    | 2306.86 | 1119    | 2318.29 | 1116.28 | 2319.51 | 1116    |
| 2323.64 | 1115.03 | 2326.66 | 1114.35 | 2328.27 | 1114    | 2329.66 | 1113.69 | 2335.66 | 1112.41 |
| 2342.06 | 1111.09 | 2342.47 | 1111    | 2357.22 | 1108    | 2357.58 | 1107.93 | 2361.07 | 1107.2  |
| 2361.98 | 1107    | 2367.08 | 1106.15 | 2367.96 | 1106    | 2374.5  | 1105.05 | 2374.86 | 1105    |
| 2379.85 | 1104    | 2380.57 | 1103.8  | 2382.78 | 1103.16 | 2383.25 | 1103.02 | 2386.81 | 1102    |
| 2389.51 | 1101.42 | 2390.4  | 1101.22 | 2391.43 | 1101    | 2398.07 | 1100    | 2411.76 | 1100.5  |
| 2414.87 | 1100.98 | 2418.26 | 1101.98 | 2421.4  | 1102.94 | 2426.08 | 1104    | 2448.16 | 1103.69 |
| 2451.61 | 1103    | 2453.06 | 1102.86 | 2459.92 | 1102.14 | 2461.15 | 1102    | 2468.97 | 1102.49 |
| 2470.64 | 1103    | 2471.15 | 1103.15 | 2473.85 | 1104    | 2474.5  | 1104.21 | 2477.36 | 1105.23 |
| 2479.67 | 1106    | 2480.09 | 1106.15 | 2480.44 | 1106.27 | 2485.27 | 1108    | 2489.97 | 1108.12 |
| 2544.59 | 1108.19 | 2545.96 | 1108.22 | 2552.63 | 1108.3  | 2553.07 | 1108.31 | 2556.58 | 1108.36 |
| 2557.55 | 1108.37 | 2571.2  | 1108.58 | 2577.91 | 1108.62 |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .04 137 .035 1112.36 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 137 1112.36 221.84 218.84 215.84 .1 .3  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 137 1099.81 F  
 1112.36 2577.91 1109 F  
 Right Levee Station= 1112.36 Elevation= 1109

CROSS SECTION

RIVER: Salt  
 REACH: 1 RS: 216.38

INPUT  
 Description:

| Station | Elevation | Data    | num=    | 482     | Sta     | Elev    | Sta     | Elev    | Sta     | Elev |
|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|------|
| -29.59  | 1105      | 0       | 1100.1  | 2.53    | 1100    | 14.17   | 1099.31 | 15.61   | 1099    |      |
| 16.31   | 1098.83   | 19.83   | 1098    | 23.38   | 1097    | 33.2    | 1094    | 36.07   | 1093.14 |      |
| 36.53   | 1093      | 36.77   | 1092.93 | 40.01   | 1092    | 46.91   | 1089.82 | 49.54   | 1089    |      |
| 51.41   | 1088.39   | 52.63   | 1088    | 54.84   | 1087.27 | 55.69   | 1087    | 58.14   | 1086.18 |      |
| 58.7    | 1086      | 73.73   | 1085    | 75.89   | 1084    | 82.33   | 1083.1  | 83.09   | 1083    |      |
| 107.13  | 1082.62   | 107.34  | 1082.61 | 108.75  | 1082.52 | 110.21  | 1082.39 | 111.05  | 1082.32 |      |
| 123     | 1082.28   | 138.64  | 1082.82 | 139.16  | 1082.83 | 143.87  | 1083    | 157.24  | 1082.99 |      |
| 158.45  | 1082.57   | 164.51  | 1082    | 191.88  | 1081.22 | 197.33  | 1081    | 198.03  | 1080.57 |      |
| 198.97  | 1080      | 199.19  | 1079.7  | 199.76  | 1079    | 200.47  | 1078.48 | 200.95  | 1078.2  |      |
| 201.18  | 1078      | 242.32  | 1078.91 | 243     | 1079    | 255.37  | 1080    | 255.53  | 1080.01 |      |
| 257.57  | 1080.19   | 258.63  | 1080.3  | 273.26  | 1080.19 | 351.34  | 1081    | 421.48  | 1081.05 |      |
| 441.19  | 1082      | 500.1   | 1082.1  | 528.27  | 1083.64 | 535.34  | 1084    | 559.62  | 1084.7  |      |
| 571.58  | 1085      | 644.68  | 1084.08 | 648.34  | 1084    | 661.22  | 1083.32 | 666.81  | 1083    |      |
| 669.25  | 1082.64   | 673.32  | 1082    | 685.06  | 1080    | 694.93  | 1079.13 | 696.5   | 1079    |      |
| 883.71  | 1079.05   | 894     | 1080    | 896.15  | 1080.99 | 908.29  | 1081.55 | 911.55  | 1081.94 |      |
| 912.02  | 1082      | 915.42  | 1082.88 | 915.9   | 1083    | 919.81  | 1084    | 921.02  | 1084.29 |      |
| 932.89  | 1087      | 934.84  | 1087.43 | 937.5   | 1088    | 946.6   | 1090    | 949.16  | 1090.74 |      |
| 950     | 1091      | 951.44  | 1091.46 | 958.6   | 1093.78 | 959.29  | 1094    | 962.02  | 1094.89 |      |
| 962.37  | 1095      | 965.46  | 1096    | 967.78  | 1096.71 | 968.71  | 1097    | 971.79  | 1097.84 |      |
| 972.28  | 1097.97   | 972.54  | 1098.04 | 976.21  | 1099    | 978.47  | 1099.67 | 979.6   | 1100    |      |
| 981.83  | 1100.68   | 982.9   | 1101    | 992.79  | 1104    | 993.89  | 1104.33 | 996.07  | 1105    |      |
| 1000.63 | 1106.38   | 1004.63 | 1107.61 | 1006.49 | 1108.21 | 1008.74 | 1109    | 1036.09 | 1108.85 |      |
| 1040.54 | 1107.62   | 1050.21 | 1105    | 1053.64 | 1104.09 | 1053.97 | 1104    | 1054.12 | 1103.96 |      |
| 1057.85 | 1103      | 1058.8  | 1102.76 | 1061.75 | 1102    | 1063.13 | 1101.69 | 1066.02 | 1101    |      |
| 1069.17 | 1100.36   | 1070.88 | 1100    | 1075.91 | 1099.03 | 1076.1  | 1099    | 1090.03 | 1098    |      |
| 1145.73 | 1098.24   | 1154.8  | 1099    | 1243.98 | 1099.06 | 1244.33 | 1099.07 | 1244.64 | 1099.09 |      |
| 1245.32 | 1099.12   | 1262.19 | 1100    | 1264.61 | 1100.28 | 1266.3  | 1100.4  | 1269.46 | 1100.6  |      |
| 1272.81 | 1100.88   | 1273.06 | 1100.9  | 1274.6  | 1100.97 | 1275.28 | 1100.98 | 1277    | 1100.97 |      |
| 1277.15 | 1100.96   | 1280.01 | 1100.89 | 1280.63 | 1100.87 | 1283.77 | 1100.78 | 1285.44 | 1100.74 |      |
| 1291.62 | 1100.55   | 1292.7  | 1100.51 | 1294.45 | 1100.43 | 1304.55 | 1100.1  | 1306.61 | 1100    |      |
| 1317.52 | 1100.76   | 1322.1  | 1101    | 1336.1  | 1101.44 | 1350.04 | 1102    | 1391.51 | 1102.7  |      |
| 1403.21 | 1103      | 1409.64 | 1104    | 1412.72 | 1103.46 | 1413.25 | 1103    | 1413.57 | 1102.4  |      |
| 1413.78 | 1102      | 1414.31 | 1101    | 1414.77 | 1100.13 | 1414.92 | 1099.85 | 1415.37 | 1099    |      |
| 1415.62 | 1098.53   | 1415.9  | 1098    | 1416.42 | 1097    | 1416.9  | 1096.09 | 1417.43 | 1095.1  |      |
| 1417.55 | 1094.87   | 1418.01 | 1094    | 1419.06 | 1092    | 1419.24 | 1091.68 | 1419.59 | 1091    |      |
| 1419.89 | 1090.44   | 1420.12 | 1090    | 1420.6  | 1089.1  | 1420.75 | 1088.82 | 1421.18 | 1088    |      |
| 1421.59 | 1087.23   | 1421.71 | 1087    | 1422.18 | 1086.12 | 1422.65 | 1085.22 | 1422.77 | 1085    |      |
| 1422.91 | 1084.73   | 1423.3  | 1084    | 1423.63 | 1083.38 | 1423.83 | 1083    | 1424.26 | 1082.19 |      |
| 1424.76 | 1081.24   | 1424.89 | 1081    | 1425.39 | 1080.04 | 1425.71 | 1079.44 | 1425.95 | 1079    |      |
| 1426.84 | 1077.32   | 1427.01 | 1077    | 1427.38 | 1076.29 | 1427.54 | 1076    | 1427.95 | 1075.23 |      |
| 1428.07 | 1075      | 1428.39 | 1074.42 | 1428.61 | 1074    | 1428.7  | 1073.83 | 1429.14 | 1073    |      |
| 1429.58 | 1072.19   | 1429.68 | 1072    | 1429.82 | 1071.73 | 1430.21 | 1071    | 1430.64 | 1070.2  |      |
| 1430.75 | 1070      | 1430.92 | 1069.69 | 1431.85 | 1068    | 1432.24 | 1067.3  | 1432.41 | 1067    |      |
| 1432.53 | 1066.79   | 1433.1  | 1066    | 1434.29 | 1065.68 | 1435.34 | 1065.42 | 1436.85 | 1065.1  |      |
| 1437.03 | 1065.06   | 1437.46 | 1065    | 1439.57 | 1064.37 | 1439.93 | 1064.08 | 1444.92 | 1063.33 |      |

Proposed\_SkyHarbor.rep

|         |         |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1446.03 | 1063.19 | 1446.9  | 1063.14 | 1449.67 | 1063    | 1459.91 | 1063.72 | 1460.27 | 1064    |
| 1461.68 | 1064.74 | 1463.37 | 1064.31 | 1463.94 | 1064    | 1488.98 | 1063.9  | 1492.73 | 1063.87 |
| 1496.36 | 1063.89 | 1502.65 | 1063.96 | 1510.51 | 1063.99 | 1514.42 | 1063.98 | 1519.38 | 1063.99 |
| 1519.81 | 1064    | 1523.24 | 1064.02 | 1523.73 | 1064.08 | 1524.8  | 1064.17 | 1527.12 | 1064.32 |
| 1527.65 | 1064.37 | 1530.82 | 1064.27 | 1541    | 1064.73 | 1542.24 | 1064.8  | 1544.65 | 1065    |
| 1548.55 | 1065.9  | 1548.9  | 1066    | 1549.92 | 1066.15 | 1550.72 | 1066.29 | 1551.79 | 1066.46 |
| 1553.3  | 1067    | 1560.94 | 1066.07 | 1561.19 | 1066    | 1573.81 | 1065.74 | 1575.16 | 1065.83 |
| 1576.57 | 1065.91 | 1577.8  | 1065.97 | 1578.8  | 1066    | 1592.45 | 1065.43 | 1594.71 | 1065.21 |
| 1597.01 | 1065    | 1599.64 | 1064.85 | 1602.88 | 1064.68 | 1608.37 | 1064.62 | 1616.11 | 1064    |
| 1621.93 | 1064.62 | 1623.03 | 1065    | 1624.31 | 1065.68 | 1624.87 | 1066    | 1625.29 | 1066.27 |
| 1626.44 | 1067    | 1628    | 1068    | 1629.14 | 1068.72 | 1629.58 | 1069    | 1629.81 | 1069.14 |
| 1631.17 | 1070    | 1632.65 | 1070.92 | 1633.21 | 1071.27 | 1634.44 | 1072    | 1635.11 | 1072.38 |
| 1636.17 | 1073    | 1637.91 | 1074    | 1638.79 | 1074.51 | 1639.46 | 1074.88 | 1639.68 | 1075    |
| 1639.77 | 1075.35 | 1639.93 | 1076    | 1639.98 | 1076.43 | 1640.03 | 1077    | 1640.15 | 1077.96 |
| 1640.18 | 1078.15 | 1640.3  | 1079    | 1640.43 | 1080    | 1640.57 | 1080.52 | 1640.7  | 1081    |
| 1640.93 | 1081.59 | 1641.08 | 1082    | 1641.19 | 1082.29 | 1641.46 | 1083    | 1641.74 | 1083.74 |
| 1641.84 | 1084    | 1641.95 | 1084.32 | 1642.19 | 1085    | 1642.41 | 1085.59 | 1642.57 | 1086    |
| 1642.9  | 1086.85 | 1642.96 | 1087    | 1643.1  | 1087.37 | 1643.35 | 1088    | 1643.59 | 1088.61 |
| 1643.74 | 1089    | 1643.93 | 1089.48 | 1644.14 | 1090    | 1644.21 | 1090.19 | 1644.53 | 1091    |
| 1644.68 | 1091.4  | 1644.92 | 1092    | 1645.22 | 1092.77 | 1645.4  | 1093.23 | 1645.69 | 1094    |
| 1645.94 | 1094.62 | 1646.09 | 1095    | 1646.29 | 1095.53 | 1646.47 | 1096    | 1646.62 | 1096.4  |
| 1646.85 | 1097    | 1647    | 1097.51 | 1647.14 | 1098    | 1647.26 | 1098.43 | 1647.66 | 1099.95 |
| 1647.89 | 1101    | 1648.04 | 1101.73 | 1648.1  | 1102    | 1648.13 | 1102.19 | 1648.47 | 1103.81 |
| 1648.51 | 1104    | 1648.73 | 1104.84 | 1648.77 | 1105    | 1649.03 | 1106    | 1653.58 | 1105.97 |
| 1657.04 | 1105.55 | 1662.14 | 1105.42 | 1663.81 | 1106    | 1669.24 | 1106.17 | 1673.48 | 1107    |
| 1679.16 | 1108    | 1693.93 | 1107.57 | 1698.05 | 1106.35 | 1699.21 | 1106    | 1702.27 | 1105.09 |
| 1702.56 | 1105    | 1703.58 | 1104.7  | 1705.91 | 1104    | 1709.6  | 1103    | 1714.05 | 1102    |
| 1732.94 | 1102.36 | 1735.01 | 1102.52 | 1736.8  | 1102.63 | 1741.29 | 1103    | 1748.14 | 1103.77 |
| 1750.82 | 1103.99 | 1756.35 | 1104.13 | 1759    | 1104.21 | 1763.05 | 1104.31 | 1765.81 | 1104.41 |
| 1770.7  | 1104.56 | 1782.25 | 1105    | 1785    | 1105.05 | 1833.15 | 1105.2  | 1834.5  | 1105.19 |
| 1835.35 | 1105.18 | 1837.28 | 1105.17 | 1837.59 | 1105.16 | 1864.22 | 1105    | 1882.6  | 1104.8  |
| 1886.85 | 1104.74 | 1897.56 | 1104.54 | 1932.71 | 1104.07 | 1933.25 | 1104.06 | 1937.97 | 1104    |
| 1941.52 | 1103.75 | 1943.69 | 1103.61 | 1946.57 | 1103.41 | 1952.99 | 1103    | 1953.96 | 1102.68 |
| 1956.19 | 1102.05 | 1956.35 | 1102    | 1957.38 | 1101.74 | 1960.36 | 1101    | 1960.7  | 1100.91 |
| 1961.1  | 1100.81 | 1962.77 | 1100.38 | 1966.88 | 1099.28 | 1967.94 | 1099    | 1970.97 | 1098.28 |
| 1971.69 | 1098.1  | 1972.1  | 1098    | 1984.11 | 1098.24 | 1988.4  | 1099    | 1993.86 | 1100    |
| 2000.67 | 1101.99 | 2000.91 | 1102.05 | 2004.8  | 1103    | 2005.16 | 1103.08 | 2008.4  | 1103.76 |
| 2008.85 | 1103.85 | 2012.39 | 1104.65 | 2013.8  | 1105    | 2015.16 | 1105.31 | 2018.08 | 1106    |
| 2019.35 | 1106.29 | 2020.74 | 1106.62 | 2021.57 | 1106.81 | 2023.68 | 1107.32 | 2025.84 | 1107.88 |
| 2026.29 | 1108    | 2028.57 | 1108.66 | 2033.05 | 1110    | 2033.57 | 1110.13 | 2035.34 | 1110.58 |
| 2036.96 | 1111    | 2047.04 | 1113.2  | 2050.9  | 1114    | 2055.9  | 1115    | 2060.98 | 1116    |
| 2065.64 | 1116.89 | 2066.19 | 1117    | 2072.91 | 1117.41 | 2077.6  | 1117.33 | 2097.42 | 1117.85 |
| 2099.42 | 1117.91 | 2103.18 | 1118    | 2104.17 | 1118.03 | 2104.62 | 1118.04 | 2127.76 | 1118.65 |
| 2129.6  | 1118.69 | 2131.25 | 1118.74 | 2141.76 | 1119    | 2150.96 | 1119.09 | 2151.55 | 1119.1  |
| 2152.36 | 1119.11 | 2153.65 | 1119.12 | 2168.72 | 1119.28 | 2186.24 | 1119.54 | 2226.63 | 1120    |
| 2239.49 | 1120.2  | 2242.98 | 1120.29 | 2253.74 | 1120.48 | 2273.05 | 1120.92 | 2274.22 | 1120.93 |
| 2318.77 | 1122    | 2372.08 | 1122.73 | 2373.14 | 1122.74 | 2378.64 | 1122.82 | 2379.56 | 1122.83 |
| 2391.42 | 1123    | 2403.47 | 1122.88 | 2404.29 | 1122.78 | 2409.17 | 1122.15 | 2410.37 | 1122    |
| 2429.81 | 1118.25 | 2430.98 | 1118    | 2435.46 | 1117    | 2436.41 | 1116.78 | 2439.6  | 1116.07 |
| 2439.89 | 1116    | 2448.75 | 1114    | 2449.31 | 1113.87 | 2450.79 | 1113.54 | 2460.24 | 1111.39 |
| 2461.9  | 1111    | 2464.49 | 1110.46 | 2471.05 | 1109.22 | 2472.03 | 1109.04 | 2472.23 | 1109    |
| 2477.51 | 1108    | 2478.39 | 1107.83 |         |         |         |         |         |         |

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -29.59 .04 14.17 .035 1008.74 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 14.17 1008.74 0 0 .1 .3

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 -29.59 14.17 1099.31 F  
 1008.74 2478.39 1109 F  
 Right Levee Station= 1008.74 Elevation= 1109

SUMMARY OF MANNING'S N VALUES

River:Salt

| Reach | River Sta. | n1     | n2   | n3  |
|-------|------------|--------|------|-----|
| 1     | 219.51     | .04    | .039 | .04 |
| 1     | 219.46     | .04    | .039 | .04 |
| 1     | 219.42     | .04    | .039 | .04 |
| 1     | 219.38     | .04    | .039 | .04 |
| 1     | 219.33     | .04    | .039 | .04 |
| 1     | 219.29     | .04    | .039 | .04 |
| 1     | 219.24     | .04    | .039 | .04 |
| 1     | 219.19     | .04    | .039 | .04 |
| 1     | 219.14     | .04    | .039 | .04 |
| 1     | 219.09     | .04    | .039 | .04 |
| 1     | 219.03     | .04    | .039 | .04 |
| 1     | 219.02     | Bridge |      |     |
| 1     | 219.01     | .04    | .035 | .04 |
| 1     | 218.99     | .04    | .035 | .04 |
| 1     | 218.975    | Bridge |      |     |

|   |         |        |      |     |
|---|---------|--------|------|-----|
| 1 | 218.96  | .04    | .035 | .04 |
| 1 | 218.8   | .04    | .035 | .04 |
| 1 | 218.77  | .04    | .035 | .04 |
| 1 | 218.71  | .04    | .035 | .04 |
| 1 | 218.66  | .04    | .035 | .04 |
| 1 | 218.61  | .04    | .035 | .04 |
| 1 | 218.57  | .04    | .035 | .04 |
| 1 | 218.52  | .04    | .035 | .04 |
| 1 | 218.47  | .04    | .035 | .04 |
| 1 | 218.42  | .04    | .035 | .04 |
| 1 | 218.38  | .04    | .035 | .04 |
| 1 | 218.33  | .04    | .035 | .04 |
| 1 | 218.29  | .04    | .035 | .04 |
| 1 | 218.24  | .04    | .035 | .04 |
| 1 | 218.19  | .04    | .035 | .04 |
| 1 | 218.14  | .04    | .035 | .04 |
| 1 | 218.09  | .04    | .035 | .04 |
| 1 | 218.04  | .04    | .035 | .04 |
| 1 | 218     | .04    | .035 | .04 |
| 1 | 217.95  | .04    | .035 | .04 |
| 1 | 217.91  | .04    | .035 | .04 |
| 1 | 217.86  | .04    | .035 | .04 |
| 1 | 217.81  | .04    | .035 | .04 |
| 1 | 217.76  | .04    | .035 | .04 |
| 1 | 217.71  | .04    | .035 | .04 |
| 1 | 217.66  | .04    | .035 | .04 |
| 1 | 217.62  | .04    | .035 | .04 |
| 1 | 217.57  | .04    | .035 | .04 |
| 1 | 217.53  | .04    | .035 | .04 |
| 1 | 217.48  | .04    | .035 | .04 |
| 1 | 217.43  | .04    | .035 | .04 |
| 1 | 217.38  | .04    | .035 | .04 |
| 1 | 217.34  | .04    | .035 | .04 |
| 1 | 217.29  | .04    | .035 | .04 |
| 1 | 217.24  | .04    | .035 | .04 |
| 1 | 217.19  | .04    | .035 | .04 |
| 1 | 217.15  | .04    | .035 | .04 |
| 1 | 217.1   | .04    | .035 | .04 |
| 1 | 217.05  | .04    | .035 | .04 |
| 1 | 217     | .04    | .035 | .04 |
| 1 | 216.96  | .04    | .035 | .04 |
| 1 | 216.91  | .04    | .035 | .04 |
| 1 | 216.86  | .04    | .035 | .04 |
| 1 | 216.81  | .04    | .035 | .04 |
| 1 | 216.77  | .04    | .035 | .04 |
| 1 | 216.72  | .04    | .035 | .04 |
| 1 | 216.67  | .04    | .035 | .04 |
| 1 | 216.62  | .04    | .035 | .04 |
| 1 | 216.52  | .04    | .035 | .04 |
| 1 | 216.505 | Bridge |      |     |
| 1 | 216.49  | .04    | .035 | .04 |
| 1 | 216.42  | .04    | .035 | .04 |
| 1 | 216.38  | .04    | .035 | .04 |

ERRORS WARNINGS AND NOTES

Errors Warnings and Notes for Plan : Asbuilt2011

River: Salt Reach: 1 RS: 219.51 Profile: Floodplain  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 219.51 Profile: Floodway  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 219.51 Profile: 10 %  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 219.51 Profile: 2 %  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 219.51 Profile: 0.2 %  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 219.46 Profile: Floodplain  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 219.46 Profile: Floodway  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.





Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
River: Salt Reach: 1 RS: 219.03 Profile: 10 %  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
River: Salt Reach: 1 RS: 219.03 Profile: 2 %  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
River: Salt Reach: 1 RS: 219.03 Profile: 0.2 %  
Warning: Divided flow computed for this cross-section.  
Warning: The cross-section end points had to be extended vertically for the computed water surface.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
River: Salt Reach: 1 RS: 219.02 Profile: Floodplain  
Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.  
River: Salt Reach: 1 RS: 219.02 Profile: Floodplain Upstream  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
River: Salt Reach: 1 RS: 219.02 Profile: Floodplain Downstream  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
River: Salt Reach: 1 RS: 219.02 Profile: Floodway  
Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.  
River: Salt Reach: 1 RS: 219.02 Profile: Floodway Upstream  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
River: Salt Reach: 1 RS: 219.02 Profile: Floodway Downstream  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
River: Salt Reach: 1 RS: 219.02 Profile: 10 %  
Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.  
River: Salt Reach: 1 RS: 219.02 Profile: 10 % Upstream  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
River: Salt Reach: 1 RS: 219.02 Profile: 10 % Downstream  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
River: Salt Reach: 1 RS: 219.02 Profile: 2 %  
Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.  
River: Salt Reach: 1 RS: 219.02 Profile: 2 % Upstream  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
River: Salt Reach: 1 RS: 219.02 Profile: 2 % Downstream  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
River: Salt Reach: 1 RS: 219.02 Profile: 0.2 %  
Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.  
River: Salt Reach: 1 RS: 219.02 Profile: 0.2 % Upstream  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
River: Salt Reach: 1 RS: 219.02 Profile: 0.2 % Downstream  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
River: Salt Reach: 1 RS: 219.01 Profile: Floodplain  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
River: Salt Reach: 1 RS: 219.01 Profile: Floodway  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
River: Salt Reach: 1 RS: 219.01 Profile: 10 %  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
River: Salt Reach: 1 RS: 219.01 Profile: 2 %  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
River: Salt Reach: 1 RS: 219.01 Profile: 0.2 %  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
River: Salt Reach: 1 RS: 218.99 Profile: Floodplain  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
River: Salt Reach: 1 RS: 218.99 Profile: Floodway  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
River: Salt Reach: 1 RS: 218.99 Profile: 10 %  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
River: Salt Reach: 1 RS: 218.99 Profile: 2 %

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
 River: Salt Reach: 1 RS: 218.99 Profile: 0.2 %  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
 River: Salt Reach: 1 RS: 218.975 Profile: Floodplain Upstream  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
 River: Salt Reach: 1 RS: 218.975 Profile: Floodplain Downstream  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
 River: Salt Reach: 1 RS: 218.975 Profile: Floodway Upstream  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
 River: Salt Reach: 1 RS: 218.975 Profile: Floodway Downstream  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
 River: Salt Reach: 1 RS: 218.975 Profile: 10 % Upstream  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
 River: Salt Reach: 1 RS: 218.975 Profile: 10 % Downstream  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
 River: Salt Reach: 1 RS: 218.975 Profile: 2 % Upstream  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
 River: Salt Reach: 1 RS: 218.975 Profile: 2 % Downstream  
 Warning: Critical depth could not be determined within the specified number of iterations. The program used the iteration with the lowest energy.  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
 River: Salt Reach: 1 RS: 218.975 Profile: 0.2 %  
 Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.  
 River: Salt Reach: 1 RS: 218.975 Profile: 0.2 % Upstream  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
 River: Salt Reach: 1 RS: 218.975 Profile: 0.2 % Downstream  
 Warning: Critical depth could not be determined within the specified number of iterations. The program used the iteration with the lowest energy.  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
 River: Salt Reach: 1 RS: 218.96 Profile: Floodplain  
 Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
 River: Salt Reach: 1 RS: 218.96 Profile: Floodway  
 Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
 River: Salt Reach: 1 RS: 218.96 Profile: 10 %  
 Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
 River: Salt Reach: 1 RS: 218.96 Profile: 2 %  
 Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
 River: Salt Reach: 1 RS: 218.96 Profile: 0.2 %  
 Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
 Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.  
 River: Salt Reach: 1 RS: 218.8 Profile: Floodplain  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.  
 River: Salt Reach: 1 RS: 218.8 Profile: Floodway  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.  
 River: Salt Reach: 1 RS: 218.8 Profile: 10 %  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.





used.  
River: Salt Reach: 1 RS: 218.38 Profile: 10 %  
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.  
This may indicate the need for additional cross sections.  
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  
This may indicate the need for additional cross sections.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.38 Profile: 2 %  
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.38 Profile: 0.2 %  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.33 Profile: Floodplain  
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.33 Profile: Floodway  
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.33 Profile: 10 %  
Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.  
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.  
This may indicate the need for additional cross sections.  
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  
This may indicate the need for additional cross sections.  
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.33 Profile: 2 %  
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.33 Profile: 0.2 %  
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.29 Profile: Floodplain  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.29 Profile: Floodway  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.29 Profile: 10 %  
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.  
This may indicate the need for additional cross sections.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.29 Profile: 2 %  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.29 Profile: 0.2 %  
Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.24 Profile: Floodplain  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.24 Profile: Floodway  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.24 Profile: 10 %  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.24 Profile: 2 %  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.24 Profile: 0.2 %  
Warning: Divided flow computed for this cross-section.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.19 Profile: Floodplain  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.19 Profile: Floodway  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.19 Profile: 10 %  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.19 Profile: 2 %  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.19 Profile: 0.2 %  
Warning: Divided flow computed for this cross-section.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.14 Profile: Floodplain  
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.14 Profile: Floodway  
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.14 Profile: 10 %  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.14 Profile: 2 %  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.14 Profile: 0.2 %  
Warning: Divided flow computed for this cross-section.  
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.09 Profile: Floodplain  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.09 Profile: Floodway  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.09 Profile: 10 %  
Warning: Divided flow computed for this cross-section.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.09 Profile: 2 %  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

used.  
River: Salt Reach: 1 RS: 218.09 Profile: 0.2 %  
Warning: Divided flow computed for this cross-section.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.04 Profile: Floodplain  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.04 Profile: Floodway  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.04 Profile: 10 %  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.04 Profile: 2 %  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218.04 Profile: 0.2 %  
Warning: Divided flow computed for this cross-section.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218 Profile: Floodplain  
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218 Profile: Floodway  
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218 Profile: 10 %  
Warning: Divided flow computed for this cross-section.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218 Profile: 2 %  
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 218 Profile: 0.2 %  
Warning: Divided flow computed for this cross-section.  
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.95 Profile: Floodplain  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.95 Profile: Floodway  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.95 Profile: 10 %  
Warning: Divided flow computed for this cross-section.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.95 Profile: 2 %  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.95 Profile: 0.2 %  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.91 Profile: Floodplain  
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.91 Profile: Floodway  
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

water surface was used.  
 River: Salt Reach: 1 RS: 217.91 Profile: 10 %  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.91 Profile: 2 %  
 Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.91 Profile: 0.2 %  
 Warning: Divided flow computed for this cross-section.  
 Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.86 Profile: Floodplain  
 Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.86 Profile: Floodway  
 Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.86 Profile: 10 %  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.86 Profile: 2 %  
 Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.86 Profile: 0.2 %  
 Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.81 Profile: Floodplain  
 Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.81 Profile: Floodway  
 Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.81 Profile: 10 %  
 Warning: Divided flow computed for this cross-section.  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.81 Profile: 2 %  
 Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.81 Profile: 0.2 %  
 Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.76 Profile: Floodplain  
 Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.  
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.76 Profile: Floodway

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  
This may indicate the need for additional cross sections.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.  
River: Salt Reach: 1 RS: 217.76 Profile: 10 %  
Warning: Divided flow computed for this cross-section.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.  
River: Salt Reach: 1 RS: 217.76 Profile: 2 %  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.  
River: Salt Reach: 1 RS: 217.76 Profile: 0.2 %  
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  
This may indicate the need for additional cross sections.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.  
River: Salt Reach: 1 RS: 217.71 Profile: Floodplain  
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  
This may indicate the need for additional cross sections.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.  
River: Salt Reach: 1 RS: 217.71 Profile: Floodway  
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  
This may indicate the need for additional cross sections.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.  
River: Salt Reach: 1 RS: 217.71 Profile: 10 %  
Warning: Divided flow computed for this cross-section.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.  
River: Salt Reach: 1 RS: 217.71 Profile: 2 %  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.  
River: Salt Reach: 1 RS: 217.71 Profile: 0.2 %  
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  
This may indicate the need for additional cross sections.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.  
River: Salt Reach: 1 RS: 217.66 Profile: Floodplain  
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  
This may indicate the need for additional cross sections.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.  
River: Salt Reach: 1 RS: 217.66 Profile: Floodway  
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  
This may indicate the need for additional cross sections.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.  
River: Salt Reach: 1 RS: 217.66 Profile: 10 %  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.  
River: Salt Reach: 1 RS: 217.66 Profile: 2 %  
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.  
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  
This may indicate the need for additional cross sections.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.  
River: Salt Reach: 1 RS: 217.66 Profile: 0.2 %  
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.62 Profile: Floodplain

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.62 Profile: Floodway

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.62 Profile: 10 %

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.62 Profile: 2 %

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.62 Profile: 0.2 %

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.57 Profile: Floodplain

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.57 Profile: Floodway

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.57 Profile: 10 %

Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.57 Profile: 2 %

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.57 Profile: 0.2 %

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.53 Profile: Floodplain

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.53 Profile: Floodway

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.53 Profile: 10 %

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.53 Profile: 2 %

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.53 Profile: 0.2 %

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.48 Profile: Floodplain

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.48 Profile: Floodway

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.48 Profile: 10 %

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.48 Profile: 2 %

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 217.48 Profile: 0.2 %

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.











used.  
River: Salt Reach: 1 RS: 216.42 Profile: 2 %  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 216.42 Profile: 0.2 %  
Warning: The cross-section end points had to be extended vertically for the computed water surface.  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 216.38 Profile: Floodplain  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 216.38 Profile: Floodway  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 216.38 Profile: 10 %  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

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River: Salt Reach: 1 RS: 216.38 Profile: 2 %  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Salt Reach: 1 RS: 216.38 Profile: 0.2 %  
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Appendix D  
FEMA FREEBOARD REQUIREMENTS

| Cross Section<br>River Mile<br>Stationing<br>[miles] | Southbank<br>Elevation<br>[ft] | Northbank<br>Elevation<br>[ft] | Asbuilt<br>Floodplain<br>WSEL (100-yr)<br>[ft] | Asbuilt<br>Floodway<br>WSEL (100-yr)<br>[ft] | FEMA<br>Required<br>Freeboard<br>[ft] | Southbank<br>Freeboard<br>[ft] | Northbank<br>Freeboard<br>[ft] | Description            |
|--|--------------------------------|--------------------------------|--|--|---------------------------------------|--------------------------------|--------------------------------|------------------------|
| 219.51 (AT)  | 1141.68                        | 1144.00                        | 1134.95  | 1134.95                                      | 3.21                                  | 6.73                           | 9.05                           |                        |
| 219.46   | 1141.94                        | 1143.00                        | 1134.52  | 1134.52                                      | 3.19                                  | 7.42                           | 8.48                           |                        |
| 219.42   | 1140.92                        | 1142.00                        | 1133.82  | 1133.82                                      | 3.16                                  | 7.10                           | 8.18                           |                        |
| 219.38   | 1140.33                        | 1141.12                        | 1133.40  | 1133.40                                      | 3.15                                  | 6.93                           | 7.72                           |                        |
| 219.33   | 1139.45                        | 1142.00                        | 1132.72  | 1132.72                                      | 3.12                                  | 6.73                           | 9.28                           |                        |
| 219.29   | 1139.24                        | 1141.00                        | 1132.18  | 1132.18                                      | 3.10                                  | 7.06                           | 8.82                           |                        |
| 219.24   | 1138.32                        | 1141.00                        | 1131.63  | 1131.63                                      | 3.08                                  | 6.69                           | 9.37                           |                        |
| 219.19   | 1138.57                        | 1140.00                        | 1131.07  | 1131.07                                      | 3.05                                  | 7.50                           | 8.93                           |                        |
| 219.14   | 1138.30                        | 1139.00                        | 1130.44  | 1130.44                                      | 3.02                                  | 7.86                           | 8.56                           |                        |
| 219.09   | 1137.71                        | 1138.00                        | 1129.91  | 1129.91                                      | 3.00                                  | 7.80                           | 8.09                           |                        |
| 219.03 (AS)  | 1137.04                        | 1138.00                        | 1129.48  | 1129.48                                      | 4.00                                  | 7.56                           | 8.52                           | U/S SR-143 Bridge      |
| 219.01   | 1136.48                        | 1138.00                        | 1128.78  | 1128.78                                      | 4.50                                  | 7.70                           | 9.22                           | D/S SR-143 Bridge      |
| 218.99   | 1136.80                        | 1137.00                        | 1128.73  | 1128.73                                      | 4.50                                  | 8.07                           | 8.27                           | U/S 44th Street Bridge |
| 218.96   | 1137.00                        | 1137.00                        | 1127.95  | 1127.95                                      | 4.50                                  | 9.05                           | 9.05                           | D/S 44th Street Bridge |
| 218.80   | 1134.63                        | 1135.07                        | 1125.93  | 1125.93                                      | 3.50                                  | 8.70                           | 9.14                           |                        |
| 218.77   | 1134.49                        | 1134.78                        | 1125.42  | 1125.42                                      | 3.49                                  | 9.07                           | 9.36                           |                        |
| 218.71 (AR)  | 1134.72                        | 1134.00                        | 1124.82  | 1124.82                                      | 3.48                                  | 9.90                           | 9.18                           |                        |
| 218.66   | 1133.04                        | 1134.00                        | 1124.33  | 1124.33                                      | 3.47                                  | 8.71                           | 9.67                           |                        |
| 218.61   | 1132.02                        | 1134.00                        | 1123.75  | 1123.75                                      | 3.46                                  | 8.27                           | 10.25                          |                        |
| 218.57   | 1132.08                        | 1133.00                        | 1123.21  | 1123.21                                      | 3.45                                  | 8.87                           | 9.79                           |                        |
| 218.52   | 1133.67                        | 1132.00                        | 1122.70  | 1122.70                                      | 3.44                                  | 10.97                          | 9.30                           |                        |
| 218.47   | 1132.98                        | 1132.00                        | 1122.38  | 1122.38                                      | 3.42                                  | 10.60                          | 9.62                           |                        |
| 218.42   | 1128.90                        | 1131.00                        | 1121.71  | 1121.71                                      | 3.41                                  | 7.19                           | 9.29                           |                        |
| 218.38   | 1128.25                        | 1130.00                        | 1121.27  | 1121.27                                      | 3.40                                  | 6.98                           | 8.73                           |                        |
| 218.33   | 1125.28                        | 1130.00                        | 1120.19  | 1120.19                                      | 3.39                                  | 5.09                           | 9.81                           |                        |
| 218.29   | 1125.10                        | 1128.00                        | 1120.21  | 1120.21                                      | 3.38                                  | 4.89                           | 7.79                           |                        |
| 218.24 (AQ)  | 1125.00                        | 1128.00                        | 1120.11  | 1120.11                                      | 3.37                                  | 4.89                           | 7.89                           |                        |
| 218.19   | 1125.00                        | 1127.00                        | 1119.90  | 1119.90                                      | 3.36                                  | 5.10                           | 7.10                           |                        |
| 218.14   | 1124.64                        | 1125.54                        | 1119.51  | 1119.51                                      | 3.35                                  | 5.13                           | 6.03                           |                        |

| Cross Section<br>River Mile<br>Stationing<br>[miles] | Southbank<br>Elevation<br>[ft] | Northbank<br>Elevation<br>[ft] | Asbuilt<br>Floodplain<br>WSEL (100-yr)<br>[ft] | Asbuilt<br>Floodway<br>WSEL (100-yr)<br>[ft] | FEMA<br>Required<br>Freeboard<br>[ft] | Southbank<br>Freeboard<br>[ft] | Northbank<br>Freeboard<br>[ft] | Description |
|--|--------------------------------|--------------------------------|--|--|---------------------------------------|--------------------------------|--------------------------------|-------------|
| 218.09   | 1124.00                        | 1124.63                        | 1118.57  | 1118.57                                      | 3.34                                  | 5.43                           | 6.06                           |             |
| 218.04   | 1123.00                        | 1123.64                        | 1118.28  | 1118.28                                      | 3.33                                  | 4.72                           | 5.36                           |             |
| 218.00   | 1124.00                        | 1123.07                        | 1117.98  | 1117.98                                      | 3.32                                  | 6.02                           | 5.09                           |             |
| 217.95   | 1123.00                        | 1122.18                        | 1116.87  | 1116.87                                      | 3.31                                  | 6.13                           | 5.31                           |             |
| 217.91   | 1123.00                        | 1121.46                        | 1116.46  | 1116.46                                      | 3.30                                  | 6.54                           | 5.00                           |             |
| 217.86   | 1123.00                        | 1120.58                        | 1115.14  | 1115.14                                      | 3.28                                  | 7.86                           | 5.44                           |             |
| 217.81   | 1122.00                        | 1119.87                        | 1113.48  | 1113.48                                      | 3.27                                  | 8.52                           | 6.39                           |             |
| 217.76 (AP)  | 1121.41                        | 1119.79                        | 1112.07  | 1112.07                                      | 3.26                                  | 9.34                           | 7.72                           |             |
| 217.71   | 1122.38                        | 1119.83                        | 1111.53  | 1111.53                                      | 3.25                                  | 10.85                          | 8.30                           |             |
| 217.66   | 1122.00                        | 1119.93                        | 1110.56  | 1110.56                                      | 3.24                                  | 11.44                          | 9.37                           |             |
| 217.62   | 1121.00                        | 1120.00                        | 1110.67  | 1110.67                                      | 3.23                                  | 10.33                          | 9.33                           |             |
| 217.57   | 1119.88                        | 1119.00                        | 1110.19  | 1110.19                                      | 3.22                                  | 9.69                           | 8.81                           |             |
| 217.53   | 1118.49                        | 1119.00                        | 1110.10  | 1110.10                                      | 3.21                                  | 8.39                           | 8.90                           |             |
| 217.48   | 1118.13                        | 1119.00                        | 1109.67  | 1109.67                                      | 3.20                                  | 8.46                           | 9.33                           |             |
| 217.43   | 1117.02                        | 1119.00                        | 1109.10  | 1109.10                                      | 3.19                                  | 7.92                           | 9.90                           |             |
| 217.38   | 1117.31                        | 1118.00                        | 1108.65  | 1108.65                                      | 3.17                                  | 8.66                           | 9.35                           |             |
| 217.34   | 1117.96                        | 1117.96                        | 1108.19  | 1108.19                                      | 3.17                                  | 9.77                           | 9.77                           |             |
| 217.29 (AO)  | 1117.43                        | 1117.00                        | 1107.75  | 1107.75                                      | 3.15                                  | 9.68                           | 9.25                           |             |
| 217.24   | 1116.28                        | 1116.00                        | 1107.33  | 1107.33                                      | 3.14                                  | 8.95                           | 8.67                           |             |
| 217.19   | 1116.46                        | 1115.00                        | 1106.79  | 1106.79                                      | 3.13                                  | 9.67                           | 8.21                           |             |
| 217.15   | 1116.43                        | 1114.00                        | 1106.64  | 1106.64                                      | 3.12                                  | 9.79                           | 7.36                           |             |
| 217.10   | 1116.51                        | 1113.00                        | 1106.26  | 1106.26                                      | 3.11                                  | 10.25                          | 6.74                           |             |
| 217.05   | 1116.91                        | 1113.08                        | 1105.84  | 1105.84                                      | 3.10                                  | 11.07                          | 7.24                           |             |
| 217.00   | 1116.57                        | 1113.00                        | 1105.39  | 1105.39                                      | 3.09                                  | 11.18                          | 7.61                           |             |
| 216.96   | 1115.14                        | 1113.00                        | 1105.17  | 1105.17                                      | 3.08                                  | 9.97                           | 7.83                           |             |
| 216.91   | 1115.02                        | 1112.00                        | 1104.84  | 1104.84                                      | 3.07                                  | 10.18                          | 7.16                           |             |
| 216.86   | 1114.27                        | 1112.00                        | 1104.62  | 1104.62                                      | 3.06                                  | 9.65                           | 7.38                           |             |
| 216.81 (AN)  | 1113.78                        | 1111.00                        | 1104.40  | 1104.40                                      | 3.04                                  | 9.38                           | 6.60                           |             |
| 216.77   | 1111.01                        | 1111.00                        | 1104.20  | 1104.20                                      | 3.03                                  | 6.81                           | 6.80                           |             |

| Cross Section<br>River Mile<br>Stationing<br>[miles] | Southbank<br>Elevation<br>[ft] | Northbank<br>Elevation<br>[ft] | Asbuilt<br>Floodplain<br>WSEL (100-yr)<br>[ft] | Asbuilt<br>Floodway<br>WSEL (100-yr)<br>[ft] | FEMA<br>Required<br>Freeboard<br>[ft] | Southbank<br>Freeboard<br>[ft] | Northbank<br>Freeboard<br>[ft] | Description     |
|--|--------------------------------|--------------------------------|--|--|---------------------------------------|--------------------------------|--------------------------------|-----------------|
| 216.72   | 1111.41                        | 1110.00                        | 1103.92  | 1103.92                                      | 3.02                                  | 7.49                           | 6.08                           |                 |
| 216.67   | 1111.52                        | 1110.00                        | 1103.37  | 1103.37                                      | 3.01                                  | 8.15                           | 6.63                           |                 |
| 216.62   | 1110.16                        | 1110.00                        | 1102.95  | 1102.95                                      | 3.00                                  | 7.21                           | 7.05                           |                 |
| 216.52   | 1100.00                        | 1102.10                        | 1102.44  | 1102.44                                      | 4.00                                  | 2.44                           | 0.34                           | U/S I-10 Bridge |
| 216.49   | 1100.00                        | 1100.00                        | 1101.27  | 1101.27                                      | 4.50                                  | 1.27                           | 1.27                           | D/S I-10 Bridge |
| 216.42   | 1099.81                        | 1109.00                        | 1100.93  | 1100.93                                      | 4.50                                  | 1.12                           | 8.07                           |                 |
| 216.38   | 1105.00                        | 1109.00                        | 1100.76  | 1100.76                                      | 3.50                                  | 4.24                           | 8.24                           |                 |

Appendix E  
RECORD DRAWINGS



**Appendix E: Record Drawings**

The Record Drawings for the *Salt River Bank Extension: Runway 7R/25L RSA Improvements* are included under a separate cover.

Appendix F  
LEVEE OPERATION AND MAINTENANCE PLAN



## Appendix F: Operation and Maintenance Plan

### Levee O&M Plan

An Operations and Maintenance (O&M) plan was developed in conjunction with the Levee Certification Report (2011) and submitted at the end of the provisionally accredited levee (PAL) process. One element of the certification study included determination of levee versus non-levee conditions by identifying areas where the adjacent grade on the landward side of the levee was consistently higher than that of the base flood elevation such that a breach of the CSA embankment would not result in a flood hazard. The result of this analysis significantly reduced the overall length of Levee ID No. 42.

The construction of the RSA Salt River Bank Extension included fill on the landward side such that the finished grade is higher than the base flood elevation and therefore does not constitute levee conditions. The extent of Levee ID No. 42 remains the same as defined in the Levee Certification Report.

The operation and maintenance plan covers the north embankment between the SR-143 and I-10 bridges, not just the limits of Levee ID No. 42, such that maintenance would be performed as deemed necessary on the entire reach. This reach is inclusive of the new RSA Bank Extension project, and therefore the O&M plan developed with the Levee Certification Report covers this new project. A revised copy of the O&M plan can be found in this appendix.



CITY OF PHOENIX

## LEVEE OPERATION AND MAINTENANCE PLAN



### LEVEE ID NO. 42

December 2010  
*Revised (November 2011)*

PHOENIX AVIATION DEPARTMENT  
3400 East Sky Harbor Boulevard  
Terminal 3  
Phoenix, Az 85034

|  |   |  |
|--|---|--|
| <br><br>CITY OF PHOENIX | <b>STREET MAINTENANCE DIVISION<br/>POLICY AND PROCEDURE</b> | 410<br><br>1 of 1<br><br><b>NUMBER</b>     |
|  | <b>MAINTENANCE OF DRAINAGE FACILITIES</b><br><br>SUBJECT    | 6-7-00<br>REV<br><br>12-2-92<br>ISSUE DATE |

### PURPOSE

To ensure all drainage facilities are maintained and kept clear of objects that may impede the flow of storm runoff.

### POLICY

All drainage facilities shall be inspected monthly and cleaned on a regular maintenance schedule.

### PROCEDURE

- The Street Maintenance Drainage Foreman is responsible for visually inspecting each drainage facility in their section on a monthly basis.
- The Drainage Foreman shall schedule the cleaning as needed, but is not to exceed the established service levels, unless it is determined that allowing it to exist could become an obstruction to drainage.
- The established service levels are as follows:
  - a) Man-made Drainage Easements shall be inspected on a monthly basis and cleaned if necessary.
  - b) Dedicated Natural Washes shall be inspected on a monthly basis and debris removed twice a year.
  - c) Non-dedicated Natural Washes shall be inspected twice a year and the adjacent property owner notified to clean as needed. If the property owner fails to remove the debris from the wash, the Foreman shall inform the Street Maintenance Field Investigator who will follow up by notifying NIH Zoning Enforcement.
  - d) Man-made Detention Basins shall be inspected on a monthly basis and cleaned when necessary.
  - e) Storm Drainage Inlets shall be inspected on a monthly basis and cleaned when necessary.
  - f) Storm Drainage Catch Basins, Syphons and Drywells shall be cleaned on a monthly basis. The section equipped with the vectors shall schedule these accordingly.

The Street Maintenance Section shall respond to any complaints regarding the clogging of drainage facilities

and resolve the problem within five days of notification. The above service levels shall be followed for routine maintenance. Extenuating circumstances may require deviation.

## Table of Contents

### **CHAPTER 1: GENERAL INFORMATION**

- 1.1 LOCATION AND DESCRIPTION OF LEVEE
- 1.2 ASSIGNMENT OF RESPONSIBILITY
- 1.3 EMBANKMENT DATA
- 1.4 ATTENDANT, COMMUNICATIONS, AND WARNING SYSTEM
- 1.5 PERTINENT RECORDS
- 1.6 SUMMARY OF INSPECTION, OPERATIONS, AND MAINTENANCE
- 1.7 LOGBOOK
- 1.8 PUBLIC SAFETY AND SECURITY

### **CHAPTER 2: INSPECTION AND MAINTENANCE**

- 2.1 GENERAL DESCRIPTION
- 2.2 EVENT INSPECTION
- 2.3 NON EVENT INSPECTION AND MAINTENANCE

### **CHAPTER 3: LEVEE INSTRUMENTATION**

- 3.1 INTRODUCTION
- 3.2 RAINFALL GAUGE
- 3.3 PRESSURE GAUGE
- 3.4 SURVEY MONUMENTATION

### **CHAPTER 4: FLOOD OPERATIONS**

- 4.1 SALT RIVER FLOOD HYDROLOGY
- 4.2 SALT RIVER FLOOD HYDRAULICS
- 4.3 FLOW FORECASTING
- 4.4 FLOOD OPERATING CRITERIA
- 4.5 RECREATION MANAGEMENT
- 4.6 CULTURAL RESOURCE AREAS

**APPENDIX A: VISUAL INSPECTION CHECKLIST/REPORT**

**APPENDIX B: FLOOD MONITORING AND RESPONSE GUIDE**

**B.I. RESPONSIBILITIES**

**B.I.1 RESPONSIBILITY FOR EVENT MONITORING**

**B.I.2 RESPONSIBILITY FOR EVALUATION AND NOTIFICATION**

**B.I.3 RESPONSIBILITY FOR EVACUATION**

**B.I.4 RESPONSIBILITY FOR DURATION, SECURITY, TERMINATION, AND FOLLOW-UP**

**B.II. PREPAREDNESS**

**B.II.1 SITE ACCESS**

**B.II.2 EMERGENCY SUPPLIES**

**B.III. EMERGENCY CLASSIFICATION SYSTEM**

**B.III.1 FAILURE IS IMMINENT OR HAS OCCURRED**

**B.III.2 POTENTIAL FAILURE SITUATION IS DEVELOPING**

**B.III.3 NON-FAILURE EMERGENCY CONDITION**

**B.IV. ABNORMAL BEHAVIOR DECISION CRITERIA**

**B.V. EVENT MONITORING**

**APPENDIX C: FLOOD HAZARD AREA (EXHIBIT)**

**CHAPTER 1: GENERAL INFORMATION****1.1 LOCATION AND DESCRIPTION OF LEVEE**

The Salt River Levee ID 42 is a flood control structure located in central Phoenix, Sections 13, 14, 23 and 24 of T1NR3E and Section 18 of T1NR4E. The structure is located on the north side of the Salt River between the Interstate Highway I-10 (Maricopa Freeway) and the State Route 143 bridge (Hohokam Expressway). The embankment was originally constructed in the mid 1980's and protects the Sky Harbor International Airport which lies adjacent to and north of the embankment.

The embankment is included in the Floodplain Delineation Study of the Salt River and is shown on the effective Flood Insurance Rate Maps covering this area. These maps include Flood Insurance Rate Maps 04013C2145H and 04013C2165H both with an effective date of Sept. 30, 2005. The embankment functions by blocking any potential flow outbreak from the Salt River.

Modifications to this embankment were submitted to FEMA as part of a Conditional Letter of Map Revision with construction completed and record drawings prepared in March of 2011. This O&M plan is being included in a submittal with a Letter of Map Revision to revise the effective floodplain based upon the bank/channel improvements.

There are fourteen penetrations of the embankment by storm drain structures. All locations, except one, openly discharge into the Salt River. At one location the outlets of the dual pipes, one 48-inch and one 60-inch, are covered with flap gates to prevent flow within the Salt River from backing up to the landward side of the embankment. These closed outlets are directly adjacent to the low lying East Economy Lot.

Local runoff on the landward side of the embankment typically follows local gradient flowing east to west and is collected in a number of local low points throughout the airport. Flows are delivered to the Salt River by numerous storm drain systems. The one exception is the local low lying area around the East Economy Lot which collects storm water in existing detention basins and then discharge through the dual outlet pipes with flap gates into the Salt River.

Although normally dry the Salt River is a major water course with a significant base flood (169,000 cfs) generated from a 12,800 square mile watershed. The reach length is approximately 2.5 miles long having a base flood elevation of 1127 at the east end and 1102 at the west end (NGVD 29 datum).

| Location              | Drainage Area<br>(square miles) | Peak Discharge (cfs) |         |          |          |
|-----------------------|---------------------------------|----------------------|---------|----------|----------|
|                       |                                 | 10-year              | 50-year | 100-year | 500-year |
| At Mill Avenue Bridge | 12,783                          | 55,000               | 140,000 | 169,000  | 243,000  |

The embankment is earthen with an 8-foot wide cement stabilized alluvium (CSA) riverward face which extends the entire length of the project reach. A survey of the existing embankment was made in February 2010. The survey was performed taking



cross sections at approximate 100-foot intervals. To satisfy the embankment requirements of 44CFR Section 65.10, the embankment crest elevation needs to be at least 3.0 feet higher than the high water surface elevation (HWSEL) except within 100 feet of a structure where this requirement increases to 4.0 feet. The existing embankment meets FEMA criteria everywhere with excess freeboard in most locations.

Survey and field inspections found the embankment to be varying between 15 and 31 feet in height with side slopes which generally vary from 0.5H:1V to 2.8H:1V although the most common slope with was found to be 2H:1V and the steepest slope was found to be 0.5H:1V. The base width varies from 90 feet at its narrowest to about 120 feet at its widest depending upon the elevation of the lowest adjacent grade on the landward side of the embankment. See section 1.3 for the Levee Plan and Profile.

In emergency or unusual conditions, Emergency Management responsibilities are described in Appendix B. A communications Directory is also provided in Appendix B.

Wet or dry access to the embankment is from the airport perimeter road. There are gate accesses at several locations along the perimeter.

### 1.2 ASSIGNMENT OF RESPONSIBILITY

The City of Phoenix-Aviation Department owns the entire embankment between the Arizona Department of Transportation's right-of-way for the I-10 and the SR-143 bridges.

The City of Phoenix-Aviation Department is a municipal corporation and political subdivision of the State of Arizona, an entity that reports to and is governed by a City Council, the members of which are elected officials.

|                          |                            |             |                               |
|--------------------------|----------------------------|-------------|-------------------------------|
| Mayor: Mayor Phil Gordon |                            |             |                               |
| City Council             |                            |             |                               |
| District 1               | Vice Mayor Thelda Williams | District 5  | Councilman Claude Mattox      |
| District 2               | Councilwoman Jim Waring    | District 6  | Councilman Sal DiCiccio       |
| District 3               | Councilman Bill Gates      | District 7  | Councilman Michael Nowakowski |
| District 4               | Councilman Tom Simplot     | District 8* | Councilman Michael Johnson    |

\*Salt River Levee is located within this District

#### A. Responsibility for Inspections and Event Monitoring

The Dam Safety Program Manager and Principal Engineering Technician within the Street Transportation Department, of the City of Phoenix, is designated as the responsible person for embankment inspection and monitoring conditions.

#### B. Responsibility for Evaluation and Notification

The Dam safety Program Manager and Principal Engineering Technician within the Street Transportation Department of the City of Phoenix are designated as the responsible person for evaluating conditions and notification to the appropriate personnel of the conditions listed below:



| City of Phoenix - Street Transportation Department          |              |                |
|---|--------------|----------------|
| Title   | Name         | Contact Number |
| Dam Safety Program Manager/Principal Engineering Technician | Mike Ziegler | 602.534.0966   |
| Alternate Contact - Chief Construction Inspector            | Pat Presley  | 602.534.3177   |

Note: a full contact list is included in Section 4.4

- When the Salt River has reached a 10-year discharge of 55,000 cfs
- When the Salt River has reached a 50-year discharge of 140,000 cfs
- When the Salt River has reached a 100-year discharge of 169,000 cfs
- When a non-failure emergency conditions exists
- When potential failure situation is developing
- When failure is imminent

### 1.3 EMBANKMENT DATA

#### Embankment and Reservoir Data Summary

|  |   |
|--|---|
| FEMA Levee Name:   | Salt River - North Bank Levee   |
| FEMA Levee ID:   | 42  |
| General Location:  | Phoenix   |
| County:  | Maricopa  |
| Township:  | Sect. 13, 14, 23 & 24 T1NR3E and Sect. 18 T1NR4E  |
| Map Location:  | Salt River between I-10 and SR-143  |
| Type of Embankment:  | CSA   |
| Purpose of Embankment Levee:   | Flood Retarding   |
| Year Constructed:  | 1980's  |
| Levee Base Elevation   | Varies from 1084 (west) to 1116 (east)  |
| Lowest Levee Crest Elevation:  | 1107.0 (NAVD 88); 1104.88 (NGVD 29)   |
| Location:  | West end of Project Reach near I-10 bridge  |
| Highest Levee Crest Elevation:   | 1137.5 (NAVD 88); 1135.38 (NGVD 29)   |
| Location:  | East end of Project Reach near SR-143 bridge  |
| Maximum Height to Crest:   | Varies by location from 15 to 31 feet   |
| Crest Length:  | 13,200 ft   |
| Crest Width:   | varies 15 to 40 feet; Average 30 ft.  |
| Slope of Streamside Face:  | 1H:1V   |
| Slope of Landside Face:  | 2H:1V   |
| Salt River Drainage Area, Design:  | 12,783 sq. mi.  |
| Salt River Base Flow:  | 169,000 cfs   |
| Salt River Bank Elevation:<br>(elevation before Salt River will flow toward levee) | Varies from 1085 (west) to 1110 (east)<br>the Salt River has a low flow channel w/terraced banks in locations |
| Historical Safety Deficiencies:  | None  |
| Downstream Hazard Potential Classification:  | High  |



## 1.4 ATTENDANT, COMMUNICATIONS, AND WARNING SYSTEM

### Attendant

No staff is permanently assigned at the Salt River embankment.

### Communications

There is no permanent communications facility at the Salt River embankment. City staff carry cellular telephones and have radio communications between vehicles and office.

### Warning System

There is no early warning system equipment installed on this reach of the Salt River embankment.

### Monitoring System

There are a number of stream gages on the Salt River which are monitored by the Flood Control District of Maricopa County. The nearest stream gauge is located at the Priest Road bridge crossing of the Salt River. This gauge is located approximately one mile upstream from the beginning of the project reach.

## 1.5 PERTINENT RECORDS

The following documents are on file in the Floodplain Management Library – Dam Safety Section.

- As-built survey records
- Design Summary

## 1.6 SUMMARY OF INSPECTION, OPERATIONS, AND MAINTENANCE

| Item                    | Reference Section | Activity  | Routine | Annual | In-depth | Special |
|-------------------------|-------------------|---|---------|--------|----------|---------|
| Erosion                 | 2.2.3.A           | Inspect all areas of the embankment and abutment contacts. Repair erosion and any irregular surface areas | X       | X      | X        | X       |
| Trees and Vegetation    | 2.2.3.B           | Inspect embankment and channels, and remove trees and deep-rooted vegetation                              | X       | X      | X        | X       |
| Animal Burrows          | 2.2.3.C           | Inspect and repair damage, eliminate burrowing animals  | X       | X      | X        | X       |
| Encroachment            | 2.2.3.D           | Inspect or remove if they affect embankment integrity. Repair damaged areas                               | X       | X      | X        | X       |
| Stability or Settlement | 2.2.3.E           | Immediately report significant settlement to Dam Safety Program Manager                                   | X       | X      | X        | X       |
| Downstream Channel      | 2.5               | Clean out debris and material that may clog channel   | X       | X      | X        | X       |
| Earthquake              | 1.6               | Inspect embankment  |         |        |          | X       |
| Flood Event => 10-Year  | 1.6               | Inspect embankment  |         |        |          | X       |



## Special Inspections

### After Earthquakes

Immediately conduct a general overall visual inspection of the embankment looking for cracks, settlement, displacement, or sloughing.

### Salt River experiences flows greater than 10-year event

If the Salt River flows equal or exceed the 10-year event, monitor with a detailed inspection continuously until flow decreased to less than 10-year discharge. The inspection protocol is presented in Appendix B – Flood Monitoring and Response Guide, Section V – Event Monitoring. Conduct a post-event in-depth inspection of the embankment.

## 1.7 LOGBOOK

A logbook shall be maintained for the levee. It can be either a bound book or an electronic file at the City of Phoenix Street Maintenance Department. The documentation serves as an official record of activities and historical events which occur on the Salt River and at the embankment. Operating personnel should make logbook entries for the following:

- Record of performance of Visual Inspections Checklist
- Minor and major maintenance activities including scheduled maintenance
- Initial acknowledgment of an emergency or unusual condition
- Reports on acts of vandalism
- Communications network checks
- Record of names and addresses of official visitors, including examination teams
- Miscellaneous items pertinent to operation, emergency, or unusual conditions at the structures
- Levee performance monitoring/surveillance
- Changes from normal operation during an emergency or unusual condition

All entries shall be made legibly in ink, dated, and signed. Corrections shall not be made by erasure or use of ink eradicators. However, errors should be lightly crossed out so the incorrect notation is still legible and the correct entry is added.

## 1.8 PUBLIC SAFETY AND SECURITY

Public safety is of primary concern. City personnel are to note unsafe conditions or acts and report them to the management of the Street Maintenance Division for correction. Unauthorized persons shall be kept away from the embankment and appurtenant structures. Any vehicle gate(s) shall be kept closed and locked, except when conducting official business. Unauthorized vehicles should not be parked on the embankment.



## **CHAPTER 2: INSPECTION AND MAINTENANCE**

### **2.1 GENERAL DESCRIPTION**

Routine maintenance of the embankment slopes and crest shall be performed as described in Section 2.3, Inspection and Maintenance (Non-event). However, any unusual condition that may adversely affect the safety of the Salt River embankment Levee SHALL IMMEDIATELY be reported to the Street Maintenance Department, as outlined in Chapter 4.

### **2.2 EVENT INSPECTION**

When flow is occurring in the Salt River, the landside slope of the embankments and the natural foundations for the embankments shall be inspected for indications of cracks, slides, sloughs, subsidence, springs, and seeps caused by seepage through the embankment from the river.

When the Salt River water surface is decreasing, the river side of the levee embankment shall be inspected for evidence of cracks, subsidence, and damage to the slope or slope protection as well as any other signs of erosion or deterioration.

Post events, the exposed portions of the riverbed, terraces and overbanks should be examined for sinks, scour holes, cracking, or any other unusual conditions.

If the embankment experiences periods of sustained flow exceeding 30,000 cfs, daily inspections should be made of the embankment with particular attention being given to the crest of the embankment, visible portions of the river side slope, landside slope, and areas landward from the embankment for evidence of abnormal developments caused by seepage through the foundation.

Following any reportable earthquakes, inspection should be made of the embankment for indications of physical damage, such as cracks, displacement, subsidence, new seeps or change in seepage, and land movements, and if no damage is discovered, a report of No Damage should be made.

### **2.3 NON EVENT INSPECTION AND MAINTENANCE**

The CSA bank material is not typically subjected to parts A through D of this section, however, it is prudent to follow through with each step in the checklist.

**A. Erosion.** Erosion involves the loss of embankment material due to water and/or wind action. It reduces the embankment cross-section, thereby impairing the safety and stability of the embankment. Erosion can be in the form of gullies down side slopes or benching due to water action. The gullies and benching may be initiated by animal and/or man made traffic.

**1. Inspection.** On a semiannual basis, all areas of the embankment should be inspected for loss of soils fill, for irregular ground surfaces that might indicated loss of material, for vandalism, or for any other signs of damage to the embankment. After a heavy rainfall has occurred (1 inch in 24 hours), inspect for erosion.



**2. Maintenance.** Repairs should be made as necessary to maintain the integrity of the embankment. Earth materials used to repair eroded areas should be tamped or compacted into place.

**B. Trees and Vegetation.** Growth of trees and other deep-rooted vegetation on the embankment should be prevented. Trees and other deep-rooted vegetation on and near embankments can create pathways for seepage. Also, when trees become large they are susceptible to being toppled, and in falling; the resulting uprooting may create voids, weaknesses, or shortened seepage paths in the embankment. When trees grow within areas of bank protections such as gabion mattresses they can also damage the rock baskets and the underlying filter fabric.

**1. Inspection.** On a semiannual basis, inspect the embankment and adjacent banks for trees, brush, shrubs, and woody, deep-rooted vegetation.

**2. Maintenance.** Remove brush growth by cutting at the ground line and removing the cuttings. The vegetation removal should extend a minimum distance of 50 feet on either side from the toe of the embankment to allow proper surveillance of the embankment toe and any seepage areas that might otherwise be concealed. Before removing deep roots, a qualified professional engineer should be consulted. Voids caused by the removal of trees and vegetation shall be immediately backfilled with suitable material and be properly compacted to protect the embankment. Damage caused to gabion mattresses during the removal of vegetation shall be repaired immediately.

**C. Animal Burrows.** Animal burrows in levee embankments can create seepage paths, weaken the structure, and damage the embankment. Often, animal burrows extend deep into the embankment and allow water to travel freely toward an open face, thus allowing piping to occur and ultimate failure of the embankment.

**1. Inspection.** On a semiannual basis, inspect the upstream and downstream slopes for animal burrows.

**2. Maintenance.** A burrow should be repaired by excavating the burrow to the maximum practical extent and filling the excavation with compacted embankment material. Also eliminate burrowing animals using the City's on-call exterminator.

**D. Encroachments.** Encroachments may occur in various ways, including buried utilities, utility lines, and poles on the crest and side slopes of embankments, construction of buildings or embankments, and removal of embankment material to accommodate construction or to obtain material for other use. Encroachments weaken embankments and may seriously jeopardize the integrity of the embankment.

**1. Inspection.** On a semiannual basis, inspect for encroachments. Removal of such encroachments is required if they affect the integrity of the levee embankment. No encroachments should be permitted without the review and approval of a qualified professional engineer.



**2. Maintenance.** Any disturbed material should be repaired by excavating to the maximum practical extent and filling the excavation with compacted embankment material.

**E. Stability and Settlement.** Sloughs, slumps, bulges, depressions, cracks, or other irregularities in the crest or slopes of the levee embankment are often signs of instability and settlement of the embankment or foundation, or both. Significant settlement of the embankment may diminish freeboard and increase the possibility of overtopping. Signs of instability and settlement **SHALL IMMEDIATELY** be reported to the Street Maintenance Division so that arrangements can be made for qualified professional engineers to inspect and evaluate the levee embankment.

**1. Inspection.** On a semiannual basis, inspect the embankment for sloughs, sumps, bulges, depressions, and cracks. Sloughs, slumps, bulge, depressions, or other anomalies should be photographed and surveyed to provide a record of the occurrence.

**2. Maintenance.** Ruts from vehicles should be filled so that the crest will be well drained and access along the crest is possible at all times. A qualified professional engineer should be consulted for evaluation of any signs of settlement or instability and for suitable repairs to the embankment.



## CHAPTER 3: LEVEE INSTRUMENTATION

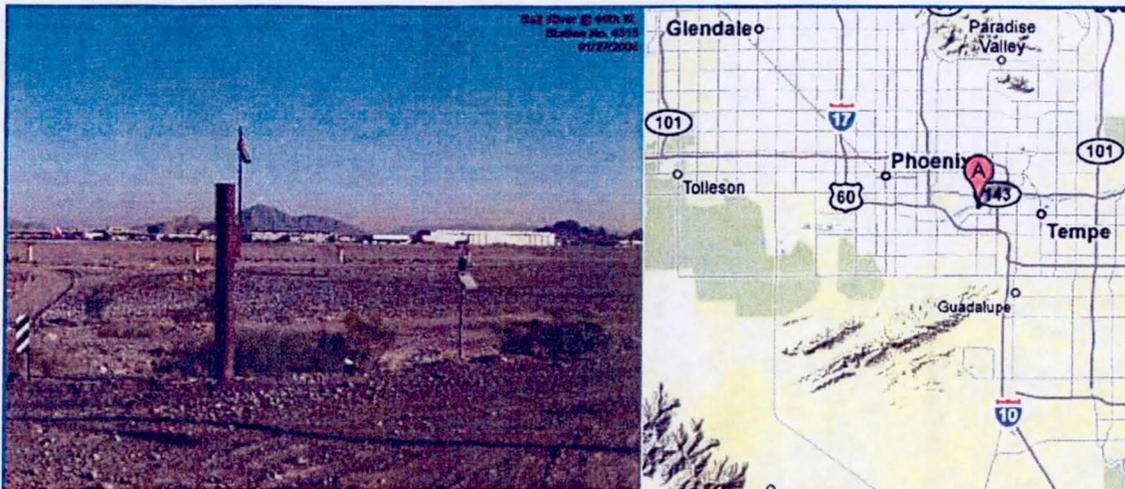
### 3.1 INTRODUCTION

The purpose of the instrumentation at the embankment is as follows:

- Monitor rainfall at the levee
- Monitor the Salt River rate of flow at the levee
- Monitor surface settlement and deflection along the levee embankment crest.

### 3.2 RAINFALL GAUGE

A rainfall gauge is located on the south bank of the Salt River and is owned and operated by the Flood Control District of Maricopa County (District). The gauge (ID # 4515) was installed in March of 1996 and is located on the south side of the Salt River near 40th Street (latitude N 33° 25' 33.9" and longitude W 111° 59' 44.5"). The gauge is located within Section 13, T1N-R3E of the Gila and Salt River Base and Meridian, within the city of Phoenix Arizona. The Dam Safety Program Manager is responsible for monitoring the performance of the rain gauge. The District is responsible for maintenance and repair of the gauge.



FCDMC Rain Gauge #4515 – South Bank of Salt River

The rain gauge listed above only identifies rain falling on-site which could potentially cause erosion to the top and sides slopes of the embankment levee. The Salt River has a very large contributing watershed (approximately 12,800 square miles) with a number of rain gauges located within its boundaries which are more relevant to estimating rainfall discharges and flow rates within the Salt River.

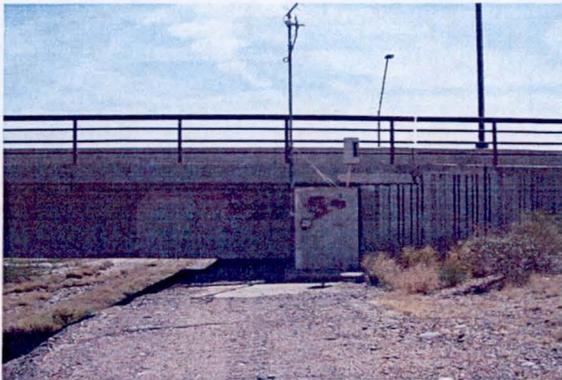
### 3.3 STREAM GAUGE

The closest stream gauge is located approximately one mile upstream of the levee embankment at the Priest Drive crossing of the Salt River. Gauging equipment is located on the south bank of the Salt River on the downstream side of the bridge (latitude N 33° 26' 03.4" and longitude W 111° 57' 41.0"). The gauge is located within

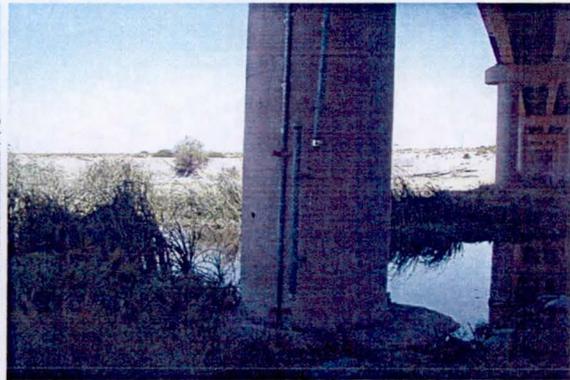


Section 17, T1N-R4E of the Gila and Salt River Base and Meridian, within the city of Tempe Arizona. The Gauging is owned and operated by the Flood Control District of Maricopa County (District) and was established on December 7, 1993. The gauge is a non-submersible pressure transducer type instrument connected with an orifice line in the river channel. The orifice is at elevation 2.60 feet gauge height (USGS datum). There are staff gages at this location, located near both orifice lines in the river channel. A trigger value of 10,000 cfs activates the automated notification system alerting Steve Waters (District).

The maximum discharge recorded by this gauge was 78,850 cfs with a flow depth of 12.57 feet, on February 16, 1995. Higher flows have occurred at this location prior to gauge installation. The Dam Safety Program Manager is responsible for monitoring the performance of the pressure gauge. The District is responsible for maintenance and repair of the gauge.



Stream Flow Monitoring Station  
located at Priest Drive and the Salt River



Pressure Transducer Mounted  
to Bridge Piers

### 3.4 SURVEY MONUMENTATION

There are no embankment measurement points installed along the levee embankment crest. However, the length of the embankment should be surveyed after major flow events or at a minimum of every five years with results reviewed and documented to ensure that the overall embankment isn't lowering causing a loss of freeboard.



## CHAPTER 4: FLOOD OPERATIONS

### 4.1 SALT RIVER FLOOD HYDROLOGY

The hydrology study was published by the U.S. Army Corps of Engineers (Los Angeles District) in May of 1982, and is entitled Gila River and Tributaries, Central Arizona Water Control Study, Hydrology. This study delineates the contributing watersheds for a number of rivers with confluences to the Gila River including the Salt River. The study established peak discharges for a variety of return periods.

The discharge rates in the 1982 report were updated in a subsequent report. In March of 1996 the U.S. Army Corps of Engineers (Los Angeles District) published a report entitled Study for Modified Roosevelt Dam, Arizona, Hydrologic Evaluation of Water Control Plans Salt River Project to Gila River at Gillespie Dam. The purpose of this report was to develop a Water Control Plan for the Modified Roosevelt Dam. The modifications to the dam were completed in the mid 1990's increasing the size of the flood pool to 557,000 acre-feet of storage.

| Location   | Return Period <sup>1</sup> |         |         |         |        |        |        |
|--|----------------------------|---------|---------|---------|--------|--------|--------|
|  | 500-YR                     | 200-YR  | 100-YR  | 50-YR   | 20-YR  | 10-YR  | 5-YR   |
| Peak Discharge (ft <sup>3</sup> / s) in Salt River |                            |         |         |         |        |        |        |
| Mesa-<br>Gilbert Road Bridge<br>(CO109)            | 246,000                    | 207,000 | 172,000 | 145,000 | 95,000 | 58,000 | 21,000 |
| Tempe -<br>Mill Avenue Bridge<br>(CP110)           | 243,000                    | 204,000 | 169,000 | 140,000 | 90,000 | 55,000 | 20,500 |
| Phoenix-<br>Central Avenue<br>Bridge<br>(CP111)    | 240,000                    | 202,000 | 166,000 | 135,000 | 87,000 | 53,000 | 20,200 |

Notes: 1) Drainage Area approximately 12,800 square miles

### 4.2 SALT RIVER FLOOD HYDRAULICS

The embankment levee lies between State Route-143 (SR-143) and Interstate Highway 10 (I-10) which is two miles downstream of the Mill Avenue Bridge, therefore, a discharge of 169,000 was used in the hydraulic analysis.

The Salt River Embankment Levee lies between river mile 216.81 and 218.24. The information in the following table is from the effective FIS Floodway Data Table.

The hydraulic analysis for the original FEMA study was performed using HEC-RAS. A new HEC-RAS analysis was prepared in 2009 as a part of the CLOMR study which includes updates to the existing conditions as well as the proposed conditions with improvements to the north embankment. Post project conditions are presented as a part



of the Letter of Map Revision (2011). The effective FIS information (shown in the table below) will be superseded with the acceptance of the Letter of Map revision (2011).

| Cross Section | River Mile | WSEL           | WSEL         | WSEL           | WSEL         | Floodway Mean Velocity |
|---------------|------------|----------------|--------------|----------------|--------------|------------------------|
|               |            | w/Floodway     | w/o Floodway | w/Floodway     | w/o Floodway |                        |
|               |            | NGVD 1929 [ft] |              | NAVD 1988 [ft] |              | [ft/sec]               |
| AQ            | 218.24     | 1118.20        | 1118.20      | 1120.32        | 1120.32      | 11.61                  |
|               | 218.14     | 1117.26        | 1117.26      | 1119.38        | 1119.38      | 11.22                  |
|               | 218.04     | 1116.28        | 1116.28      | 1118.40        | 1118.40      | 11.14                  |
|               | 217.95     | 1115.57        | 1115.57      | 1117.69        | 1117.69      | 10.40                  |
|               | 217.86     | 1114.83        | 1114.83      | 1116.95        | 1116.95      | 10.34                  |
| AP            | 217.76     | 1111.73        | 1111.73      | 1113.85        | 1113.85      | 14.83                  |
|               | 217.66     | 1111.44        | 1111.44      | 1113.56        | 1113.56      | 11.25                  |
|               | 217.57     | 1110.33        | 1110.33      | 1112.45        | 1112.45      | 11.42                  |
|               | 217.48     | 1109.48        | 1109.48      | 1111.60        | 1111.60      | 11.00                  |
|               | 217.38     | 1108.43        | 1108.43      | 1110.55        | 1110.55      | 11.20                  |
|               | 217.29     | 1107.17        | 1107.17      | 1109.29        | 1109.29      | 11.78                  |
|               | 217.19     | 1105.32        | 1105.32      | 1107.44        | 1107.44      | 13.06                  |
|               | 217.1      | 1105.06        | 1105.06      | 1107.18        | 1107.18      | 10.37                  |
|               | 217        | 1104.50        | 1104.50      | 1106.62        | 1106.62      | 10.18                  |
|               | 216.91     | 1103.62        | 1103.62      | 1105.74        | 1105.74      | 10.77                  |
| 216.81        | 1103.13    | 1103.13        | 1105.25      | 1105.25        | 10.08        |                        |

### 4.3 FLOW FORECASTING

The Flood Control District of Maricopa County (FCDMC) owns and operates rainfall and pressure gauges that are installed on or near the Salt River levee. The internet address for the gauge information is <http://www.fcd.maricopa.gov/Rainfall/rainfall.aspx>. If the internet connection is unavailable, contact with the FCDMC Flood Warning Branch can be made by telephone, 602.506.8701.

### 4.4 FLOOD OPERATING CRITERIA

#### A. Responsibility for Event Monitoring

The City of Phoenix Street Maintenance Dam Safety Program Manager is designated as the responsible individual for monitoring the conditions at the embankment in accordance with the flow chart, Figure 1.

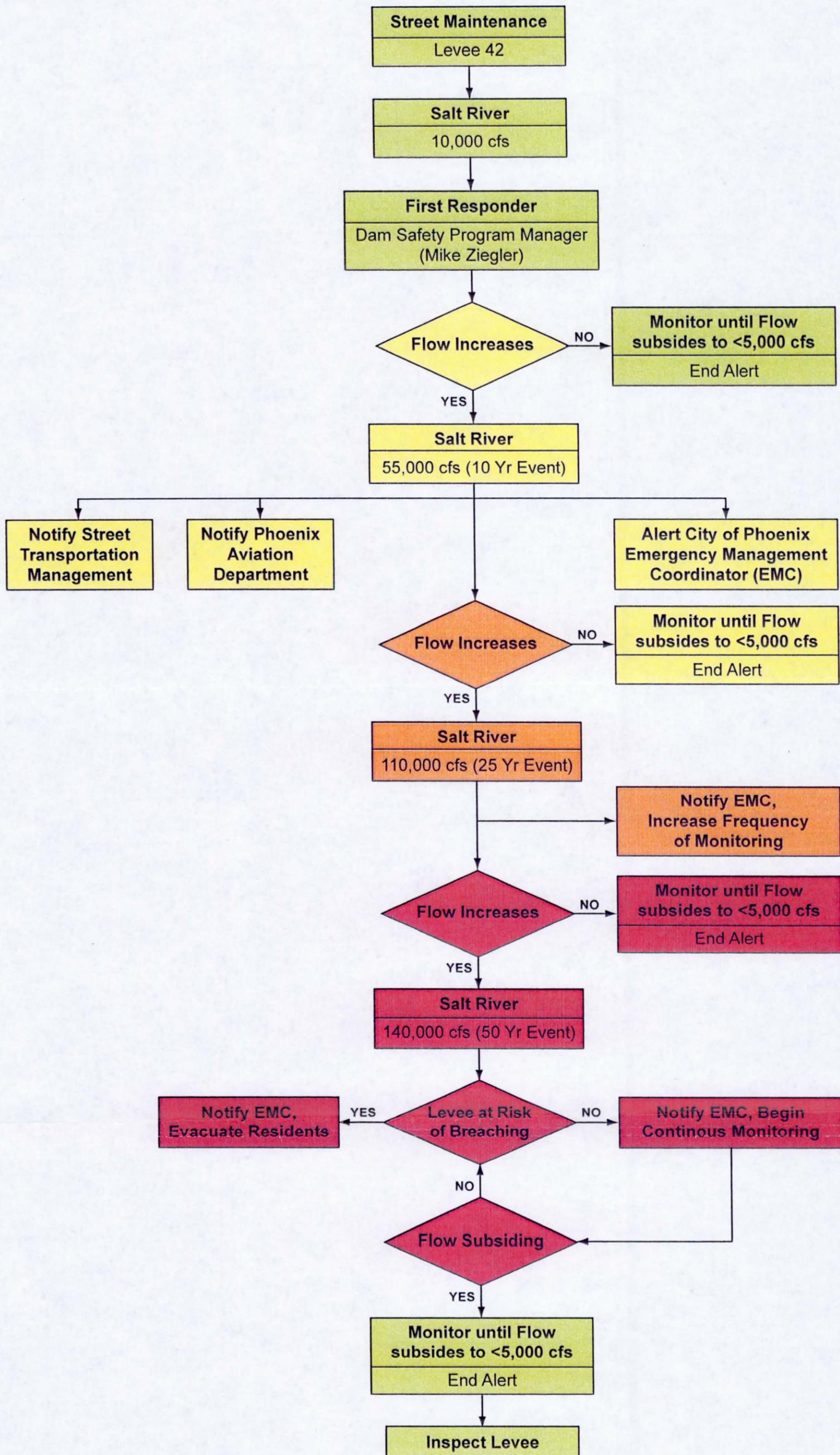
- 10-year discharge – 55,000 cfs
- 25-year discharge - 110,000 cfs (approximate)
- 50-year discharge – 140,000 cfs

**LEVEE ID 42**

Contact List

|   | Phone Number                                 | Pager/Cell Number |
|---|--|-------------------|
| City of Phoenix<br>Dam Safety Program Manager - Mike Ziegler<br>Alternate Responder - Pat Presley   | 602.534.0966<br>602.534.3177                 |                   |
| City of Phoenix<br>Emergency Management Coordinator (EMC)<br>Street Transportation Department Management<br>Phoenix Aviation - Joseph Francis | 602.495.2077<br>602.256.4335<br>602.273.4301 | 602.821.4241      |
| City of Phoenix<br>Emergency Management Coordinator (EMC)   | 602.495.2077                                 |                   |
| City of Phoenix<br>Emergency Management Coordinator (EMC)   | 602.495.2077                                 |                   |

Figure 1 - Flow Chart  
Levee 42





- 100-year discharge – 169,000 cfs
- 500-year discharge – 243,000 cfs
- Embankment at risk of failing

#### **B. Responsibility for Evaluation & Notification**

The City of Phoenix Street Maintenance Dam Safety Program Manager is responsible for evaluating conditions and notification of the following conditions:

- 10-year discharge – 55,000 cfs
- 25-year discharge - 110,000 cfs (approximate)
- 50-year discharge – 140,000 cfs
- 100-year discharge – 169,000 cfs
- 500-year discharge – 243,000 cfs
- Embankment at risk of failing
- Non-failure emergency condition
- Potential failure situation is developing
- Failure is imminent

#### **C. Responsibility for Evacuation**

A breach of this embankment levee would result in flooding only at the Sky Harbor International Airport, and only within a limited low lying area around the east economy lot.

Note: The flood wave for any embankment levee breach will reach downstream individuals very quickly. The rapid travel will make it difficult to conduct timely evacuation procedures. However, any evacuation will be coordinated by the Emergency Management Coordinator based on recommendations of Street Transportation Department and the Flood Control District of Maricopa County (FCDMC).

#### **D. Responsibility for Duration, Security, Termination, and Follow-Up**

1. City of Phoenix Street Maintenance Dam Safety Program Manager is responsible for:
  - On-site monitoring of the situation at the levee.
  - Declaring that the emergency at the levee is terminated.
2. The Phoenix Police Department is responsible for securing access to the site by appropriate personnel. Restrictions will be coordinated by the Emergency Management Department.

#### **Overview of flooding for possible events:**

**Failure or overtopping of Levee:** Failure of the embankment levee could occur anywhere along the embankment, no change in risk is attributed based on where the embankment would fail. Embankment levee break flood flows would spread north into the low lying area around the East Economy Lot and would be contained south of Sky Harbor Boulevard.



**The following streets could be inundated during levee break discharges:**

- Access driveway to East Economy Lot

#### **4.5 RECREATION MANAGEMENT**

The embankment levee is located along the north side of the Salt River. There are no recreational facilities located within this area.

#### **4.6 CULTURAL RESOURCE AREAS**

Report is available in the Floodplain Management Library – Dam Safety Section.

APPENDIX A

VISUAL INSPECTION CHECKLIST/REPORT

CITY OF PHOENIX - DAM SAFETY  
 EMBANKMENT INSPECTION CHECKLIST / REPORT  
**SALT RIVER LEVEE ID 42**

Each item of the checklist should be completed. Repair is required when obvious problems are observed. Monitoring is recommended if there is a potential for a problem to occur in the future. Investigation is necessary if the reason for the observed problem is not obvious.

Brief description should be made of any noted irregularities, needed maintenance, or problems. Abbreviations and short descriptions are recommended. Additional sheet(s) may be used for any items not listed and additional comments.

|   |   |  |   |        |             |                                 |                            |   |
|---|---|--|---|--------|-------------|---------------------------------|----------------------------|---|
| OWNER: City of Phoenix  | LEVEE NAME: Salt River North Bank (Levee ID 42) | TYPE: CSA Embankment                         | N<br>O<br>T<br>A<br>P<br>P<br>L<br>I<br>C<br>A<br>B<br>L<br>E | N<br>O | Y<br>E<br>S | M<br>O<br>N<br>I<br>T<br>O<br>R | R<br>E<br>P<br>A<br>I<br>R | I<br>N<br>V<br>E<br>S<br>T<br>I<br>G<br>A<br>T<br>E |
| CONTACTS:   |   | REPORT DATE:                                 |   |        |             |                                 |                            |   |
| INSPECTED BY:   |   | DATE:  |   |        |             |                                 |                            |   |
| REVIEWED BY:  |   | DATE: PAGE 1 of 5                            |   |        |             |                                 |                            |   |
| 100 YR. DESIGN FLOOD: 169,000 cfs                               | HAZARD CLASS:                                   | SIZE:  |   |        |             |                                 |                            |   |
| LEVEE LENGTH: 3100 ft   | Varies: 28-93 ft<br>CREST WIDTH: Typical: 35 ft | Varies: 16-25 ft<br>LEVEE HEIGHT: Typ: 21 ft |   |        |             |                                 |                            |   |
| East: 3.35 ft. West: 3.05 ft.<br>TOTAL DESIGN FREEBOARD: Varies | East: 1124.0 ft<br>CREST ELEV: West: 1113.0 ft  | PHOTOS:                                      |   |        |             |                                 |                            |   |
| Item  | Comments:                                       |  |   |        |             |                                 |                            |   |

|  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|
| <b>1. CREST</b>                              |  |  |  |  |  |  |  |  |
| a. Settlements, slides, depressions?         |  |  |  |  |  |  |  |  |
| b. Misalignment?                             |  |  |  |  |  |  |  |  |
| c. Longitudinal/Transverse cracking?         |  |  |  |  |  |  |  |  |
| d. Animal burrows?                           |  |  |  |  |  |  |  |  |
| e. Adverse Vegetation? (size, type, amount)  |  |  |  |  |  |  |  |  |
| f. Erosion?                                  |  |  |  |  |  |  |  |  |
| <b>2. UPSTREAM SLOPE</b>                     |  |  |  |  |  |  |  |  |
| a. Settlements, slides, depressions, bulges? |  |  |  |  |  |  |  |  |
| b. Longitudinal/Transverse cracking?         |  |  |  |  |  |  |  |  |
| c. Animal burrows?                           |  |  |  |  |  |  |  |  |
| d. Adverse Vegetation? (size, type, amount)  |  |  |  |  |  |  |  |  |
| e. Erosion?                                  |  |  |  |  |  |  |  |  |
| <b>3. DOWNSTREAM SLOPE</b>                   |  |  |  |  |  |  |  |  |
| a. Settlements, slides, depressions, bulges? |  |  |  |  |  |  |  |  |
| b. Longitudinal/Transverse cracking?         |  |  |  |  |  |  |  |  |
| c. Animal burrows?                           |  |  |  |  |  |  |  |  |
| d. Adverse vegetation? (size, type, amount)  |  |  |  |  |  |  |  |  |
| e. Erosion?                                  |  |  |  |  |  |  |  |  |
| f. Soft spots or boggy areas?                |  |  |  |  |  |  |  |  |
| g. Movement at or beyond toe? (Details)      |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |





|                                     |             |  |  |   |   |   |   |   |
|-------------------------------------|-------------|--|--|---|---|---|---|---|
| LEVEE INSPECTION CHECKLIST / REPORT | PAGE 4 of 5 | OWNER.: City of Phoenix (Aviation Dept.) |  |   |   |   |   |   |
| INSPECTED BY:                       |             | DATE:                                    |  | N | N | Y | M | R |
|                                     |             |  |  | / | O | E | O | E |
| Item                                |             | Comments                                 |  | A |   | S | N | P |
|                                     |             |  |  |   |   |   |   | V |

Note Safety Deficiencies:

|                                     |  |             |  |  |  |  |   |   |   |   |   |   |
|-------------------------------------|--|-------------|--|--|--|--|---|---|---|---|---|---|
| LEVEE INSPECTION CHECKLIST / REPORT |  | PAGE 5 of 5 | OWNER.: City of Phoenix (Aviation Dept.) |  |  |  |   |   |   |   |   |   |
| INSPECTED BY:                       |  |             | DATE:                                    |  |  |  | N |   | Y | M | R | I |
| Item                                |  |             | Comments                                 |  |  |  | / | N | E | O | E | N |
|                                     |  |             |  |  |  |  | A | O | S | N | P | V |

Maintenance Recommendations:

APPENDIX B

FLOOD MONITORING AND RESPONSE GUIDE

## **I. General Responsibilities**

### **A. Responsibility for Event Monitoring**

Mike Ziegler, City of Phoenix Street Maintenance Dam Safety Program Manager is designated as the responsible lead person for monitoring the conditions at the levee.

- Salt River – bank full discharge: 10,000 cfs
- Salt River – 10-year discharge: 55,000 cfs
- Salt River – 50-year discharge: 140,000 cfs
- Salt River – 100-year discharge: 169,000 cfs
- Levee at risk of failing

### **B. Responsibility for Evaluation and Notification**

Mike Ziegler, City of Phoenix Street Maintenance Dam Safety Program Manager is designated as the responsible person for evaluating conditions and notification of the following conditions:

- Failure is imminent
- Potential Failure situation is developing
- Non-failure emergency condition

#### **Failure is imminent.**

- **Phoenix 911 operator.**
- City of Phoenix Emergency Management Coordinator – 602.495.2077
- City of Phoenix Emergency Management Coordinator ALTERNATE:  
Mike DeBenedetto – 602.495.7801 or pager 602.201.7401
- City of Phoenix ALARM ROOM – 602.262.7496
- Street Transportation Department Management – 602.256.4335

#### **Potential failure situation is developing**

- City of Phoenix Emergency Management Coordinator – 602.495.2077
- Street Transportation Department Management – 602.256.4335
- Flood Control District of Maricopa County – ALERT ROOM 602.506.8701 or 602.272.0132.  
Duty officer – Cell: 602.390.7804

#### **Non-Failure emergency condition.**

- City of Phoenix Emergency Management Coordinator – 602.495.2077
- Street Transportation Department Management – 602.256.4335
- Phoenix Aviation – Joseph Francis – 602.273.4301

#### **ADDITIONAL NOTIFICATION INFORMATION:**

The City of Phoenix **Emergency Management Coordinator** will contact, as appropriate, the following City of Phoenix Departments, Federal and State agencies and support groups.

- City of Phoenix 911 Center
- City of Phoenix Police Department
- City of Phoenix Fire Department
- Public Works Department Management
- Maricopa County Department of Emergency Management
- Arizona Division of Emergency Management
- City of Phoenix Homeland Defense Coordinator
- National Weather Service
- American Red Cross
- News Media

The City of Phoenix **Street Transportation Department** will contact the following:

- Street Maintenance – Barricade erection
- City of Phoenix – Parks Department
- Public Works Department Management
- Arizona Department of Water Resources (ADWR)
- Flood Control District of Maricopa County

### **C. Responsibility for Evacuation**

NOTE: The flood wave for any levee breach will reach downstream individuals very quickly. The rapid travel will make it difficult to conduct timely evacuations procedures. However, any evacuation will be coordinated by the **Emergency Management Coordinator** based on recommendations of Street Transportation Department.

### **D. Responsibility for Duration, Security, Termination and Follow-up**

1. Mike Ziegler, City of Phoenix, Street Maintenance - Dam Safety Program Manager, is responsible for:
  - On-site monitoring of the situation at the levee
  - Declaring that the emergency at the levee is terminated

### **D. Responsibility for Duration, Security, Termination and Follow-up (continued)**

2. The Phoenix Police Department is responsible for securing access to the site by appropriate personnel. Restrictions will be coordinated by the Emergency Management Department.

## **II. Preparedness**

- **Site Access – primary and secondary routes.**
  - **Access to the levee from the south.** This may not be possible due to flooding within the Salt River.
  - **Access to the levee from the west.** To access the embankment levee from the west, travel east on Old Tower Road from 24<sup>th</sup> Street. There is a gated entrance in the parking lot adjacent to the

Federal Express hangers. Access will require coordination with Phoenix Aviation. This will provide access to the west end of the levee embankment.

- **Access to levee from the east.** To access the levee embankment from the east, begin at Sky Harbor Boulevard and travel south into the entrance for the east Economy Lot. the levee embankment can be accessed near the south end of the overflow parking lot between the 44<sup>th</sup> Street and Hohokam Expressway overpasses. Access will require coordination with Phoenix Aviation. This will provide access to the east end of the levee embankment.
- **Access to levee from the north.** To access the embankment levee from the north, there are several access points within Sky Harbor International Airport. Access will require coordination with Phoenix Aviation. This will provide access to the north side of the levee embankment.
- **Emergency Supplies**

The following list of **emergency supplies** shall be kept in the vehicle assigned for initial response:

- First Aid kit
- Blankets
- Flashlight and extra batteries
- Basic tool kit
- Cellular telephone for contact with the following agencies:
  - Phoenix Emergency Management Coordinator
  - Phoenix Police Department
  - Phoenix Fire Department

This equipment shall be kept in a ready condition. They shall be checked monthly for correct operation.

Personnel responding to an event alert shall have with the them following equipment:

- Boots
- Hardhat
- Work gloves
- Safety glasses
- Radio/telephone

### III. Emergency Classification System

The following terms are to be used in describing the status of the situation at the levee when the Emergency Action Plan is activated.

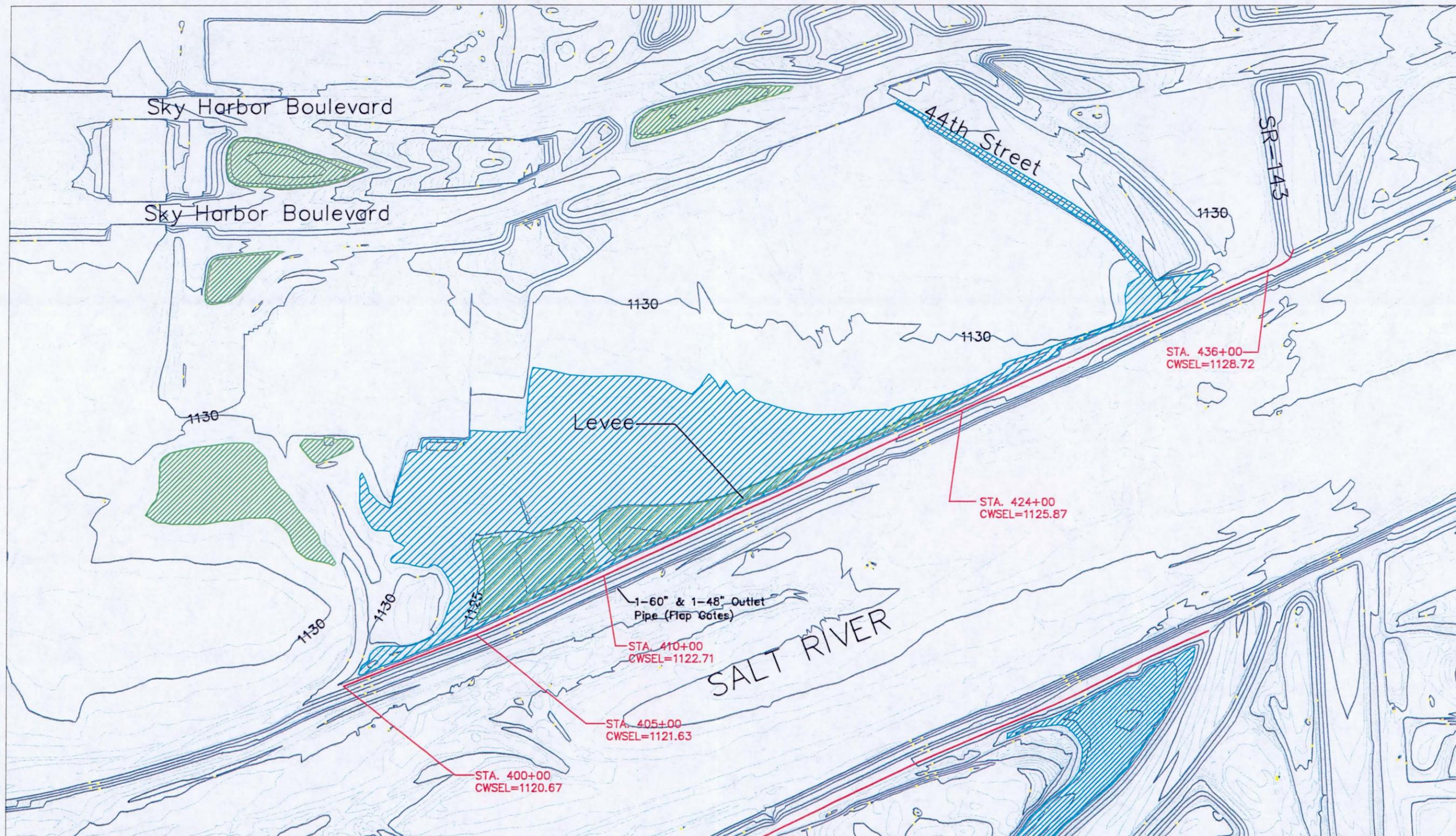
- A. **Failure is imminent or has occurred.** This condition may be determined by the initial responder once observation of the levee has begun or by interpretation of telemetry data. It has been concluded that no time is available to attempt repairs or corrective measures to prevent a levee failure. This emergency classification is extremely urgent. It is critical that emergency services authority (911) be immediately notified and make aware of the emergency classification. The City of Phoenix Emergency Management Coordinator must be notified of this emergency classification.

- B. **Potential Failure situation is developing.** This condition may be determined by the initial responder once observation of the levee has begun or by interpretation of telemetry data. It has been concluded that there is some time available for further analyses/decisions of the probability of levee failure; also some pre-planned action may moderate or alleviate failure. This is to be tempered by the estimated warning time available. The City of Phoenix Emergency Management Coordinator must be notified of this emergency classification. If the conditions worsen and failure becomes imminent, emergency service authorities (911) must be notified immediately.

APPENDIX C

Flood Hazard Area (Exhibit)

# NORTH BANK - FLOOD HAZARD AREA



## LEGEND

- Existing Levee
-  Retention Basins
-  Potential Flooding/Areas Protected by Levee



Appendix G  
EROSION AND SEDIMENT TRANSPORT ANALYSIS



### **Appendix G: Erosion and Sediment Transport**

An Erosion and Sediment Transport analysis was conducted as a part of the Final Design for the Runway Safety Area Improvements. This analysis can be found in its entirety on the accompanying compact disk under the Previous Studies folder: RSA Bank Extension Final Design Report dated June 28, 2010.

Appendix H  
EMBANKMENT SLOPE STABILITY ANALYSIS



Consulting Geotechnical, Materials and Environmental Engineers

October 27, 2011

Mr. Lloyd Vick, P.E., CFM  
T.Y. Lin International  
60 East Rio Salado Parkway, Suite 501  
Tempe, Arizona 85281

Subject: Slope Stability Analyses for Bank Protection, North and South Bank of the Salt River, Sky Harbor International Airport Extension to the Salt River (HA Project # 11067)

Dear Mr. Vick:

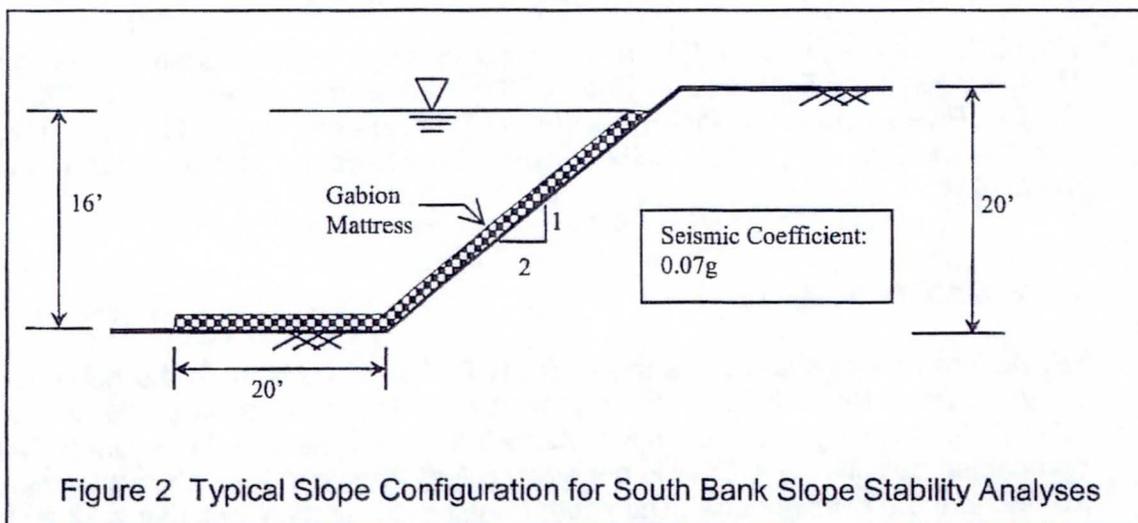
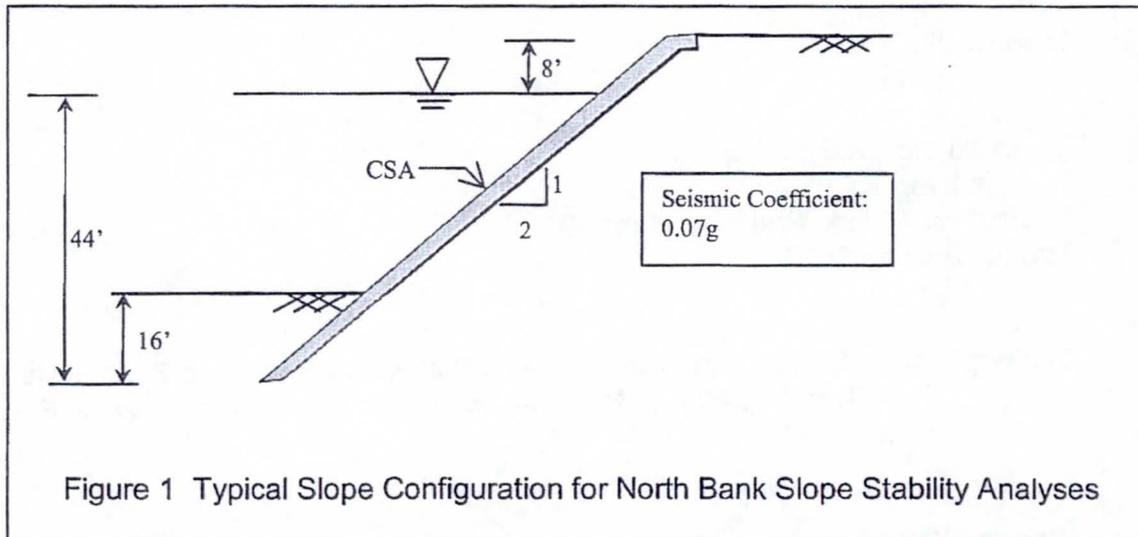
Hoque & Associates, Inc. (HA) has completed slope stability analyses for the Salt River Banks at the Extension of Phoenix Sky Harbor International Airport (PSHIA) at the Salt River. The work was authorized by T.Y. Lin according to HA's cost proposal dated August 25, 2011. This letter report summarizes the analyses performed and the results.

### **Slope Stability Analyses**

HA performed slope stability analysis for typical sections at both the north and the south banks of the Salt River at the project site. The north bank section includes a 28 feet high 2:1 slope with recently constructed cement stabilized alluvium (CSA) and compacted backfill. The CSA is generally 8 feet thick and it extends approximately 16 feet into the river bottom. The south bank typical section includes a 22 feet high existing 2:1 slope with gabion mattresses. The gabion mattress is generally 12 inch thick and extends 20 feet on the river floor and up to 16 feet on the height of the slope. The critical slopes from the configurations in Figure 1 and Figure 2 were utilized for all slope stability analyses.

HA completed slope stability analyses using STABL for Windows<sup>®</sup> Version 2.0, an analytical slope stability computer program. STABL has capability to analyze slopes using a variety of two-dimensional, limit equilibrium methods including the Bishop Method, the Spencer Method, and the Janbu Method of Slices. STABL uses a unique random technique for randomly generating potential failure surfaces. A factor of safety is determined for each potential failure surface, defined as the ratio of the available shear strength to the shear strength that must be mobilized to maintain a

condition of limiting equilibrium. Three types of failure surfaces can be specified in STABL; circular, sliding block, and general irregular surfaces of random shape.



STABL was utilized to perform slope stability analyses for five cases mentioned below:

- Case I: End of construction
- Case II: Sudden drawdown
- Case III: Critical flood stage
- Case IV: Steady seepage at flood stage
- Case V: Earthquake (Case I with seismic force)

End of construction or Case I is the condition of the slope with no water and no seismic force. The critical condition for the sudden drawdown or Case II is the event when sudden drop of water level occurs from the highest flood level. Critical flood stage or Case III is the case of sudden rise of water level to the maximum flood level. Steady seepage at flood stage or Case IV represents the condition where steady seepage is happening under peak flood which requires flooded condition for sometime based on soil type. Case V is the same condition as the Case I with the design seismic force.

The STABL input and output for both north and south banks are attached. The analyses indicate adequate factors of safety for these five cases of analyses for both banks.

For this project, the geometry of the gabion mattresses was chosen based on field data and measurements. The soil properties were chosen from field soil type encountered during soil investigation and from the Arizona Department of Transportation Valley Wide Freeway Construction and Design Manual prepared by De Leau Cather and Associates in 1987. The material properties are shown below:

North Bank:

- Soil Type:
  - River Bottom: Silty Sand with Gravels and some cobbles
  - Compacted Backfill: Silty Sand with some Gravels
- Unit Weight (pcf): 130 for river bottom, 135 for backfill, 140 for CSA
- Cohesion Intercept (psf): 0 for river bottom and backfill, 54000 for CSA
- Friction Angle (degrees): 38 for river bottom, 36 for backfill, 0 for CSA

South Bank:

- Soil Type: Silty Sand with Gravels and some cobbles
- Unit Weight (PCF): 130 for slope and river bottom, 145 for gabion
- Cohesion Intercept (psf): 0 for both soil and gabion materials
- Friction Angle (degrees): 37 for slope and bottom, 42 for gabion

The detail STABL input and output are attached to this report. The following table presents the factor of safety values for different cases.

|                  | Case | Loading Conditions            | Determined Critical Factor of Safety | Required Minimum Factor of Safety |
|------------------|------|-------------------------------|--------------------------------------|-----------------------------------|
| North Bank Slope | I    | End of construction           | 3.61                                 | 1.3                               |
|                  | II   | Sudden drawdown               | 2.67                                 | 1.0                               |
|                  | III  | Critical flood stage          | 3.15                                 | 1.4                               |
|                  | IV   | Steady seepage at flood stage | 3.15                                 | 1.4                               |
|                  | V    | Earthquake (Case I)           | 2.78                                 | 1.0                               |
| South Bank Slope | I    | End of construction           | 1.55                                 | 1.3                               |
|                  | II   | Sudden drawdown               | 2.74                                 | 1.0                               |
|                  | III  | Critical flood stage          | 1.55                                 | 1.4                               |
|                  | IV   | Steady seepage at flood stage | 1.55                                 | 1.4                               |
|                  | V    | Earthquake (Case I)           | 1.68                                 | 1.0                               |

HA's slope stability analyses demonstrate that the factor of safety values determined for different cases analyzed are adequate.

The slope stability analyses considered slope sections without any damages on the slope or slope toe. Damages (if occurred) should be repaired to keep those sections stable in future.

HA appreciates the opportunity to work on your project. If you have any questions, or if we can be of any further assistance, please contact us at (480) 921-1368.

Sincerely,  
Hoque & Associates, Inc.

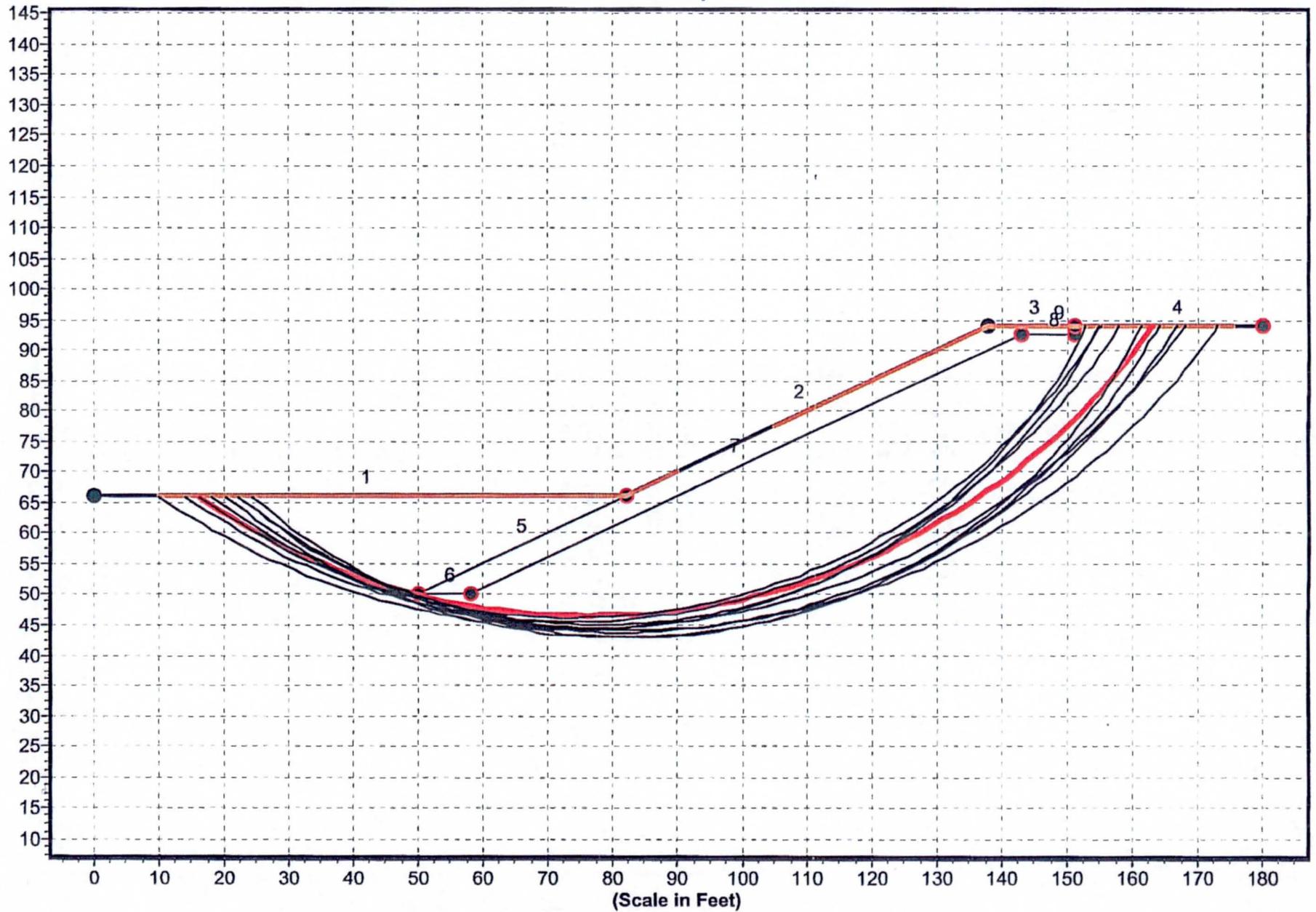


Shameem A. Dewan, Ph.D., P.E.  
Vice President

# Slope Stability analyses For North Bank

- Case I: End of construction**
- Case II: Sudden drawdown**
- Case III: Critical flood stage**
- Case IV: Steady seepage at flood stage**
- Case V: Earthquake (Case I with seismic force)**

Geometry and Boundary Conditions  
Problem: PSHIA Salt River Extension 2:1 CSA Slope - End of Construction - FS Min = 3.614



\*\* PCSTABL6 \*\*

result.out

by  
Purdue University

--Slope Stability Analysis--  
Simplified Janbu, Simplified Bishop  
or Spencer's Method of Slices

Run Date:  
Time of Run:  
Run By:  
Input Data Filename: run.in  
Output Filename: result.out  
Unit: ENGLISH  
Plotted Output Filename: result.plt

PROBLEM DESCRIPTION PSHIA Salt River Extension 2:1 CSA Slope  
- End of Construction

BOUNDARY COORDINATES

4 Top Boundaries  
9 Total Boundaries

| Boundary No. | X-Left (ft) | Y-Left (ft) | X-Right (ft) | Y-Right (ft) | Soil Type Below Bnd |
|--------------|-------------|-------------|--------------|--------------|---------------------|
| 1            | 0.00        | 66.00       | 82.00        | 66.00        | 2                   |
| 2            | 82.00       | 66.00       | 138.00       | 94.00        | 3                   |
| 3            | 138.00      | 94.00       | 151.00       | 94.00        | 3                   |
| 4            | 151.00      | 94.00       | 180.00       | 94.00        | 2                   |
| 5            | 50.00       | 50.00       | 82.00        | 66.00        | 3                   |
| 6            | 50.00       | 50.00       | 58.00        | 50.00        | 1                   |
| 7            | 58.00       | 50.00       | 143.00       | 92.50        | 2                   |
| 8            | 143.00      | 92.50       | 151.00       | 92.50        | 2                   |
| 9            | 151.00      | 92.50       | 151.01       | 94.00        | 2                   |

ISOTROPIC SOIL PARAMETERS

3 Type(s) of Soil

| Soil Type No. | Total Unit wt. (pcf) | Saturated Unit wt. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Param. | Pressure Constant (psf) | Piez. Surface No. |
|---------------|----------------------|--------------------------|--------------------------|----------------------|----------------------|-------------------------|-------------------|
| 1             | 130.0                | 140.0                    | 0.0                      | 38.0                 | 0.00                 | 0.0                     | 1                 |
| 2             | 125.0                | 135.0                    | 0.0                      | 36.0                 | 0.00                 | 0.0                     | 1                 |
| 3             | 140.0                | 140.0                    | 54000.0                  | 0.0                  | 0.00                 | 0.0                     | 1                 |

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.

1000 Trial Surfaces Have Been Generated.

25 Surfaces Initiate From Each Of 40 Points Equally Spaced Along The Ground Surface Between X = 10.00 ft. and X = 90.00 ft.

Each Surface Terminates Between X = 105.00 ft. and X = 175.00 ft.

Unless Further Limitations Were Imposed, The Minimum Elevation At Which A Surface Extends Is Y = 0.00 ft.

2.00 ft. Line Segments Define Each Trial Failure Surface.

Following Are Displayed The Ten Most Critical Of The Trial  
Failure Surfaces Examined. They Are Ordered - Most Critical  
First.

\* \* Safety Factors Are Calculated By The Modified Bishop Method \* \*

Failure Surface Specified By 85 Coordinate Points

| Point<br>No. | X-Surf<br>(ft) | Y-Surf<br>(ft) |
|--------------|----------------|----------------|
| 1            | 16.15          | 66.00          |
| 2            | 17.78          | 64.84          |
| 3            | 19.44          | 63.71          |
| 4            | 21.11          | 62.62          |
| 5            | 22.81          | 61.56          |
| 6            | 24.52          | 60.53          |
| 7            | 26.26          | 59.54          |
| 8            | 28.01          | 58.58          |
| 9            | 29.78          | 57.65          |
| 10           | 31.58          | 56.76          |
| 11           | 33.38          | 55.90          |
| 12           | 35.21          | 55.08          |
| 13           | 37.05          | 54.30          |
| 14           | 38.90          | 53.55          |
| 15           | 40.77          | 52.84          |
| 16           | 42.65          | 52.16          |
| 17           | 44.55          | 51.52          |
| 18           | 46.45          | 50.92          |
| 19           | 48.37          | 50.35          |
| 20           | 50.30          | 49.83          |
| 21           | 52.24          | 49.34          |
| 22           | 54.19          | 48.88          |
| 23           | 56.15          | 48.47          |
| 24           | 58.11          | 48.10          |
| 25           | 60.08          | 47.76          |
| 26           | 62.06          | 47.46          |
| 27           | 64.04          | 47.20          |
| 28           | 66.03          | 46.98          |
| 29           | 68.02          | 46.80          |
| 30           | 70.02          | 46.65          |
| 31           | 72.01          | 46.55          |
| 32           | 74.01          | 46.48          |
| 33           | 76.01          | 46.45          |
| 34           | 78.01          | 46.47          |
| 35           | 80.01          | 46.52          |
| 36           | 82.01          | 46.61          |
| 37           | 84.01          | 46.74          |
| 38           | 86.00          | 46.90          |
| 39           | 87.99          | 47.11          |
| 40           | 89.97          | 47.36          |
| 41           | 91.95          | 47.64          |
| 42           | 93.93          | 47.96          |
| 43           | 95.89          | 48.32          |
| 44           | 97.85          | 48.72          |
| 45           | 99.80          | 49.16          |
| 46           | 101.75         | 49.64          |
| 47           | 103.68         | 50.15          |
| 48           | 105.60         | 50.70          |
| 49           | 107.51         | 51.29          |
| 50           | 109.41         | 51.91          |
| 51           | 111.30         | 52.58          |
| 52           | 113.17         | 53.28          |
| 53           | 115.03         | 54.01          |
| 54           | 116.88         | 54.78          |
| 55           | 118.71         | 55.59          |
| 56           | 120.52         | 56.43          |
| 57           | 122.32         | 57.31          |
| 58           | 124.10         | 58.22          |
| 59           | 125.86         | 59.17          |
| 60           | 127.60         | 60.15          |
| 61           | 129.33         | 61.17          |
| 62           | 131.03         | 62.22          |
| 63           | 132.71         | 63.30          |
| 64           | 134.37         | 64.41          |
| 65           | 136.01         | 65.56          |
| 66           | 137.63         | 66.74          |
| 67           | 139.22         | 67.95          |
| 68           | 140.79         | 69.19          |
| 69           | 142.33         | 70.46          |
| 70           | 143.85         | 71.76          |
| 71           | 145.35         | 73.09          |

result.out

|    |        |       |
|----|--------|-------|
| 72 | 146.82 | 74.45 |
| 73 | 148.26 | 75.83 |
| 74 | 149.67 | 77.25 |
| 75 | 151.06 | 78.69 |
| 76 | 152.41 | 80.16 |
| 77 | 153.74 | 81.65 |
| 78 | 155.04 | 83.17 |
| 79 | 156.31 | 84.72 |
| 80 | 157.55 | 86.29 |
| 81 | 158.76 | 87.89 |
| 82 | 159.93 | 89.50 |
| 83 | 161.08 | 91.14 |
| 84 | 162.19 | 92.80 |
| 85 | 162.96 | 94.00 |

Circle Center At X = 76.4 ; Y = 149.0 and Radius, 102.6

\*\*\* 3.614 \*\*\*

Individual data on the 91 slices

| Slice No. | width (ft) | weight (lbs) | Water Force |           | Force Norm (lbs) | Force Tan (lbs) | Earthquake Force |           | Surcharge Load (lbs) |
|-----------|------------|--------------|-------------|-----------|------------------|-----------------|------------------|-----------|----------------------|
|           |            |              | Top (lbs)   | Bot (lbs) |                  |                 | Hor (lbs)        | Ver (lbs) |                      |
| 1         | 1.6        | 118.0        | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 2         | 1.7        | 355.7        | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 3         | 1.7        | 592.7        | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 4         | 1.7        | 828.5        | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 5         | 1.7        | 1062.4       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 6         | 1.7        | 1294.0       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 7         | 1.8        | 1522.5       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 8         | 1.8        | 1747.5       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 9         | 1.8        | 1968.3       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 10        | 1.8        | 2184.4       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 11        | 1.8        | 2395.3       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 12        | 1.8        | 2600.5       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 13        | 1.9        | 2799.4       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 14        | 1.9        | 2991.6       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 15        | 1.9        | 3176.7       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 16        | 1.9        | 3354.1       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 17        | 1.9        | 3523.5       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 18        | 1.9        | 3684.5       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 19        | 1.6        | 3229.0       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 20        | 0.3        | 608.3        | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 21        | 1.9        | 4002.2       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 22        | 1.9        | 4168.8       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 23        | 2.0        | 4325.6       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 24        | 1.9        | 4218.8       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 25        | 0.1        | 252.5        | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 26        | 2.0        | 4571.9       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 27        | 2.0        | 4664.9       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 28        | 2.0        | 4747.0       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 29        | 2.0        | 4818.0       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 30        | 2.0        | 4877.9       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 31        | 2.0        | 4926.3       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 32        | 2.0        | 4963.4       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 33        | 2.0        | 4988.8       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 34        | 2.0        | 5002.6       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 35        | 2.0        | 5004.8       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 36        | 2.0        | 4995.4       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 37        | 2.0        | 4951.2       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 38        | 0.0        | 23.2         | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 39        | 2.0        | 5067.3       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 40        | 2.0        | 5271.4       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 41        | 2.0        | 5462.7       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 42        | 2.0        | 5641.0       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 43        | 2.0        | 5806.1       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 44        | 2.0        | 5957.8       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 45        | 2.0        | 6095.9       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 46        | 2.0        | 6220.3       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 47        | 2.0        | 6330.8       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 48        | 1.9        | 6427.6       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 49        | 1.9        | 6510.3       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 50        | 1.9        | 6579.2       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 51        | 1.9        | 6634.2       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 52        | 1.9        | 6675.3       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 53        | 1.9        | 6702.7       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 54        | 1.9        | 6716.4       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 55        | 1.9        | 6716.5       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 56        | 1.8        | 6703.4       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 57        | 1.8        | 6677.1       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 58        | 1.8        | 6637.9       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |

|    |     |        |     |     |     |     | result.out |     |     |
|----|-----|--------|-----|-----|-----|-----|------------|-----|-----|
| 59 | 1.8 | 6586.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 60 | 1.8 | 6521.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 61 | 1.8 | 6445.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 62 | 1.7 | 6357.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 63 | 1.7 | 6257.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 64 | 1.7 | 6147.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 65 | 1.7 | 6026.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 66 | 1.7 | 5895.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 67 | 1.6 | 5754.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 68 | 1.6 | 5604.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 69 | 0.4 | 1277.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 70 | 1.2 | 4115.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 71 | 1.6 | 5058.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 72 | 1.5 | 4719.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 73 | 0.7 | 1950.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 74 | 0.9 | 2433.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 75 | 1.5 | 4062.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 76 | 1.5 | 3744.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 77 | 1.4 | 3429.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 78 | 1.4 | 3116.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 79 | 1.3 | 2700.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 80 | 0.0 | 19.2   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 81 | 0.0 | 87.2   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 82 | 1.4 | 2472.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 83 | 1.3 | 2174.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 84 | 1.3 | 1881.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 85 | 1.3 | 1594.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 86 | 1.2 | 1315.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 87 | 1.2 | 1043.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 88 | 1.2 | 780.4  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 89 | 1.1 | 526.3  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 90 | 1.1 | 281.9  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 91 | 0.8 | 57.3   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |

Failure Surface Specified by 80 Coordinate Points

| Point No. | X-surf (ft) | Y-surf (ft) |
|-----------|-------------|-------------|
| 1         | 22.31       | 66.00       |
| 2         | 23.83       | 64.70       |
| 3         | 25.38       | 63.44       |
| 4         | 26.96       | 62.21       |
| 5         | 28.57       | 61.02       |
| 6         | 30.20       | 59.87       |
| 7         | 31.86       | 58.76       |
| 8         | 33.55       | 57.68       |
| 9         | 35.26       | 56.65       |
| 10        | 37.00       | 55.66       |
| 11        | 38.76       | 54.71       |
| 12        | 40.54       | 53.80       |
| 13        | 42.35       | 52.94       |
| 14        | 44.17       | 52.11       |
| 15        | 46.01       | 51.33       |
| 16        | 47.87       | 50.60       |
| 17        | 49.75       | 49.91       |
| 18        | 51.64       | 49.26       |
| 19        | 53.55       | 48.66       |
| 20        | 55.47       | 48.10       |
| 21        | 57.40       | 47.59       |
| 22        | 59.35       | 47.12       |
| 23        | 61.30       | 46.70       |
| 24        | 63.27       | 46.33       |
| 25        | 65.24       | 46.00       |
| 26        | 67.22       | 45.72       |
| 27        | 69.21       | 45.49       |
| 28        | 71.20       | 45.30       |
| 29        | 73.19       | 45.17       |
| 30        | 75.19       | 45.07       |
| 31        | 77.19       | 45.03       |
| 32        | 79.19       | 45.03       |
| 33        | 81.19       | 45.08       |
| 34        | 83.19       | 45.18       |
| 35        | 85.18       | 45.32       |
| 36        | 87.17       | 45.52       |
| 37        | 89.16       | 45.76       |
| 38        | 91.14       | 46.04       |
| 39        | 93.11       | 46.37       |
| 40        | 95.07       | 46.75       |
| 41        | 97.03       | 47.18       |
| 42        | 98.97       | 47.65       |
| 43        | 100.90      | 48.16       |
| 44        | 102.82      | 48.73       |
| 45        | 104.73      | 49.34       |
| 46        | 106.62      | 49.99       |
| 47        | 108.49      | 50.68       |
| 48        | 110.35      | 51.43       |

result.out

|    |        |       |
|----|--------|-------|
| 49 | 112.19 | 52.21 |
| 50 | 114.01 | 53.04 |
| 51 | 115.81 | 53.91 |
| 52 | 117.59 | 54.82 |
| 53 | 119.35 | 55.78 |
| 54 | 121.08 | 56.78 |
| 55 | 122.79 | 57.81 |
| 56 | 124.48 | 58.89 |
| 57 | 126.14 | 60.01 |
| 58 | 127.77 | 61.16 |
| 59 | 129.37 | 62.36 |
| 60 | 130.95 | 63.59 |
| 61 | 132.50 | 64.86 |
| 62 | 134.01 | 66.16 |
| 63 | 135.50 | 67.50 |
| 64 | 136.95 | 68.88 |
| 65 | 138.37 | 70.28 |
| 66 | 139.75 | 71.73 |
| 67 | 141.11 | 73.20 |
| 68 | 142.42 | 74.71 |
| 69 | 143.70 | 76.24 |
| 70 | 144.95 | 77.81 |
| 71 | 146.15 | 79.40 |
| 72 | 147.32 | 81.03 |
| 73 | 148.45 | 82.68 |
| 74 | 149.54 | 84.35 |
| 75 | 150.59 | 86.06 |
| 76 | 151.60 | 87.78 |
| 77 | 152.57 | 89.53 |
| 78 | 153.50 | 91.30 |
| 79 | 154.38 | 93.10 |
| 80 | 154.80 | 94.00 |

Circle Center At X = 78.1 ; Y = 129.6 and Radius, 84.6

\*\*\* 3.687 \*\*\*

1

Failure Surface Specified By 82 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 16.15       | 66.00       |
| 2         | 17.74       | 64.78       |
| 3         | 19.36       | 63.60       |
| 4         | 21.00       | 62.46       |
| 5         | 22.66       | 61.35       |
| 6         | 24.35       | 60.27       |
| 7         | 26.06       | 59.23       |
| 8         | 27.79       | 58.23       |
| 9         | 29.54       | 57.27       |
| 10        | 31.31       | 56.34       |
| 11        | 33.10       | 55.46       |
| 12        | 34.92       | 54.61       |
| 13        | 36.74       | 53.80       |
| 14        | 38.59       | 53.03       |
| 15        | 40.45       | 52.30       |
| 16        | 42.33       | 51.61       |
| 17        | 44.22       | 50.95       |
| 18        | 46.12       | 50.35       |
| 19        | 48.04       | 49.78       |
| 20        | 49.97       | 49.25       |
| 21        | 51.91       | 48.76       |
| 22        | 53.86       | 48.32       |
| 23        | 55.82       | 47.92       |
| 24        | 57.79       | 47.56       |
| 25        | 59.76       | 47.24       |
| 26        | 61.74       | 46.97       |
| 27        | 63.73       | 46.73       |
| 28        | 65.72       | 46.54       |
| 29        | 67.72       | 46.40       |
| 30        | 69.71       | 46.29       |
| 31        | 71.71       | 46.23       |
| 32        | 73.71       | 46.21       |
| 33        | 75.71       | 46.24       |
| 34        | 77.71       | 46.31       |
| 35        | 79.71       | 46.42       |
| 36        | 81.70       | 46.57       |
| 37        | 83.69       | 46.77       |
| 38        | 85.68       | 47.00       |
| 39        | 87.66       | 47.29       |
| 40        | 89.63       | 47.61       |

result.out

|    |        |       |
|----|--------|-------|
| 41 | 91.60  | 47.98 |
| 42 | 93.56  | 48.38 |
| 43 | 95.50  | 48.83 |
| 44 | 97.44  | 49.32 |
| 45 | 99.37  | 49.86 |
| 46 | 101.29 | 50.43 |
| 47 | 103.19 | 51.05 |
| 48 | 105.08 | 51.70 |
| 49 | 106.95 | 52.40 |
| 50 | 108.81 | 53.14 |
| 51 | 110.66 | 53.91 |
| 52 | 112.48 | 54.73 |
| 53 | 114.29 | 55.58 |
| 54 | 116.08 | 56.48 |
| 55 | 117.85 | 57.41 |
| 56 | 119.60 | 58.38 |
| 57 | 121.33 | 59.39 |
| 58 | 123.03 | 60.43 |
| 59 | 124.72 | 61.51 |
| 60 | 126.38 | 62.62 |
| 61 | 128.01 | 63.78 |
| 62 | 129.62 | 64.96 |
| 63 | 131.21 | 66.18 |
| 64 | 132.76 | 67.44 |
| 65 | 134.30 | 68.72 |
| 66 | 135.80 | 70.04 |
| 67 | 137.27 | 71.39 |
| 68 | 138.72 | 72.78 |
| 69 | 140.13 | 74.19 |
| 70 | 141.52 | 75.63 |
| 71 | 142.87 | 77.11 |
| 72 | 144.19 | 78.61 |
| 73 | 145.48 | 80.14 |
| 74 | 146.73 | 81.70 |
| 75 | 147.95 | 83.28 |
| 76 | 149.14 | 84.89 |
| 77 | 150.29 | 86.52 |
| 78 | 151.41 | 88.18 |
| 79 | 152.49 | 89.87 |
| 80 | 153.54 | 91.57 |
| 81 | 154.55 | 93.30 |
| 82 | 154.93 | 94.00 |

Circle Center At X = 73.6 ; Y = 139.4 and Radius, 93.2

\*\*\* 3.704 \*\*\*

Failure Surface Specified by 84 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 14.10       | 66.00       |
| 2         | 15.70       | 64.79       |
| 3         | 17.31       | 63.62       |
| 4         | 18.96       | 62.47       |
| 5         | 20.62       | 61.37       |
| 6         | 22.31       | 60.29       |
| 7         | 24.02       | 59.25       |
| 8         | 25.75       | 58.25       |
| 9         | 27.50       | 57.28       |
| 10        | 29.27       | 56.35       |
| 11        | 31.06       | 55.46       |
| 12        | 32.86       | 54.60       |
| 13        | 34.69       | 53.78       |
| 14        | 36.53       | 52.99       |
| 15        | 38.38       | 52.25       |
| 16        | 40.25       | 51.54       |
| 17        | 42.14       | 50.87       |
| 18        | 44.04       | 50.24       |
| 19        | 45.95       | 49.65       |
| 20        | 47.87       | 49.10       |
| 21        | 49.81       | 48.59       |
| 22        | 51.75       | 48.12       |
| 23        | 53.70       | 47.69       |
| 24        | 55.66       | 47.30       |
| 25        | 57.63       | 46.95       |
| 26        | 59.61       | 46.64       |
| 27        | 61.59       | 46.37       |
| 28        | 63.58       | 46.14       |
| 29        | 65.57       | 45.95       |
| 30        | 67.56       | 45.80       |
| 31        | 69.56       | 45.69       |

|    |        |       |
|----|--------|-------|
| 32 | 71.56  | 45.63 |
| 33 | 73.56  | 45.60 |
| 34 | 75.56  | 45.62 |
| 35 | 77.56  | 45.68 |
| 36 | 79.55  | 45.78 |
| 37 | 81.55  | 45.92 |
| 38 | 83.54  | 46.10 |
| 39 | 85.53  | 46.32 |
| 40 | 87.51  | 46.58 |
| 41 | 89.49  | 46.89 |
| 42 | 91.46  | 47.23 |
| 43 | 93.42  | 47.61 |
| 44 | 95.38  | 48.04 |
| 45 | 97.32  | 48.50 |
| 46 | 99.26  | 49.01 |
| 47 | 101.18 | 49.55 |
| 48 | 103.09 | 50.13 |
| 49 | 105.00 | 50.76 |
| 50 | 106.88 | 51.42 |
| 51 | 108.76 | 52.12 |
| 52 | 110.62 | 52.86 |
| 53 | 112.46 | 53.63 |
| 54 | 114.29 | 54.45 |
| 55 | 116.09 | 55.30 |
| 56 | 117.89 | 56.19 |
| 57 | 119.66 | 57.11 |
| 58 | 121.41 | 58.07 |
| 59 | 123.15 | 59.07 |
| 60 | 124.86 | 60.10 |
| 61 | 126.55 | 61.17 |
| 62 | 128.22 | 62.27 |
| 63 | 129.87 | 63.41 |
| 64 | 131.49 | 64.58 |
| 65 | 133.09 | 65.78 |
| 66 | 134.66 | 67.01 |
| 67 | 136.21 | 68.28 |
| 68 | 137.73 | 69.58 |
| 69 | 139.22 | 70.91 |
| 70 | 140.69 | 72.27 |
| 71 | 142.13 | 73.66 |
| 72 | 143.54 | 75.08 |
| 73 | 144.92 | 76.52 |
| 74 | 146.27 | 78.00 |
| 75 | 147.59 | 79.50 |
| 76 | 148.88 | 81.03 |
| 77 | 150.13 | 82.59 |
| 78 | 151.36 | 84.17 |
| 79 | 152.55 | 85.78 |
| 80 | 153.71 | 87.41 |
| 81 | 154.83 | 89.06 |
| 82 | 155.92 | 90.74 |
| 83 | 156.98 | 92.44 |
| 84 | 157.90 | 94.00 |

Circle Center At X = 73.7 ; Y = 143.0 and Radius, 97.4

\*\*\* 3.748 \*\*\*

1

Failure surface Specified By 80 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 22.31       | 66.00       |
| 2         | 23.80       | 64.67       |
| 3         | 25.33       | 63.37       |
| 4         | 26.88       | 62.12       |
| 5         | 28.47       | 60.90       |
| 6         | 30.08       | 59.72       |
| 7         | 31.73       | 58.58       |
| 8         | 33.40       | 57.48       |
| 9         | 35.10       | 56.42       |
| 10        | 36.82       | 55.41       |
| 11        | 38.57       | 54.44       |
| 12        | 40.34       | 53.50       |
| 13        | 42.13       | 52.62       |
| 14        | 43.94       | 51.77       |
| 15        | 45.77       | 50.97       |
| 16        | 47.63       | 50.22       |
| 17        | 49.50       | 49.51       |
| 18        | 51.38       | 48.85       |
| 19        | 53.29       | 48.23       |

result.out

|    |        |       |
|----|--------|-------|
| 20 | 55.20  | 47.66 |
| 21 | 57.13  | 47.14 |
| 22 | 59.08  | 46.66 |
| 23 | 61.03  | 46.24 |
| 24 | 62.99  | 45.86 |
| 25 | 64.97  | 45.52 |
| 26 | 66.95  | 45.24 |
| 27 | 68.93  | 45.00 |
| 28 | 70.92  | 44.82 |
| 29 | 72.92  | 44.68 |
| 30 | 74.92  | 44.59 |
| 31 | 76.92  | 44.55 |
| 32 | 78.92  | 44.55 |
| 33 | 80.92  | 44.61 |
| 34 | 82.91  | 44.72 |
| 35 | 84.91  | 44.87 |
| 36 | 86.90  | 45.07 |
| 37 | 88.88  | 45.32 |
| 38 | 90.86  | 45.62 |
| 39 | 92.83  | 45.97 |
| 40 | 94.79  | 46.37 |
| 41 | 96.74  | 46.81 |
| 42 | 98.68  | 47.30 |
| 43 | 100.60 | 47.84 |
| 44 | 102.52 | 48.42 |
| 45 | 104.41 | 49.05 |
| 46 | 106.30 | 49.73 |
| 47 | 108.16 | 50.45 |
| 48 | 110.01 | 51.22 |
| 49 | 111.83 | 52.04 |
| 50 | 113.64 | 52.89 |
| 51 | 115.43 | 53.79 |
| 52 | 117.19 | 54.74 |
| 53 | 118.93 | 55.73 |
| 54 | 120.64 | 56.75 |
| 55 | 122.33 | 57.83 |
| 56 | 124.00 | 58.94 |
| 57 | 125.63 | 60.09 |
| 58 | 127.24 | 61.28 |
| 59 | 128.81 | 62.51 |
| 60 | 130.36 | 63.78 |
| 61 | 131.87 | 65.09 |
| 62 | 133.36 | 66.43 |
| 63 | 134.81 | 67.81 |
| 64 | 136.22 | 69.22 |
| 65 | 137.60 | 70.67 |
| 66 | 138.95 | 72.15 |
| 67 | 140.26 | 73.66 |
| 68 | 141.53 | 75.20 |
| 69 | 142.76 | 76.78 |
| 70 | 143.95 | 78.38 |
| 71 | 145.11 | 80.02 |
| 72 | 146.22 | 81.68 |
| 73 | 147.30 | 83.37 |
| 74 | 148.33 | 85.08 |
| 75 | 149.32 | 86.82 |
| 76 | 150.26 | 88.58 |
| 77 | 151.17 | 90.36 |
| 78 | 152.03 | 92.17 |
| 79 | 152.84 | 93.99 |
| 80 | 152.85 | 94.00 |

Circle Center At X = 77.6 ; Y = 126.5 and Radius, 82.0

\*\*\* 3.759 \*\*\*

Failure Surface Specified By 88 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 18.21       | 66.00       |
| 2         | 19.77       | 64.75       |
| 3         | 21.35       | 63.53       |
| 4         | 22.96       | 62.35       |
| 5         | 24.60       | 61.19       |
| 6         | 26.25       | 60.07       |
| 7         | 27.93       | 58.99       |
| 8         | 29.64       | 57.94       |
| 9         | 31.36       | 56.92       |
| 10        | 33.10       | 55.94       |
| 11        | 34.86       | 54.99       |
| 12        | 36.64       | 54.08       |

|    |        |       |
|----|--------|-------|
| 13 | 38.44  | 53.21 |
| 14 | 40.26  | 52.37 |
| 15 | 42.09  | 51.57 |
| 16 | 43.94  | 50.81 |
| 17 | 45.80  | 50.08 |
| 18 | 47.68  | 49.39 |
| 19 | 49.57  | 48.74 |
| 20 | 51.48  | 48.13 |
| 21 | 53.39  | 47.56 |
| 22 | 55.32  | 47.03 |
| 23 | 57.26  | 46.53 |
| 24 | 59.21  | 46.08 |
| 25 | 61.16  | 45.66 |
| 26 | 63.13  | 45.29 |
| 27 | 65.10  | 44.95 |
| 28 | 67.08  | 44.66 |
| 29 | 69.06  | 44.40 |
| 30 | 71.05  | 44.19 |
| 31 | 73.04  | 44.01 |
| 32 | 75.04  | 43.88 |
| 33 | 77.04  | 43.78 |
| 34 | 79.04  | 43.73 |
| 35 | 81.04  | 43.72 |
| 36 | 83.03  | 43.74 |
| 37 | 85.03  | 43.81 |
| 38 | 87.03  | 43.92 |
| 39 | 89.03  | 44.07 |
| 40 | 91.02  | 44.26 |
| 41 | 93.00  | 44.49 |
| 42 | 94.98  | 44.76 |
| 43 | 96.96  | 45.07 |
| 44 | 98.93  | 45.42 |
| 45 | 100.89 | 45.81 |
| 46 | 102.84 | 46.24 |
| 47 | 104.79 | 46.71 |
| 48 | 106.72 | 47.22 |
| 49 | 108.65 | 47.76 |
| 50 | 110.56 | 48.35 |
| 51 | 112.46 | 48.98 |
| 52 | 114.35 | 49.64 |
| 53 | 116.22 | 50.34 |
| 54 | 118.08 | 51.08 |
| 55 | 119.92 | 51.86 |
| 56 | 121.75 | 52.67 |
| 57 | 123.56 | 53.52 |
| 58 | 125.35 | 54.41 |
| 59 | 127.12 | 55.33 |
| 60 | 128.88 | 56.29 |
| 61 | 130.61 | 57.29 |
| 62 | 132.33 | 58.32 |
| 63 | 134.02 | 59.38 |
| 64 | 135.69 | 60.48 |
| 65 | 137.34 | 61.61 |
| 66 | 138.97 | 62.77 |
| 67 | 140.57 | 63.97 |
| 68 | 142.15 | 65.20 |
| 69 | 143.70 | 66.46 |
| 70 | 145.22 | 67.76 |
| 71 | 146.72 | 69.08 |
| 72 | 148.20 | 70.43 |
| 73 | 149.64 | 71.82 |
| 74 | 151.06 | 73.23 |
| 75 | 152.44 | 74.67 |
| 76 | 153.80 | 76.14 |
| 77 | 155.13 | 77.63 |
| 78 | 156.43 | 79.16 |
| 79 | 157.69 | 80.70 |
| 80 | 158.93 | 82.28 |
| 81 | 160.13 | 83.88 |
| 82 | 161.30 | 85.50 |
| 83 | 162.44 | 87.14 |
| 84 | 163.54 | 88.81 |
| 85 | 164.61 | 90.50 |
| 86 | 165.64 | 92.21 |
| 87 | 166.64 | 93.95 |
| 88 | 166.67 | 94.00 |

Circle Center At X = 80.7 ; Y = 142.4 and Radius, 98.7

\*\*\* 3.763 \*\*\*

Failure Surface Specified By 83 Coordinate Points

| Point<br>No. | X-Surf<br>(ft) | Y-Surf<br>(ft) |
|--------------|----------------|----------------|
| 1            | 24.36          | 66.00          |
| 2            | 25.84          | 64.65          |
| 3            | 27.34          | 63.34          |
| 4            | 28.88          | 62.06          |
| 5            | 30.45          | 60.81          |
| 6            | 32.04          | 59.61          |
| 7            | 33.67          | 58.44          |
| 8            | 35.32          | 57.31          |
| 9            | 36.99          | 56.22          |
| 10           | 38.69          | 55.17          |
| 11           | 40.42          | 54.16          |
| 12           | 42.17          | 53.18          |
| 13           | 43.94          | 52.25          |
| 14           | 45.73          | 51.37          |
| 15           | 47.54          | 50.52          |
| 16           | 49.37          | 49.71          |
| 17           | 51.22          | 48.95          |
| 18           | 53.09          | 48.24          |
| 19           | 54.97          | 47.56          |
| 20           | 56.87          | 46.93          |
| 21           | 58.78          | 46.35          |
| 22           | 60.71          | 45.81          |
| 23           | 62.65          | 45.31          |
| 24           | 64.60          | 44.86          |
| 25           | 66.55          | 44.46          |
| 26           | 68.52          | 44.10          |
| 27           | 70.50          | 43.79          |
| 28           | 72.48          | 43.52          |
| 29           | 74.47          | 43.30          |
| 30           | 76.46          | 43.13          |
| 31           | 78.46          | 43.00          |
| 32           | 80.45          | 42.92          |
| 33           | 82.45          | 42.89          |
| 34           | 84.45          | 42.90          |
| 35           | 86.45          | 42.96          |
| 36           | 88.45          | 43.07          |
| 37           | 90.44          | 43.22          |
| 38           | 92.43          | 43.42          |
| 39           | 94.42          | 43.67          |
| 40           | 96.40          | 43.96          |
| 41           | 98.37          | 44.30          |
| 42           | 100.33         | 44.68          |
| 43           | 102.28         | 45.11          |
| 44           | 104.23         | 45.59          |
| 45           | 106.16         | 46.11          |
| 46           | 108.08         | 46.68          |
| 47           | 109.98         | 47.29          |
| 48           | 111.87         | 47.94          |
| 49           | 113.74         | 48.64          |
| 50           | 115.60         | 49.38          |
| 51           | 117.44         | 50.17          |
| 52           | 119.26         | 51.00          |
| 53           | 121.06         | 51.87          |
| 54           | 122.84         | 52.78          |
| 55           | 124.60         | 53.73          |
| 56           | 126.34         | 54.73          |
| 57           | 128.05         | 55.76          |
| 58           | 129.73         | 56.84          |
| 59           | 131.39         | 57.95          |
| 60           | 133.03         | 59.10          |
| 61           | 134.64         | 60.29          |
| 62           | 136.22         | 61.52          |
| 63           | 137.77         | 62.78          |
| 64           | 139.29         | 64.08          |
| 65           | 140.78         | 65.42          |
| 66           | 142.24         | 66.79          |
| 67           | 143.66         | 68.19          |
| 68           | 145.05         | 69.62          |
| 69           | 146.41         | 71.09          |
| 70           | 147.74         | 72.59          |
| 71           | 149.02         | 74.12          |
| 72           | 150.28         | 75.68          |
| 73           | 151.49         | 77.27          |
| 74           | 152.67         | 78.88          |
| 75           | 153.81         | 80.53          |
| 76           | 154.91         | 82.19          |
| 77           | 155.98         | 83.89          |
| 78           | 157.00         | 85.61          |
| 79           | 157.98         | 87.35          |
| 80           | 158.92         | 89.11          |
| 81           | 159.82         | 90.90          |
| 82           | 160.68         | 92.71          |
| 83           | 161.26         | 94.00          |

Circle Center At x = 82.9 ; Y = 128.5 and Radius, 85.7

result.out

\*\*\* 3.766 \*\*\*

Failure Surface Specified By 91 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 16.15       | 66.00       |
| 2         | 17.76       | 64.81       |
| 3         | 19.39       | 63.64       |
| 4         | 21.04       | 62.51       |
| 5         | 22.70       | 61.41       |
| 6         | 24.39       | 60.34       |
| 7         | 26.10       | 59.30       |
| 8         | 27.83       | 58.29       |
| 9         | 29.58       | 57.32       |
| 10        | 31.34       | 56.37       |
| 11        | 33.12       | 55.46       |
| 12        | 34.92       | 54.58       |
| 13        | 36.73       | 53.74       |
| 14        | 38.56       | 52.93       |
| 15        | 40.40       | 52.15       |
| 16        | 42.26       | 51.41       |
| 17        | 44.13       | 50.70       |
| 18        | 46.01       | 50.02       |
| 19        | 47.91       | 49.39       |
| 20        | 49.81       | 48.78       |
| 21        | 51.73       | 48.21       |
| 22        | 53.66       | 47.68       |
| 23        | 55.59       | 47.18       |
| 24        | 57.54       | 46.72       |
| 25        | 59.49       | 46.29       |
| 26        | 61.46       | 45.90       |
| 27        | 63.42       | 45.55       |
| 28        | 65.40       | 45.23       |
| 29        | 67.38       | 44.95       |
| 30        | 69.36       | 44.71       |
| 31        | 71.35       | 44.50       |
| 32        | 73.35       | 44.33       |
| 33        | 75.34       | 44.19       |
| 34        | 77.34       | 44.10       |
| 35        | 79.34       | 44.03       |
| 36        | 81.34       | 44.01       |
| 37        | 83.34       | 44.02       |
| 38        | 85.34       | 44.07       |
| 39        | 87.34       | 44.16       |
| 40        | 89.33       | 44.28       |
| 41        | 91.32       | 44.45       |
| 42        | 93.32       | 44.64       |
| 43        | 95.30       | 44.88       |
| 44        | 97.28       | 45.15       |
| 45        | 99.26       | 45.45       |
| 46        | 101.23      | 45.80       |
| 47        | 103.19      | 46.18       |
| 48        | 105.15      | 46.59       |
| 49        | 107.10      | 47.04       |
| 50        | 109.04      | 47.53       |
| 51        | 110.97      | 48.05       |
| 52        | 112.89      | 48.61       |
| 53        | 114.80      | 49.21       |
| 54        | 116.70      | 49.84       |
| 55        | 118.58      | 50.50       |
| 56        | 120.46      | 51.20       |
| 57        | 122.32      | 51.93       |
| 58        | 124.16      | 52.70       |
| 59        | 126.00      | 53.50       |
| 60        | 127.81      | 54.34       |
| 61        | 129.62      | 55.20       |
| 62        | 131.40      | 56.11       |
| 63        | 133.17      | 57.04       |
| 64        | 134.92      | 58.01       |
| 65        | 136.65      | 59.01       |
| 66        | 138.37      | 60.04       |
| 67        | 140.06      | 61.10       |
| 68        | 141.74      | 62.19       |
| 69        | 143.39      | 63.31       |
| 70        | 145.03      | 64.47       |
| 71        | 146.64      | 65.65       |
| 72        | 148.23      | 66.87       |
| 73        | 149.79      | 68.11       |
| 74        | 151.34      | 69.38       |

result.out

|    |        |       |
|----|--------|-------|
| 75 | 152.86 | 70.68 |
| 76 | 154.35 | 72.01 |
| 77 | 155.83 | 73.36 |
| 78 | 157.27 | 74.74 |
| 79 | 158.69 | 76.15 |
| 80 | 160.09 | 77.58 |
| 81 | 161.45 | 79.04 |
| 82 | 162.79 | 80.53 |
| 83 | 164.11 | 82.04 |
| 84 | 165.39 | 83.57 |
| 85 | 166.65 | 85.13 |
| 86 | 167.88 | 86.71 |
| 87 | 169.07 | 88.31 |
| 88 | 170.24 | 89.93 |
| 89 | 171.38 | 91.57 |
| 90 | 172.49 | 93.24 |
| 91 | 172.97 | 94.00 |

Circle Center At X = 81.6 ; Y = 152.5 and Radius, 108.5

\*\*\* 3.779 \*\*\*

1

Failure Surface Specified By 86 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 20.26       | 66.00       |
| 2         | 21.77       | 64.69       |
| 3         | 23.31       | 63.42       |
| 4         | 24.88       | 62.18       |
| 5         | 26.47       | 60.97       |
| 6         | 28.09       | 59.80       |
| 7         | 29.74       | 58.66       |
| 8         | 31.41       | 57.56       |
| 9         | 33.10       | 56.49       |
| 10        | 34.82       | 55.47       |
| 11        | 36.56       | 54.48       |
| 12        | 38.32       | 53.52       |
| 13        | 40.09       | 52.61       |
| 14        | 41.89       | 51.74       |
| 15        | 43.71       | 50.90       |
| 16        | 45.54       | 50.10       |
| 17        | 47.40       | 49.35       |
| 18        | 49.26       | 48.63       |
| 19        | 51.15       | 47.96       |
| 20        | 53.04       | 47.32       |
| 21        | 54.95       | 46.73       |
| 22        | 56.87       | 46.18       |
| 23        | 58.81       | 45.67       |
| 24        | 60.75       | 45.20       |
| 25        | 62.71       | 44.77       |
| 26        | 64.67       | 44.39       |
| 27        | 66.64       | 44.05       |
| 28        | 68.62       | 43.75       |
| 29        | 70.60       | 43.50       |
| 30        | 72.59       | 43.29       |
| 31        | 74.58       | 43.12       |
| 32        | 76.58       | 42.99       |
| 33        | 78.58       | 42.91       |
| 34        | 80.58       | 42.87       |
| 35        | 82.58       | 42.88       |
| 36        | 84.58       | 42.92       |
| 37        | 86.58       | 43.01       |
| 38        | 88.57       | 43.15       |
| 39        | 90.56       | 43.33       |
| 40        | 92.55       | 43.55       |
| 41        | 94.53       | 43.81       |
| 42        | 96.51       | 44.12       |
| 43        | 98.48       | 44.47       |
| 44        | 100.44      | 44.86       |
| 45        | 102.39      | 45.29       |
| 46        | 104.33      | 45.77       |
| 47        | 106.27      | 46.29       |
| 48        | 108.19      | 46.85       |
| 49        | 110.09      | 47.45       |
| 50        | 111.99      | 48.10       |
| 51        | 113.87      | 48.78       |
| 52        | 115.73      | 49.50       |
| 53        | 117.58      | 50.27       |
| 54        | 119.41      | 51.07       |
| 55        | 121.22      | 51.92       |

result.out

|    |        |       |
|----|--------|-------|
| 56 | 123.02 | 52.80 |
| 57 | 124.79 | 53.72 |
| 58 | 126.55 | 54.68 |
| 59 | 128.28 | 55.68 |
| 60 | 129.99 | 56.72 |
| 61 | 131.68 | 57.79 |
| 62 | 133.34 | 58.90 |
| 63 | 134.98 | 60.04 |
| 64 | 136.60 | 61.22 |
| 65 | 138.19 | 62.43 |
| 66 | 139.75 | 63.68 |
| 67 | 141.29 | 64.97 |
| 68 | 142.79 | 66.28 |
| 69 | 144.27 | 67.63 |
| 70 | 145.72 | 69.01 |
| 71 | 147.14 | 70.42 |
| 72 | 148.53 | 71.86 |
| 73 | 149.88 | 73.33 |
| 74 | 151.21 | 74.83 |
| 75 | 152.50 | 76.35 |
| 76 | 153.75 | 77.91 |
| 77 | 154.98 | 79.49 |
| 78 | 156.17 | 81.10 |
| 79 | 157.32 | 82.73 |
| 80 | 158.44 | 84.39 |
| 81 | 159.52 | 86.07 |
| 82 | 160.57 | 87.78 |
| 83 | 161.57 | 89.51 |
| 84 | 162.54 | 91.25 |
| 85 | 163.48 | 93.02 |
| 86 | 163.96 | 94.00 |

Circle Center At X = 81.4 ; Y = 135.1 and Radius, 92.3

\*\*\* 3.805 \*\*\*

Failure Surface Specified By 91 Coordinate Points

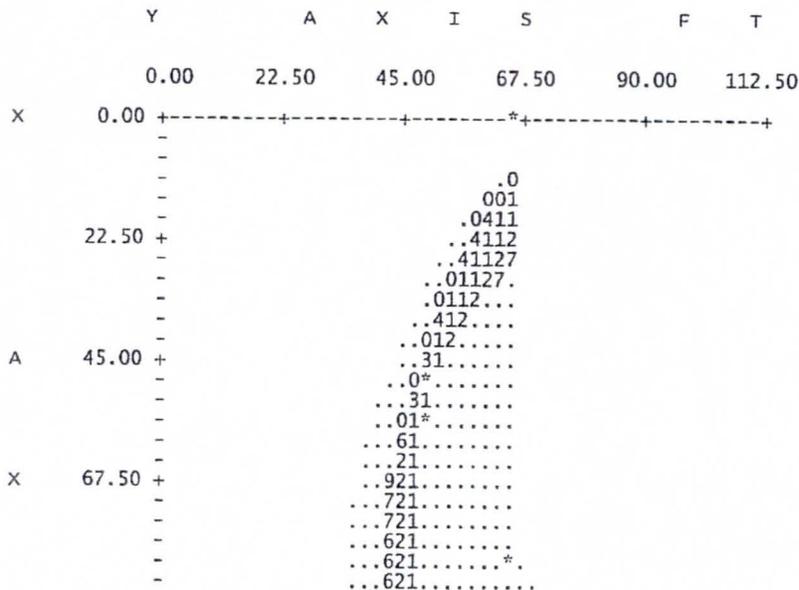
| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 10.00       | 66.00       |
| 2         | 11.62       | 64.83       |
| 3         | 13.27       | 63.69       |
| 4         | 14.93       | 62.58       |
| 5         | 16.62       | 61.51       |
| 6         | 18.32       | 60.46       |
| 7         | 20.04       | 59.44       |
| 8         | 21.78       | 58.45       |
| 9         | 23.54       | 57.50       |
| 10        | 25.31       | 56.58       |
| 11        | 27.10       | 55.69       |
| 12        | 28.91       | 54.83       |
| 13        | 30.73       | 54.00       |
| 14        | 32.57       | 53.21       |
| 15        | 34.42       | 52.45       |
| 16        | 36.28       | 51.72       |
| 17        | 38.16       | 51.03       |
| 18        | 40.05       | 50.37       |
| 19        | 41.95       | 49.75       |
| 20        | 43.86       | 49.16       |
| 21        | 45.78       | 48.60       |
| 22        | 47.71       | 48.08       |
| 23        | 49.65       | 47.60       |
| 24        | 51.60       | 47.15       |
| 25        | 53.56       | 46.73       |
| 26        | 55.52       | 46.35       |
| 27        | 57.49       | 46.01       |
| 28        | 59.47       | 45.70       |
| 29        | 61.45       | 45.42       |
| 30        | 63.43       | 45.18       |
| 31        | 65.42       | 44.98       |
| 32        | 67.42       | 44.82       |
| 33        | 69.41       | 44.69       |
| 34        | 71.41       | 44.59       |
| 35        | 73.41       | 44.53       |
| 36        | 75.41       | 44.51       |
| 37        | 77.41       | 44.52       |
| 38        | 79.41       | 44.57       |
| 39        | 81.41       | 44.66       |
| 40        | 83.40       | 44.78       |
| 41        | 85.40       | 44.94       |
| 42        | 87.39       | 45.13       |

|    |        |       |
|----|--------|-------|
| 43 | 89.37  | 45.36 |
| 44 | 91.36  | 45.63 |
| 45 | 93.33  | 45.93 |
| 46 | 95.30  | 46.26 |
| 47 | 97.27  | 46.64 |
| 48 | 99.23  | 47.04 |
| 49 | 101.18 | 47.49 |
| 50 | 103.12 | 47.96 |
| 51 | 105.05 | 48.48 |
| 52 | 106.98 | 49.02 |
| 53 | 108.89 | 49.60 |
| 54 | 110.79 | 50.22 |
| 55 | 112.68 | 50.87 |
| 56 | 114.56 | 51.55 |
| 57 | 116.43 | 52.27 |
| 58 | 118.28 | 53.02 |
| 59 | 120.12 | 53.81 |
| 60 | 121.95 | 54.63 |
| 61 | 123.76 | 55.48 |
| 62 | 125.55 | 56.36 |
| 63 | 127.33 | 57.28 |
| 64 | 129.09 | 58.22 |
| 65 | 130.84 | 59.20 |
| 66 | 132.56 | 60.21 |
| 67 | 134.27 | 61.25 |
| 68 | 135.96 | 62.32 |
| 69 | 137.63 | 63.42 |
| 70 | 139.28 | 64.56 |
| 71 | 140.91 | 65.72 |
| 72 | 142.52 | 66.91 |
| 73 | 144.10 | 68.13 |
| 74 | 145.66 | 69.37 |
| 75 | 147.21 | 70.65 |
| 76 | 148.72 | 71.95 |
| 77 | 150.22 | 73.28 |
| 78 | 151.69 | 74.64 |
| 79 | 153.13 | 76.02 |
| 80 | 154.55 | 77.43 |
| 81 | 155.94 | 78.86 |
| 82 | 157.31 | 80.32 |
| 83 | 158.65 | 81.81 |
| 84 | 159.97 | 83.31 |
| 85 | 161.26 | 84.84 |
| 86 | 162.52 | 86.40 |
| 87 | 163.75 | 87.97 |
| 88 | 164.95 | 89.57 |
| 89 | 166.12 | 91.19 |
| 90 | 167.27 | 92.83 |
| 91 | 168.05 | 94.00 |

Circle Center At X = 75.6 ; Y = 155.5 and Radius, 111.0

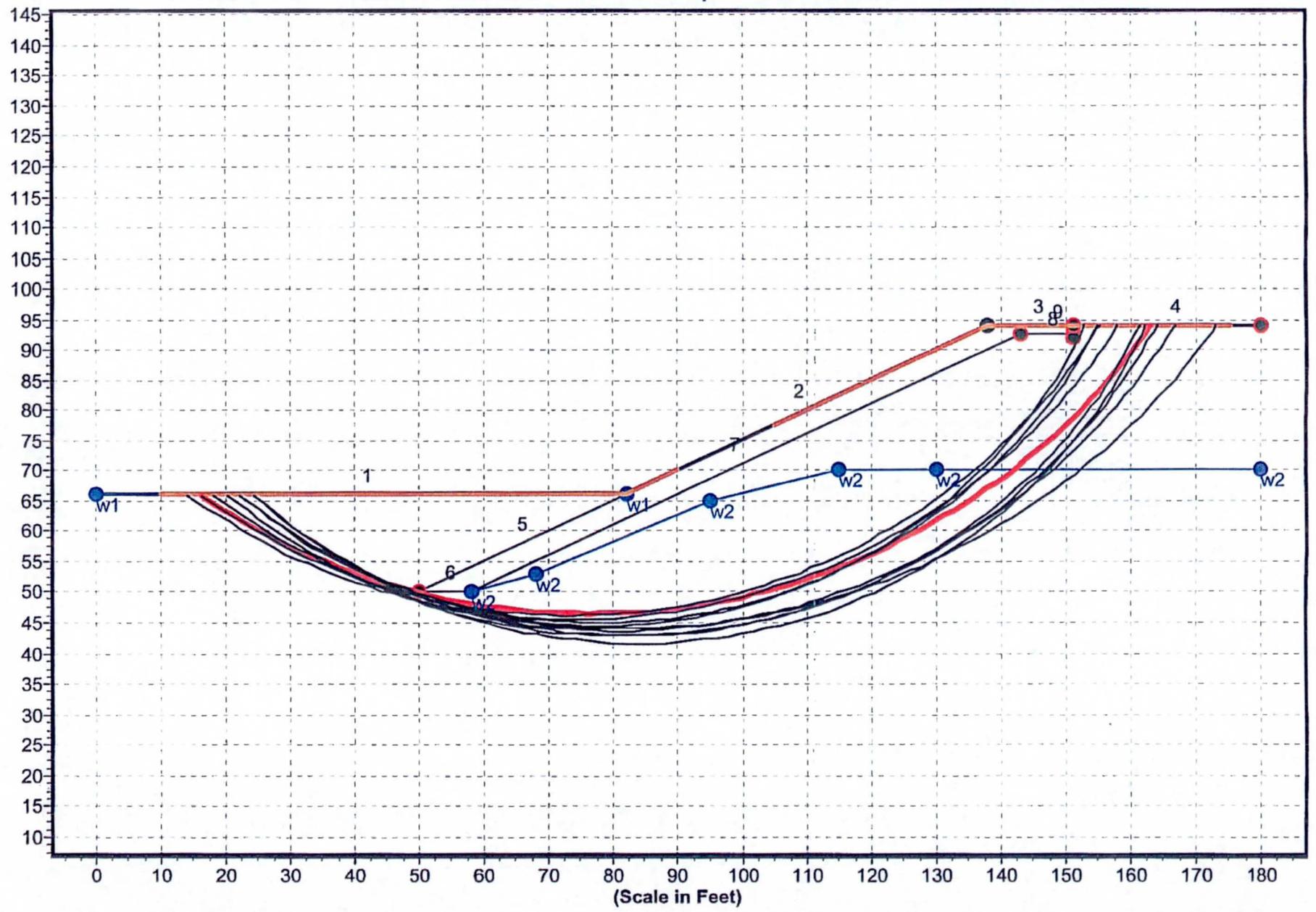
\*\*\* 3.831 \*\*\*

1





**Geometry and Boundary Conditions**  
**Problem: PSHIA Salt River Extension 2:1 CSA Slope - Sudden Drawdown - FS Min = 2.673**



\*\* PCSTABL6 \*\*

result.out

by  
Purdue University

--Slope Stability Analysis--  
Simplified Janbu, Simplified Bishop  
or Spencer's Method of Slices

Run Date:  
Time of Run:  
Run By:  
Input Data Filename: run.in  
Output Filename: result.out  
Unit: ENGLISH  
Plotted Output Filename: result.plt

PROBLEM DESCRIPTION PSHIA Salt River Extension 2:1 CSA Slope  
- Sudden Drawdown

BOUNDARY COORDINATES

4 Top Boundaries  
9 Total Boundaries

| Boundary No. | X-Left (ft) | Y-Left (ft) | X-Right (ft) | Y-Right (ft) | Soil Type Below Bnd |
|--------------|-------------|-------------|--------------|--------------|---------------------|
| 1            | 0.00        | 66.00       | 82.00        | 66.00        | 2                   |
| 2            | 82.00       | 66.00       | 138.00       | 94.00        | 3                   |
| 3            | 138.00      | 94.00       | 151.01       | 94.00        | 3                   |
| 4            | 151.01      | 94.00       | 180.00       | 94.00        | 2                   |
| 5            | 50.00       | 50.00       | 82.00        | 66.00        | 3                   |
| 6            | 50.00       | 50.00       | 58.00        | 50.00        | 1                   |
| 7            | 58.00       | 50.00       | 143.00       | 92.50        | 2                   |
| 8            | 143.00      | 92.50       | 151.00       | 92.50        | 2                   |
| 9            | 151.00      | 92.10       | 151.01       | 94.00        | 2                   |

ISOTROPIC SOIL PARAMETERS

3 Type(s) of Soil

| Soil Type No. | Total Unit Wt. (pcf) | Saturated Unit Wt. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Param. | Pressure Constant (psf) | Piez. Surface No. |
|---------------|----------------------|--------------------------|--------------------------|----------------------|----------------------|-------------------------|-------------------|
| 1             | 130.0                | 140.0                    | 0.0                      | 38.0                 | 0.00                 | 0.0                     | 1                 |
| 2             | 135.0                | 140.0                    | 0.0                      | 36.0                 | 0.00                 | 0.0                     | 1                 |
| 3             | 140.0                | 140.0                    | 54000.0                  | 0.0                  | 0.00                 | 0.0                     | 1                 |

2 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

Unit weight of water = 62.40

Piezometric surface No. 1 Specified by 2 Coordinate Points

| Point No. | X-water (ft) | Y-water (ft) |
|-----------|--------------|--------------|
| 1         | 0.00         | 66.00        |
| 2         | 82.00        | 66.00        |

Piezometric surface No. 2 Specified by 6 Coordinate Points

| Point No. | X-water (ft) | Y-water (ft) |
|-----------|--------------|--------------|
|-----------|--------------|--------------|

result.out

|   |        |       |
|---|--------|-------|
| 1 | 58.00  | 50.00 |
| 2 | 68.00  | 53.00 |
| 3 | 95.00  | 65.00 |
| 4 | 115.00 | 70.00 |
| 5 | 130.00 | 70.00 |
| 6 | 180.00 | 70.00 |

1

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.

1000 Trial Surfaces Have Been Generated.

25 Surfaces Initiate From Each Of 40 Points Equally Spaced Along The Ground Surface Between  $x = 10.00$  ft.  
and  $x = 90.00$  ft.

Each Surface Terminates Between  $x = 105.00$  ft.  
and  $x = 175.00$  ft.

Unless Further Limitations Were Imposed, The Minimum Elevation At Which A Surface Extends Is  $y = 0.00$  ft.

2.00 ft. Line Segments Define Each Trial Failure Surface.

1

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

\* \* Safety Factors Are Calculated By The Modified Bishop Method \* \*

Failure Surface Specified By 85 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 16.15       | 66.00       |
| 2         | 17.78       | 64.84       |
| 3         | 19.44       | 63.71       |
| 4         | 21.11       | 62.62       |
| 5         | 22.81       | 61.56       |
| 6         | 24.52       | 60.53       |
| 7         | 26.26       | 59.54       |
| 8         | 28.01       | 58.58       |
| 9         | 29.78       | 57.65       |
| 10        | 31.58       | 56.76       |
| 11        | 33.38       | 55.90       |
| 12        | 35.21       | 55.08       |
| 13        | 37.05       | 54.30       |
| 14        | 38.90       | 53.55       |
| 15        | 40.77       | 52.84       |
| 16        | 42.65       | 52.16       |
| 17        | 44.55       | 51.52       |
| 18        | 46.45       | 50.92       |
| 19        | 48.37       | 50.35       |
| 20        | 50.30       | 49.83       |
| 21        | 52.24       | 49.34       |
| 22        | 54.19       | 48.88       |
| 23        | 56.15       | 48.47       |
| 24        | 58.11       | 48.10       |
| 25        | 60.08       | 47.76       |
| 26        | 62.06       | 47.46       |
| 27        | 64.04       | 47.20       |
| 28        | 66.03       | 46.98       |
| 29        | 68.02       | 46.80       |
| 30        | 70.02       | 46.65       |
| 31        | 72.01       | 46.55       |
| 32        | 74.01       | 46.48       |
| 33        | 76.01       | 46.45       |
| 34        | 78.01       | 46.47       |
| 35        | 80.01       | 46.52       |
| 36        | 82.01       | 46.61       |
| 37        | 84.01       | 46.74       |
| 38        | 86.00       | 46.90       |

result.out

|    |        |       |
|----|--------|-------|
| 39 | 87.99  | 47.11 |
| 40 | 89.97  | 47.36 |
| 41 | 91.95  | 47.64 |
| 42 | 93.93  | 47.96 |
| 43 | 95.89  | 48.32 |
| 44 | 97.85  | 48.72 |
| 45 | 99.80  | 49.16 |
| 46 | 101.75 | 49.64 |
| 47 | 103.68 | 50.15 |
| 48 | 105.60 | 50.70 |
| 49 | 107.51 | 51.29 |
| 50 | 109.41 | 51.91 |
| 51 | 111.30 | 52.58 |
| 52 | 113.17 | 53.28 |
| 53 | 115.03 | 54.01 |
| 54 | 116.88 | 54.78 |
| 55 | 118.71 | 55.59 |
| 56 | 120.52 | 56.43 |
| 57 | 122.32 | 57.31 |
| 58 | 124.10 | 58.22 |
| 59 | 125.86 | 59.17 |
| 60 | 127.60 | 60.15 |
| 61 | 129.33 | 61.17 |
| 62 | 131.03 | 62.22 |
| 63 | 132.71 | 63.30 |
| 64 | 134.37 | 64.41 |
| 65 | 136.01 | 65.56 |
| 66 | 137.63 | 66.74 |
| 67 | 139.22 | 67.95 |
| 68 | 140.79 | 69.19 |
| 69 | 142.33 | 70.46 |
| 70 | 143.85 | 71.76 |
| 71 | 145.35 | 73.09 |
| 72 | 146.82 | 74.45 |
| 73 | 148.26 | 75.83 |
| 74 | 149.67 | 77.25 |
| 75 | 151.06 | 78.69 |
| 76 | 152.41 | 80.16 |
| 77 | 153.74 | 81.65 |
| 78 | 155.04 | 83.17 |
| 79 | 156.31 | 84.72 |
| 80 | 157.55 | 86.29 |
| 81 | 158.76 | 87.89 |
| 82 | 159.93 | 89.50 |
| 83 | 161.08 | 91.14 |
| 84 | 162.19 | 92.80 |
| 85 | 162.96 | 94.00 |

Circle Center At X = 76.4 ; Y = 149.0 and Radius, 102.6

\*\*\* 2.673 \*\*\*

Individual data on the 96 slices

| Slice No. | width (ft) | weight (lbs) | Water           | Water           | Force Norm (lbs) | Force Tan (lbs) | Earthquake Force |           | Surcharge Load (lbs) |
|-----------|------------|--------------|-----------------|-----------------|------------------|-----------------|------------------|-----------|----------------------|
|           |            |              | Force Top (lbs) | Force Bot (lbs) |                  |                 | Hor (lbs)        | Ver (lbs) |                      |
| 1         | 1.6        | 132.2        | 0.0             | 72.3            | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 2         | 1.7        | 398.3        | 0.0             | 214.9           | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 3         | 1.7        | 663.8        | 0.0             | 353.4           | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 4         | 1.7        | 927.9        | 0.0             | 487.9           | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 5         | 1.7        | 1189.9       | 0.0             | 618.3           | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 6         | 1.7        | 1449.3       | 0.0             | 744.5           | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 7         | 1.8        | 1705.2       | 0.0             | 866.5           | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 8         | 1.8        | 1957.2       | 0.0             | 984.2           | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 9         | 1.8        | 2204.5       | 0.0             | 1097.5          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 10        | 1.8        | 2446.5       | 0.0             | 1206.6          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 11        | 1.8        | 2682.7       | 0.0             | 1311.2          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 12        | 1.8        | 2912.5       | 0.0             | 1411.4          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 13        | 1.9        | 3135.3       | 0.0             | 1507.1          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 14        | 1.9        | 3350.6       | 0.0             | 1598.3          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 15        | 1.9        | 3557.9       | 0.0             | 1685.0          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 16        | 1.9        | 3756.6       | 0.0             | 1767.1          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 17        | 1.9        | 3946.4       | 0.0             | 1844.6          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 18        | 1.9        | 4126.7       | 0.0             | 1917.4          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 19        | 1.6        | 3616.4       | 0.0             | 1671.1          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 20        | 0.3        | 680.7        | 0.0             | 314.5           | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 21        | 1.9        | 4457.3       | 0.0             | 2049.0          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 22        | 1.9        | 4606.8       | 0.0             | 2107.8          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 23        | 2.0        | 4745.3       | 0.0             | 2161.8          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 24        | 1.9        | 4597.1       | 0.0             | 2086.1          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 25        | 0.1        | 275.4        | 0.0             | 125.0           | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |

|    |     |        |     |        |     |     | result.out |     |     |
|----|-----|--------|-----|--------|-----|-----|------------|-----|-----|
| 26 | 2.0 | 4988.1 | 0.0 | 2255.5 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 27 | 2.0 | 5091.8 | 0.0 | 2295.2 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 28 | 2.0 | 5183.4 | 0.0 | 2330.1 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 29 | 2.0 | 5262.6 | 0.0 | 2360.1 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 30 | 2.0 | 5272.3 | 0.0 | 2359.8 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 31 | 0.0 | 57.1   | 0.0 | 25.6   | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 32 | 2.0 | 5383.4 | 0.0 | 2405.7 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 33 | 2.0 | 5424.7 | 0.0 | 2421.2 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 34 | 2.0 | 5453.1 | 0.0 | 2431.9 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 35 | 2.0 | 5468.6 | 0.0 | 2437.6 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 36 | 2.0 | 5471.0 | 0.0 | 2438.6 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 37 | 2.0 | 5460.5 | 0.0 | 2434.6 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 38 | 2.0 | 5411.7 | 0.0 | 2414.5 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 39 | 0.0 | 25.3   | 0.0 | 11.3   | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 40 | 2.0 | 5541.3 | 0.0 | 2412.1 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 41 | 2.0 | 5770.1 | 0.0 | 2393.6 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 42 | 2.0 | 5984.6 | 0.0 | 2370.2 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 43 | 2.0 | 6184.6 | 0.0 | 2342.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 44 | 2.0 | 6365.1 | 0.0 | 2309.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 45 | 2.0 | 6525.6 | 0.0 | 2271.1 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 46 | 1.1 | 3622.8 | 0.0 | 1222.5 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 47 | 0.9 | 3048.2 | 0.0 | 1006.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 48 | 2.0 | 6801.3 | 0.0 | 2181.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 49 | 2.0 | 6916.3 | 0.0 | 2128.8 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 50 | 1.9 | 7016.0 | 0.0 | 2071.8 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 51 | 1.9 | 7100.2 | 0.0 | 2010.1 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 52 | 1.9 | 7169.1 | 0.0 | 1943.7 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 53 | 1.9 | 7222.7 | 0.0 | 1872.7 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 54 | 1.9 | 7261.0 | 0.0 | 1796.9 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 55 | 1.9 | 7284.1 | 0.0 | 1716.6 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 56 | 1.9 | 7292.2 | 0.0 | 1631.7 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 57 | 1.8 | 7148.4 | 0.0 | 1514.1 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 58 | 0.0 | 137.1  | 0.0 | 28.1   | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 59 | 1.8 | 7264.1 | 0.0 | 1448.1 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 60 | 1.8 | 7228.2 | 0.0 | 1349.6 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 61 | 1.8 | 7178.2 | 0.0 | 1246.7 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 62 | 1.8 | 7114.4 | 0.0 | 1139.3 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 63 | 1.8 | 7037.0 | 0.0 | 1027.6 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 64 | 1.8 | 6946.4 | 0.0 | 911.5  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 65 | 1.7 | 6843.1 | 0.0 | 791.1  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 66 | 1.7 | 6727.3 | 0.0 | 666.5  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 67 | 0.7 | 2613.1 | 0.0 | 228.0  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 68 | 1.0 | 3986.5 | 0.0 | 309.7  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 69 | 1.7 | 6460.5 | 0.0 | 404.8  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 70 | 1.7 | 6310.3 | 0.0 | 267.8  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 71 | 1.6 | 6149.8 | 0.0 | 126.7  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 72 | 1.6 | 5980.5 | 0.0 | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 73 | 0.4 | 1363.5 | 0.0 | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 74 | 1.2 | 4394.5 | 0.0 | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 75 | 1.6 | 5410.7 | 0.0 | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 76 | 1.0 | 3271.5 | 0.0 | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 77 | 0.6 | 1787.1 | 0.0 | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 78 | 0.7 | 2094.5 | 0.0 | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 79 | 0.9 | 2613.3 | 0.0 | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 80 | 1.5 | 4362.6 | 0.0 | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 81 | 1.5 | 4019.8 | 0.0 | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 82 | 1.4 | 3679.4 | 0.0 | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 83 | 1.4 | 3342.3 | 0.0 | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 84 | 1.3 | 2893.9 | 0.0 | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 85 | 0.0 | 20.8   | 0.0 | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 86 | 0.0 | 94.2   | 0.0 | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 87 | 1.4 | 2670.7 | 0.0 | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 88 | 1.3 | 2348.0 | 0.0 | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 89 | 1.3 | 2031.7 | 0.0 | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 90 | 1.3 | 1722.2 | 0.0 | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 91 | 1.2 | 1420.4 | 0.0 | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 92 | 1.2 | 1127.1 | 0.0 | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 93 | 1.2 | 842.8  | 0.0 | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 94 | 1.1 | 568.4  | 0.0 | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 95 | 1.1 | 304.4  | 0.0 | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 96 | 0.8 | 61.9   | 0.0 | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |

Failure Surface Specified By 80 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 22.31       | 66.00       |
| 2         | 23.83       | 64.70       |
| 3         | 25.38       | 63.44       |
| 4         | 26.96       | 62.21       |
| 5         | 28.57       | 61.02       |
| 6         | 30.20       | 59.87       |
| 7         | 31.86       | 58.76       |
| 8         | 33.55       | 57.68       |
| 9         | 35.26       | 56.65       |
| 10        | 37.00       | 55.66       |

result.out

|    |        |       |
|----|--------|-------|
| 11 | 38.76  | 54.71 |
| 12 | 40.54  | 53.80 |
| 13 | 42.35  | 52.94 |
| 14 | 44.17  | 52.11 |
| 15 | 46.01  | 51.33 |
| 16 | 47.87  | 50.60 |
| 17 | 49.75  | 49.91 |
| 18 | 51.64  | 49.26 |
| 19 | 53.55  | 48.66 |
| 20 | 55.47  | 48.10 |
| 21 | 57.40  | 47.59 |
| 22 | 59.35  | 47.12 |
| 23 | 61.30  | 46.70 |
| 24 | 63.27  | 46.33 |
| 25 | 65.24  | 46.00 |
| 26 | 67.22  | 45.72 |
| 27 | 69.21  | 45.49 |
| 28 | 71.20  | 45.30 |
| 29 | 73.19  | 45.17 |
| 30 | 75.19  | 45.07 |
| 31 | 77.19  | 45.03 |
| 32 | 79.19  | 45.03 |
| 33 | 81.19  | 45.08 |
| 34 | 83.19  | 45.18 |
| 35 | 85.18  | 45.32 |
| 36 | 87.17  | 45.52 |
| 37 | 89.16  | 45.76 |
| 38 | 91.14  | 46.04 |
| 39 | 93.11  | 46.37 |
| 40 | 95.07  | 46.75 |
| 41 | 97.03  | 47.18 |
| 42 | 98.97  | 47.65 |
| 43 | 100.90 | 48.16 |
| 44 | 102.82 | 48.73 |
| 45 | 104.73 | 49.34 |
| 46 | 106.62 | 49.99 |
| 47 | 108.49 | 50.68 |
| 48 | 110.35 | 51.43 |
| 49 | 112.19 | 52.21 |
| 50 | 114.01 | 53.04 |
| 51 | 115.81 | 53.91 |
| 52 | 117.59 | 54.82 |
| 53 | 119.35 | 55.78 |
| 54 | 121.08 | 56.78 |
| 55 | 122.79 | 57.81 |
| 56 | 124.48 | 58.89 |
| 57 | 126.14 | 60.01 |
| 58 | 127.77 | 61.16 |
| 59 | 129.37 | 62.36 |
| 60 | 130.95 | 63.59 |
| 61 | 132.50 | 64.86 |
| 62 | 134.01 | 66.16 |
| 63 | 135.50 | 67.50 |
| 64 | 136.95 | 68.88 |
| 65 | 138.37 | 70.28 |
| 66 | 139.75 | 71.73 |
| 67 | 141.11 | 73.20 |
| 68 | 142.42 | 74.71 |
| 69 | 143.70 | 76.24 |
| 70 | 144.95 | 77.81 |
| 71 | 146.15 | 79.40 |
| 72 | 147.32 | 81.03 |
| 73 | 148.45 | 82.68 |
| 74 | 149.54 | 84.35 |
| 75 | 150.59 | 86.06 |
| 76 | 151.60 | 87.78 |
| 77 | 152.57 | 89.53 |
| 78 | 153.50 | 91.30 |
| 79 | 154.38 | 93.10 |
| 80 | 154.80 | 94.00 |

Circle Center At X = 78.1 ; Y = 129.6 and Radius, 84.6

\*\*\* 2.678 \*\*\*

1

Failure surface Specified By 82 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 16.15       | 66.00       |
| 2         | 17.74       | 64.78       |

result.out

|    |        |       |
|----|--------|-------|
| 3  | 19.36  | 63.60 |
| 4  | 21.00  | 62.46 |
| 5  | 22.66  | 61.35 |
| 6  | 24.35  | 60.27 |
| 7  | 26.06  | 59.23 |
| 8  | 27.79  | 58.23 |
| 9  | 29.54  | 57.27 |
| 10 | 31.31  | 56.34 |
| 11 | 33.10  | 55.46 |
| 12 | 34.92  | 54.61 |
| 13 | 36.74  | 53.80 |
| 14 | 38.59  | 53.03 |
| 15 | 40.45  | 52.30 |
| 16 | 42.33  | 51.61 |
| 17 | 44.22  | 50.95 |
| 18 | 46.12  | 50.35 |
| 19 | 48.04  | 49.78 |
| 20 | 49.97  | 49.25 |
| 21 | 51.91  | 48.76 |
| 22 | 53.86  | 48.32 |
| 23 | 55.82  | 47.92 |
| 24 | 57.79  | 47.56 |
| 25 | 59.76  | 47.24 |
| 26 | 61.74  | 46.97 |
| 27 | 63.73  | 46.73 |
| 28 | 65.72  | 46.54 |
| 29 | 67.72  | 46.40 |
| 30 | 69.71  | 46.29 |
| 31 | 71.71  | 46.23 |
| 32 | 73.71  | 46.21 |
| 33 | 75.71  | 46.24 |
| 34 | 77.71  | 46.31 |
| 35 | 79.71  | 46.42 |
| 36 | 81.70  | 46.57 |
| 37 | 83.69  | 46.77 |
| 38 | 85.68  | 47.00 |
| 39 | 87.66  | 47.29 |
| 40 | 89.63  | 47.61 |
| 41 | 91.60  | 47.98 |
| 42 | 93.56  | 48.38 |
| 43 | 95.50  | 48.83 |
| 44 | 97.44  | 49.32 |
| 45 | 99.37  | 49.86 |
| 46 | 101.29 | 50.43 |
| 47 | 103.19 | 51.05 |
| 48 | 105.08 | 51.70 |
| 49 | 106.95 | 52.40 |
| 50 | 108.81 | 53.14 |
| 51 | 110.66 | 53.91 |
| 52 | 112.48 | 54.73 |
| 53 | 114.29 | 55.58 |
| 54 | 116.08 | 56.48 |
| 55 | 117.85 | 57.41 |
| 56 | 119.60 | 58.38 |
| 57 | 121.33 | 59.39 |
| 58 | 123.03 | 60.43 |
| 59 | 124.72 | 61.51 |
| 60 | 126.38 | 62.62 |
| 61 | 128.01 | 63.78 |
| 62 | 129.62 | 64.96 |
| 63 | 131.21 | 66.18 |
| 64 | 132.76 | 67.44 |
| 65 | 134.30 | 68.72 |
| 66 | 135.80 | 70.04 |
| 67 | 137.27 | 71.39 |
| 68 | 138.72 | 72.78 |
| 69 | 140.13 | 74.19 |
| 70 | 141.52 | 75.63 |
| 71 | 142.87 | 77.11 |
| 72 | 144.19 | 78.61 |
| 73 | 145.48 | 80.14 |
| 74 | 146.73 | 81.70 |
| 75 | 147.95 | 83.28 |
| 76 | 149.14 | 84.89 |
| 77 | 150.29 | 86.52 |
| 78 | 151.41 | 88.18 |
| 79 | 152.49 | 89.87 |
| 80 | 153.54 | 91.57 |
| 81 | 154.55 | 93.30 |
| 82 | 154.93 | 94.00 |

Circle Center At x = 73.6 ; Y = 139.4 and Radius, 93.2

\*\*\* 2.695 \*\*\*

## Failure Surface Specified By 80 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 22.31       | 66.00       |
| 2         | 23.80       | 64.67       |
| 3         | 25.33       | 63.37       |
| 4         | 26.88       | 62.12       |
| 5         | 28.47       | 60.90       |
| 6         | 30.08       | 59.72       |
| 7         | 31.73       | 58.58       |
| 8         | 33.40       | 57.48       |
| 9         | 35.10       | 56.42       |
| 10        | 36.82       | 55.41       |
| 11        | 38.57       | 54.44       |
| 12        | 40.34       | 53.50       |
| 13        | 42.13       | 52.62       |
| 14        | 43.94       | 51.77       |
| 15        | 45.77       | 50.97       |
| 16        | 47.63       | 50.22       |
| 17        | 49.50       | 49.51       |
| 18        | 51.38       | 48.85       |
| 19        | 53.29       | 48.23       |
| 20        | 55.20       | 47.66       |
| 21        | 57.13       | 47.14       |
| 22        | 59.08       | 46.66       |
| 23        | 61.03       | 46.24       |
| 24        | 62.99       | 45.86       |
| 25        | 64.97       | 45.52       |
| 26        | 66.95       | 45.24       |
| 27        | 68.93       | 45.00       |
| 28        | 70.92       | 44.82       |
| 29        | 72.92       | 44.68       |
| 30        | 74.92       | 44.59       |
| 31        | 76.92       | 44.55       |
| 32        | 78.92       | 44.55       |
| 33        | 80.92       | 44.61       |
| 34        | 82.91       | 44.72       |
| 35        | 84.91       | 44.87       |
| 36        | 86.90       | 45.07       |
| 37        | 88.88       | 45.32       |
| 38        | 90.86       | 45.62       |
| 39        | 92.83       | 45.97       |
| 40        | 94.79       | 46.37       |
| 41        | 96.74       | 46.81       |
| 42        | 98.68       | 47.30       |
| 43        | 100.60      | 47.84       |
| 44        | 102.52      | 48.42       |
| 45        | 104.41      | 49.05       |
| 46        | 106.30      | 49.73       |
| 47        | 108.16      | 50.45       |
| 48        | 110.01      | 51.22       |
| 49        | 111.83      | 52.04       |
| 50        | 113.64      | 52.89       |
| 51        | 115.43      | 53.79       |
| 52        | 117.19      | 54.74       |
| 53        | 118.93      | 55.73       |
| 54        | 120.64      | 56.75       |
| 55        | 122.33      | 57.83       |
| 56        | 124.00      | 58.94       |
| 57        | 125.63      | 60.09       |
| 58        | 127.24      | 61.28       |
| 59        | 128.81      | 62.51       |
| 60        | 130.36      | 63.78       |
| 61        | 131.87      | 65.09       |
| 62        | 133.36      | 66.43       |
| 63        | 134.81      | 67.81       |
| 64        | 136.22      | 69.22       |
| 65        | 137.60      | 70.67       |
| 66        | 138.95      | 72.15       |
| 67        | 140.26      | 73.66       |
| 68        | 141.53      | 75.20       |
| 69        | 142.76      | 76.78       |
| 70        | 143.95      | 78.38       |
| 71        | 145.11      | 80.02       |
| 72        | 146.22      | 81.68       |
| 73        | 147.30      | 83.37       |
| 74        | 148.33      | 85.08       |
| 75        | 149.32      | 86.82       |
| 76        | 150.26      | 88.58       |
| 77        | 151.17      | 90.36       |
| 78        | 152.03      | 92.17       |
| 79        | 152.84      | 93.99       |
| 80        | 152.85      | 94.00       |

Circle Center At X = 77.6 ; Y = 126.5 and Radius, 82.0 <sup>result.out</sup>

\*\*\* 2.713 \*\*\*

1

Failure Surface Specified By 84 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 14.10       | 66.00       |
| 2         | 15.70       | 64.79       |
| 3         | 17.31       | 63.62       |
| 4         | 18.96       | 62.47       |
| 5         | 20.62       | 61.37       |
| 6         | 22.31       | 60.29       |
| 7         | 24.02       | 59.25       |
| 8         | 25.75       | 58.25       |
| 9         | 27.50       | 57.28       |
| 10        | 29.27       | 56.35       |
| 11        | 31.06       | 55.46       |
| 12        | 32.86       | 54.60       |
| 13        | 34.69       | 53.78       |
| 14        | 36.53       | 52.99       |
| 15        | 38.38       | 52.25       |
| 16        | 40.25       | 51.54       |
| 17        | 42.14       | 50.87       |
| 18        | 44.04       | 50.24       |
| 19        | 45.95       | 49.65       |
| 20        | 47.87       | 49.10       |
| 21        | 49.81       | 48.59       |
| 22        | 51.75       | 48.12       |
| 23        | 53.70       | 47.69       |
| 24        | 55.66       | 47.30       |
| 25        | 57.63       | 46.95       |
| 26        | 59.61       | 46.64       |
| 27        | 61.59       | 46.37       |
| 28        | 63.58       | 46.14       |
| 29        | 65.57       | 45.95       |
| 30        | 67.56       | 45.80       |
| 31        | 69.56       | 45.69       |
| 32        | 71.56       | 45.63       |
| 33        | 73.56       | 45.60       |
| 34        | 75.56       | 45.62       |
| 35        | 77.56       | 45.68       |
| 36        | 79.55       | 45.78       |
| 37        | 81.55       | 45.92       |
| 38        | 83.54       | 46.10       |
| 39        | 85.53       | 46.32       |
| 40        | 87.51       | 46.58       |
| 41        | 89.49       | 46.89       |
| 42        | 91.46       | 47.23       |
| 43        | 93.42       | 47.61       |
| 44        | 95.38       | 48.04       |
| 45        | 97.32       | 48.50       |
| 46        | 99.26       | 49.01       |
| 47        | 101.18      | 49.55       |
| 48        | 103.09      | 50.13       |
| 49        | 105.00      | 50.76       |
| 50        | 106.88      | 51.42       |
| 51        | 108.76      | 52.12       |
| 52        | 110.62      | 52.86       |
| 53        | 112.46      | 53.63       |
| 54        | 114.29      | 54.45       |
| 55        | 116.09      | 55.30       |
| 56        | 117.89      | 56.19       |
| 57        | 119.66      | 57.11       |
| 58        | 121.41      | 58.07       |
| 59        | 123.15      | 59.07       |
| 60        | 124.86      | 60.10       |
| 61        | 126.55      | 61.17       |
| 62        | 128.22      | 62.27       |
| 63        | 129.87      | 63.41       |
| 64        | 131.49      | 64.58       |
| 65        | 133.09      | 65.78       |
| 66        | 134.66      | 67.01       |
| 67        | 136.21      | 68.28       |
| 68        | 137.73      | 69.58       |
| 69        | 139.22      | 70.91       |
| 70        | 140.69      | 72.27       |
| 71        | 142.13      | 73.66       |
| 72        | 143.54      | 75.08       |
| 73        | 144.92      | 76.52       |

result.out

|    |        |       |
|----|--------|-------|
| 74 | 146.27 | 78.00 |
| 75 | 147.59 | 79.50 |
| 76 | 148.88 | 81.03 |
| 77 | 150.13 | 82.59 |
| 78 | 151.36 | 84.17 |
| 79 | 152.55 | 85.78 |
| 80 | 153.71 | 87.41 |
| 81 | 154.83 | 89.06 |
| 82 | 155.92 | 90.74 |
| 83 | 156.98 | 92.44 |
| 84 | 157.90 | 94.00 |

Circle Center At X = 73.7 ; Y = 143.0 and Radius, 97.4

\*\*\* 2.728 \*\*\*

Failure Surface Specified By 83 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 24.36       | 66.00       |
| 2         | 25.84       | 64.65       |
| 3         | 27.34       | 63.34       |
| 4         | 28.88       | 62.06       |
| 5         | 30.45       | 60.81       |
| 6         | 32.04       | 59.61       |
| 7         | 33.67       | 58.44       |
| 8         | 35.32       | 57.31       |
| 9         | 36.99       | 56.22       |
| 10        | 38.69       | 55.17       |
| 11        | 40.42       | 54.16       |
| 12        | 42.17       | 53.18       |
| 13        | 43.94       | 52.25       |
| 14        | 45.73       | 51.37       |
| 15        | 47.54       | 50.52       |
| 16        | 49.37       | 49.71       |
| 17        | 51.22       | 48.95       |
| 18        | 53.09       | 48.24       |
| 19        | 54.97       | 47.56       |
| 20        | 56.87       | 46.93       |
| 21        | 58.78       | 46.35       |
| 22        | 60.71       | 45.81       |
| 23        | 62.65       | 45.31       |
| 24        | 64.60       | 44.86       |
| 25        | 66.55       | 44.46       |
| 26        | 68.52       | 44.10       |
| 27        | 70.50       | 43.79       |
| 28        | 72.48       | 43.52       |
| 29        | 74.47       | 43.30       |
| 30        | 76.46       | 43.13       |
| 31        | 78.46       | 43.00       |
| 32        | 80.45       | 42.92       |
| 33        | 82.45       | 42.89       |
| 34        | 84.45       | 42.90       |
| 35        | 86.45       | 42.96       |
| 36        | 88.45       | 43.07       |
| 37        | 90.44       | 43.22       |
| 38        | 92.43       | 43.42       |
| 39        | 94.42       | 43.67       |
| 40        | 96.40       | 43.96       |
| 41        | 98.37       | 44.30       |
| 42        | 100.33      | 44.68       |
| 43        | 102.28      | 45.11       |
| 44        | 104.23      | 45.59       |
| 45        | 106.16      | 46.11       |
| 46        | 108.08      | 46.68       |
| 47        | 109.98      | 47.29       |
| 48        | 111.87      | 47.94       |
| 49        | 113.74      | 48.64       |
| 50        | 115.60      | 49.38       |
| 51        | 117.44      | 50.17       |
| 52        | 119.26      | 51.00       |
| 53        | 121.06      | 51.87       |
| 54        | 122.84      | 52.78       |
| 55        | 124.60      | 53.73       |
| 56        | 126.34      | 54.73       |
| 57        | 128.05      | 55.76       |
| 58        | 129.73      | 56.84       |
| 59        | 131.39      | 57.95       |
| 60        | 133.03      | 59.10       |
| 61        | 134.64      | 60.29       |
| 62        | 136.22      | 61.52       |

result.out

|    |        |       |
|----|--------|-------|
| 63 | 137.77 | 62.78 |
| 64 | 139.29 | 64.08 |
| 65 | 140.78 | 65.42 |
| 66 | 142.24 | 66.79 |
| 67 | 143.66 | 68.19 |
| 68 | 145.05 | 69.62 |
| 69 | 146.41 | 71.09 |
| 70 | 147.74 | 72.59 |
| 71 | 149.02 | 74.12 |
| 72 | 150.28 | 75.68 |
| 73 | 151.49 | 77.27 |
| 74 | 152.67 | 78.88 |
| 75 | 153.81 | 80.53 |
| 76 | 154.91 | 82.19 |
| 77 | 155.98 | 83.89 |
| 78 | 157.00 | 85.61 |
| 79 | 157.98 | 87.35 |
| 80 | 158.92 | 89.11 |
| 81 | 159.82 | 90.90 |
| 82 | 160.68 | 92.71 |
| 83 | 161.26 | 94.00 |

Circle Center At X = 82.9 ; Y = 128.5 and Radius, 85.7

\*\*\* 2.737 \*\*\*

1

Failure surface Specified By 88 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 18.21       | 66.00       |
| 2         | 19.77       | 64.75       |
| 3         | 21.35       | 63.53       |
| 4         | 22.96       | 62.35       |
| 5         | 24.60       | 61.19       |
| 6         | 26.25       | 60.07       |
| 7         | 27.93       | 58.99       |
| 8         | 29.64       | 57.94       |
| 9         | 31.36       | 56.92       |
| 10        | 33.10       | 55.94       |
| 11        | 34.86       | 54.99       |
| 12        | 36.64       | 54.08       |
| 13        | 38.44       | 53.21       |
| 14        | 40.26       | 52.37       |
| 15        | 42.09       | 51.57       |
| 16        | 43.94       | 50.81       |
| 17        | 45.80       | 50.08       |
| 18        | 47.68       | 49.39       |
| 19        | 49.57       | 48.74       |
| 20        | 51.48       | 48.13       |
| 21        | 53.39       | 47.56       |
| 22        | 55.32       | 47.03       |
| 23        | 57.26       | 46.53       |
| 24        | 59.21       | 46.08       |
| 25        | 61.16       | 45.66       |
| 26        | 63.13       | 45.29       |
| 27        | 65.10       | 44.95       |
| 28        | 67.08       | 44.66       |
| 29        | 69.06       | 44.40       |
| 30        | 71.05       | 44.19       |
| 31        | 73.04       | 44.01       |
| 32        | 75.04       | 43.88       |
| 33        | 77.04       | 43.78       |
| 34        | 79.04       | 43.73       |
| 35        | 81.04       | 43.72       |
| 36        | 83.03       | 43.74       |
| 37        | 85.03       | 43.81       |
| 38        | 87.03       | 43.92       |
| 39        | 89.03       | 44.07       |
| 40        | 91.02       | 44.26       |
| 41        | 93.00       | 44.49       |
| 42        | 94.98       | 44.76       |
| 43        | 96.96       | 45.07       |
| 44        | 98.93       | 45.42       |
| 45        | 100.89      | 45.81       |
| 46        | 102.84      | 46.24       |
| 47        | 104.79      | 46.71       |
| 48        | 106.72      | 47.22       |
| 49        | 108.65      | 47.76       |
| 50        | 110.56      | 48.35       |
| 51        | 112.46      | 48.98       |

result.out

|    |        |       |
|----|--------|-------|
| 52 | 114.35 | 49.64 |
| 53 | 116.22 | 50.34 |
| 54 | 118.08 | 51.08 |
| 55 | 119.92 | 51.86 |
| 56 | 121.75 | 52.67 |
| 57 | 123.56 | 53.52 |
| 58 | 125.35 | 54.41 |
| 59 | 127.12 | 55.33 |
| 60 | 128.88 | 56.29 |
| 61 | 130.61 | 57.29 |
| 62 | 132.33 | 58.32 |
| 63 | 134.02 | 59.38 |
| 64 | 135.69 | 60.48 |
| 65 | 137.34 | 61.61 |
| 66 | 138.97 | 62.77 |
| 67 | 140.57 | 63.97 |
| 68 | 142.15 | 65.20 |
| 69 | 143.70 | 66.46 |
| 70 | 145.22 | 67.76 |
| 71 | 146.72 | 69.08 |
| 72 | 148.20 | 70.43 |
| 73 | 149.64 | 71.82 |
| 74 | 151.06 | 73.23 |
| 75 | 152.44 | 74.67 |
| 76 | 153.80 | 76.14 |
| 77 | 155.13 | 77.63 |
| 78 | 156.43 | 79.16 |
| 79 | 157.69 | 80.70 |
| 80 | 158.93 | 82.28 |
| 81 | 160.13 | 83.88 |
| 82 | 161.30 | 85.50 |
| 83 | 162.44 | 87.14 |
| 84 | 163.54 | 88.81 |
| 85 | 164.61 | 90.50 |
| 86 | 165.64 | 92.21 |
| 87 | 166.64 | 93.95 |
| 88 | 166.67 | 94.00 |

Circle Center At X = 80.7 ; Y = 142.4 and Radius, 98.7

\*\*\* 2.758 \*\*\*

Failure Surface Specified by 86 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 20.26       | 66.00       |
| 2         | 21.77       | 64.69       |
| 3         | 23.31       | 63.42       |
| 4         | 24.88       | 62.18       |
| 5         | 26.47       | 60.97       |
| 6         | 28.09       | 59.80       |
| 7         | 29.74       | 58.66       |
| 8         | 31.41       | 57.56       |
| 9         | 33.10       | 56.49       |
| 10        | 34.82       | 55.47       |
| 11        | 36.56       | 54.48       |
| 12        | 38.32       | 53.52       |
| 13        | 40.09       | 52.61       |
| 14        | 41.89       | 51.74       |
| 15        | 43.71       | 50.90       |
| 16        | 45.54       | 50.10       |
| 17        | 47.40       | 49.35       |
| 18        | 49.26       | 48.63       |
| 19        | 51.15       | 47.96       |
| 20        | 53.04       | 47.32       |
| 21        | 54.95       | 46.73       |
| 22        | 56.87       | 46.18       |
| 23        | 58.81       | 45.67       |
| 24        | 60.75       | 45.20       |
| 25        | 62.71       | 44.77       |
| 26        | 64.67       | 44.39       |
| 27        | 66.64       | 44.05       |
| 28        | 68.62       | 43.75       |
| 29        | 70.60       | 43.50       |
| 30        | 72.59       | 43.29       |
| 31        | 74.58       | 43.12       |
| 32        | 76.58       | 42.99       |
| 33        | 78.58       | 42.91       |
| 34        | 80.58       | 42.87       |
| 35        | 82.58       | 42.88       |
| 36        | 84.58       | 42.92       |

result.out

|    |        |       |
|----|--------|-------|
| 37 | 86.58  | 43.01 |
| 38 | 88.57  | 43.15 |
| 39 | 90.56  | 43.33 |
| 40 | 92.55  | 43.55 |
| 41 | 94.53  | 43.81 |
| 42 | 96.51  | 44.12 |
| 43 | 98.48  | 44.47 |
| 44 | 100.44 | 44.86 |
| 45 | 102.39 | 45.29 |
| 46 | 104.33 | 45.77 |
| 47 | 106.27 | 46.29 |
| 48 | 108.19 | 46.85 |
| 49 | 110.09 | 47.45 |
| 50 | 111.99 | 48.10 |
| 51 | 113.87 | 48.78 |
| 52 | 115.73 | 49.50 |
| 53 | 117.58 | 50.27 |
| 54 | 119.41 | 51.07 |
| 55 | 121.22 | 51.92 |
| 56 | 123.02 | 52.80 |
| 57 | 124.79 | 53.72 |
| 58 | 126.55 | 54.68 |
| 59 | 128.28 | 55.68 |
| 60 | 129.99 | 56.72 |
| 61 | 131.68 | 57.79 |
| 62 | 133.34 | 58.90 |
| 63 | 134.98 | 60.04 |
| 64 | 136.60 | 61.22 |
| 65 | 138.19 | 62.43 |
| 66 | 139.75 | 63.68 |
| 67 | 141.29 | 64.97 |
| 68 | 142.79 | 66.28 |
| 69 | 144.27 | 67.63 |
| 70 | 145.72 | 69.01 |
| 71 | 147.14 | 70.42 |
| 72 | 148.53 | 71.86 |
| 73 | 149.88 | 73.33 |
| 74 | 151.21 | 74.83 |
| 75 | 152.50 | 76.35 |
| 76 | 153.75 | 77.91 |
| 77 | 154.98 | 79.49 |
| 78 | 156.17 | 81.10 |
| 79 | 157.32 | 82.73 |
| 80 | 158.44 | 84.39 |
| 81 | 159.52 | 86.07 |
| 82 | 160.57 | 87.78 |
| 83 | 161.57 | 89.51 |
| 84 | 162.54 | 91.25 |
| 85 | 163.48 | 93.02 |
| 86 | 163.96 | 94.00 |

Circle Center At X = 81.4 ; Y = 135.1 and Radius, 92.3

\*\*\* 2.768 \*\*\*

1

Failure Surface Specified by 84 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 24.36       | 66.00       |
| 2         | 25.80       | 64.61       |
| 3         | 27.28       | 63.26       |
| 4         | 28.78       | 61.95       |
| 5         | 30.32       | 60.67       |
| 6         | 31.89       | 59.43       |
| 7         | 33.48       | 58.22       |
| 8         | 35.11       | 57.05       |
| 9         | 36.76       | 55.92       |
| 10        | 38.43       | 54.83       |
| 11        | 40.13       | 53.78       |
| 12        | 41.86       | 52.77       |
| 13        | 43.61       | 51.80       |
| 14        | 45.38       | 50.87       |
| 15        | 47.18       | 49.99       |
| 16        | 48.99       | 49.14       |
| 17        | 50.82       | 48.34       |
| 18        | 52.67       | 47.59       |
| 19        | 54.54       | 46.87       |
| 20        | 56.43       | 46.20       |
| 21        | 58.33       | 45.58       |
| 22        | 60.24       | 45.00       |

result.out

|    |        |       |
|----|--------|-------|
| 23 | 62.17  | 44.47 |
| 24 | 64.11  | 43.98 |
| 25 | 66.06  | 43.53 |
| 26 | 68.02  | 43.14 |
| 27 | 69.99  | 42.79 |
| 28 | 71.96  | 42.48 |
| 29 | 73.95  | 42.22 |
| 30 | 75.94  | 42.01 |
| 31 | 77.93  | 41.85 |
| 32 | 79.92  | 41.73 |
| 33 | 81.92  | 41.66 |
| 34 | 83.92  | 41.64 |
| 35 | 85.92  | 41.66 |
| 36 | 87.92  | 41.74 |
| 37 | 89.92  | 41.85 |
| 38 | 91.91  | 42.02 |
| 39 | 93.90  | 42.23 |
| 40 | 95.88  | 42.49 |
| 41 | 97.86  | 42.80 |
| 42 | 99.83  | 43.15 |
| 43 | 101.79 | 43.55 |
| 44 | 103.74 | 43.99 |
| 45 | 105.68 | 44.48 |
| 46 | 107.60 | 45.02 |
| 47 | 109.52 | 45.60 |
| 48 | 111.42 | 46.22 |
| 49 | 113.30 | 46.90 |
| 50 | 115.17 | 47.61 |
| 51 | 117.02 | 48.37 |
| 52 | 118.85 | 49.17 |
| 53 | 120.67 | 50.02 |
| 54 | 122.46 | 50.90 |
| 55 | 124.23 | 51.83 |
| 56 | 125.98 | 52.80 |
| 57 | 127.70 | 53.81 |
| 58 | 129.40 | 54.87 |
| 59 | 131.08 | 55.96 |
| 60 | 132.73 | 57.09 |
| 61 | 134.35 | 58.26 |
| 62 | 135.95 | 59.46 |
| 63 | 137.51 | 60.71 |
| 64 | 139.05 | 61.99 |
| 65 | 140.55 | 63.31 |
| 66 | 142.03 | 64.66 |
| 67 | 143.47 | 66.05 |
| 68 | 144.88 | 67.46 |
| 69 | 146.25 | 68.92 |
| 70 | 147.59 | 70.40 |
| 71 | 148.90 | 71.92 |
| 72 | 150.17 | 73.46 |
| 73 | 151.40 | 75.04 |
| 74 | 152.59 | 76.64 |
| 75 | 153.75 | 78.27 |
| 76 | 154.87 | 79.93 |
| 77 | 155.95 | 81.62 |
| 78 | 156.98 | 83.33 |
| 79 | 157.98 | 85.06 |
| 80 | 158.94 | 86.82 |
| 81 | 159.85 | 88.59 |
| 82 | 160.73 | 90.39 |
| 83 | 161.56 | 92.21 |
| 84 | 162.32 | 94.00 |

Circle Center At X = 83.9 ; Y = 126.6 and Radius, 84.9

\*\*\* 2.792 \*\*\*

Failure Surface Specified By 91 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 16.15       | 66.00       |
| 2         | 17.76       | 64.81       |
| 3         | 19.39       | 63.64       |
| 4         | 21.04       | 62.51       |
| 5         | 22.70       | 61.41       |
| 6         | 24.39       | 60.34       |
| 7         | 26.10       | 59.30       |
| 8         | 27.83       | 58.29       |
| 9         | 29.58       | 57.32       |
| 10        | 31.34       | 56.37       |
| 11        | 33.12       | 55.46       |

result.out

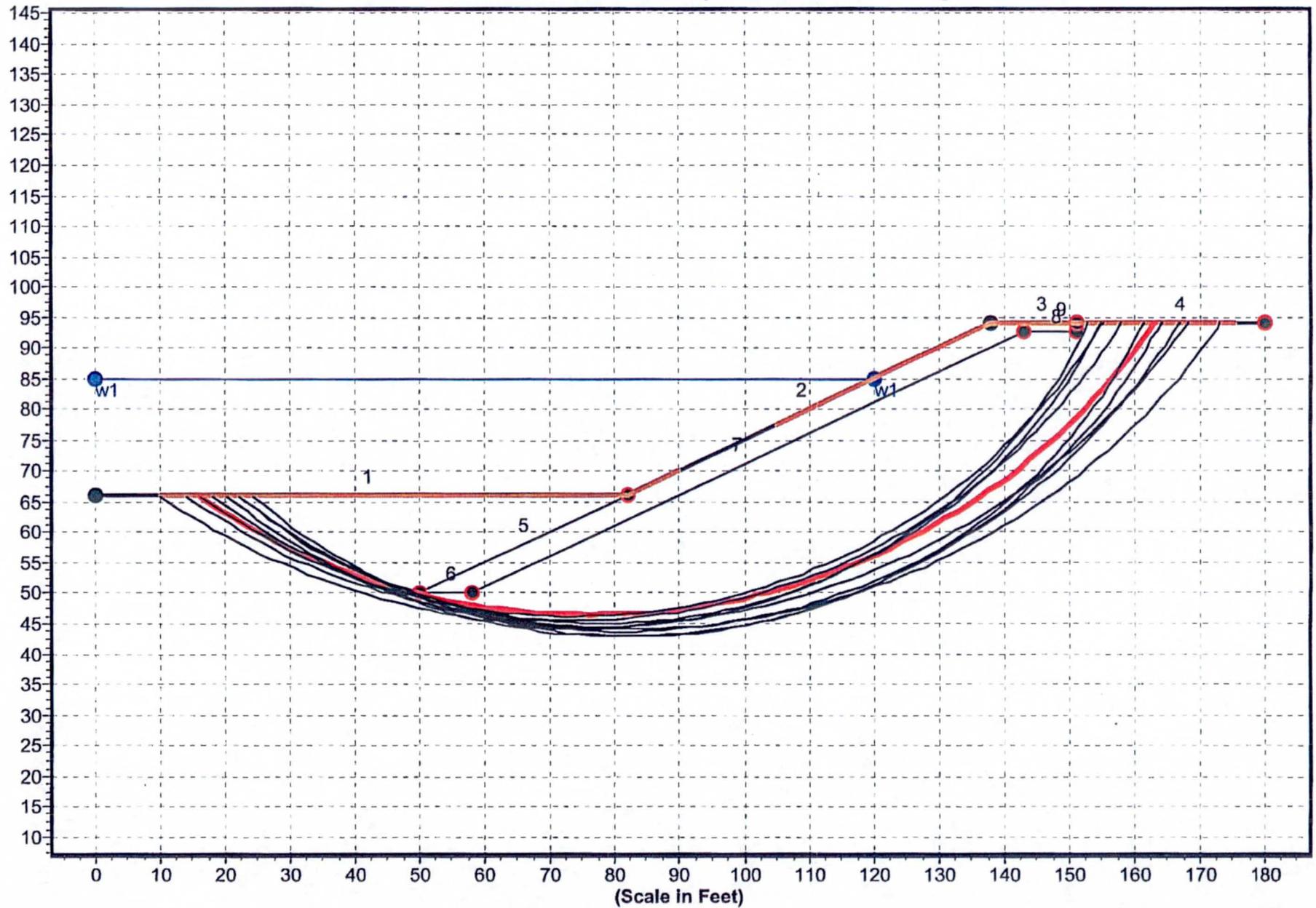
|    |        |       |
|----|--------|-------|
| 12 | 34.92  | 54.58 |
| 13 | 36.73  | 53.74 |
| 14 | 38.56  | 52.93 |
| 15 | 40.40  | 52.15 |
| 16 | 42.26  | 51.41 |
| 17 | 44.13  | 50.70 |
| 18 | 46.01  | 50.02 |
| 19 | 47.91  | 49.39 |
| 20 | 49.81  | 48.78 |
| 21 | 51.73  | 48.21 |
| 22 | 53.66  | 47.68 |
| 23 | 55.59  | 47.18 |
| 24 | 57.54  | 46.72 |
| 25 | 59.49  | 46.29 |
| 26 | 61.46  | 45.90 |
| 27 | 63.42  | 45.55 |
| 28 | 65.40  | 45.23 |
| 29 | 67.38  | 44.95 |
| 30 | 69.36  | 44.71 |
| 31 | 71.35  | 44.50 |
| 32 | 73.35  | 44.33 |
| 33 | 75.34  | 44.19 |
| 34 | 77.34  | 44.10 |
| 35 | 79.34  | 44.03 |
| 36 | 81.34  | 44.01 |
| 37 | 83.34  | 44.02 |
| 38 | 85.34  | 44.07 |
| 39 | 87.34  | 44.16 |
| 40 | 89.33  | 44.28 |
| 41 | 91.32  | 44.45 |
| 42 | 93.32  | 44.64 |
| 43 | 95.30  | 44.88 |
| 44 | 97.28  | 45.15 |
| 45 | 99.26  | 45.45 |
| 46 | 101.23 | 45.80 |
| 47 | 103.19 | 46.18 |
| 48 | 105.15 | 46.59 |
| 49 | 107.10 | 47.04 |
| 50 | 109.04 | 47.53 |
| 51 | 110.97 | 48.05 |
| 52 | 112.89 | 48.61 |
| 53 | 114.80 | 49.21 |
| 54 | 116.70 | 49.84 |
| 55 | 118.58 | 50.50 |
| 56 | 120.46 | 51.20 |
| 57 | 122.32 | 51.93 |
| 58 | 124.16 | 52.70 |
| 59 | 126.00 | 53.50 |
| 60 | 127.81 | 54.34 |
| 61 | 129.62 | 55.20 |
| 62 | 131.40 | 56.11 |
| 63 | 133.17 | 57.04 |
| 64 | 134.92 | 58.01 |
| 65 | 136.65 | 59.01 |
| 66 | 138.37 | 60.04 |
| 67 | 140.06 | 61.10 |
| 68 | 141.74 | 62.19 |
| 69 | 143.39 | 63.31 |
| 70 | 145.03 | 64.47 |
| 71 | 146.64 | 65.65 |
| 72 | 148.23 | 66.87 |
| 73 | 149.79 | 68.11 |
| 74 | 151.34 | 69.38 |
| 75 | 152.86 | 70.68 |
| 76 | 154.35 | 72.01 |
| 77 | 155.83 | 73.36 |
| 78 | 157.27 | 74.74 |
| 79 | 158.69 | 76.15 |
| 80 | 160.09 | 77.58 |
| 81 | 161.45 | 79.04 |
| 82 | 162.79 | 80.53 |
| 83 | 164.11 | 82.04 |
| 84 | 165.39 | 83.57 |
| 85 | 166.65 | 85.13 |
| 86 | 167.88 | 86.71 |
| 87 | 169.07 | 88.31 |
| 88 | 170.24 | 89.93 |
| 89 | 171.38 | 91.57 |
| 90 | 172.49 | 93.24 |
| 91 | 172.97 | 94.00 |

Circle Center At X = 81.6 ; Y = 152.5 and Radius, 108.5

\*\*\* 2.796 \*\*\*



**Geometry and Boundary Conditions**  
**Problem: PSHIA Salt River Extension 2:1 CSA Slope - Critical Flood Stage - FS Min = 3.149**



\*\* PCSTABL6 \*\*

result.out

by  
Purdue University

--Slope Stability Analysis--  
Simplified Janbu, Simplified Bishop  
or Spencer's Method of Slices

Run Date:  
Time of Run:  
Run By:  
Input Data Filename: run.in  
Output Filename: result.out  
Unit: ENGLISH  
Plotted Output Filename: result.plt

PROBLEM DESCRIPTION PSHIA Salt River Extension 2:1 CSA Slope  
- Critical Flood Stage

BOUNDARY COORDINATES

4 Top Boundaries  
9 Total Boundaries

| Boundary No. | X-Left (ft) | Y-Left (ft) | X-Right (ft) | Y-Right (ft) | Soil Type Below Bnd |
|--------------|-------------|-------------|--------------|--------------|---------------------|
| 1            | 0.00        | 66.00       | 82.00        | 66.00        | 2                   |
| 2            | 82.00       | 66.00       | 138.00       | 94.00        | 3                   |
| 3            | 138.00      | 94.00       | 151.01       | 94.00        | 3                   |
| 4            | 151.01      | 94.00       | 180.00       | 94.00        | 2                   |
| 5            | 50.00       | 50.00       | 82.00        | 66.00        | 3                   |
| 6            | 50.00       | 50.00       | 58.00        | 50.00        | 1                   |
| 7            | 58.00       | 50.00       | 143.00       | 92.50        | 2                   |
| 8            | 143.00      | 92.50       | 151.00       | 92.50        | 2                   |
| 9            | 151.00      | 92.50       | 151.01       | 94.00        | 2                   |

ISOTROPIC SOIL PARAMETERS

3 Type(s) of soil

| Soil Type No. | Total Unit wt. (pcf) | Saturated Unit wt. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Param. | Pressure Constant (psf) | Piez. Surface No. |
|---------------|----------------------|--------------------------|--------------------------|----------------------|----------------------|-------------------------|-------------------|
| 1             | 130.0                | 140.0                    | 0.0                      | 38.0                 | 0.00                 | 0.0                     | 1                 |
| 2             | 125.0                | 135.0                    | 0.0                      | 36.0                 | 0.00                 | 0.0                     | 1                 |
| 3             | 140.0                | 140.0                    | 54000.0                  | 0.0                  | 0.00                 | 0.0                     | 1                 |

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

Unit weight of water = 62.40

Piezometric Surface No. 1 Specified by 2 Coordinate Points

| Point No. | X-Water (ft) | Y-Water (ft) |
|-----------|--------------|--------------|
| 1         | 0.00         | 85.00        |
| 2         | 120.00       | 85.00        |

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.

1000 Trial Surfaces Have Been Generated.

result.out

25 Surfaces Initiate From Each Of 40 Points Equally Spaced  
Along The Ground Surface Between  $x = 10.00$  ft.  
and  $x = 90.00$  ft.

Each Surface Terminates Between  $x = 105.00$  ft.  
and  $x = 175.00$  ft.

Unless Further Limitations Were Imposed, The Minimum Elevation  
At Which A Surface Extends Is  $y = 0.00$  ft.

2.00 ft. Line Segments Define Each Trial Failure Surface.

1

Following Are Displayed The Ten Most Critical Of The Trial  
Failure Surfaces Examined. They Are Ordered - Most Critical  
First.

\* \* Safety Factors Are Calculated By The Modified Bishop Method \* \*

Failure surface specified by 85 coordinate points

| Point<br>No. | X-Surf<br>(ft) | Y-Surf<br>(ft) |
|--------------|----------------|----------------|
| 1            | 16.15          | 66.00          |
| 2            | 17.78          | 64.84          |
| 3            | 19.44          | 63.71          |
| 4            | 21.11          | 62.62          |
| 5            | 22.81          | 61.56          |
| 6            | 24.52          | 60.53          |
| 7            | 26.26          | 59.54          |
| 8            | 28.01          | 58.58          |
| 9            | 29.78          | 57.65          |
| 10           | 31.58          | 56.76          |
| 11           | 33.38          | 55.90          |
| 12           | 35.21          | 55.08          |
| 13           | 37.05          | 54.30          |
| 14           | 38.90          | 53.55          |
| 15           | 40.77          | 52.84          |
| 16           | 42.65          | 52.16          |
| 17           | 44.55          | 51.52          |
| 18           | 46.45          | 50.92          |
| 19           | 48.37          | 50.35          |
| 20           | 50.30          | 49.83          |
| 21           | 52.24          | 49.34          |
| 22           | 54.19          | 48.88          |
| 23           | 56.15          | 48.47          |
| 24           | 58.11          | 48.10          |
| 25           | 60.08          | 47.76          |
| 26           | 62.06          | 47.46          |
| 27           | 64.04          | 47.20          |
| 28           | 66.03          | 46.98          |
| 29           | 68.02          | 46.80          |
| 30           | 70.02          | 46.65          |
| 31           | 72.01          | 46.55          |
| 32           | 74.01          | 46.48          |
| 33           | 76.01          | 46.45          |
| 34           | 78.01          | 46.47          |
| 35           | 80.01          | 46.52          |
| 36           | 82.01          | 46.61          |
| 37           | 84.01          | 46.74          |
| 38           | 86.00          | 46.90          |
| 39           | 87.99          | 47.11          |
| 40           | 89.97          | 47.36          |
| 41           | 91.95          | 47.64          |
| 42           | 93.93          | 47.96          |
| 43           | 95.89          | 48.32          |
| 44           | 97.85          | 48.72          |
| 45           | 99.80          | 49.16          |
| 46           | 101.75         | 49.64          |
| 47           | 103.68         | 50.15          |
| 48           | 105.60         | 50.70          |
| 49           | 107.51         | 51.29          |
| 50           | 109.41         | 51.91          |
| 51           | 111.30         | 52.58          |
| 52           | 113.17         | 53.28          |
| 53           | 115.03         | 54.01          |

result.out

|    |        |       |
|----|--------|-------|
| 54 | 116.88 | 54.78 |
| 55 | 118.71 | 55.59 |
| 56 | 120.52 | 56.43 |
| 57 | 122.32 | 57.31 |
| 58 | 124.10 | 58.22 |
| 59 | 125.86 | 59.17 |
| 60 | 127.60 | 60.15 |
| 61 | 129.33 | 61.17 |
| 62 | 131.03 | 62.22 |
| 63 | 132.71 | 63.30 |
| 64 | 134.37 | 64.41 |
| 65 | 136.01 | 65.56 |
| 66 | 137.63 | 66.74 |
| 67 | 139.22 | 67.95 |
| 68 | 140.79 | 69.19 |
| 69 | 142.33 | 70.46 |
| 70 | 143.85 | 71.76 |
| 71 | 145.35 | 73.09 |
| 72 | 146.82 | 74.45 |
| 73 | 148.26 | 75.83 |
| 74 | 149.67 | 77.25 |
| 75 | 151.06 | 78.69 |
| 76 | 152.41 | 80.16 |
| 77 | 153.74 | 81.65 |
| 78 | 155.04 | 83.17 |
| 79 | 156.31 | 84.72 |
| 80 | 157.55 | 86.29 |
| 81 | 158.76 | 87.89 |
| 82 | 159.93 | 89.50 |
| 83 | 161.08 | 91.14 |
| 84 | 162.19 | 92.80 |
| 85 | 162.96 | 94.00 |

Circle Center At X = 76.4 ; Y = 149.0 and radius, 102.6

\*\*\* 3.149 \*\*\*

Individual data on the 92 slices

| Slice No. | width (ft) | weight (lbs) | Water Force |           | Force Norm (lbs) | Force Tan (lbs) | Earthquake Force |           | Surcharge Load (lbs) |
|-----------|------------|--------------|-------------|-----------|------------------|-----------------|------------------|-----------|----------------------|
|           |            |              | Top (lbs)   | Bot (lbs) |                  |                 | Hor (lbs)        | Ver (lbs) |                      |
| 1         | 1.6        | 127.5        | 1932.9      | 2443.5    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 2         | 1.7        | 384.1        | 1959.3      | 2586.1    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 3         | 1.7        | 640.1        | 1985.0      | 2724.6    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 4         | 1.7        | 894.8        | 2009.9      | 2859.1    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 5         | 1.7        | 1147.4       | 2034.0      | 2989.5    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 6         | 1.7        | 1397.5       | 2057.4      | 3115.7    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 7         | 1.8        | 1644.3       | 2080.0      | 3237.7    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 8         | 1.8        | 1887.3       | 2101.8      | 3355.4    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 9         | 1.8        | 2125.7       | 2122.8      | 3468.7    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 10        | 1.8        | 2359.1       | 2143.0      | 3577.8    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 11        | 1.8        | 2586.9       | 2162.4      | 3682.4    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 12        | 1.8        | 2808.5       | 2180.9      | 3782.6    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 13        | 1.9        | 3023.3       | 2198.6      | 3878.3    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 14        | 1.9        | 3230.9       | 2215.5      | 3969.5    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 15        | 1.9        | 3430.8       | 2231.6      | 4056.2    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 16        | 1.9        | 3622.5       | 2246.8      | 4138.3    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 17        | 1.9        | 3805.4       | 2261.1      | 4215.8    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 18        | 1.9        | 3979.3       | 2274.6      | 4288.6    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 19        | 1.6        | 3487.3       | 1930.0      | 3671.8    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 20        | 0.3        | 656.7        | 357.3       | 684.9     | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 21        | 1.9        | 4308.3       | 2299.0      | 4420.2    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 22        | 1.9        | 4466.6       | 2309.9      | 4479.0    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 23        | 2.0        | 4614.0       | 2319.9      | 4533.0    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 24        | 1.9        | 4481.5       | 2198.7      | 4324.6    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 25        | 0.1        | 267.7        | 130.3       | 257.7     | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 26        | 2.0        | 4849.4       | 2337.3      | 4626.7    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 27        | 2.0        | 4949.5       | 2344.6      | 4666.4    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 28        | 2.0        | 5037.9       | 2351.1      | 4701.3    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 29        | 2.0        | 5114.4       | 2356.6      | 4731.3    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 30        | 2.0        | 5178.9       | 2361.3      | 4756.5    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 31        | 2.0        | 5231.1       | 2365.1      | 4776.9    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 32        | 2.0        | 5270.9       | 2367.9      | 4792.4    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 33        | 2.0        | 5298.4       | 2369.9      | 4803.1    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 34        | 2.0        | 5313.3       | 2371.0      | 4808.8    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 35        | 2.0        | 5315.6       | 2371.2      | 4809.8    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 36        | 2.0        | 5305.5       | 2370.4      | 4805.8    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 37        | 2.0        | 5258.2       | 2357.7      | 4774.6    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 38        | 0.0        | 24.6         | 12.4        | 22.4      | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 39        | 2.0        | 5383.3       | 2575.4      | 4783.3    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 40        | 2.0        | 5603.9       | 2433.1      | 4764.8    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |

|    |     |        |        |        |     |     | result.out |     |     |
|----|-----|--------|--------|--------|-----|-----|------------|-----|-----|
| 41 | 2.0 | 5810.6 | 2290.4 | 4741.4 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 42 | 2.0 | 6003.4 | 2147.8 | 4713.2 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 43 | 2.0 | 6181.9 | 2005.3 | 4680.2 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 44 | 2.0 | 6346.0 | 1863.2 | 4642.3 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 45 | 2.0 | 6495.4 | 1721.7 | 4599.7 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 46 | 2.0 | 6630.1 | 1581.0 | 4552.2 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 47 | 2.0 | 6749.9 | 1441.3 | 4500.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 48 | 1.9 | 6854.7 | 1302.8 | 4443.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 49 | 1.9 | 6944.5 | 1165.6 | 4381.3 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 50 | 1.9 | 7019.4 | 1030.1 | 4314.9 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 51 | 1.9 | 7079.3 | 896.3  | 4243.9 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 52 | 1.9 | 7124.2 | 764.5  | 4168.1 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 53 | 1.9 | 7154.3 | 634.8  | 4087.8 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 54 | 1.9 | 7169.7 | 507.4  | 4002.9 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 55 | 1.9 | 7170.5 | 382.5  | 3913.4 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 56 | 1.8 | 7157.0 | 260.2  | 3819.3 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 57 | 1.8 | 7129.3 | 140.7  | 3720.8 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 58 | 1.3 | 5039.4 | 29.0   | 2584.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 59 | 0.5 | 2048.2 | 0.0    | 1033.9 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 60 | 1.8 | 7032.4 | 0.0    | 3510.5 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 61 | 1.8 | 6963.7 | 0.0    | 3398.8 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 62 | 1.8 | 6882.1 | 0.0    | 3282.7 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 63 | 1.7 | 6787.8 | 0.0    | 3162.3 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 64 | 1.7 | 6677.3 | 0.0    | 3037.7 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 65 | 1.7 | 6544.4 | 0.0    | 2908.9 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 66 | 1.7 | 6400.6 | 0.0    | 2776.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 67 | 1.7 | 6246.5 | 0.0    | 2638.9 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 68 | 1.6 | 6082.5 | 0.0    | 2497.9 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 69 | 1.6 | 5909.2 | 0.0    | 2352.8 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 70 | 0.4 | 1345.3 | 0.0    | 527.7  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 71 | 1.2 | 4329.7 | 0.0    | 1676.2 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 72 | 1.6 | 5316.5 | 0.0    | 2051.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 73 | 1.5 | 4953.8 | 0.0    | 1894.3 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 74 | 0.7 | 2045.7 | 0.0    | 779.2  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 75 | 0.9 | 2549.3 | 0.0    | 954.7  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 76 | 1.5 | 4250.6 | 0.0    | 1569.7 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 77 | 1.5 | 3909.7 | 0.0    | 1401.9 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 78 | 1.4 | 3571.3 | 0.0    | 1230.6 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 79 | 1.4 | 3236.3 | 0.0    | 1055.8 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 80 | 1.3 | 2794.1 | 0.0    | 845.8  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 81 | 0.0 | 19.9   | 0.0    | 5.7    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 82 | 0.0 | 90.1   | 0.0    | 25.9   | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 83 | 1.4 | 2548.5 | 0.0    | 695.8  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 84 | 1.3 | 2228.5 | 0.0    | 510.9  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 85 | 1.3 | 1914.7 | 0.0    | 322.7  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 86 | 1.3 | 1608.0 | 0.0    | 131.3  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 87 | 1.2 | 1315.2 | 0.0    | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 88 | 1.2 | 1043.6 | 0.0    | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 89 | 1.2 | 780.4  | 0.0    | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 90 | 1.1 | 526.3  | 0.0    | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 91 | 1.1 | 281.9  | 0.0    | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 92 | 0.8 | 57.3   | 0.0    | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |

Failure Surface Specified By 80 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 22.31       | 66.00       |
| 2         | 23.83       | 64.70       |
| 3         | 25.38       | 63.44       |
| 4         | 26.96       | 62.21       |
| 5         | 28.57       | 61.02       |
| 6         | 30.20       | 59.87       |
| 7         | 31.86       | 58.76       |
| 8         | 33.55       | 57.68       |
| 9         | 35.26       | 56.65       |
| 10        | 37.00       | 55.66       |
| 11        | 38.76       | 54.71       |
| 12        | 40.54       | 53.80       |
| 13        | 42.35       | 52.94       |
| 14        | 44.17       | 52.11       |
| 15        | 46.01       | 51.33       |
| 16        | 47.87       | 50.60       |
| 17        | 49.75       | 49.91       |
| 18        | 51.64       | 49.26       |
| 19        | 53.55       | 48.66       |
| 20        | 55.47       | 48.10       |
| 21        | 57.40       | 47.59       |
| 22        | 59.35       | 47.12       |
| 23        | 61.30       | 46.70       |
| 24        | 63.27       | 46.33       |
| 25        | 65.24       | 46.00       |
| 26        | 67.22       | 45.72       |
| 27        | 69.21       | 45.49       |
| 28        | 71.20       | 45.30       |
| 29        | 73.19       | 45.17       |

|    |        |       |
|----|--------|-------|
| 30 | 75.19  | 45.07 |
| 31 | 77.19  | 45.03 |
| 32 | 79.19  | 45.03 |
| 33 | 81.19  | 45.08 |
| 34 | 83.19  | 45.18 |
| 35 | 85.18  | 45.32 |
| 36 | 87.17  | 45.52 |
| 37 | 89.16  | 45.76 |
| 38 | 91.14  | 46.04 |
| 39 | 93.11  | 46.37 |
| 40 | 95.07  | 46.75 |
| 41 | 97.03  | 47.18 |
| 42 | 98.97  | 47.65 |
| 43 | 100.90 | 48.16 |
| 44 | 102.82 | 48.73 |
| 45 | 104.73 | 49.34 |
| 46 | 106.62 | 49.99 |
| 47 | 108.49 | 50.68 |
| 48 | 110.35 | 51.43 |
| 49 | 112.19 | 52.21 |
| 50 | 114.01 | 53.04 |
| 51 | 115.81 | 53.91 |
| 52 | 117.59 | 54.82 |
| 53 | 119.35 | 55.78 |
| 54 | 121.08 | 56.78 |
| 55 | 122.79 | 57.81 |
| 56 | 124.48 | 58.89 |
| 57 | 126.14 | 60.01 |
| 58 | 127.77 | 61.16 |
| 59 | 129.37 | 62.36 |
| 60 | 130.95 | 63.59 |
| 61 | 132.50 | 64.86 |
| 62 | 134.01 | 66.16 |
| 63 | 135.50 | 67.50 |
| 64 | 136.95 | 68.88 |
| 65 | 138.37 | 70.28 |
| 66 | 139.75 | 71.73 |
| 67 | 141.11 | 73.20 |
| 68 | 142.42 | 74.71 |
| 69 | 143.70 | 76.24 |
| 70 | 144.95 | 77.81 |
| 71 | 146.15 | 79.40 |
| 72 | 147.32 | 81.03 |
| 73 | 148.45 | 82.68 |
| 74 | 149.54 | 84.35 |
| 75 | 150.59 | 86.06 |
| 76 | 151.60 | 87.78 |
| 77 | 152.57 | 89.53 |
| 78 | 153.50 | 91.30 |
| 79 | 154.38 | 93.10 |
| 80 | 154.80 | 94.00 |

Circle Center At X = 78.1 ; Y = 129.6 and Radius, 84.6

\*\*\* 3.238 \*\*\*

1

Failure Surface Specified By 82 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 16.15       | 66.00       |
| 2         | 17.74       | 64.78       |
| 3         | 19.36       | 63.60       |
| 4         | 21.00       | 62.46       |
| 5         | 22.66       | 61.35       |
| 6         | 24.35       | 60.27       |
| 7         | 26.06       | 59.23       |
| 8         | 27.79       | 58.23       |
| 9         | 29.54       | 57.27       |
| 10        | 31.31       | 56.34       |
| 11        | 33.10       | 55.46       |
| 12        | 34.92       | 54.61       |
| 13        | 36.74       | 53.80       |
| 14        | 38.59       | 53.03       |
| 15        | 40.45       | 52.30       |
| 16        | 42.33       | 51.61       |
| 17        | 44.22       | 50.95       |
| 18        | 46.12       | 50.35       |
| 19        | 48.04       | 49.78       |
| 20        | 49.97       | 49.25       |
| 21        | 51.91       | 48.76       |

|    |        |       |
|----|--------|-------|
| 22 | 53.86  | 48.32 |
| 23 | 55.82  | 47.92 |
| 24 | 57.79  | 47.56 |
| 25 | 59.76  | 47.24 |
| 26 | 61.74  | 46.97 |
| 27 | 63.73  | 46.73 |
| 28 | 65.72  | 46.54 |
| 29 | 67.72  | 46.40 |
| 30 | 69.71  | 46.29 |
| 31 | 71.71  | 46.23 |
| 32 | 73.71  | 46.21 |
| 33 | 75.71  | 46.24 |
| 34 | 77.71  | 46.31 |
| 35 | 79.71  | 46.42 |
| 36 | 81.70  | 46.57 |
| 37 | 83.69  | 46.77 |
| 38 | 85.68  | 47.00 |
| 39 | 87.66  | 47.29 |
| 40 | 89.63  | 47.61 |
| 41 | 91.60  | 47.98 |
| 42 | 93.56  | 48.38 |
| 43 | 95.50  | 48.83 |
| 44 | 97.44  | 49.32 |
| 45 | 99.37  | 49.86 |
| 46 | 101.29 | 50.43 |
| 47 | 103.19 | 51.05 |
| 48 | 105.08 | 51.70 |
| 49 | 106.95 | 52.40 |
| 50 | 108.81 | 53.14 |
| 51 | 110.66 | 53.91 |
| 52 | 112.48 | 54.73 |
| 53 | 114.29 | 55.58 |
| 54 | 116.08 | 56.48 |
| 55 | 117.85 | 57.41 |
| 56 | 119.60 | 58.38 |
| 57 | 121.33 | 59.39 |
| 58 | 123.03 | 60.43 |
| 59 | 124.72 | 61.51 |
| 60 | 126.38 | 62.62 |
| 61 | 128.01 | 63.78 |
| 62 | 129.62 | 64.96 |
| 63 | 131.21 | 66.18 |
| 64 | 132.76 | 67.44 |
| 65 | 134.30 | 68.72 |
| 66 | 135.80 | 70.04 |
| 67 | 137.27 | 71.39 |
| 68 | 138.72 | 72.78 |
| 69 | 140.13 | 74.19 |
| 70 | 141.52 | 75.63 |
| 71 | 142.87 | 77.11 |
| 72 | 144.19 | 78.61 |
| 73 | 145.48 | 80.14 |
| 74 | 146.73 | 81.70 |
| 75 | 147.95 | 83.28 |
| 76 | 149.14 | 84.89 |
| 77 | 150.29 | 86.52 |
| 78 | 151.41 | 88.18 |
| 79 | 152.49 | 89.87 |
| 80 | 153.54 | 91.57 |
| 81 | 154.55 | 93.30 |
| 82 | 154.93 | 94.00 |

Circle Center At X = 73.6 ; Y = 139.4 and Radius, 93.2

\*\*\* 3.252 \*\*\*

Failure Surface Specified By 88 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 18.21       | 66.00       |
| 2         | 19.77       | 64.75       |
| 3         | 21.35       | 63.53       |
| 4         | 22.96       | 62.35       |
| 5         | 24.60       | 61.19       |
| 6         | 26.25       | 60.07       |
| 7         | 27.93       | 58.99       |
| 8         | 29.64       | 57.94       |
| 9         | 31.36       | 56.92       |
| 10        | 33.10       | 55.94       |
| 11        | 34.86       | 54.99       |
| 12        | 36.64       | 54.08       |

|    |        |       |
|----|--------|-------|
| 13 | 38.44  | 53.21 |
| 14 | 40.26  | 52.37 |
| 15 | 42.09  | 51.57 |
| 16 | 43.94  | 50.81 |
| 17 | 45.80  | 50.08 |
| 18 | 47.68  | 49.39 |
| 19 | 49.57  | 48.74 |
| 20 | 51.48  | 48.13 |
| 21 | 53.39  | 47.56 |
| 22 | 55.32  | 47.03 |
| 23 | 57.26  | 46.53 |
| 24 | 59.21  | 46.08 |
| 25 | 61.16  | 45.66 |
| 26 | 63.13  | 45.29 |
| 27 | 65.10  | 44.95 |
| 28 | 67.08  | 44.66 |
| 29 | 69.06  | 44.40 |
| 30 | 71.05  | 44.19 |
| 31 | 73.04  | 44.01 |
| 32 | 75.04  | 43.88 |
| 33 | 77.04  | 43.78 |
| 34 | 79.04  | 43.73 |
| 35 | 81.04  | 43.72 |
| 36 | 83.03  | 43.74 |
| 37 | 85.03  | 43.81 |
| 38 | 87.03  | 43.92 |
| 39 | 89.03  | 44.07 |
| 40 | 91.02  | 44.26 |
| 41 | 93.00  | 44.49 |
| 42 | 94.98  | 44.76 |
| 43 | 96.96  | 45.07 |
| 44 | 98.93  | 45.42 |
| 45 | 100.89 | 45.81 |
| 46 | 102.84 | 46.24 |
| 47 | 104.79 | 46.71 |
| 48 | 106.72 | 47.22 |
| 49 | 108.65 | 47.76 |
| 50 | 110.56 | 48.35 |
| 51 | 112.46 | 48.98 |
| 52 | 114.35 | 49.64 |
| 53 | 116.22 | 50.34 |
| 54 | 118.08 | 51.08 |
| 55 | 119.92 | 51.86 |
| 56 | 121.75 | 52.67 |
| 57 | 123.56 | 53.52 |
| 58 | 125.35 | 54.41 |
| 59 | 127.12 | 55.33 |
| 60 | 128.88 | 56.29 |
| 61 | 130.61 | 57.29 |
| 62 | 132.33 | 58.32 |
| 63 | 134.02 | 59.38 |
| 64 | 135.69 | 60.48 |
| 65 | 137.34 | 61.61 |
| 66 | 138.97 | 62.77 |
| 67 | 140.57 | 63.97 |
| 68 | 142.15 | 65.20 |
| 69 | 143.70 | 66.46 |
| 70 | 145.22 | 67.76 |
| 71 | 146.72 | 69.08 |
| 72 | 148.20 | 70.43 |
| 73 | 149.64 | 71.82 |
| 74 | 151.06 | 73.23 |
| 75 | 152.44 | 74.67 |
| 76 | 153.80 | 76.14 |
| 77 | 155.13 | 77.63 |
| 78 | 156.43 | 79.16 |
| 79 | 157.69 | 80.70 |
| 80 | 158.93 | 82.28 |
| 81 | 160.13 | 83.88 |
| 82 | 161.30 | 85.50 |
| 83 | 162.44 | 87.14 |
| 84 | 163.54 | 88.81 |
| 85 | 164.61 | 90.50 |
| 86 | 165.64 | 92.21 |
| 87 | 166.64 | 93.95 |
| 88 | 166.67 | 94.00 |

Circle Center At X = 80.7 ; Y = 142.4 and Radius, 98.7

\*\*\* 3.268 \*\*\*

Failure Surface Specified By 91 Coordinate Points

| Point<br>No. | X-Surf<br>(ft) | Y-Surf<br>(ft) |
|--------------|----------------|----------------|
| 1            | 16.15          | 66.00          |
| 2            | 17.76          | 64.81          |
| 3            | 19.39          | 63.64          |
| 4            | 21.04          | 62.51          |
| 5            | 22.70          | 61.41          |
| 6            | 24.39          | 60.34          |
| 7            | 26.10          | 59.30          |
| 8            | 27.83          | 58.29          |
| 9            | 29.58          | 57.32          |
| 10           | 31.34          | 56.37          |
| 11           | 33.12          | 55.46          |
| 12           | 34.92          | 54.58          |
| 13           | 36.73          | 53.74          |
| 14           | 38.56          | 52.93          |
| 15           | 40.40          | 52.15          |
| 16           | 42.26          | 51.41          |
| 17           | 44.13          | 50.70          |
| 18           | 46.01          | 50.02          |
| 19           | 47.91          | 49.39          |
| 20           | 49.81          | 48.78          |
| 21           | 51.73          | 48.21          |
| 22           | 53.66          | 47.68          |
| 23           | 55.59          | 47.18          |
| 24           | 57.54          | 46.72          |
| 25           | 59.49          | 46.29          |
| 26           | 61.46          | 45.90          |
| 27           | 63.42          | 45.55          |
| 28           | 65.40          | 45.23          |
| 29           | 67.38          | 44.95          |
| 30           | 69.36          | 44.71          |
| 31           | 71.35          | 44.50          |
| 32           | 73.35          | 44.33          |
| 33           | 75.34          | 44.19          |
| 34           | 77.34          | 44.10          |
| 35           | 79.34          | 44.03          |
| 36           | 81.34          | 44.01          |
| 37           | 83.34          | 44.02          |
| 38           | 85.34          | 44.07          |
| 39           | 87.34          | 44.16          |
| 40           | 89.33          | 44.28          |
| 41           | 91.32          | 44.45          |
| 42           | 93.32          | 44.64          |
| 43           | 95.30          | 44.88          |
| 44           | 97.28          | 45.15          |
| 45           | 99.26          | 45.45          |
| 46           | 101.23         | 45.80          |
| 47           | 103.19         | 46.18          |
| 48           | 105.15         | 46.59          |
| 49           | 107.10         | 47.04          |
| 50           | 109.04         | 47.53          |
| 51           | 110.97         | 48.05          |
| 52           | 112.89         | 48.61          |
| 53           | 114.80         | 49.21          |
| 54           | 116.70         | 49.84          |
| 55           | 118.58         | 50.50          |
| 56           | 120.46         | 51.20          |
| 57           | 122.32         | 51.93          |
| 58           | 124.16         | 52.70          |
| 59           | 126.00         | 53.50          |
| 60           | 127.81         | 54.34          |
| 61           | 129.62         | 55.20          |
| 62           | 131.40         | 56.11          |
| 63           | 133.17         | 57.04          |
| 64           | 134.92         | 58.01          |
| 65           | 136.65         | 59.01          |
| 66           | 138.37         | 60.04          |
| 67           | 140.06         | 61.10          |
| 68           | 141.74         | 62.19          |
| 69           | 143.39         | 63.31          |
| 70           | 145.03         | 64.47          |
| 71           | 146.64         | 65.65          |
| 72           | 148.23         | 66.87          |
| 73           | 149.79         | 68.11          |
| 74           | 151.34         | 69.38          |
| 75           | 152.86         | 70.68          |
| 76           | 154.35         | 72.01          |
| 77           | 155.83         | 73.36          |
| 78           | 157.27         | 74.74          |
| 79           | 158.69         | 76.15          |
| 80           | 160.09         | 77.58          |
| 81           | 161.45         | 79.04          |
| 82           | 162.79         | 80.53          |
| 83           | 164.11         | 82.04          |
| 84           | 165.39         | 83.57          |

result.out

|    |        |       |
|----|--------|-------|
| 85 | 166.65 | 85.13 |
| 86 | 167.88 | 86.71 |
| 87 | 169.07 | 88.31 |
| 88 | 170.24 | 89.93 |
| 89 | 171.38 | 91.57 |
| 90 | 172.49 | 93.24 |
| 91 | 172.97 | 94.00 |

Circle Center At X = 81.6 ; Y = 152.5 and Radius, 108.5

\*\*\* 3.273 \*\*\*

Failure Surface Specified By 84 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 14.10       | 66.00       |
| 2         | 15.70       | 64.79       |
| 3         | 17.31       | 63.62       |
| 4         | 18.96       | 62.47       |
| 5         | 20.62       | 61.37       |
| 6         | 22.31       | 60.29       |
| 7         | 24.02       | 59.25       |
| 8         | 25.75       | 58.25       |
| 9         | 27.50       | 57.28       |
| 10        | 29.27       | 56.35       |
| 11        | 31.06       | 55.46       |
| 12        | 32.86       | 54.60       |
| 13        | 34.69       | 53.78       |
| 14        | 36.53       | 52.99       |
| 15        | 38.38       | 52.25       |
| 16        | 40.25       | 51.54       |
| 17        | 42.14       | 50.87       |
| 18        | 44.04       | 50.24       |
| 19        | 45.95       | 49.65       |
| 20        | 47.87       | 49.10       |
| 21        | 49.81       | 48.59       |
| 22        | 51.75       | 48.12       |
| 23        | 53.70       | 47.69       |
| 24        | 55.66       | 47.30       |
| 25        | 57.63       | 46.95       |
| 26        | 59.61       | 46.64       |
| 27        | 61.59       | 46.37       |
| 28        | 63.58       | 46.14       |
| 29        | 65.57       | 45.95       |
| 30        | 67.56       | 45.80       |
| 31        | 69.56       | 45.69       |
| 32        | 71.56       | 45.63       |
| 33        | 73.56       | 45.60       |
| 34        | 75.56       | 45.62       |
| 35        | 77.56       | 45.68       |
| 36        | 79.55       | 45.78       |
| 37        | 81.55       | 45.92       |
| 38        | 83.54       | 46.10       |
| 39        | 85.53       | 46.32       |
| 40        | 87.51       | 46.58       |
| 41        | 89.49       | 46.89       |
| 42        | 91.46       | 47.23       |
| 43        | 93.42       | 47.61       |
| 44        | 95.38       | 48.04       |
| 45        | 97.32       | 48.50       |
| 46        | 99.26       | 49.01       |
| 47        | 101.18      | 49.55       |
| 48        | 103.09      | 50.13       |
| 49        | 105.00      | 50.76       |
| 50        | 106.88      | 51.42       |
| 51        | 108.76      | 52.12       |
| 52        | 110.62      | 52.86       |
| 53        | 112.46      | 53.63       |
| 54        | 114.29      | 54.45       |
| 55        | 116.09      | 55.30       |
| 56        | 117.89      | 56.19       |
| 57        | 119.66      | 57.11       |
| 58        | 121.41      | 58.07       |
| 59        | 123.15      | 59.07       |
| 60        | 124.86      | 60.10       |
| 61        | 126.55      | 61.17       |
| 62        | 128.22      | 62.27       |
| 63        | 129.87      | 63.41       |
| 64        | 131.49      | 64.58       |
| 65        | 133.09      | 65.78       |
| 66        | 134.66      | 67.01       |

result.out

|    |        |       |
|----|--------|-------|
| 67 | 136.21 | 68.28 |
| 68 | 137.73 | 69.58 |
| 69 | 139.22 | 70.91 |
| 70 | 140.69 | 72.27 |
| 71 | 142.13 | 73.66 |
| 72 | 143.54 | 75.08 |
| 73 | 144.92 | 76.52 |
| 74 | 146.27 | 78.00 |
| 75 | 147.59 | 79.50 |
| 76 | 148.88 | 81.03 |
| 77 | 150.13 | 82.59 |
| 78 | 151.36 | 84.17 |
| 79 | 152.55 | 85.78 |
| 80 | 153.71 | 87.41 |
| 81 | 154.83 | 89.06 |
| 82 | 155.92 | 90.74 |
| 83 | 156.98 | 92.44 |
| 84 | 157.90 | 94.00 |

Circle Center At X = 73.7 ; Y = 143.0 and Radius, 97.4

\*\*\* 3.279 \*\*\*

1

Failure Surface Specified By 83 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 24.36       | 66.00       |
| 2         | 25.84       | 64.65       |
| 3         | 27.34       | 63.34       |
| 4         | 28.88       | 62.06       |
| 5         | 30.45       | 60.81       |
| 6         | 32.04       | 59.61       |
| 7         | 33.67       | 58.44       |
| 8         | 35.32       | 57.31       |
| 9         | 36.99       | 56.22       |
| 10        | 38.69       | 55.17       |
| 11        | 40.42       | 54.16       |
| 12        | 42.17       | 53.18       |
| 13        | 43.94       | 52.25       |
| 14        | 45.73       | 51.37       |
| 15        | 47.54       | 50.52       |
| 16        | 49.37       | 49.71       |
| 17        | 51.22       | 48.95       |
| 18        | 53.09       | 48.24       |
| 19        | 54.97       | 47.56       |
| 20        | 56.87       | 46.93       |
| 21        | 58.78       | 46.35       |
| 22        | 60.71       | 45.81       |
| 23        | 62.65       | 45.31       |
| 24        | 64.60       | 44.86       |
| 25        | 66.55       | 44.46       |
| 26        | 68.52       | 44.10       |
| 27        | 70.50       | 43.79       |
| 28        | 72.48       | 43.52       |
| 29        | 74.47       | 43.30       |
| 30        | 76.46       | 43.13       |
| 31        | 78.46       | 43.00       |
| 32        | 80.45       | 42.92       |
| 33        | 82.45       | 42.89       |
| 34        | 84.45       | 42.90       |
| 35        | 86.45       | 42.96       |
| 36        | 88.45       | 43.07       |
| 37        | 90.44       | 43.22       |
| 38        | 92.43       | 43.42       |
| 39        | 94.42       | 43.67       |
| 40        | 96.40       | 43.96       |
| 41        | 98.37       | 44.30       |
| 42        | 100.33      | 44.68       |
| 43        | 102.28      | 45.11       |
| 44        | 104.23      | 45.59       |
| 45        | 106.16      | 46.11       |
| 46        | 108.08      | 46.68       |
| 47        | 109.98      | 47.29       |
| 48        | 111.87      | 47.94       |
| 49        | 113.74      | 48.64       |
| 50        | 115.60      | 49.38       |
| 51        | 117.44      | 50.17       |
| 52        | 119.26      | 51.00       |
| 53        | 121.06      | 51.87       |
| 54        | 122.84      | 52.78       |

result.out

|    |        |       |
|----|--------|-------|
| 55 | 124.60 | 53.73 |
| 56 | 126.34 | 54.73 |
| 57 | 128.05 | 55.76 |
| 58 | 129.73 | 56.84 |
| 59 | 131.39 | 57.95 |
| 60 | 133.03 | 59.10 |
| 61 | 134.64 | 60.29 |
| 62 | 136.22 | 61.52 |
| 63 | 137.77 | 62.78 |
| 64 | 139.29 | 64.08 |
| 65 | 140.78 | 65.42 |
| 66 | 142.24 | 66.79 |
| 67 | 143.66 | 68.19 |
| 68 | 145.05 | 69.62 |
| 69 | 146.41 | 71.09 |
| 70 | 147.74 | 72.59 |
| 71 | 149.02 | 74.12 |
| 72 | 150.28 | 75.68 |
| 73 | 151.49 | 77.27 |
| 74 | 152.67 | 78.88 |
| 75 | 153.81 | 80.53 |
| 76 | 154.91 | 82.19 |
| 77 | 155.98 | 83.89 |
| 78 | 157.00 | 85.61 |
| 79 | 157.98 | 87.35 |
| 80 | 158.92 | 89.11 |
| 81 | 159.82 | 90.90 |
| 82 | 160.68 | 92.71 |
| 83 | 161.26 | 94.00 |

Circle Center At X = 82.9 ; Y = 128.5 and Radius, 85.7

\*\*\* 3.282 \*\*\*

Failure Surface Specified by 86 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 20.26       | 66.00       |
| 2         | 21.77       | 64.69       |
| 3         | 23.31       | 63.42       |
| 4         | 24.88       | 62.18       |
| 5         | 26.47       | 60.97       |
| 6         | 28.09       | 59.80       |
| 7         | 29.74       | 58.66       |
| 8         | 31.41       | 57.56       |
| 9         | 33.10       | 56.49       |
| 10        | 34.82       | 55.47       |
| 11        | 36.56       | 54.48       |
| 12        | 38.32       | 53.52       |
| 13        | 40.09       | 52.61       |
| 14        | 41.89       | 51.74       |
| 15        | 43.71       | 50.90       |
| 16        | 45.54       | 50.10       |
| 17        | 47.40       | 49.35       |
| 18        | 49.26       | 48.63       |
| 19        | 51.15       | 47.96       |
| 20        | 53.04       | 47.32       |
| 21        | 54.95       | 46.73       |
| 22        | 56.87       | 46.18       |
| 23        | 58.81       | 45.67       |
| 24        | 60.75       | 45.20       |
| 25        | 62.71       | 44.77       |
| 26        | 64.67       | 44.39       |
| 27        | 66.64       | 44.05       |
| 28        | 68.62       | 43.75       |
| 29        | 70.60       | 43.50       |
| 30        | 72.59       | 43.29       |
| 31        | 74.58       | 43.12       |
| 32        | 76.58       | 42.99       |
| 33        | 78.58       | 42.91       |
| 34        | 80.58       | 42.87       |
| 35        | 82.58       | 42.88       |
| 36        | 84.58       | 42.92       |
| 37        | 86.58       | 43.01       |
| 38        | 88.57       | 43.15       |
| 39        | 90.56       | 43.33       |
| 40        | 92.55       | 43.55       |
| 41        | 94.53       | 43.81       |
| 42        | 96.51       | 44.12       |
| 43        | 98.48       | 44.47       |
| 44        | 100.44      | 44.86       |

result.out

|    |        |       |
|----|--------|-------|
| 45 | 102.39 | 45.29 |
| 46 | 104.33 | 45.77 |
| 47 | 106.27 | 46.29 |
| 48 | 108.19 | 46.85 |
| 49 | 110.09 | 47.45 |
| 50 | 111.99 | 48.10 |
| 51 | 113.87 | 48.78 |
| 52 | 115.73 | 49.50 |
| 53 | 117.58 | 50.27 |
| 54 | 119.41 | 51.07 |
| 55 | 121.22 | 51.92 |
| 56 | 123.02 | 52.80 |
| 57 | 124.79 | 53.72 |
| 58 | 126.55 | 54.68 |
| 59 | 128.28 | 55.68 |
| 60 | 129.99 | 56.72 |
| 61 | 131.68 | 57.79 |
| 62 | 133.34 | 58.90 |
| 63 | 134.98 | 60.04 |
| 64 | 136.60 | 61.22 |
| 65 | 138.19 | 62.43 |
| 66 | 139.75 | 63.68 |
| 67 | 141.29 | 64.97 |
| 68 | 142.79 | 66.28 |
| 69 | 144.27 | 67.63 |
| 70 | 145.72 | 69.01 |
| 71 | 147.14 | 70.42 |
| 72 | 148.53 | 71.86 |
| 73 | 149.88 | 73.33 |
| 74 | 151.21 | 74.83 |
| 75 | 152.50 | 76.35 |
| 76 | 153.75 | 77.91 |
| 77 | 154.98 | 79.49 |
| 78 | 156.17 | 81.10 |
| 79 | 157.32 | 82.73 |
| 80 | 158.44 | 84.39 |
| 81 | 159.52 | 86.07 |
| 82 | 160.57 | 87.78 |
| 83 | 161.57 | 89.51 |
| 84 | 162.54 | 91.25 |
| 85 | 163.48 | 93.02 |
| 86 | 163.96 | 94.00 |

Circle Center At X = 81.4 ; Y = 135.1 and Radius, 92.3

\*\*\* 3.310 \*\*\*

1

Failure Surface Specified By 80 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 22.31       | 66.00       |
| 2         | 23.80       | 64.67       |
| 3         | 25.33       | 63.37       |
| 4         | 26.88       | 62.12       |
| 5         | 28.47       | 60.90       |
| 6         | 30.08       | 59.72       |
| 7         | 31.73       | 58.58       |
| 8         | 33.40       | 57.48       |
| 9         | 35.10       | 56.42       |
| 10        | 36.82       | 55.41       |
| 11        | 38.57       | 54.44       |
| 12        | 40.34       | 53.50       |
| 13        | 42.13       | 52.62       |
| 14        | 43.94       | 51.77       |
| 15        | 45.77       | 50.97       |
| 16        | 47.63       | 50.22       |
| 17        | 49.50       | 49.51       |
| 18        | 51.38       | 48.85       |
| 19        | 53.29       | 48.23       |
| 20        | 55.20       | 47.66       |
| 21        | 57.13       | 47.14       |
| 22        | 59.08       | 46.66       |
| 23        | 61.03       | 46.24       |
| 24        | 62.99       | 45.86       |
| 25        | 64.97       | 45.52       |
| 26        | 66.95       | 45.24       |
| 27        | 68.93       | 45.00       |
| 28        | 70.92       | 44.82       |
| 29        | 72.92       | 44.68       |
| 30        | 74.92       | 44.59       |

result.out

|    |        |       |
|----|--------|-------|
| 31 | 76.92  | 44.55 |
| 32 | 78.92  | 44.55 |
| 33 | 80.92  | 44.61 |
| 34 | 82.91  | 44.72 |
| 35 | 84.91  | 44.87 |
| 36 | 86.90  | 45.07 |
| 37 | 88.88  | 45.32 |
| 38 | 90.86  | 45.62 |
| 39 | 92.83  | 45.97 |
| 40 | 94.79  | 46.37 |
| 41 | 96.74  | 46.81 |
| 42 | 98.68  | 47.30 |
| 43 | 100.60 | 47.84 |
| 44 | 102.52 | 48.42 |
| 45 | 104.41 | 49.05 |
| 46 | 106.30 | 49.73 |
| 47 | 108.16 | 50.45 |
| 48 | 110.01 | 51.22 |
| 49 | 111.83 | 52.04 |
| 50 | 113.64 | 52.89 |
| 51 | 115.43 | 53.79 |
| 52 | 117.19 | 54.74 |
| 53 | 118.93 | 55.73 |
| 54 | 120.64 | 56.75 |
| 55 | 122.33 | 57.83 |
| 56 | 124.00 | 58.94 |
| 57 | 125.63 | 60.09 |
| 58 | 127.24 | 61.28 |
| 59 | 128.81 | 62.51 |
| 60 | 130.36 | 63.78 |
| 61 | 131.87 | 65.09 |
| 62 | 133.36 | 66.43 |
| 63 | 134.81 | 67.81 |
| 64 | 136.22 | 69.22 |
| 65 | 137.60 | 70.67 |
| 66 | 138.95 | 72.15 |
| 67 | 140.26 | 73.66 |
| 68 | 141.53 | 75.20 |
| 69 | 142.76 | 76.78 |
| 70 | 143.95 | 78.38 |
| 71 | 145.11 | 80.02 |
| 72 | 146.22 | 81.68 |
| 73 | 147.30 | 83.37 |
| 74 | 148.33 | 85.08 |
| 75 | 149.32 | 86.82 |
| 76 | 150.26 | 88.58 |
| 77 | 151.17 | 90.36 |
| 78 | 152.03 | 92.17 |
| 79 | 152.84 | 93.99 |
| 80 | 152.85 | 94.00 |

Circle Center At x = 77.6 ; y = 126.5 and radius, 82.0

\*\*\* 3.310 \*\*\*

Failure surface specified By 91 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 10.00       | 66.00       |
| 2         | 11.62       | 64.83       |
| 3         | 13.27       | 63.69       |
| 4         | 14.93       | 62.58       |
| 5         | 16.62       | 61.51       |
| 6         | 18.32       | 60.46       |
| 7         | 20.04       | 59.44       |
| 8         | 21.78       | 58.45       |
| 9         | 23.54       | 57.50       |
| 10        | 25.31       | 56.58       |
| 11        | 27.10       | 55.69       |
| 12        | 28.91       | 54.83       |
| 13        | 30.73       | 54.00       |
| 14        | 32.57       | 53.21       |
| 15        | 34.42       | 52.45       |
| 16        | 36.28       | 51.72       |
| 17        | 38.16       | 51.03       |
| 18        | 40.05       | 50.37       |
| 19        | 41.95       | 49.75       |
| 20        | 43.86       | 49.16       |
| 21        | 45.78       | 48.60       |
| 22        | 47.71       | 48.08       |
| 23        | 49.65       | 47.60       |

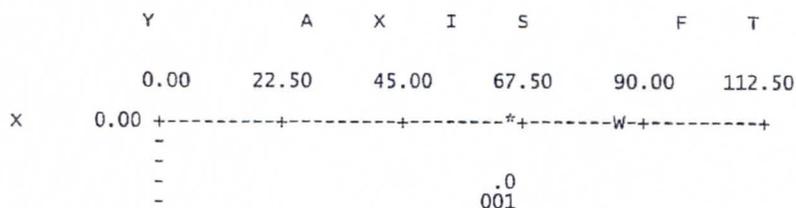
result.out

|    |        |       |
|----|--------|-------|
| 24 | 51.60  | 47.15 |
| 25 | 53.56  | 46.73 |
| 26 | 55.52  | 46.35 |
| 27 | 57.49  | 46.01 |
| 28 | 59.47  | 45.70 |
| 29 | 61.45  | 45.42 |
| 30 | 63.43  | 45.18 |
| 31 | 65.42  | 44.98 |
| 32 | 67.42  | 44.82 |
| 33 | 69.41  | 44.69 |
| 34 | 71.41  | 44.59 |
| 35 | 73.41  | 44.53 |
| 36 | 75.41  | 44.51 |
| 37 | 77.41  | 44.52 |
| 38 | 79.41  | 44.57 |
| 39 | 81.41  | 44.66 |
| 40 | 83.40  | 44.78 |
| 41 | 85.40  | 44.94 |
| 42 | 87.39  | 45.13 |
| 43 | 89.37  | 45.36 |
| 44 | 91.36  | 45.63 |
| 45 | 93.33  | 45.93 |
| 46 | 95.30  | 46.26 |
| 47 | 97.27  | 46.64 |
| 48 | 99.23  | 47.04 |
| 49 | 101.18 | 47.49 |
| 50 | 103.12 | 47.96 |
| 51 | 105.05 | 48.48 |
| 52 | 106.98 | 49.02 |
| 53 | 108.89 | 49.60 |
| 54 | 110.79 | 50.22 |
| 55 | 112.68 | 50.87 |
| 56 | 114.56 | 51.55 |
| 57 | 116.43 | 52.27 |
| 58 | 118.28 | 53.02 |
| 59 | 120.12 | 53.81 |
| 60 | 121.95 | 54.63 |
| 61 | 123.76 | 55.48 |
| 62 | 125.55 | 56.36 |
| 63 | 127.33 | 57.28 |
| 64 | 129.09 | 58.22 |
| 65 | 130.84 | 59.20 |
| 66 | 132.56 | 60.21 |
| 67 | 134.27 | 61.25 |
| 68 | 135.96 | 62.32 |
| 69 | 137.63 | 63.42 |
| 70 | 139.28 | 64.56 |
| 71 | 140.91 | 65.72 |
| 72 | 142.52 | 66.91 |
| 73 | 144.10 | 68.13 |
| 74 | 145.66 | 69.37 |
| 75 | 147.21 | 70.65 |
| 76 | 148.72 | 71.95 |
| 77 | 150.22 | 73.28 |
| 78 | 151.69 | 74.64 |
| 79 | 153.13 | 76.02 |
| 80 | 154.55 | 77.43 |
| 81 | 155.94 | 78.86 |
| 82 | 157.31 | 80.32 |
| 83 | 158.65 | 81.81 |
| 84 | 159.97 | 83.31 |
| 85 | 161.26 | 84.84 |
| 86 | 162.52 | 86.40 |
| 87 | 163.75 | 87.97 |
| 88 | 164.95 | 89.57 |
| 89 | 166.12 | 91.19 |
| 90 | 167.27 | 92.83 |
| 91 | 168.05 | 94.00 |

Circle Center At X = 75.6 ; Y = 155.5 and Radius, 111.0

\*\*\* 3.325 \*\*\*

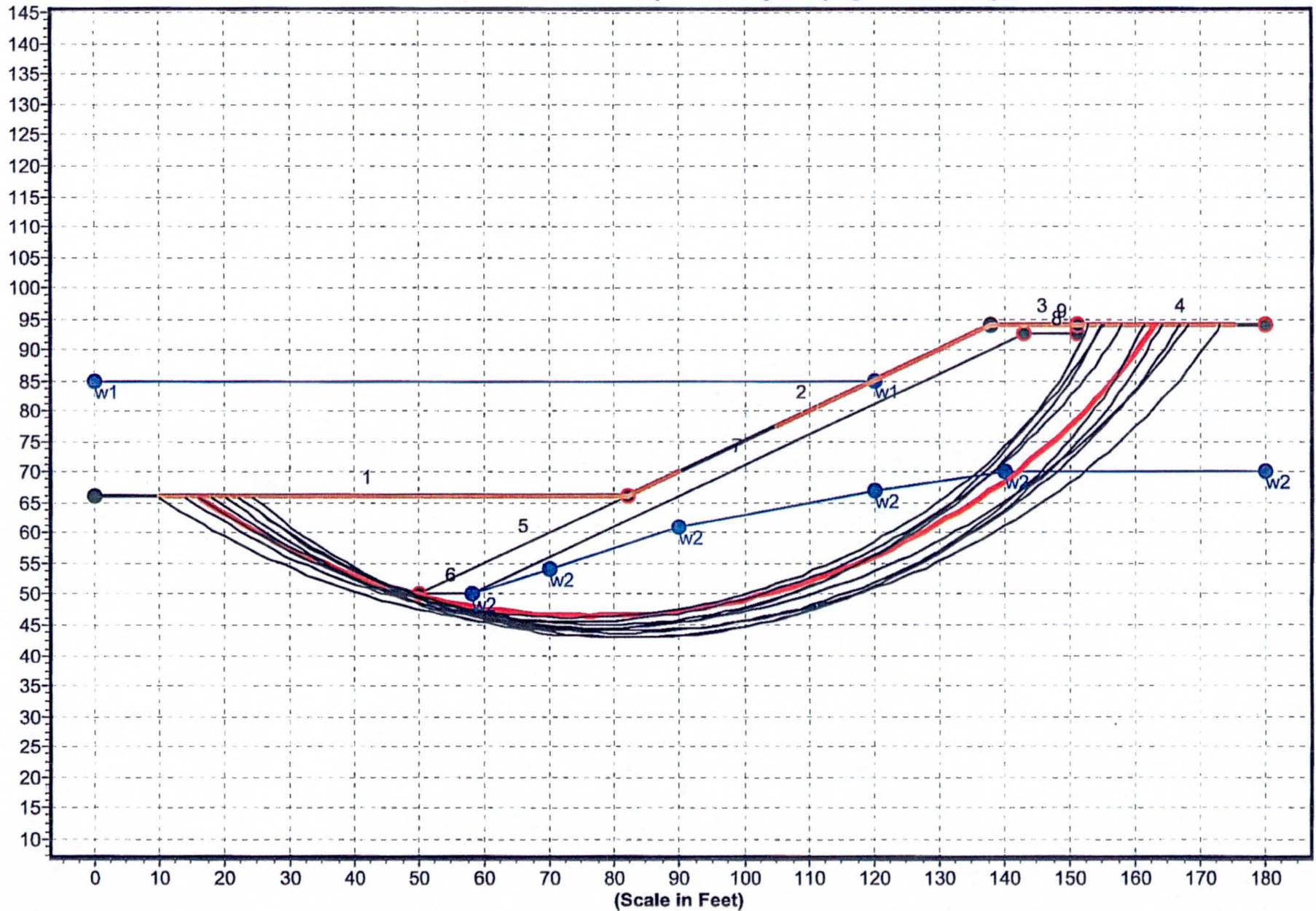
1



```
- .0611
22.50 + ..6112
- ..61127
- ..01127.
- ..0112...
- ..612....
- ..012....
A 45.00 + ..31.....
- ..0*.....
- ..31.....
- ..01*.....
- ..41.....
- ..21.....
X 67.50 + ..821.....
- ..721.....
- ..721.....
- ..421.....
- ..421.....*
- ..421.....
I 90.00 + ..721.....
- ..7413.....
- ..411.....
- ..421.....
- ..7411.....
- ..4913.....
S 112.50 + ..54113.....
- ..44133.....
- ..54013.....w
- ..54113.....
- ..54112.....
- ..440123.....
135.00 + ..5440123.....
- ..4401223.....*
- ..54411223.....*
- ..544116223.....
- ..54441162229**
- ..544441166222
F 157.50 + ..5444411666
- ..555444111
- ..5554444
- ..5500
- ..55
T 180.00 + ..*
```

### Geometry and Boundary Conditions

Problem: PSHIA Salt River Extension 2:1 CSA Slope - Steady Seepage Flood Stage - FS Min = 3.149



\*\* PCSTABL6 \*\*

result.out

by  
Purdue University

--Slope Stability Analysis--  
Simplified Janbu, Simplified Bishop  
or Spencer's Method of Slices

Run Date:  
Time of Run:  
Run By:  
Input Data Filename: run.in  
Output Filename: result.out  
Unit: ENGLISH  
Plotted Output Filename: result.plt

PROBLEM DESCRIPTION PSHIA Salt River Extension 2:1 CSA Slope  
- Steady Seepage Flood Stage

BOUNDARY COORDINATES

4 Top Boundaries  
9 Total Boundaries

| Boundary No. | X-Left (ft) | Y-Left (ft) | X-Right (ft) | Y-Right (ft) | Soil Type Below Bnd |
|--------------|-------------|-------------|--------------|--------------|---------------------|
| 1            | 0.00        | 66.00       | 82.00        | 66.00        | 2                   |
| 2            | 82.00       | 66.00       | 138.00       | 94.00        | 3                   |
| 3            | 138.00      | 94.00       | 151.01       | 94.00        | 3                   |
| 4            | 151.01      | 94.00       | 180.00       | 94.00        | 2                   |
| 5            | 50.00       | 50.00       | 82.00        | 66.00        | 3                   |
| 6            | 50.00       | 50.00       | 58.00        | 50.00        | 1                   |
| 7            | 58.00       | 50.00       | 143.00       | 92.50        | 2                   |
| 8            | 143.00      | 92.50       | 151.00       | 92.50        | 2                   |
| 9            | 151.00      | 92.50       | 151.01       | 94.00        | 2                   |

ISOTROPIC SOIL PARAMETERS

3 Type(s) of Soil

| Soil Type No. | Total Unit Wt. (pcf) | Saturated Unit Wt. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Param. | Pressure Constant (psf) | Piez. Surface No. |
|---------------|----------------------|--------------------------|--------------------------|----------------------|----------------------|-------------------------|-------------------|
| 1             | 130.0                | 140.0                    | 0.0                      | 38.0                 | 0.00                 | 0.0                     | 1                 |
| 2             | 125.0                | 135.0                    | 0.0                      | 36.0                 | 0.00                 | 0.0                     | 1                 |
| 3             | 140.0                | 140.0                    | 54000.0                  | 0.0                  | 0.00                 | 0.0                     | 1                 |

2 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

Unit Weight of water = 62.40

Piezometric Surface No. 1 Specified by 2 Coordinate Points

| Point No. | X-Water (ft) | Y-Water (ft) |
|-----------|--------------|--------------|
| 1         | 0.00         | 85.00        |
| 2         | 120.00       | 85.00        |

Piezometric Surface No. 2 Specified by 6 Coordinate Points

| Point No. | X-Water (ft) | Y-Water (ft) |
|-----------|--------------|--------------|
|-----------|--------------|--------------|

result.out

|   |        |       |
|---|--------|-------|
| 1 | 58.00  | 50.00 |
| 2 | 70.00  | 54.00 |
| 3 | 90.00  | 61.00 |
| 4 | 120.00 | 67.00 |
| 5 | 140.00 | 70.00 |
| 6 | 180.00 | 70.00 |

1

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.

1000 Trial Surfaces Have Been Generated.

25 Surfaces Initiate From Each Of 40 Points Equally Spaced Along The Ground Surface Between X = 10.00 ft.  
and X = 90.00 ft.

Each Surface Terminates Between X = 105.00 ft.  
and X = 175.00 ft.

Unless Further Limitations Were Imposed, The Minimum Elevation At Which A Surface Extends Is Y = 0.00 ft.

2.00 ft. Line Segments Define Each Trial Failure Surface.

1

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

\* \* safety Factors Are Calculated By The Modified Bishop Method \* \*

Failure surface specified By 85 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 16.15       | 66.00       |
| 2         | 17.78       | 64.84       |
| 3         | 19.44       | 63.71       |
| 4         | 21.11       | 62.62       |
| 5         | 22.81       | 61.56       |
| 6         | 24.52       | 60.53       |
| 7         | 26.26       | 59.54       |
| 8         | 28.01       | 58.58       |
| 9         | 29.78       | 57.65       |
| 10        | 31.58       | 56.76       |
| 11        | 33.38       | 55.90       |
| 12        | 35.21       | 55.08       |
| 13        | 37.05       | 54.30       |
| 14        | 38.90       | 53.55       |
| 15        | 40.77       | 52.84       |
| 16        | 42.65       | 52.16       |
| 17        | 44.55       | 51.52       |
| 18        | 46.45       | 50.92       |
| 19        | 48.37       | 50.35       |
| 20        | 50.30       | 49.83       |
| 21        | 52.24       | 49.34       |
| 22        | 54.19       | 48.88       |
| 23        | 56.15       | 48.47       |
| 24        | 58.11       | 48.10       |
| 25        | 60.08       | 47.76       |
| 26        | 62.06       | 47.46       |
| 27        | 64.04       | 47.20       |
| 28        | 66.03       | 46.98       |
| 29        | 68.02       | 46.80       |
| 30        | 70.02       | 46.65       |
| 31        | 72.01       | 46.55       |
| 32        | 74.01       | 46.48       |
| 33        | 76.01       | 46.45       |
| 34        | 78.01       | 46.47       |
| 35        | 80.01       | 46.52       |
| 36        | 82.01       | 46.61       |
| 37        | 84.01       | 46.74       |
| 38        | 86.00       | 46.90       |

result.out

|    |        |       |
|----|--------|-------|
| 39 | 87.99  | 47.11 |
| 40 | 89.97  | 47.36 |
| 41 | 91.95  | 47.64 |
| 42 | 93.93  | 47.96 |
| 43 | 95.89  | 48.32 |
| 44 | 97.85  | 48.72 |
| 45 | 99.80  | 49.16 |
| 46 | 101.75 | 49.64 |
| 47 | 103.68 | 50.15 |
| 48 | 105.60 | 50.70 |
| 49 | 107.51 | 51.29 |
| 50 | 109.41 | 51.91 |
| 51 | 111.30 | 52.58 |
| 52 | 113.17 | 53.28 |
| 53 | 115.03 | 54.01 |
| 54 | 116.88 | 54.78 |
| 55 | 118.71 | 55.59 |
| 56 | 120.52 | 56.43 |
| 57 | 122.32 | 57.31 |
| 58 | 124.10 | 58.22 |
| 59 | 125.86 | 59.17 |
| 60 | 127.60 | 60.15 |
| 61 | 129.33 | 61.17 |
| 62 | 131.03 | 62.22 |
| 63 | 132.71 | 63.30 |
| 64 | 134.37 | 64.41 |
| 65 | 136.01 | 65.56 |
| 66 | 137.63 | 66.74 |
| 67 | 139.22 | 67.95 |
| 68 | 140.79 | 69.19 |
| 69 | 142.33 | 70.46 |
| 70 | 143.85 | 71.76 |
| 71 | 145.35 | 73.09 |
| 72 | 146.82 | 74.45 |
| 73 | 148.26 | 75.83 |
| 74 | 149.67 | 77.25 |
| 75 | 151.06 | 78.69 |
| 76 | 152.41 | 80.16 |
| 77 | 153.74 | 81.65 |
| 78 | 155.04 | 83.17 |
| 79 | 156.31 | 84.72 |
| 80 | 157.55 | 86.29 |
| 81 | 158.76 | 87.89 |
| 82 | 159.93 | 89.50 |
| 83 | 161.08 | 91.14 |
| 84 | 162.19 | 92.80 |
| 85 | 162.96 | 94.00 |

Circle Center At X = 76.4 ; Y = 149.0 and Radius, 102.6

\*\*\* 3.149 \*\*\*

Individual data on the 96 slices

| Slice No. | Width (ft) | Weight (lbs) | Water           | Water           | Force Norm (lbs) | Force Tan (lbs) | Earthquake Force |           | Surcharge Load (lbs) |
|-----------|------------|--------------|-----------------|-----------------|------------------|-----------------|------------------|-----------|----------------------|
|           |            |              | Force Top (lbs) | Force Bot (lbs) |                  |                 | Hor (lbs)        | Ver (lbs) |                      |
| 1         | 1.6        | 127.5        | 1932.9          | 2443.5          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 2         | 1.7        | 384.1        | 1959.3          | 2586.1          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 3         | 1.7        | 640.1        | 1985.0          | 2724.6          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 4         | 1.7        | 894.8        | 2009.9          | 2859.1          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 5         | 1.7        | 1147.4       | 2034.0          | 2989.5          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 6         | 1.7        | 1397.5       | 2057.4          | 3115.7          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 7         | 1.8        | 1644.3       | 2080.0          | 3237.7          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 8         | 1.8        | 1887.3       | 2101.8          | 3355.4          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 9         | 1.8        | 2125.7       | 2122.8          | 3468.7          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 10        | 1.8        | 2359.1       | 2143.0          | 3577.8          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 11        | 1.8        | 2586.9       | 2162.4          | 3682.4          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 12        | 1.8        | 2808.5       | 2180.9          | 3782.6          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 13        | 1.9        | 3023.3       | 2198.6          | 3878.3          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 14        | 1.9        | 3230.9       | 2215.5          | 3969.5          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 15        | 1.9        | 3430.8       | 2231.6          | 4056.2          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 16        | 1.9        | 3622.5       | 2246.8          | 4138.3          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 17        | 1.9        | 3805.4       | 2261.1          | 4215.8          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 18        | 1.9        | 3979.3       | 2274.6          | 4288.6          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 19        | 1.6        | 3487.3       | 1930.0          | 3671.8          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 20        | 0.3        | 656.7        | 357.3           | 684.9           | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 21        | 1.9        | 4308.3       | 2299.0          | 4420.2          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 22        | 1.9        | 4466.6       | 2309.9          | 4479.0          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 23        | 2.0        | 4614.0       | 2319.9          | 4533.0          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 24        | 1.9        | 4481.5       | 2198.7          | 4324.6          | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 25        | 0.1        | 267.7        | 130.3           | 257.7           | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |

|    |     |        |        |        |     |     | result.out |     |     |
|----|-----|--------|--------|--------|-----|-----|------------|-----|-----|
| 26 | 2.0 | 4849.4 | 2337.3 | 4626.7 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 27 | 2.0 | 4949.5 | 2344.6 | 4666.4 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 28 | 2.0 | 5037.9 | 2351.1 | 4701.3 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 29 | 2.0 | 5114.4 | 2356.6 | 4731.3 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 30 | 2.0 | 5178.9 | 2361.3 | 4756.5 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 31 | 2.0 | 5188.8 | 2346.0 | 4738.3 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 32 | 0.0 | 42.3   | 19.0   | 38.5   | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 33 | 2.0 | 5270.9 | 2367.9 | 4792.4 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 34 | 2.0 | 5298.4 | 2369.9 | 4803.1 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 35 | 2.0 | 5313.3 | 2371.0 | 4808.8 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 36 | 2.0 | 5315.6 | 2371.2 | 4809.8 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 37 | 2.0 | 5305.5 | 2370.4 | 4805.8 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 38 | 2.0 | 5258.2 | 2357.7 | 4774.6 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 39 | 0.0 | 24.6   | 12.4   | 22.4   | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 40 | 2.0 | 5383.3 | 2575.4 | 4783.3 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 41 | 2.0 | 5603.9 | 2433.1 | 4764.8 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 42 | 2.0 | 5810.6 | 2290.4 | 4741.4 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 43 | 2.0 | 6003.4 | 2147.8 | 4713.2 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 44 | 0.0 | 85.3   | 29.0   | 65.8   | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 45 | 2.0 | 6096.7 | 1976.3 | 4614.4 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 46 | 2.0 | 6346.0 | 1863.2 | 4642.3 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 47 | 2.0 | 6495.4 | 1721.7 | 4599.7 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 48 | 2.0 | 6630.1 | 1581.0 | 4552.2 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 49 | 2.0 | 6749.9 | 1441.3 | 4500.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 50 | 1.9 | 6854.7 | 1302.8 | 4443.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 51 | 1.9 | 6944.5 | 1165.6 | 4381.3 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 52 | 1.9 | 7019.4 | 1030.1 | 4314.9 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 53 | 1.9 | 7079.3 | 896.3  | 4243.9 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 54 | 1.9 | 7124.2 | 764.5  | 4168.1 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 55 | 1.9 | 7154.3 | 634.8  | 4087.8 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 56 | 1.9 | 7169.7 | 507.4  | 4002.9 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 57 | 1.9 | 7170.5 | 382.5  | 3913.4 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 58 | 1.8 | 7157.0 | 260.2  | 3819.3 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 59 | 1.8 | 7129.3 | 140.7  | 3720.8 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 60 | 1.3 | 5039.4 | 29.0   | 2584.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 61 | 0.5 | 2048.2 | 0.0    | 1033.9 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 62 | 1.8 | 7032.4 | 0.0    | 3510.5 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 63 | 1.8 | 6963.7 | 0.0    | 3398.8 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 64 | 1.8 | 6882.1 | 0.0    | 3282.7 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 65 | 1.7 | 6787.8 | 0.0    | 3162.3 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 66 | 1.7 | 6677.3 | 0.0    | 3037.7 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 67 | 1.7 | 6544.4 | 0.0    | 2908.9 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 68 | 1.7 | 6400.6 | 0.0    | 2776.0 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 69 | 1.7 | 6246.5 | 0.0    | 2638.9 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 70 | 1.6 | 6082.5 | 0.0    | 2497.9 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 71 | 1.6 | 5909.2 | 0.0    | 2352.8 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 72 | 0.4 | 1345.3 | 0.0    | 527.7  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 73 | 1.2 | 4329.7 | 0.0    | 1676.2 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 74 | 0.8 | 2674.0 | 0.0    | 1037.3 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 75 | 0.8 | 2642.5 | 0.0    | 1013.6 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 76 | 1.0 | 3205.7 | 0.0    | 1231.6 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 77 | 0.6 | 1748.1 | 0.0    | 662.6  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 78 | 0.7 | 2045.7 | 0.0    | 779.2  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 79 | 0.9 | 2549.3 | 0.0    | 954.7  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 80 | 1.5 | 4250.6 | 0.0    | 1569.7 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 81 | 1.5 | 3909.7 | 0.0    | 1401.9 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 82 | 1.4 | 3571.3 | 0.0    | 1230.6 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 83 | 1.4 | 3236.3 | 0.0    | 1055.8 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 84 | 1.3 | 2794.1 | 0.0    | 845.8  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 85 | 0.0 | 19.9   | 0.0    | 5.7    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 86 | 0.0 | 90.1   | 0.0    | 25.9   | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 87 | 1.4 | 2548.5 | 0.0    | 695.8  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 88 | 1.3 | 2228.5 | 0.0    | 510.9  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 89 | 1.3 | 1914.7 | 0.0    | 322.7  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 90 | 1.3 | 1608.0 | 0.0    | 131.3  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 91 | 1.2 | 1315.2 | 0.0    | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 92 | 1.2 | 1043.6 | 0.0    | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 93 | 1.2 | 780.4  | 0.0    | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 94 | 1.1 | 526.3  | 0.0    | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 95 | 1.1 | 281.9  | 0.0    | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 96 | 0.8 | 57.3   | 0.0    | 0.0    | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |

Failure Surface Specified By 80 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 22.31       | 66.00       |
| 2         | 23.83       | 64.70       |
| 3         | 25.38       | 63.44       |
| 4         | 26.96       | 62.21       |
| 5         | 28.57       | 61.02       |
| 6         | 30.20       | 59.87       |
| 7         | 31.86       | 58.76       |
| 8         | 33.55       | 57.68       |
| 9         | 35.26       | 56.65       |
| 10        | 37.00       | 55.66       |

|    |        |       |
|----|--------|-------|
| 11 | 38.76  | 54.71 |
| 12 | 40.54  | 53.80 |
| 13 | 42.35  | 52.94 |
| 14 | 44.17  | 52.11 |
| 15 | 46.01  | 51.33 |
| 16 | 47.87  | 50.60 |
| 17 | 49.75  | 49.91 |
| 18 | 51.64  | 49.26 |
| 19 | 53.55  | 48.66 |
| 20 | 55.47  | 48.10 |
| 21 | 57.40  | 47.59 |
| 22 | 59.35  | 47.12 |
| 23 | 61.30  | 46.70 |
| 24 | 63.27  | 46.33 |
| 25 | 65.24  | 46.00 |
| 26 | 67.22  | 45.72 |
| 27 | 69.21  | 45.49 |
| 28 | 71.20  | 45.30 |
| 29 | 73.19  | 45.17 |
| 30 | 75.19  | 45.07 |
| 31 | 77.19  | 45.03 |
| 32 | 79.19  | 45.03 |
| 33 | 81.19  | 45.08 |
| 34 | 83.19  | 45.18 |
| 35 | 85.18  | 45.32 |
| 36 | 87.17  | 45.52 |
| 37 | 89.16  | 45.76 |
| 38 | 91.14  | 46.04 |
| 39 | 93.11  | 46.37 |
| 40 | 95.07  | 46.75 |
| 41 | 97.03  | 47.18 |
| 42 | 98.97  | 47.65 |
| 43 | 100.90 | 48.16 |
| 44 | 102.82 | 48.73 |
| 45 | 104.73 | 49.34 |
| 46 | 106.62 | 49.99 |
| 47 | 108.49 | 50.68 |
| 48 | 110.35 | 51.43 |
| 49 | 112.19 | 52.21 |
| 50 | 114.01 | 53.04 |
| 51 | 115.81 | 53.91 |
| 52 | 117.59 | 54.82 |
| 53 | 119.35 | 55.78 |
| 54 | 121.08 | 56.78 |
| 55 | 122.79 | 57.81 |
| 56 | 124.48 | 58.89 |
| 57 | 126.14 | 60.01 |
| 58 | 127.77 | 61.16 |
| 59 | 129.37 | 62.36 |
| 60 | 130.95 | 63.59 |
| 61 | 132.50 | 64.86 |
| 62 | 134.01 | 66.16 |
| 63 | 135.50 | 67.50 |
| 64 | 136.95 | 68.88 |
| 65 | 138.37 | 70.28 |
| 66 | 139.75 | 71.73 |
| 67 | 141.11 | 73.20 |
| 68 | 142.42 | 74.71 |
| 69 | 143.70 | 76.24 |
| 70 | 144.95 | 77.81 |
| 71 | 146.15 | 79.40 |
| 72 | 147.32 | 81.03 |
| 73 | 148.45 | 82.68 |
| 74 | 149.54 | 84.35 |
| 75 | 150.59 | 86.06 |
| 76 | 151.60 | 87.78 |
| 77 | 152.57 | 89.53 |
| 78 | 153.50 | 91.30 |
| 79 | 154.38 | 93.10 |
| 80 | 154.80 | 94.00 |

Circle Center At X = 78.1 ; Y = 129.6 and Radius, 84.6

\*\*\* 3.238 \*\*\*

1

Failure Surface Specified By 82 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 16.15       | 66.00       |
| 2         | 17.74       | 64.78       |

result.out

|    |        |       |
|----|--------|-------|
| 3  | 19.36  | 63.60 |
| 4  | 21.00  | 62.46 |
| 5  | 22.66  | 61.35 |
| 6  | 24.35  | 60.27 |
| 7  | 26.06  | 59.23 |
| 8  | 27.79  | 58.23 |
| 9  | 29.54  | 57.27 |
| 10 | 31.31  | 56.34 |
| 11 | 33.10  | 55.46 |
| 12 | 34.92  | 54.61 |
| 13 | 36.74  | 53.80 |
| 14 | 38.59  | 53.03 |
| 15 | 40.45  | 52.30 |
| 16 | 42.33  | 51.61 |
| 17 | 44.22  | 50.95 |
| 18 | 46.12  | 50.35 |
| 19 | 48.04  | 49.78 |
| 20 | 49.97  | 49.25 |
| 21 | 51.91  | 48.76 |
| 22 | 53.86  | 48.32 |
| 23 | 55.82  | 47.92 |
| 24 | 57.79  | 47.56 |
| 25 | 59.76  | 47.24 |
| 26 | 61.74  | 46.97 |
| 27 | 63.73  | 46.73 |
| 28 | 65.72  | 46.54 |
| 29 | 67.72  | 46.40 |
| 30 | 69.71  | 46.29 |
| 31 | 71.71  | 46.23 |
| 32 | 73.71  | 46.21 |
| 33 | 75.71  | 46.24 |
| 34 | 77.71  | 46.31 |
| 35 | 79.71  | 46.42 |
| 36 | 81.70  | 46.57 |
| 37 | 83.69  | 46.77 |
| 38 | 85.68  | 47.00 |
| 39 | 87.66  | 47.29 |
| 40 | 89.63  | 47.61 |
| 41 | 91.60  | 47.98 |
| 42 | 93.56  | 48.38 |
| 43 | 95.50  | 48.83 |
| 44 | 97.44  | 49.32 |
| 45 | 99.37  | 49.86 |
| 46 | 101.29 | 50.43 |
| 47 | 103.19 | 51.05 |
| 48 | 105.08 | 51.70 |
| 49 | 106.95 | 52.40 |
| 50 | 108.81 | 53.14 |
| 51 | 110.66 | 53.91 |
| 52 | 112.48 | 54.73 |
| 53 | 114.29 | 55.58 |
| 54 | 116.08 | 56.48 |
| 55 | 117.85 | 57.41 |
| 56 | 119.60 | 58.38 |
| 57 | 121.33 | 59.39 |
| 58 | 123.03 | 60.43 |
| 59 | 124.72 | 61.51 |
| 60 | 126.38 | 62.62 |
| 61 | 128.01 | 63.78 |
| 62 | 129.62 | 64.96 |
| 63 | 131.21 | 66.18 |
| 64 | 132.76 | 67.44 |
| 65 | 134.30 | 68.72 |
| 66 | 135.80 | 70.04 |
| 67 | 137.27 | 71.39 |
| 68 | 138.72 | 72.78 |
| 69 | 140.13 | 74.19 |
| 70 | 141.52 | 75.63 |
| 71 | 142.87 | 77.11 |
| 72 | 144.19 | 78.61 |
| 73 | 145.48 | 80.14 |
| 74 | 146.73 | 81.70 |
| 75 | 147.95 | 83.28 |
| 76 | 149.14 | 84.89 |
| 77 | 150.29 | 86.52 |
| 78 | 151.41 | 88.18 |
| 79 | 152.49 | 89.87 |
| 80 | 153.54 | 91.57 |
| 81 | 154.55 | 93.30 |
| 82 | 154.93 | 94.00 |

Circle Center At X = 73.6 ; Y = 139.4 and Radius, 93.2

\*\*\* 3.252 \*\*\*

## Failure Surface Specified by 88 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 18.21       | 66.00       |
| 2         | 19.77       | 64.75       |
| 3         | 21.35       | 63.53       |
| 4         | 22.96       | 62.35       |
| 5         | 24.60       | 61.19       |
| 6         | 26.25       | 60.07       |
| 7         | 27.93       | 58.99       |
| 8         | 29.64       | 57.94       |
| 9         | 31.36       | 56.92       |
| 10        | 33.10       | 55.94       |
| 11        | 34.86       | 54.99       |
| 12        | 36.64       | 54.08       |
| 13        | 38.44       | 53.21       |
| 14        | 40.26       | 52.37       |
| 15        | 42.09       | 51.57       |
| 16        | 43.94       | 50.81       |
| 17        | 45.80       | 50.08       |
| 18        | 47.68       | 49.39       |
| 19        | 49.57       | 48.74       |
| 20        | 51.48       | 48.13       |
| 21        | 53.39       | 47.56       |
| 22        | 55.32       | 47.03       |
| 23        | 57.26       | 46.53       |
| 24        | 59.21       | 46.08       |
| 25        | 61.16       | 45.66       |
| 26        | 63.13       | 45.29       |
| 27        | 65.10       | 44.95       |
| 28        | 67.08       | 44.66       |
| 29        | 69.06       | 44.40       |
| 30        | 71.05       | 44.19       |
| 31        | 73.04       | 44.01       |
| 32        | 75.04       | 43.88       |
| 33        | 77.04       | 43.78       |
| 34        | 79.04       | 43.73       |
| 35        | 81.04       | 43.72       |
| 36        | 83.03       | 43.74       |
| 37        | 85.03       | 43.81       |
| 38        | 87.03       | 43.92       |
| 39        | 89.03       | 44.07       |
| 40        | 91.02       | 44.26       |
| 41        | 93.00       | 44.49       |
| 42        | 94.98       | 44.76       |
| 43        | 96.96       | 45.07       |
| 44        | 98.93       | 45.42       |
| 45        | 100.89      | 45.81       |
| 46        | 102.84      | 46.24       |
| 47        | 104.79      | 46.71       |
| 48        | 106.72      | 47.22       |
| 49        | 108.65      | 47.76       |
| 50        | 110.56      | 48.35       |
| 51        | 112.46      | 48.98       |
| 52        | 114.35      | 49.64       |
| 53        | 116.22      | 50.34       |
| 54        | 118.08      | 51.08       |
| 55        | 119.92      | 51.86       |
| 56        | 121.75      | 52.67       |
| 57        | 123.56      | 53.52       |
| 58        | 125.35      | 54.41       |
| 59        | 127.12      | 55.33       |
| 60        | 128.88      | 56.29       |
| 61        | 130.61      | 57.29       |
| 62        | 132.33      | 58.32       |
| 63        | 134.02      | 59.38       |
| 64        | 135.69      | 60.48       |
| 65        | 137.34      | 61.61       |
| 66        | 138.97      | 62.77       |
| 67        | 140.57      | 63.97       |
| 68        | 142.15      | 65.20       |
| 69        | 143.70      | 66.46       |
| 70        | 145.22      | 67.76       |
| 71        | 146.72      | 69.08       |
| 72        | 148.20      | 70.43       |
| 73        | 149.64      | 71.82       |
| 74        | 151.06      | 73.23       |
| 75        | 152.44      | 74.67       |
| 76        | 153.80      | 76.14       |
| 77        | 155.13      | 77.63       |
| 78        | 156.43      | 79.16       |
| 79        | 157.69      | 80.70       |
| 80        | 158.93      | 82.28       |
| 81        | 160.13      | 83.88       |

result.out

|    |        |       |
|----|--------|-------|
| 82 | 161.30 | 85.50 |
| 83 | 162.44 | 87.14 |
| 84 | 163.54 | 88.81 |
| 85 | 164.61 | 90.50 |
| 86 | 165.64 | 92.21 |
| 87 | 166.64 | 93.95 |
| 88 | 166.67 | 94.00 |

Circle Center At X = 80.7 ; Y = 142.4 and Radius, 98.7

\*\*\* 3.268 \*\*\*

1

Failure Surface Specified By 91 Coordinate Points

| Point No. | X-surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 16.15       | 66.00       |
| 2         | 17.76       | 64.81       |
| 3         | 19.39       | 63.64       |
| 4         | 21.04       | 62.51       |
| 5         | 22.70       | 61.41       |
| 6         | 24.39       | 60.34       |
| 7         | 26.10       | 59.30       |
| 8         | 27.83       | 58.29       |
| 9         | 29.58       | 57.32       |
| 10        | 31.34       | 56.37       |
| 11        | 33.12       | 55.46       |
| 12        | 34.92       | 54.58       |
| 13        | 36.73       | 53.74       |
| 14        | 38.56       | 52.93       |
| 15        | 40.40       | 52.15       |
| 16        | 42.26       | 51.41       |
| 17        | 44.13       | 50.70       |
| 18        | 46.01       | 50.02       |
| 19        | 47.91       | 49.39       |
| 20        | 49.81       | 48.78       |
| 21        | 51.73       | 48.21       |
| 22        | 53.66       | 47.68       |
| 23        | 55.59       | 47.18       |
| 24        | 57.54       | 46.72       |
| 25        | 59.49       | 46.29       |
| 26        | 61.46       | 45.90       |
| 27        | 63.42       | 45.55       |
| 28        | 65.40       | 45.23       |
| 29        | 67.38       | 44.95       |
| 30        | 69.36       | 44.71       |
| 31        | 71.35       | 44.50       |
| 32        | 73.35       | 44.33       |
| 33        | 75.34       | 44.19       |
| 34        | 77.34       | 44.10       |
| 35        | 79.34       | 44.03       |
| 36        | 81.34       | 44.01       |
| 37        | 83.34       | 44.02       |
| 38        | 85.34       | 44.07       |
| 39        | 87.34       | 44.16       |
| 40        | 89.33       | 44.28       |
| 41        | 91.32       | 44.45       |
| 42        | 93.32       | 44.64       |
| 43        | 95.30       | 44.88       |
| 44        | 97.28       | 45.15       |
| 45        | 99.26       | 45.45       |
| 46        | 101.23      | 45.80       |
| 47        | 103.19      | 46.18       |
| 48        | 105.15      | 46.59       |
| 49        | 107.10      | 47.04       |
| 50        | 109.04      | 47.53       |
| 51        | 110.97      | 48.05       |
| 52        | 112.89      | 48.61       |
| 53        | 114.80      | 49.21       |
| 54        | 116.70      | 49.84       |
| 55        | 118.58      | 50.50       |
| 56        | 120.46      | 51.20       |
| 57        | 122.32      | 51.93       |
| 58        | 124.16      | 52.70       |
| 59        | 126.00      | 53.50       |
| 60        | 127.81      | 54.34       |
| 61        | 129.62      | 55.20       |
| 62        | 131.40      | 56.11       |
| 63        | 133.17      | 57.04       |
| 64        | 134.92      | 58.01       |
| 65        | 136.65      | 59.01       |

result.out

|    |        |       |
|----|--------|-------|
| 66 | 138.37 | 60.04 |
| 67 | 140.06 | 61.10 |
| 68 | 141.74 | 62.19 |
| 69 | 143.39 | 63.31 |
| 70 | 145.03 | 64.47 |
| 71 | 146.64 | 65.65 |
| 72 | 148.23 | 66.87 |
| 73 | 149.79 | 68.11 |
| 74 | 151.34 | 69.38 |
| 75 | 152.86 | 70.68 |
| 76 | 154.35 | 72.01 |
| 77 | 155.83 | 73.36 |
| 78 | 157.27 | 74.74 |
| 79 | 158.69 | 76.15 |
| 80 | 160.09 | 77.58 |
| 81 | 161.45 | 79.04 |
| 82 | 162.79 | 80.53 |
| 83 | 164.11 | 82.04 |
| 84 | 165.39 | 83.57 |
| 85 | 166.65 | 85.13 |
| 86 | 167.88 | 86.71 |
| 87 | 169.07 | 88.31 |
| 88 | 170.24 | 89.93 |
| 89 | 171.38 | 91.57 |
| 90 | 172.49 | 93.24 |
| 91 | 172.97 | 94.00 |

Circle Center At X = 81.6 ; Y = 152.5 and Radius, 108.5

\*\*\* 3.273 \*\*\*

Failure Surface Specified By 84 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 14.10       | 66.00       |
| 2         | 15.70       | 64.79       |
| 3         | 17.31       | 63.62       |
| 4         | 18.96       | 62.47       |
| 5         | 20.62       | 61.37       |
| 6         | 22.31       | 60.29       |
| 7         | 24.02       | 59.25       |
| 8         | 25.75       | 58.25       |
| 9         | 27.50       | 57.28       |
| 10        | 29.27       | 56.35       |
| 11        | 31.06       | 55.46       |
| 12        | 32.86       | 54.60       |
| 13        | 34.69       | 53.78       |
| 14        | 36.53       | 52.99       |
| 15        | 38.38       | 52.25       |
| 16        | 40.25       | 51.54       |
| 17        | 42.14       | 50.87       |
| 18        | 44.04       | 50.24       |
| 19        | 45.95       | 49.65       |
| 20        | 47.87       | 49.10       |
| 21        | 49.81       | 48.59       |
| 22        | 51.75       | 48.12       |
| 23        | 53.70       | 47.69       |
| 24        | 55.66       | 47.30       |
| 25        | 57.63       | 46.95       |
| 26        | 59.61       | 46.64       |
| 27        | 61.59       | 46.37       |
| 28        | 63.58       | 46.14       |
| 29        | 65.57       | 45.95       |
| 30        | 67.56       | 45.80       |
| 31        | 69.56       | 45.69       |
| 32        | 71.56       | 45.63       |
| 33        | 73.56       | 45.60       |
| 34        | 75.56       | 45.62       |
| 35        | 77.56       | 45.68       |
| 36        | 79.55       | 45.78       |
| 37        | 81.55       | 45.92       |
| 38        | 83.54       | 46.10       |
| 39        | 85.53       | 46.32       |
| 40        | 87.51       | 46.58       |
| 41        | 89.49       | 46.89       |
| 42        | 91.46       | 47.23       |
| 43        | 93.42       | 47.61       |
| 44        | 95.38       | 48.04       |
| 45        | 97.32       | 48.50       |
| 46        | 99.26       | 49.01       |
| 47        | 101.18      | 49.55       |

|    |        |       |
|----|--------|-------|
| 48 | 103.09 | 50.13 |
| 49 | 105.00 | 50.76 |
| 50 | 106.88 | 51.42 |
| 51 | 108.76 | 52.12 |
| 52 | 110.62 | 52.86 |
| 53 | 112.46 | 53.63 |
| 54 | 114.29 | 54.45 |
| 55 | 116.09 | 55.30 |
| 56 | 117.89 | 56.19 |
| 57 | 119.66 | 57.11 |
| 58 | 121.41 | 58.07 |
| 59 | 123.15 | 59.07 |
| 60 | 124.86 | 60.10 |
| 61 | 126.55 | 61.17 |
| 62 | 128.22 | 62.27 |
| 63 | 129.87 | 63.41 |
| 64 | 131.49 | 64.58 |
| 65 | 133.09 | 65.78 |
| 66 | 134.66 | 67.01 |
| 67 | 136.21 | 68.28 |
| 68 | 137.73 | 69.58 |
| 69 | 139.22 | 70.91 |
| 70 | 140.69 | 72.27 |
| 71 | 142.13 | 73.66 |
| 72 | 143.54 | 75.08 |
| 73 | 144.92 | 76.52 |
| 74 | 146.27 | 78.00 |
| 75 | 147.59 | 79.50 |
| 76 | 148.88 | 81.03 |
| 77 | 150.13 | 82.59 |
| 78 | 151.36 | 84.17 |
| 79 | 152.55 | 85.78 |
| 80 | 153.71 | 87.41 |
| 81 | 154.83 | 89.06 |
| 82 | 155.92 | 90.74 |
| 83 | 156.98 | 92.44 |
| 84 | 157.90 | 94.00 |

Circle Center At X = 73.7 ; Y = 143.0 and Radius, 97.4

\*\*\* 3.279 \*\*\*

1

Failure Surface Specified By 83 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 24.36       | 66.00       |
| 2         | 25.84       | 64.65       |
| 3         | 27.34       | 63.34       |
| 4         | 28.88       | 62.06       |
| 5         | 30.45       | 60.81       |
| 6         | 32.04       | 59.61       |
| 7         | 33.67       | 58.44       |
| 8         | 35.32       | 57.31       |
| 9         | 36.99       | 56.22       |
| 10        | 38.69       | 55.17       |
| 11        | 40.42       | 54.16       |
| 12        | 42.17       | 53.18       |
| 13        | 43.94       | 52.25       |
| 14        | 45.73       | 51.37       |
| 15        | 47.54       | 50.52       |
| 16        | 49.37       | 49.71       |
| 17        | 51.22       | 48.95       |
| 18        | 53.09       | 48.24       |
| 19        | 54.97       | 47.56       |
| 20        | 56.87       | 46.93       |
| 21        | 58.78       | 46.35       |
| 22        | 60.71       | 45.81       |
| 23        | 62.65       | 45.31       |
| 24        | 64.60       | 44.86       |
| 25        | 66.55       | 44.46       |
| 26        | 68.52       | 44.10       |
| 27        | 70.50       | 43.79       |
| 28        | 72.48       | 43.52       |
| 29        | 74.47       | 43.30       |
| 30        | 76.46       | 43.13       |
| 31        | 78.46       | 43.00       |
| 32        | 80.45       | 42.92       |
| 33        | 82.45       | 42.89       |
| 34        | 84.45       | 42.90       |
| 35        | 86.45       | 42.96       |

result.out

|    |        |       |
|----|--------|-------|
| 36 | 88.45  | 43.07 |
| 37 | 90.44  | 43.22 |
| 38 | 92.43  | 43.42 |
| 39 | 94.42  | 43.67 |
| 40 | 96.40  | 43.96 |
| 41 | 98.37  | 44.30 |
| 42 | 100.33 | 44.68 |
| 43 | 102.28 | 45.11 |
| 44 | 104.23 | 45.59 |
| 45 | 106.16 | 46.11 |
| 46 | 108.08 | 46.68 |
| 47 | 109.98 | 47.29 |
| 48 | 111.87 | 47.94 |
| 49 | 113.74 | 48.64 |
| 50 | 115.60 | 49.38 |
| 51 | 117.44 | 50.17 |
| 52 | 119.26 | 51.00 |
| 53 | 121.06 | 51.87 |
| 54 | 122.84 | 52.78 |
| 55 | 124.60 | 53.73 |
| 56 | 126.34 | 54.73 |
| 57 | 128.05 | 55.76 |
| 58 | 129.73 | 56.84 |
| 59 | 131.39 | 57.95 |
| 60 | 133.03 | 59.10 |
| 61 | 134.64 | 60.29 |
| 62 | 136.22 | 61.52 |
| 63 | 137.77 | 62.78 |
| 64 | 139.29 | 64.08 |
| 65 | 140.78 | 65.42 |
| 66 | 142.24 | 66.79 |
| 67 | 143.66 | 68.19 |
| 68 | 145.05 | 69.62 |
| 69 | 146.41 | 71.09 |
| 70 | 147.74 | 72.59 |
| 71 | 149.02 | 74.12 |
| 72 | 150.28 | 75.68 |
| 73 | 151.49 | 77.27 |
| 74 | 152.67 | 78.88 |
| 75 | 153.81 | 80.53 |
| 76 | 154.91 | 82.19 |
| 77 | 155.98 | 83.89 |
| 78 | 157.00 | 85.61 |
| 79 | 157.98 | 87.35 |
| 80 | 158.92 | 89.11 |
| 81 | 159.82 | 90.90 |
| 82 | 160.68 | 92.71 |
| 83 | 161.26 | 94.00 |

Circle Center At X = 82.9 ; Y = 128.5 and Radius, 85.7

\*\*\* 3.282 \*\*\*

Failure Surface specified By 86 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 20.26       | 66.00       |
| 2         | 21.77       | 64.69       |
| 3         | 23.31       | 63.42       |
| 4         | 24.88       | 62.18       |
| 5         | 26.47       | 60.97       |
| 6         | 28.09       | 59.80       |
| 7         | 29.74       | 58.66       |
| 8         | 31.41       | 57.56       |
| 9         | 33.10       | 56.49       |
| 10        | 34.82       | 55.47       |
| 11        | 36.56       | 54.48       |
| 12        | 38.32       | 53.52       |
| 13        | 40.09       | 52.61       |
| 14        | 41.89       | 51.74       |
| 15        | 43.71       | 50.90       |
| 16        | 45.54       | 50.10       |
| 17        | 47.40       | 49.35       |
| 18        | 49.26       | 48.63       |
| 19        | 51.15       | 47.96       |
| 20        | 53.04       | 47.32       |
| 21        | 54.95       | 46.73       |
| 22        | 56.87       | 46.18       |
| 23        | 58.81       | 45.67       |
| 24        | 60.75       | 45.20       |
| 25        | 62.71       | 44.77       |

result.out

|    |        |       |
|----|--------|-------|
| 26 | 64.67  | 44.39 |
| 27 | 66.64  | 44.05 |
| 28 | 68.62  | 43.75 |
| 29 | 70.60  | 43.50 |
| 30 | 72.59  | 43.29 |
| 31 | 74.58  | 43.12 |
| 32 | 76.58  | 42.99 |
| 33 | 78.58  | 42.91 |
| 34 | 80.58  | 42.87 |
| 35 | 82.58  | 42.88 |
| 36 | 84.58  | 42.92 |
| 37 | 86.58  | 43.01 |
| 38 | 88.57  | 43.15 |
| 39 | 90.56  | 43.33 |
| 40 | 92.55  | 43.55 |
| 41 | 94.53  | 43.81 |
| 42 | 96.51  | 44.12 |
| 43 | 98.48  | 44.47 |
| 44 | 100.44 | 44.86 |
| 45 | 102.39 | 45.29 |
| 46 | 104.33 | 45.77 |
| 47 | 106.27 | 46.29 |
| 48 | 108.19 | 46.85 |
| 49 | 110.09 | 47.45 |
| 50 | 111.99 | 48.10 |
| 51 | 113.87 | 48.78 |
| 52 | 115.73 | 49.50 |
| 53 | 117.58 | 50.27 |
| 54 | 119.41 | 51.07 |
| 55 | 121.22 | 51.92 |
| 56 | 123.02 | 52.80 |
| 57 | 124.79 | 53.72 |
| 58 | 126.55 | 54.68 |
| 59 | 128.28 | 55.68 |
| 60 | 129.99 | 56.72 |
| 61 | 131.68 | 57.79 |
| 62 | 133.34 | 58.90 |
| 63 | 134.98 | 60.04 |
| 64 | 136.60 | 61.22 |
| 65 | 138.19 | 62.43 |
| 66 | 139.75 | 63.68 |
| 67 | 141.29 | 64.97 |
| 68 | 142.79 | 66.28 |
| 69 | 144.27 | 67.63 |
| 70 | 145.72 | 69.01 |
| 71 | 147.14 | 70.42 |
| 72 | 148.53 | 71.86 |
| 73 | 149.88 | 73.33 |
| 74 | 151.21 | 74.83 |
| 75 | 152.50 | 76.35 |
| 76 | 153.75 | 77.91 |
| 77 | 154.98 | 79.49 |
| 78 | 156.17 | 81.10 |
| 79 | 157.32 | 82.73 |
| 80 | 158.44 | 84.39 |
| 81 | 159.52 | 86.07 |
| 82 | 160.57 | 87.78 |
| 83 | 161.57 | 89.51 |
| 84 | 162.54 | 91.25 |
| 85 | 163.48 | 93.02 |
| 86 | 163.96 | 94.00 |

Circle Center At X = 81.4 ; Y = 135.1 and Radius, 92.3

\*\*\* 3.310 \*\*\*

1

Failure surface specified By 80 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 22.31       | 66.00       |
| 2         | 23.80       | 64.67       |
| 3         | 25.33       | 63.37       |
| 4         | 26.88       | 62.12       |
| 5         | 28.47       | 60.90       |
| 6         | 30.08       | 59.72       |
| 7         | 31.73       | 58.58       |
| 8         | 33.40       | 57.48       |
| 9         | 35.10       | 56.42       |
| 10        | 36.82       | 55.41       |
| 11        | 38.57       | 54.44       |

result.out

|    |        |       |
|----|--------|-------|
| 12 | 40.34  | 53.50 |
| 13 | 42.13  | 52.62 |
| 14 | 43.94  | 51.77 |
| 15 | 45.77  | 50.97 |
| 16 | 47.63  | 50.22 |
| 17 | 49.50  | 49.51 |
| 18 | 51.38  | 48.85 |
| 19 | 53.29  | 48.23 |
| 20 | 55.20  | 47.66 |
| 21 | 57.13  | 47.14 |
| 22 | 59.08  | 46.66 |
| 23 | 61.03  | 46.24 |
| 24 | 62.99  | 45.86 |
| 25 | 64.97  | 45.52 |
| 26 | 66.95  | 45.24 |
| 27 | 68.93  | 45.00 |
| 28 | 70.92  | 44.82 |
| 29 | 72.92  | 44.68 |
| 30 | 74.92  | 44.59 |
| 31 | 76.92  | 44.55 |
| 32 | 78.92  | 44.55 |
| 33 | 80.92  | 44.61 |
| 34 | 82.91  | 44.72 |
| 35 | 84.91  | 44.87 |
| 36 | 86.90  | 45.07 |
| 37 | 88.88  | 45.32 |
| 38 | 90.86  | 45.62 |
| 39 | 92.83  | 45.97 |
| 40 | 94.79  | 46.37 |
| 41 | 96.74  | 46.81 |
| 42 | 98.68  | 47.30 |
| 43 | 100.60 | 47.84 |
| 44 | 102.52 | 48.42 |
| 45 | 104.41 | 49.05 |
| 46 | 106.30 | 49.73 |
| 47 | 108.16 | 50.45 |
| 48 | 110.01 | 51.22 |
| 49 | 111.83 | 52.04 |
| 50 | 113.64 | 52.89 |
| 51 | 115.43 | 53.79 |
| 52 | 117.19 | 54.74 |
| 53 | 118.93 | 55.73 |
| 54 | 120.64 | 56.75 |
| 55 | 122.33 | 57.83 |
| 56 | 124.00 | 58.94 |
| 57 | 125.63 | 60.09 |
| 58 | 127.24 | 61.28 |
| 59 | 128.81 | 62.51 |
| 60 | 130.36 | 63.78 |
| 61 | 131.87 | 65.09 |
| 62 | 133.36 | 66.43 |
| 63 | 134.81 | 67.81 |
| 64 | 136.22 | 69.22 |
| 65 | 137.60 | 70.67 |
| 66 | 138.95 | 72.15 |
| 67 | 140.26 | 73.66 |
| 68 | 141.53 | 75.20 |
| 69 | 142.76 | 76.78 |
| 70 | 143.95 | 78.38 |
| 71 | 145.11 | 80.02 |
| 72 | 146.22 | 81.68 |
| 73 | 147.30 | 83.37 |
| 74 | 148.33 | 85.08 |
| 75 | 149.32 | 86.82 |
| 76 | 150.26 | 88.58 |
| 77 | 151.17 | 90.36 |
| 78 | 152.03 | 92.17 |
| 79 | 152.84 | 93.99 |
| 80 | 152.85 | 94.00 |

Circle Center At x = 77.6 ; Y = 126.5 and Radius, 82.0

\*\*\* 3.310 \*\*\*

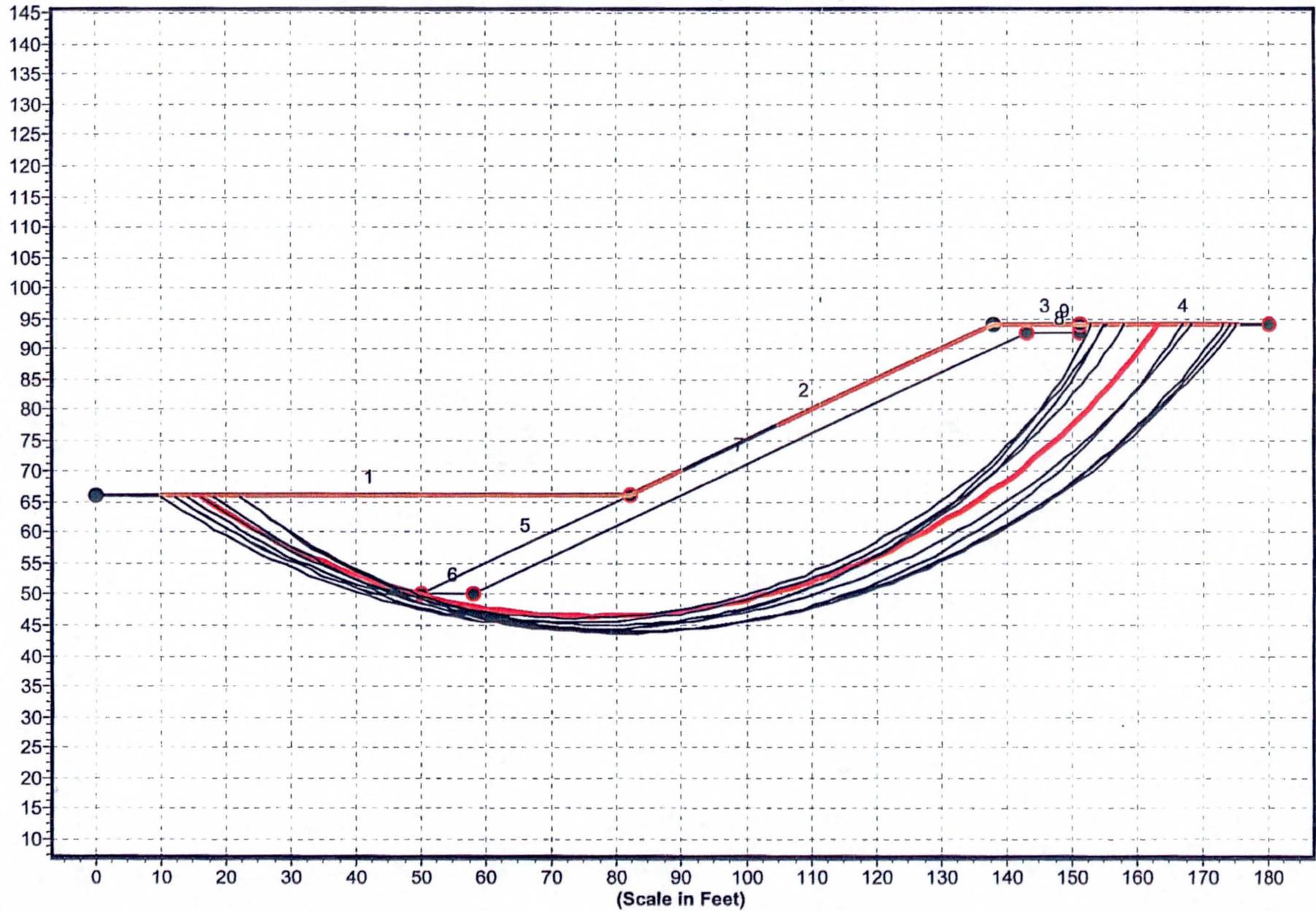
Failure Surface Specified By 91 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 10.00       | 66.00       |
| 2         | 11.62       | 64.83       |
| 3         | 13.27       | 63.69       |
| 4         | 14.93       | 62.58       |

|    |        |       |
|----|--------|-------|
| 5  | 16.62  | 61.51 |
| 6  | 18.32  | 60.46 |
| 7  | 20.04  | 59.44 |
| 8  | 21.78  | 58.45 |
| 9  | 23.54  | 57.50 |
| 10 | 25.31  | 56.58 |
| 11 | 27.10  | 55.69 |
| 12 | 28.91  | 54.83 |
| 13 | 30.73  | 54.00 |
| 14 | 32.57  | 53.21 |
| 15 | 34.42  | 52.45 |
| 16 | 36.28  | 51.72 |
| 17 | 38.16  | 51.03 |
| 18 | 40.05  | 50.37 |
| 19 | 41.95  | 49.75 |
| 20 | 43.86  | 49.16 |
| 21 | 45.78  | 48.60 |
| 22 | 47.71  | 48.08 |
| 23 | 49.65  | 47.60 |
| 24 | 51.60  | 47.15 |
| 25 | 53.56  | 46.73 |
| 26 | 55.52  | 46.35 |
| 27 | 57.49  | 46.01 |
| 28 | 59.47  | 45.70 |
| 29 | 61.45  | 45.42 |
| 30 | 63.43  | 45.18 |
| 31 | 65.42  | 44.98 |
| 32 | 67.42  | 44.82 |
| 33 | 69.41  | 44.69 |
| 34 | 71.41  | 44.59 |
| 35 | 73.41  | 44.53 |
| 36 | 75.41  | 44.51 |
| 37 | 77.41  | 44.52 |
| 38 | 79.41  | 44.57 |
| 39 | 81.41  | 44.66 |
| 40 | 83.40  | 44.78 |
| 41 | 85.40  | 44.94 |
| 42 | 87.39  | 45.13 |
| 43 | 89.37  | 45.36 |
| 44 | 91.36  | 45.63 |
| 45 | 93.33  | 45.93 |
| 46 | 95.30  | 46.26 |
| 47 | 97.27  | 46.64 |
| 48 | 99.23  | 47.04 |
| 49 | 101.18 | 47.49 |
| 50 | 103.12 | 47.96 |
| 51 | 105.05 | 48.48 |
| 52 | 106.98 | 49.02 |
| 53 | 108.89 | 49.60 |
| 54 | 110.79 | 50.22 |
| 55 | 112.68 | 50.87 |
| 56 | 114.56 | 51.55 |
| 57 | 116.43 | 52.27 |
| 58 | 118.28 | 53.02 |
| 59 | 120.12 | 53.81 |
| 60 | 121.95 | 54.63 |
| 61 | 123.76 | 55.48 |
| 62 | 125.55 | 56.36 |
| 63 | 127.33 | 57.28 |
| 64 | 129.09 | 58.22 |
| 65 | 130.84 | 59.20 |
| 66 | 132.56 | 60.21 |
| 67 | 134.27 | 61.25 |
| 68 | 135.96 | 62.32 |
| 69 | 137.63 | 63.42 |
| 70 | 139.28 | 64.56 |
| 71 | 140.91 | 65.72 |
| 72 | 142.52 | 66.91 |
| 73 | 144.10 | 68.13 |
| 74 | 145.66 | 69.37 |
| 75 | 147.21 | 70.65 |
| 76 | 148.72 | 71.95 |
| 77 | 150.22 | 73.28 |
| 78 | 151.69 | 74.64 |
| 79 | 153.13 | 76.02 |
| 80 | 154.55 | 77.43 |
| 81 | 155.94 | 78.86 |
| 82 | 157.31 | 80.32 |
| 83 | 158.65 | 81.81 |
| 84 | 159.97 | 83.31 |
| 85 | 161.26 | 84.84 |
| 86 | 162.52 | 86.40 |
| 87 | 163.75 | 87.97 |
| 88 | 164.95 | 89.57 |
| 89 | 166.12 | 91.19 |
| 90 | 167.27 | 92.83 |
| 91 | 168.05 | 94.00 |



Geometry and Boundary Conditions  
Problem: PSHIA Salt River Extension 2:1 CSA Slope - Earthquake Case - FS Min = 2.779



\*\* PCSTABL6 \*\*

by  
Purdue University

--Slope Stability Analysis--  
Simplified Janbu, Simplified Bishop  
or Spencer's Method of Slices

Run Date:  
Time of Run:  
Run By:  
Input Data Filename: run.in  
Output Filename: result.out  
Unit: ENGLISH  
Plotted Output Filename: result.plt

PROBLEM DESCRIPTION PSHIA Salt River Extension 2:1 CSA Slope  
- Earthquake Case

BOUNDARY COORDINATES

4 Top Boundaries  
9 Total Boundaries

| Boundary No. | X-Left (ft) | Y-Left (ft) | X-Right (ft) | Y-Right (ft) | Soil Type Below Bnd |
|--------------|-------------|-------------|--------------|--------------|---------------------|
| 1            | 0.00        | 66.00       | 82.00        | 66.00        | 2                   |
| 2            | 82.00       | 66.00       | 138.00       | 94.00        | 3                   |
| 3            | 138.00      | 94.00       | 151.01       | 94.00        | 3                   |
| 4            | 151.01      | 94.00       | 180.00       | 94.00        | 2                   |
| 5            | 50.00       | 50.00       | 82.00        | 66.00        | 3                   |
| 6            | 50.00       | 50.00       | 58.00        | 50.00        | 1                   |
| 7            | 58.00       | 50.00       | 143.00       | 92.50        | 2                   |
| 8            | 143.00      | 92.50       | 151.00       | 92.50        | 2                   |
| 9            | 151.00      | 92.50       | 151.01       | 94.00        | 2                   |

ISOTROPIC SOIL PARAMETERS

3 Type(s) of Soil

| Soil Type No. | Total Unit Wt. (pcf) | Saturated Unit wt. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Param. | Pressure Constant (psf) | Piez. Surface No. |
|---------------|----------------------|--------------------------|--------------------------|----------------------|----------------------|-------------------------|-------------------|
| 1             | 130.0                | 140.0                    | 0.0                      | 38.0                 | 0.00                 | 0.0                     | 1                 |
| 2             | 125.0                | 135.0                    | 0.0                      | 36.0                 | 0.00                 | 0.0                     | 1                 |
| 3             | 140.0                | 140.0                    | 54000.0                  | 0.0                  | 0.00                 | 0.0                     | 1                 |

A Horizontal Earthquake Loading Coefficient  
Of 0.070 Has Been Assigned

A Vertical Earthquake Loading Coefficient  
Of 0.070 Has Been Assigned

Cavitation Pressure = 0.0 (psf)

A Critical Failure Surface Searching Method, Using A Random  
Technique For Generating Circular Surfaces, Has Been Specified.

1000 Trial Surfaces Have Been Generated.

25 Surfaces Initiate From Each Of 40 Points Equally Spaced  
Along The Ground Surface Between X = 10.00 ft.  
and X = 90.00 ft.

Each Surface Terminates Between X = 105.00 ft.

and X = 175.00 <sup>result.out</sup> ft.

Unless Further Limitations Were Imposed, The Minimum Elevation At Which A Surface Extends Is Y = 0.00 ft.

2.00 ft. Line Segments Define Each Trial Failure Surface.

1

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

\* \* Safety Factors Are Calculated By The Modified Bishop Method \* \*

Failure Surface Specified By 85 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 16.15       | 66.00       |
| 2         | 17.78       | 64.84       |
| 3         | 19.44       | 63.71       |
| 4         | 21.11       | 62.62       |
| 5         | 22.81       | 61.56       |
| 6         | 24.52       | 60.53       |
| 7         | 26.26       | 59.54       |
| 8         | 28.01       | 58.58       |
| 9         | 29.78       | 57.65       |
| 10        | 31.58       | 56.76       |
| 11        | 33.38       | 55.90       |
| 12        | 35.21       | 55.08       |
| 13        | 37.05       | 54.30       |
| 14        | 38.90       | 53.55       |
| 15        | 40.77       | 52.84       |
| 16        | 42.65       | 52.16       |
| 17        | 44.55       | 51.52       |
| 18        | 46.45       | 50.92       |
| 19        | 48.37       | 50.35       |
| 20        | 50.30       | 49.83       |
| 21        | 52.24       | 49.34       |
| 22        | 54.19       | 48.88       |
| 23        | 56.15       | 48.47       |
| 24        | 58.11       | 48.10       |
| 25        | 60.08       | 47.76       |
| 26        | 62.06       | 47.46       |
| 27        | 64.04       | 47.20       |
| 28        | 66.03       | 46.98       |
| 29        | 68.02       | 46.80       |
| 30        | 70.02       | 46.65       |
| 31        | 72.01       | 46.55       |
| 32        | 74.01       | 46.48       |
| 33        | 76.01       | 46.45       |
| 34        | 78.01       | 46.47       |
| 35        | 80.01       | 46.52       |
| 36        | 82.01       | 46.61       |
| 37        | 84.01       | 46.74       |
| 38        | 86.00       | 46.90       |
| 39        | 87.99       | 47.11       |
| 40        | 89.97       | 47.36       |
| 41        | 91.95       | 47.64       |
| 42        | 93.93       | 47.96       |
| 43        | 95.89       | 48.32       |
| 44        | 97.85       | 48.72       |
| 45        | 99.80       | 49.16       |
| 46        | 101.75      | 49.64       |
| 47        | 103.68      | 50.15       |
| 48        | 105.60      | 50.70       |
| 49        | 107.51      | 51.29       |
| 50        | 109.41      | 51.91       |
| 51        | 111.30      | 52.58       |
| 52        | 113.17      | 53.28       |
| 53        | 115.03      | 54.01       |
| 54        | 116.88      | 54.78       |
| 55        | 118.71      | 55.59       |
| 56        | 120.52      | 56.43       |
| 57        | 122.32      | 57.31       |
| 58        | 124.10      | 58.22       |
| 59        | 125.86      | 59.17       |
| 60        | 127.60      | 60.15       |
| 61        | 129.33      | 61.17       |

result.out

|    |        |       |
|----|--------|-------|
| 62 | 131.03 | 62.22 |
| 63 | 132.71 | 63.30 |
| 64 | 134.37 | 64.41 |
| 65 | 136.01 | 65.56 |
| 66 | 137.63 | 66.74 |
| 67 | 139.22 | 67.95 |
| 68 | 140.79 | 69.19 |
| 69 | 142.33 | 70.46 |
| 70 | 143.85 | 71.76 |
| 71 | 145.35 | 73.09 |
| 72 | 146.82 | 74.45 |
| 73 | 148.26 | 75.83 |
| 74 | 149.67 | 77.25 |
| 75 | 151.06 | 78.69 |
| 76 | 152.41 | 80.16 |
| 77 | 153.74 | 81.65 |
| 78 | 155.04 | 83.17 |
| 79 | 156.31 | 84.72 |
| 80 | 157.55 | 86.29 |
| 81 | 158.76 | 87.89 |
| 82 | 159.93 | 89.50 |
| 83 | 161.08 | 91.14 |
| 84 | 162.19 | 92.80 |
| 85 | 162.96 | 94.00 |

Circle Center At X = 76.4 ; Y = 149.0 and Radius, 102.6

\*\*\* 2.779 \*\*\*

Individual data on the 91 slices

| Slice No. | Width (ft) | Weight (lbs) | Water Force |           | Force Norm (lbs) | Force Tan (lbs) | Earthquake Force |           | Surcharge Load (lbs) |
|-----------|------------|--------------|-------------|-----------|------------------|-----------------|------------------|-----------|----------------------|
|           |            |              | Top (lbs)   | Bot (lbs) |                  |                 | Hor (lbs)        | Ver (lbs) |                      |
| 1         | 1.6        | 118.0        | 0.0         | 0.0       | 0.0              | 0.0             | 8.3              | 8.3       | 0.0                  |
| 2         | 1.7        | 355.7        | 0.0         | 0.0       | 0.0              | 0.0             | 24.9             | 24.9      | 0.0                  |
| 3         | 1.7        | 592.7        | 0.0         | 0.0       | 0.0              | 0.0             | 41.5             | 41.5      | 0.0                  |
| 4         | 1.7        | 828.5        | 0.0         | 0.0       | 0.0              | 0.0             | 58.0             | 58.0      | 0.0                  |
| 5         | 1.7        | 1062.4       | 0.0         | 0.0       | 0.0              | 0.0             | 74.4             | 74.4      | 0.0                  |
| 6         | 1.7        | 1294.0       | 0.0         | 0.0       | 0.0              | 0.0             | 90.6             | 90.6      | 0.0                  |
| 7         | 1.8        | 1522.5       | 0.0         | 0.0       | 0.0              | 0.0             | 106.6            | 106.6     | 0.0                  |
| 8         | 1.8        | 1747.5       | 0.0         | 0.0       | 0.0              | 0.0             | 122.3            | 122.3     | 0.0                  |
| 9         | 1.8        | 1968.3       | 0.0         | 0.0       | 0.0              | 0.0             | 137.8            | 137.8     | 0.0                  |
| 10        | 1.8        | 2184.4       | 0.0         | 0.0       | 0.0              | 0.0             | 152.9            | 152.9     | 0.0                  |
| 11        | 1.8        | 2395.3       | 0.0         | 0.0       | 0.0              | 0.0             | 167.7            | 167.7     | 0.0                  |
| 12        | 1.8        | 2600.5       | 0.0         | 0.0       | 0.0              | 0.0             | 182.0            | 182.0     | 0.0                  |
| 13        | 1.9        | 2799.4       | 0.0         | 0.0       | 0.0              | 0.0             | 196.0            | 196.0     | 0.0                  |
| 14        | 1.9        | 2991.6       | 0.0         | 0.0       | 0.0              | 0.0             | 209.4            | 209.4     | 0.0                  |
| 15        | 1.9        | 3176.7       | 0.0         | 0.0       | 0.0              | 0.0             | 222.4            | 222.4     | 0.0                  |
| 16        | 1.9        | 3354.1       | 0.0         | 0.0       | 0.0              | 0.0             | 234.8            | 234.8     | 0.0                  |
| 17        | 1.9        | 3523.5       | 0.0         | 0.0       | 0.0              | 0.0             | 246.6            | 246.6     | 0.0                  |
| 18        | 1.9        | 3684.5       | 0.0         | 0.0       | 0.0              | 0.0             | 257.9            | 257.9     | 0.0                  |
| 19        | 1.6        | 3229.0       | 0.0         | 0.0       | 0.0              | 0.0             | 226.0            | 226.0     | 0.0                  |
| 20        | 0.3        | 608.3        | 0.0         | 0.0       | 0.0              | 0.0             | 42.6             | 42.6      | 0.0                  |
| 21        | 1.9        | 4002.2       | 0.0         | 0.0       | 0.0              | 0.0             | 280.2            | 280.2     | 0.0                  |
| 22        | 1.9        | 4168.8       | 0.0         | 0.0       | 0.0              | 0.0             | 291.8            | 291.8     | 0.0                  |
| 23        | 2.0        | 4325.6       | 0.0         | 0.0       | 0.0              | 0.0             | 302.8            | 302.8     | 0.0                  |
| 24        | 1.9        | 4218.8       | 0.0         | 0.0       | 0.0              | 0.0             | 295.3            | 295.3     | 0.0                  |
| 25        | 0.1        | 252.5        | 0.0         | 0.0       | 0.0              | 0.0             | 17.7             | 17.7      | 0.0                  |
| 26        | 2.0        | 4571.9       | 0.0         | 0.0       | 0.0              | 0.0             | 320.0            | 320.0     | 0.0                  |
| 27        | 2.0        | 4664.9       | 0.0         | 0.0       | 0.0              | 0.0             | 326.5            | 326.5     | 0.0                  |
| 28        | 2.0        | 4747.0       | 0.0         | 0.0       | 0.0              | 0.0             | 332.3            | 332.3     | 0.0                  |
| 29        | 2.0        | 4818.0       | 0.0         | 0.0       | 0.0              | 0.0             | 337.3            | 337.3     | 0.0                  |
| 30        | 2.0        | 4877.9       | 0.0         | 0.0       | 0.0              | 0.0             | 341.5            | 341.5     | 0.0                  |
| 31        | 2.0        | 4926.3       | 0.0         | 0.0       | 0.0              | 0.0             | 344.8            | 344.8     | 0.0                  |
| 32        | 2.0        | 4963.4       | 0.0         | 0.0       | 0.0              | 0.0             | 347.4            | 347.4     | 0.0                  |
| 33        | 2.0        | 4988.8       | 0.0         | 0.0       | 0.0              | 0.0             | 349.2            | 349.2     | 0.0                  |
| 34        | 2.0        | 5002.6       | 0.0         | 0.0       | 0.0              | 0.0             | 350.2            | 350.2     | 0.0                  |
| 35        | 2.0        | 5004.8       | 0.0         | 0.0       | 0.0              | 0.0             | 350.3            | 350.3     | 0.0                  |
| 36        | 2.0        | 4995.4       | 0.0         | 0.0       | 0.0              | 0.0             | 349.7            | 349.7     | 0.0                  |
| 37        | 2.0        | 4951.2       | 0.0         | 0.0       | 0.0              | 0.0             | 346.6            | 346.6     | 0.0                  |
| 38        | 0.0        | 23.2         | 0.0         | 0.0       | 0.0              | 0.0             | 1.6              | 1.6       | 0.0                  |
| 39        | 2.0        | 5067.3       | 0.0         | 0.0       | 0.0              | 0.0             | 354.7            | 354.7     | 0.0                  |
| 40        | 2.0        | 5271.4       | 0.0         | 0.0       | 0.0              | 0.0             | 369.0            | 369.0     | 0.0                  |
| 41        | 2.0        | 5462.7       | 0.0         | 0.0       | 0.0              | 0.0             | 382.4            | 382.4     | 0.0                  |
| 42        | 2.0        | 5641.0       | 0.0         | 0.0       | 0.0              | 0.0             | 394.9            | 394.9     | 0.0                  |
| 43        | 2.0        | 5806.1       | 0.0         | 0.0       | 0.0              | 0.0             | 406.4            | 406.4     | 0.0                  |
| 44        | 2.0        | 5957.8       | 0.0         | 0.0       | 0.0              | 0.0             | 417.0            | 417.0     | 0.0                  |
| 45        | 2.0        | 6095.9       | 0.0         | 0.0       | 0.0              | 0.0             | 426.7            | 426.7     | 0.0                  |
| 46        | 2.0        | 6220.3       | 0.0         | 0.0       | 0.0              | 0.0             | 435.4            | 435.4     | 0.0                  |
| 47        | 2.0        | 6330.8       | 0.0         | 0.0       | 0.0              | 0.0             | 443.2            | 443.2     | 0.0                  |
| 48        | 1.9        | 6427.6       | 0.0         | 0.0       | 0.0              | 0.0             | 449.9            | 449.9     | 0.0                  |

|    |     |        |     |     |     |     | result.out |       |     |
|----|-----|--------|-----|-----|-----|-----|------------|-------|-----|
| 49 | 1.9 | 6510.3 | 0.0 | 0.0 | 0.0 | 0.0 | 455.7      | 455.7 | 0.0 |
| 50 | 1.9 | 6579.2 | 0.0 | 0.0 | 0.0 | 0.0 | 460.5      | 460.5 | 0.0 |
| 51 | 1.9 | 6634.2 | 0.0 | 0.0 | 0.0 | 0.0 | 464.4      | 464.4 | 0.0 |
| 52 | 1.9 | 6675.3 | 0.0 | 0.0 | 0.0 | 0.0 | 467.3      | 467.3 | 0.0 |
| 53 | 1.9 | 6702.7 | 0.0 | 0.0 | 0.0 | 0.0 | 469.2      | 469.2 | 0.0 |
| 54 | 1.9 | 6716.4 | 0.0 | 0.0 | 0.0 | 0.0 | 470.1      | 470.1 | 0.0 |
| 55 | 1.9 | 6716.5 | 0.0 | 0.0 | 0.0 | 0.0 | 470.2      | 470.2 | 0.0 |
| 56 | 1.8 | 6703.4 | 0.0 | 0.0 | 0.0 | 0.0 | 469.2      | 469.2 | 0.0 |
| 57 | 1.8 | 6677.1 | 0.0 | 0.0 | 0.0 | 0.0 | 467.4      | 467.4 | 0.0 |
| 58 | 1.8 | 6637.9 | 0.0 | 0.0 | 0.0 | 0.0 | 464.6      | 464.6 | 0.0 |
| 59 | 1.8 | 6586.0 | 0.0 | 0.0 | 0.0 | 0.0 | 461.0      | 461.0 | 0.0 |
| 60 | 1.8 | 6521.7 | 0.0 | 0.0 | 0.0 | 0.0 | 456.5      | 456.5 | 0.0 |
| 61 | 1.8 | 6445.4 | 0.0 | 0.0 | 0.0 | 0.0 | 451.2      | 451.2 | 0.0 |
| 62 | 1.7 | 6357.3 | 0.0 | 0.0 | 0.0 | 0.0 | 445.0      | 445.0 | 0.0 |
| 63 | 1.7 | 6257.9 | 0.0 | 0.0 | 0.0 | 0.0 | 438.1      | 438.1 | 0.0 |
| 64 | 1.7 | 6147.4 | 0.0 | 0.0 | 0.0 | 0.0 | 430.3      | 430.3 | 0.0 |
| 65 | 1.7 | 6026.4 | 0.0 | 0.0 | 0.0 | 0.0 | 421.9      | 421.9 | 0.0 |
| 66 | 1.7 | 5895.3 | 0.0 | 0.0 | 0.0 | 0.0 | 412.7      | 412.7 | 0.0 |
| 67 | 1.6 | 5754.5 | 0.0 | 0.0 | 0.0 | 0.0 | 402.8      | 402.8 | 0.0 |
| 68 | 1.6 | 5604.5 | 0.0 | 0.0 | 0.0 | 0.0 | 392.3      | 392.3 | 0.0 |
| 69 | 0.4 | 1277.9 | 0.0 | 0.0 | 0.0 | 0.0 | 89.5       | 89.5  | 0.0 |
| 70 | 1.2 | 4115.8 | 0.0 | 0.0 | 0.0 | 0.0 | 288.1      | 288.1 | 0.0 |
| 71 | 1.6 | 5058.7 | 0.0 | 0.0 | 0.0 | 0.0 | 354.1      | 354.1 | 0.0 |
| 72 | 1.5 | 4719.4 | 0.0 | 0.0 | 0.0 | 0.0 | 330.4      | 330.4 | 0.0 |
| 73 | 0.7 | 1950.9 | 0.0 | 0.0 | 0.0 | 0.0 | 136.6      | 136.6 | 0.0 |
| 74 | 0.9 | 2433.1 | 0.0 | 0.0 | 0.0 | 0.0 | 170.3      | 170.3 | 0.0 |
| 75 | 1.5 | 4062.7 | 0.0 | 0.0 | 0.0 | 0.0 | 284.4      | 284.4 | 0.0 |
| 76 | 1.5 | 3744.8 | 0.0 | 0.0 | 0.0 | 0.0 | 262.1      | 262.1 | 0.0 |
| 77 | 1.4 | 3429.2 | 0.0 | 0.0 | 0.0 | 0.0 | 240.0      | 240.0 | 0.0 |
| 78 | 1.4 | 3116.7 | 0.0 | 0.0 | 0.0 | 0.0 | 218.2      | 218.2 | 0.0 |
| 79 | 1.3 | 2700.2 | 0.0 | 0.0 | 0.0 | 0.0 | 189.0      | 189.0 | 0.0 |
| 80 | 0.0 | 19.3   | 0.0 | 0.0 | 0.0 | 0.0 | 1.4        | 1.4   | 0.0 |
| 81 | 0.0 | 87.2   | 0.0 | 0.0 | 0.0 | 0.0 | 6.1        | 6.1   | 0.0 |
| 82 | 1.4 | 2472.8 | 0.0 | 0.0 | 0.0 | 0.0 | 173.1      | 173.1 | 0.0 |
| 83 | 1.3 | 2174.1 | 0.0 | 0.0 | 0.0 | 0.0 | 152.2      | 152.2 | 0.0 |
| 84 | 1.3 | 1881.2 | 0.0 | 0.0 | 0.0 | 0.0 | 131.7      | 131.7 | 0.0 |
| 85 | 1.3 | 1594.6 | 0.0 | 0.0 | 0.0 | 0.0 | 111.6      | 111.6 | 0.0 |
| 86 | 1.2 | 1315.2 | 0.0 | 0.0 | 0.0 | 0.0 | 92.1       | 92.1  | 0.0 |
| 87 | 1.2 | 1043.6 | 0.0 | 0.0 | 0.0 | 0.0 | 73.1       | 73.1  | 0.0 |
| 88 | 1.2 | 780.4  | 0.0 | 0.0 | 0.0 | 0.0 | 54.6       | 54.6  | 0.0 |
| 89 | 1.1 | 526.3  | 0.0 | 0.0 | 0.0 | 0.0 | 36.8       | 36.8  | 0.0 |
| 90 | 1.1 | 281.9  | 0.0 | 0.0 | 0.0 | 0.0 | 19.7       | 19.7  | 0.0 |
| 91 | 0.8 | 57.3   | 0.0 | 0.0 | 0.0 | 0.0 | 4.0        | 4.0   | 0.0 |

Failure Surface Specified By 82 Coordinate Points

| Point No. | X-surf (ft) | Y-surf (ft) |
|-----------|-------------|-------------|
| 1         | 16.15       | 66.00       |
| 2         | 17.74       | 64.78       |
| 3         | 19.36       | 63.60       |
| 4         | 21.00       | 62.46       |
| 5         | 22.66       | 61.35       |
| 6         | 24.35       | 60.27       |
| 7         | 26.06       | 59.23       |
| 8         | 27.79       | 58.23       |
| 9         | 29.54       | 57.27       |
| 10        | 31.31       | 56.34       |
| 11        | 33.10       | 55.46       |
| 12        | 34.92       | 54.61       |
| 13        | 36.74       | 53.80       |
| 14        | 38.59       | 53.03       |
| 15        | 40.45       | 52.30       |
| 16        | 42.33       | 51.61       |
| 17        | 44.22       | 50.95       |
| 18        | 46.12       | 50.35       |
| 19        | 48.04       | 49.78       |
| 20        | 49.97       | 49.25       |
| 21        | 51.91       | 48.76       |
| 22        | 53.86       | 48.32       |
| 23        | 55.82       | 47.92       |
| 24        | 57.79       | 47.56       |
| 25        | 59.76       | 47.24       |
| 26        | 61.74       | 46.97       |
| 27        | 63.73       | 46.73       |
| 28        | 65.72       | 46.54       |
| 29        | 67.72       | 46.40       |
| 30        | 69.71       | 46.29       |
| 31        | 71.71       | 46.23       |
| 32        | 73.71       | 46.21       |
| 33        | 75.71       | 46.24       |
| 34        | 77.71       | 46.31       |
| 35        | 79.71       | 46.42       |
| 36        | 81.70       | 46.57       |
| 37        | 83.69       | 46.77       |
| 38        | 85.68       | 47.00       |

|    |        |       |
|----|--------|-------|
| 39 | 87.66  | 47.29 |
| 40 | 89.63  | 47.61 |
| 41 | 91.60  | 47.98 |
| 42 | 93.56  | 48.38 |
| 43 | 95.50  | 48.83 |
| 44 | 97.44  | 49.32 |
| 45 | 99.37  | 49.86 |
| 46 | 101.29 | 50.43 |
| 47 | 103.19 | 51.05 |
| 48 | 105.08 | 51.70 |
| 49 | 106.95 | 52.40 |
| 50 | 108.81 | 53.14 |
| 51 | 110.66 | 53.91 |
| 52 | 112.48 | 54.73 |
| 53 | 114.29 | 55.58 |
| 54 | 116.08 | 56.48 |
| 55 | 117.85 | 57.41 |
| 56 | 119.60 | 58.38 |
| 57 | 121.33 | 59.39 |
| 58 | 123.03 | 60.43 |
| 59 | 124.72 | 61.51 |
| 60 | 126.38 | 62.62 |
| 61 | 128.01 | 63.78 |
| 62 | 129.62 | 64.96 |
| 63 | 131.21 | 66.18 |
| 64 | 132.76 | 67.44 |
| 65 | 134.30 | 68.72 |
| 66 | 135.80 | 70.04 |
| 67 | 137.27 | 71.39 |
| 68 | 138.72 | 72.78 |
| 69 | 140.13 | 74.19 |
| 70 | 141.52 | 75.63 |
| 71 | 142.87 | 77.11 |
| 72 | 144.19 | 78.61 |
| 73 | 145.48 | 80.14 |
| 74 | 146.73 | 81.70 |
| 75 | 147.95 | 83.28 |
| 76 | 149.14 | 84.89 |
| 77 | 150.29 | 86.52 |
| 78 | 151.41 | 88.18 |
| 79 | 152.49 | 89.87 |
| 80 | 153.54 | 91.57 |
| 81 | 154.55 | 93.30 |
| 82 | 154.93 | 94.00 |

Circle Center At X = 73.6 ; Y = 139.4 and Radius, 93.2

\*\*\* 2.851 \*\*\*

1

Failure Surface Specified By 80 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 22.31       | 66.00       |
| 2         | 23.83       | 64.70       |
| 3         | 25.38       | 63.44       |
| 4         | 26.96       | 62.21       |
| 5         | 28.57       | 61.02       |
| 6         | 30.20       | 59.87       |
| 7         | 31.86       | 58.76       |
| 8         | 33.55       | 57.68       |
| 9         | 35.26       | 56.65       |
| 10        | 37.00       | 55.66       |
| 11        | 38.76       | 54.71       |
| 12        | 40.54       | 53.80       |
| 13        | 42.35       | 52.94       |
| 14        | 44.17       | 52.11       |
| 15        | 46.01       | 51.33       |
| 16        | 47.87       | 50.60       |
| 17        | 49.75       | 49.91       |
| 18        | 51.64       | 49.26       |
| 19        | 53.55       | 48.66       |
| 20        | 55.47       | 48.10       |
| 21        | 57.40       | 47.59       |
| 22        | 59.35       | 47.12       |
| 23        | 61.30       | 46.70       |
| 24        | 63.27       | 46.33       |
| 25        | 65.24       | 46.00       |
| 26        | 67.22       | 45.72       |
| 27        | 69.21       | 45.49       |
| 28        | 71.20       | 45.30       |

result.out

|    |        |       |
|----|--------|-------|
| 29 | 73.19  | 45.17 |
| 30 | 75.19  | 45.07 |
| 31 | 77.19  | 45.03 |
| 32 | 79.19  | 45.03 |
| 33 | 81.19  | 45.08 |
| 34 | 83.19  | 45.18 |
| 35 | 85.18  | 45.32 |
| 36 | 87.17  | 45.52 |
| 37 | 89.16  | 45.76 |
| 38 | 91.14  | 46.04 |
| 39 | 93.11  | 46.37 |
| 40 | 95.07  | 46.75 |
| 41 | 97.03  | 47.18 |
| 42 | 98.97  | 47.65 |
| 43 | 100.90 | 48.16 |
| 44 | 102.82 | 48.73 |
| 45 | 104.73 | 49.34 |
| 46 | 106.62 | 49.99 |
| 47 | 108.49 | 50.68 |
| 48 | 110.35 | 51.43 |
| 49 | 112.19 | 52.21 |
| 50 | 114.01 | 53.04 |
| 51 | 115.81 | 53.91 |
| 52 | 117.59 | 54.82 |
| 53 | 119.35 | 55.78 |
| 54 | 121.08 | 56.78 |
| 55 | 122.79 | 57.81 |
| 56 | 124.48 | 58.89 |
| 57 | 126.14 | 60.01 |
| 58 | 127.77 | 61.16 |
| 59 | 129.37 | 62.36 |
| 60 | 130.95 | 63.59 |
| 61 | 132.50 | 64.86 |
| 62 | 134.01 | 66.16 |
| 63 | 135.50 | 67.50 |
| 64 | 136.95 | 68.88 |
| 65 | 138.37 | 70.28 |
| 66 | 139.75 | 71.73 |
| 67 | 141.11 | 73.20 |
| 68 | 142.42 | 74.71 |
| 69 | 143.70 | 76.24 |
| 70 | 144.95 | 77.81 |
| 71 | 146.15 | 79.40 |
| 72 | 147.32 | 81.03 |
| 73 | 148.45 | 82.68 |
| 74 | 149.54 | 84.35 |
| 75 | 150.59 | 86.06 |
| 76 | 151.60 | 87.78 |
| 77 | 152.57 | 89.53 |
| 78 | 153.50 | 91.30 |
| 79 | 154.38 | 93.10 |
| 80 | 154.80 | 94.00 |

Circle Center At X = 78.1 ; Y = 129.6 and Radius, 84.6

\*\*\* 2.873 \*\*\*

Failure Surface Specified By 84 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 14.10       | 66.00       |
| 2         | 15.70       | 64.79       |
| 3         | 17.31       | 63.62       |
| 4         | 18.96       | 62.47       |
| 5         | 20.62       | 61.37       |
| 6         | 22.31       | 60.29       |
| 7         | 24.02       | 59.25       |
| 8         | 25.75       | 58.25       |
| 9         | 27.50       | 57.28       |
| 10        | 29.27       | 56.35       |
| 11        | 31.06       | 55.46       |
| 12        | 32.86       | 54.60       |
| 13        | 34.69       | 53.78       |
| 14        | 36.53       | 52.99       |
| 15        | 38.38       | 52.25       |
| 16        | 40.25       | 51.54       |
| 17        | 42.14       | 50.87       |
| 18        | 44.04       | 50.24       |
| 19        | 45.95       | 49.65       |
| 20        | 47.87       | 49.10       |
| 21        | 49.81       | 48.59       |

result.out

|    |        |       |
|----|--------|-------|
| 22 | 51.75  | 48.12 |
| 23 | 53.70  | 47.69 |
| 24 | 55.66  | 47.30 |
| 25 | 57.63  | 46.95 |
| 26 | 59.61  | 46.64 |
| 27 | 61.59  | 46.37 |
| 28 | 63.58  | 46.14 |
| 29 | 65.57  | 45.95 |
| 30 | 67.56  | 45.80 |
| 31 | 69.56  | 45.69 |
| 32 | 71.56  | 45.63 |
| 33 | 73.56  | 45.60 |
| 34 | 75.56  | 45.62 |
| 35 | 77.56  | 45.68 |
| 36 | 79.55  | 45.78 |
| 37 | 81.55  | 45.92 |
| 38 | 83.54  | 46.10 |
| 39 | 85.53  | 46.32 |
| 40 | 87.51  | 46.58 |
| 41 | 89.49  | 46.89 |
| 42 | 91.46  | 47.23 |
| 43 | 93.42  | 47.61 |
| 44 | 95.38  | 48.04 |
| 45 | 97.32  | 48.50 |
| 46 | 99.26  | 49.01 |
| 47 | 101.18 | 49.55 |
| 48 | 103.09 | 50.13 |
| 49 | 105.00 | 50.76 |
| 50 | 106.88 | 51.42 |
| 51 | 108.76 | 52.12 |
| 52 | 110.62 | 52.86 |
| 53 | 112.46 | 53.63 |
| 54 | 114.29 | 54.45 |
| 55 | 116.09 | 55.30 |
| 56 | 117.89 | 56.19 |
| 57 | 119.66 | 57.11 |
| 58 | 121.41 | 58.07 |
| 59 | 123.15 | 59.07 |
| 60 | 124.86 | 60.10 |
| 61 | 126.55 | 61.17 |
| 62 | 128.22 | 62.27 |
| 63 | 129.87 | 63.41 |
| 64 | 131.49 | 64.58 |
| 65 | 133.09 | 65.78 |
| 66 | 134.66 | 67.01 |
| 67 | 136.21 | 68.28 |
| 68 | 137.73 | 69.58 |
| 69 | 139.22 | 70.91 |
| 70 | 140.69 | 72.27 |
| 71 | 142.13 | 73.66 |
| 72 | 143.54 | 75.08 |
| 73 | 144.92 | 76.52 |
| 74 | 146.27 | 78.00 |
| 75 | 147.59 | 79.50 |
| 76 | 148.88 | 81.03 |
| 77 | 150.13 | 82.59 |
| 78 | 151.36 | 84.17 |
| 79 | 152.55 | 85.78 |
| 80 | 153.71 | 87.41 |
| 81 | 154.83 | 89.06 |
| 82 | 155.92 | 90.74 |
| 83 | 156.98 | 92.44 |
| 84 | 157.90 | 94.00 |

Circle Center At X = 73.7 ; Y = 143.0 and Radius, 97.4

\*\*\* 2.873 \*\*\*

1

Failure Surface Specified By 91 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 16.15       | 66.00       |
| 2         | 17.76       | 64.81       |
| 3         | 19.39       | 63.64       |
| 4         | 21.04       | 62.51       |
| 5         | 22.70       | 61.41       |
| 6         | 24.39       | 60.34       |
| 7         | 26.10       | 59.30       |
| 8         | 27.83       | 58.29       |
| 9         | 29.58       | 57.32       |

result.out

|    |        |       |
|----|--------|-------|
| 10 | 31.34  | 56.37 |
| 11 | 33.12  | 55.46 |
| 12 | 34.92  | 54.58 |
| 13 | 36.73  | 53.74 |
| 14 | 38.56  | 52.93 |
| 15 | 40.40  | 52.15 |
| 16 | 42.26  | 51.41 |
| 17 | 44.13  | 50.70 |
| 18 | 46.01  | 50.02 |
| 19 | 47.91  | 49.39 |
| 20 | 49.81  | 48.78 |
| 21 | 51.73  | 48.21 |
| 22 | 53.66  | 47.68 |
| 23 | 55.59  | 47.18 |
| 24 | 57.54  | 46.72 |
| 25 | 59.49  | 46.29 |
| 26 | 61.46  | 45.90 |
| 27 | 63.42  | 45.55 |
| 28 | 65.40  | 45.23 |
| 29 | 67.38  | 44.95 |
| 30 | 69.36  | 44.71 |
| 31 | 71.35  | 44.50 |
| 32 | 73.35  | 44.33 |
| 33 | 75.34  | 44.19 |
| 34 | 77.34  | 44.10 |
| 35 | 79.34  | 44.03 |
| 36 | 81.34  | 44.01 |
| 37 | 83.34  | 44.02 |
| 38 | 85.34  | 44.07 |
| 39 | 87.34  | 44.16 |
| 40 | 89.33  | 44.28 |
| 41 | 91.32  | 44.45 |
| 42 | 93.32  | 44.64 |
| 43 | 95.30  | 44.88 |
| 44 | 97.28  | 45.15 |
| 45 | 99.26  | 45.45 |
| 46 | 101.23 | 45.80 |
| 47 | 103.19 | 46.18 |
| 48 | 105.15 | 46.59 |
| 49 | 107.10 | 47.04 |
| 50 | 109.04 | 47.53 |
| 51 | 110.97 | 48.05 |
| 52 | 112.89 | 48.61 |
| 53 | 114.80 | 49.21 |
| 54 | 116.70 | 49.84 |
| 55 | 118.58 | 50.50 |
| 56 | 120.46 | 51.20 |
| 57 | 122.32 | 51.93 |
| 58 | 124.16 | 52.70 |
| 59 | 126.00 | 53.50 |
| 60 | 127.81 | 54.34 |
| 61 | 129.62 | 55.20 |
| 62 | 131.40 | 56.11 |
| 63 | 133.17 | 57.04 |
| 64 | 134.92 | 58.01 |
| 65 | 136.65 | 59.01 |
| 66 | 138.37 | 60.04 |
| 67 | 140.06 | 61.10 |
| 68 | 141.74 | 62.19 |
| 69 | 143.39 | 63.31 |
| 70 | 145.03 | 64.47 |
| 71 | 146.64 | 65.65 |
| 72 | 148.23 | 66.87 |
| 73 | 149.79 | 68.11 |
| 74 | 151.34 | 69.38 |
| 75 | 152.86 | 70.68 |
| 76 | 154.35 | 72.01 |
| 77 | 155.83 | 73.36 |
| 78 | 157.27 | 74.74 |
| 79 | 158.69 | 76.15 |
| 80 | 160.09 | 77.58 |
| 81 | 161.45 | 79.04 |
| 82 | 162.79 | 80.53 |
| 83 | 164.11 | 82.04 |
| 84 | 165.39 | 83.57 |
| 85 | 166.65 | 85.13 |
| 86 | 167.88 | 86.71 |
| 87 | 169.07 | 88.31 |
| 88 | 170.24 | 89.93 |
| 89 | 171.38 | 91.57 |
| 90 | 172.49 | 93.24 |
| 91 | 172.97 | 94.00 |

Circle Center At X = 81.6 ; Y = 152.5 and Radius, 108.5

\*\*\* 2.886 \*\*\*

## Failure Surface Specified By 88 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 18.21       | 66.00       |
| 2         | 19.77       | 64.75       |
| 3         | 21.35       | 63.53       |
| 4         | 22.96       | 62.35       |
| 5         | 24.60       | 61.19       |
| 6         | 26.25       | 60.07       |
| 7         | 27.93       | 58.99       |
| 8         | 29.64       | 57.94       |
| 9         | 31.36       | 56.92       |
| 10        | 33.10       | 55.94       |
| 11        | 34.86       | 54.99       |
| 12        | 36.64       | 54.08       |
| 13        | 38.44       | 53.21       |
| 14        | 40.26       | 52.37       |
| 15        | 42.09       | 51.57       |
| 16        | 43.94       | 50.81       |
| 17        | 45.80       | 50.08       |
| 18        | 47.68       | 49.39       |
| 19        | 49.57       | 48.74       |
| 20        | 51.48       | 48.13       |
| 21        | 53.39       | 47.56       |
| 22        | 55.32       | 47.03       |
| 23        | 57.26       | 46.53       |
| 24        | 59.21       | 46.08       |
| 25        | 61.16       | 45.66       |
| 26        | 63.13       | 45.29       |
| 27        | 65.10       | 44.95       |
| 28        | 67.08       | 44.66       |
| 29        | 69.06       | 44.40       |
| 30        | 71.05       | 44.19       |
| 31        | 73.04       | 44.01       |
| 32        | 75.04       | 43.88       |
| 33        | 77.04       | 43.78       |
| 34        | 79.04       | 43.73       |
| 35        | 81.04       | 43.72       |
| 36        | 83.03       | 43.74       |
| 37        | 85.03       | 43.81       |
| 38        | 87.03       | 43.92       |
| 39        | 89.03       | 44.07       |
| 40        | 91.02       | 44.26       |
| 41        | 93.00       | 44.49       |
| 42        | 94.98       | 44.76       |
| 43        | 96.96       | 45.07       |
| 44        | 98.93       | 45.42       |
| 45        | 100.89      | 45.81       |
| 46        | 102.84      | 46.24       |
| 47        | 104.79      | 46.71       |
| 48        | 106.72      | 47.22       |
| 49        | 108.65      | 47.76       |
| 50        | 110.56      | 48.35       |
| 51        | 112.46      | 48.98       |
| 52        | 114.35      | 49.64       |
| 53        | 116.22      | 50.34       |
| 54        | 118.08      | 51.08       |
| 55        | 119.92      | 51.86       |
| 56        | 121.75      | 52.67       |
| 57        | 123.56      | 53.52       |
| 58        | 125.35      | 54.41       |
| 59        | 127.12      | 55.33       |
| 60        | 128.88      | 56.29       |
| 61        | 130.61      | 57.29       |
| 62        | 132.33      | 58.32       |
| 63        | 134.02      | 59.38       |
| 64        | 135.69      | 60.48       |
| 65        | 137.34      | 61.61       |
| 66        | 138.97      | 62.77       |
| 67        | 140.57      | 63.97       |
| 68        | 142.15      | 65.20       |
| 69        | 143.70      | 66.46       |
| 70        | 145.22      | 67.76       |
| 71        | 146.72      | 69.08       |
| 72        | 148.20      | 70.43       |
| 73        | 149.64      | 71.82       |
| 74        | 151.06      | 73.23       |
| 75        | 152.44      | 74.67       |
| 76        | 153.80      | 76.14       |
| 77        | 155.13      | 77.63       |
| 78        | 156.43      | 79.16       |
| 79        | 157.69      | 80.70       |

result.out

|    |        |       |
|----|--------|-------|
| 80 | 158.93 | 82.28 |
| 81 | 160.13 | 83.88 |
| 82 | 161.30 | 85.50 |
| 83 | 162.44 | 87.14 |
| 84 | 163.54 | 88.81 |
| 85 | 164.61 | 90.50 |
| 86 | 165.64 | 92.21 |
| 87 | 166.64 | 93.95 |
| 88 | 166.67 | 94.00 |

Circle Center At X = 80.7 ; Y = 142.4 and Radius, 98.7

\*\*\* 2.898 \*\*\*

1

Failure Surface Specified By 91 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 10.00       | 66.00       |
| 2         | 11.62       | 64.83       |
| 3         | 13.27       | 63.69       |
| 4         | 14.93       | 62.58       |
| 5         | 16.62       | 61.51       |
| 6         | 18.32       | 60.46       |
| 7         | 20.04       | 59.44       |
| 8         | 21.78       | 58.45       |
| 9         | 23.54       | 57.50       |
| 10        | 25.31       | 56.58       |
| 11        | 27.10       | 55.69       |
| 12        | 28.91       | 54.83       |
| 13        | 30.73       | 54.00       |
| 14        | 32.57       | 53.21       |
| 15        | 34.42       | 52.45       |
| 16        | 36.28       | 51.72       |
| 17        | 38.16       | 51.03       |
| 18        | 40.05       | 50.37       |
| 19        | 41.95       | 49.75       |
| 20        | 43.86       | 49.16       |
| 21        | 45.78       | 48.60       |
| 22        | 47.71       | 48.08       |
| 23        | 49.65       | 47.60       |
| 24        | 51.60       | 47.15       |
| 25        | 53.56       | 46.73       |
| 26        | 55.52       | 46.35       |
| 27        | 57.49       | 46.01       |
| 28        | 59.47       | 45.70       |
| 29        | 61.45       | 45.42       |
| 30        | 63.43       | 45.18       |
| 31        | 65.42       | 44.98       |
| 32        | 67.42       | 44.82       |
| 33        | 69.41       | 44.69       |
| 34        | 71.41       | 44.59       |
| 35        | 73.41       | 44.53       |
| 36        | 75.41       | 44.51       |
| 37        | 77.41       | 44.52       |
| 38        | 79.41       | 44.57       |
| 39        | 81.41       | 44.66       |
| 40        | 83.40       | 44.78       |
| 41        | 85.40       | 44.94       |
| 42        | 87.39       | 45.13       |
| 43        | 89.37       | 45.36       |
| 44        | 91.36       | 45.63       |
| 45        | 93.33       | 45.93       |
| 46        | 95.30       | 46.26       |
| 47        | 97.27       | 46.64       |
| 48        | 99.23       | 47.04       |
| 49        | 101.18      | 47.49       |
| 50        | 103.12      | 47.96       |
| 51        | 105.05      | 48.48       |
| 52        | 106.98      | 49.02       |
| 53        | 108.89      | 49.60       |
| 54        | 110.79      | 50.22       |
| 55        | 112.68      | 50.87       |
| 56        | 114.56      | 51.55       |
| 57        | 116.43      | 52.27       |
| 58        | 118.28      | 53.02       |
| 59        | 120.12      | 53.81       |
| 60        | 121.95      | 54.63       |
| 61        | 123.76      | 55.48       |
| 62        | 125.55      | 56.36       |
| 63        | 127.33      | 57.28       |

result.out

|    |        |       |
|----|--------|-------|
| 64 | 129.09 | 58.22 |
| 65 | 130.84 | 59.20 |
| 66 | 132.56 | 60.21 |
| 67 | 134.27 | 61.25 |
| 68 | 135.96 | 62.32 |
| 69 | 137.63 | 63.42 |
| 70 | 139.28 | 64.56 |
| 71 | 140.91 | 65.72 |
| 72 | 142.52 | 66.91 |
| 73 | 144.10 | 68.13 |
| 74 | 145.66 | 69.37 |
| 75 | 147.21 | 70.65 |
| 76 | 148.72 | 71.95 |
| 77 | 150.22 | 73.28 |
| 78 | 151.69 | 74.64 |
| 79 | 153.13 | 76.02 |
| 80 | 154.55 | 77.43 |
| 81 | 155.94 | 78.86 |
| 82 | 157.31 | 80.32 |
| 83 | 158.65 | 81.81 |
| 84 | 159.97 | 83.31 |
| 85 | 161.26 | 84.84 |
| 86 | 162.52 | 86.40 |
| 87 | 163.75 | 87.97 |
| 88 | 164.95 | 89.57 |
| 89 | 166.12 | 91.19 |
| 90 | 167.27 | 92.83 |
| 91 | 168.05 | 94.00 |

Circle Center At X = 75.6 ; Y = 155.5 and Radius, 111.0

\*\*\* 2.906 \*\*\*

Failure Surface Specified By 93 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 12.05       | 66.00       |
| 2         | 13.68       | 64.83       |
| 3         | 15.32       | 63.69       |
| 4         | 16.98       | 62.59       |
| 5         | 18.67       | 61.51       |
| 6         | 20.37       | 60.46       |
| 7         | 22.09       | 59.43       |
| 8         | 23.83       | 58.44       |
| 9         | 25.58       | 57.48       |
| 10        | 27.35       | 56.56       |
| 11        | 29.14       | 55.66       |
| 12        | 30.94       | 54.79       |
| 13        | 32.76       | 53.96       |
| 14        | 34.59       | 53.16       |
| 15        | 36.44       | 52.38       |
| 16        | 38.30       | 51.65       |
| 17        | 40.17       | 50.94       |
| 18        | 42.05       | 50.27       |
| 19        | 43.95       | 49.63       |
| 20        | 45.85       | 49.02       |
| 21        | 47.77       | 48.45       |
| 22        | 49.70       | 47.91       |
| 23        | 51.63       | 47.41       |
| 24        | 53.57       | 46.93       |
| 25        | 55.53       | 46.50       |
| 26        | 57.49       | 46.09       |
| 27        | 59.45       | 45.72       |
| 28        | 61.42       | 45.39       |
| 29        | 63.40       | 45.09       |
| 30        | 65.38       | 44.83       |
| 31        | 67.37       | 44.60       |
| 32        | 69.36       | 44.40       |
| 33        | 71.35       | 44.24       |
| 34        | 73.35       | 44.11       |
| 35        | 75.35       | 44.02       |
| 36        | 77.35       | 43.97       |
| 37        | 79.35       | 43.95       |
| 38        | 81.35       | 43.96       |
| 39        | 83.35       | 44.01       |
| 40        | 85.34       | 44.09       |
| 41        | 87.34       | 44.21       |
| 42        | 89.33       | 44.37       |
| 43        | 91.33       | 44.55       |
| 44        | 93.31       | 44.78       |
| 45        | 95.30       | 45.04       |

result.out

|    |        |       |
|----|--------|-------|
| 46 | 97.27  | 45.33 |
| 47 | 99.25  | 45.66 |
| 48 | 101.21 | 46.02 |
| 49 | 103.17 | 46.41 |
| 50 | 105.13 | 46.85 |
| 51 | 107.07 | 47.31 |
| 52 | 109.01 | 47.81 |
| 53 | 110.94 | 48.34 |
| 54 | 112.86 | 48.91 |
| 55 | 114.76 | 49.51 |
| 56 | 116.66 | 50.14 |
| 57 | 118.55 | 50.81 |
| 58 | 120.42 | 51.50 |
| 59 | 122.28 | 52.24 |
| 60 | 124.13 | 53.00 |
| 61 | 125.97 | 53.80 |
| 62 | 127.79 | 54.62 |
| 63 | 129.59 | 55.48 |
| 64 | 131.38 | 56.38 |
| 65 | 133.16 | 57.30 |
| 66 | 134.91 | 58.25 |
| 67 | 136.66 | 59.24 |
| 68 | 138.38 | 60.25 |
| 69 | 140.08 | 61.30 |
| 70 | 141.77 | 62.37 |
| 71 | 143.44 | 63.47 |
| 72 | 145.09 | 64.61 |
| 73 | 146.72 | 65.77 |
| 74 | 148.32 | 66.96 |
| 75 | 149.91 | 68.17 |
| 76 | 151.48 | 69.42 |
| 77 | 153.02 | 70.69 |
| 78 | 154.54 | 71.99 |
| 79 | 156.04 | 73.32 |
| 80 | 157.51 | 74.67 |
| 81 | 158.96 | 76.04 |
| 82 | 160.39 | 77.45 |
| 83 | 161.79 | 78.87 |
| 84 | 163.17 | 80.33 |
| 85 | 164.52 | 81.80 |
| 86 | 165.84 | 83.30 |
| 87 | 167.14 | 84.82 |
| 88 | 168.41 | 86.36 |
| 89 | 169.65 | 87.93 |
| 90 | 170.87 | 89.52 |
| 91 | 172.06 | 91.13 |
| 92 | 173.22 | 92.76 |
| 93 | 174.07 | 94.00 |

Circle Center At X = 79.5 ; Y = 158.2 and Radius, 114.3

\*\*\* 2.912 \*\*\*

1

Failure Surface Specified By 94 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 12.05       | 66.00       |
| 2         | 13.68       | 64.84       |
| 3         | 15.32       | 63.70       |
| 4         | 16.99       | 62.59       |
| 5         | 18.68       | 61.52       |
| 6         | 20.38       | 60.47       |
| 7         | 22.10       | 59.45       |
| 8         | 23.84       | 58.46       |
| 9         | 25.59       | 57.50       |
| 10        | 27.37       | 56.58       |
| 11        | 29.15       | 55.68       |
| 12        | 30.96       | 54.81       |
| 13        | 32.78       | 53.98       |
| 14        | 34.61       | 53.18       |
| 15        | 36.45       | 52.41       |
| 16        | 38.31       | 51.67       |
| 17        | 40.18       | 50.96       |
| 18        | 42.07       | 50.29       |
| 19        | 43.96       | 49.65       |
| 20        | 45.87       | 49.04       |
| 21        | 47.78       | 48.47       |
| 22        | 49.71       | 47.93       |
| 23        | 51.64       | 47.42       |
| 24        | 53.59       | 46.95       |

|    |        |       |
|----|--------|-------|
| 25 | 55.54  | 46.51 |
| 26 | 57.50  | 46.10 |
| 27 | 59.46  | 45.73 |
| 28 | 61.43  | 45.39 |
| 29 | 63.41  | 45.09 |
| 30 | 65.39  | 44.82 |
| 31 | 67.38  | 44.59 |
| 32 | 69.37  | 44.39 |
| 33 | 71.36  | 44.22 |
| 34 | 73.36  | 44.09 |
| 35 | 75.35  | 44.00 |
| 36 | 77.35  | 43.93 |
| 37 | 79.35  | 43.91 |
| 38 | 81.35  | 43.92 |
| 39 | 83.35  | 43.96 |
| 40 | 85.35  | 44.04 |
| 41 | 87.35  | 44.15 |
| 42 | 89.34  | 44.30 |
| 43 | 91.33  | 44.48 |
| 44 | 93.32  | 44.69 |
| 45 | 95.31  | 44.94 |
| 46 | 97.29  | 45.23 |
| 47 | 99.26  | 45.55 |
| 48 | 101.23 | 45.90 |
| 49 | 103.19 | 46.29 |
| 50 | 105.15 | 46.71 |
| 51 | 107.09 | 47.17 |
| 52 | 109.03 | 47.66 |
| 53 | 110.96 | 48.18 |
| 54 | 112.88 | 48.74 |
| 55 | 114.79 | 49.33 |
| 56 | 116.70 | 49.95 |
| 57 | 118.58 | 50.61 |
| 58 | 120.46 | 51.29 |
| 59 | 122.33 | 52.01 |
| 60 | 124.18 | 52.77 |
| 61 | 126.02 | 53.55 |
| 62 | 127.85 | 54.37 |
| 63 | 129.66 | 55.22 |
| 64 | 131.45 | 56.10 |
| 65 | 133.23 | 57.01 |
| 66 | 135.00 | 57.95 |
| 67 | 136.74 | 58.92 |
| 68 | 138.48 | 59.93 |
| 69 | 140.19 | 60.96 |
| 70 | 141.88 | 62.02 |
| 71 | 143.56 | 63.11 |
| 72 | 145.22 | 64.23 |
| 73 | 146.85 | 65.38 |
| 74 | 148.47 | 66.56 |
| 75 | 150.07 | 67.76 |
| 76 | 151.64 | 69.00 |
| 77 | 153.19 | 70.26 |
| 78 | 154.73 | 71.54 |
| 79 | 156.23 | 72.86 |
| 80 | 157.72 | 74.20 |
| 81 | 159.18 | 75.56 |
| 82 | 160.62 | 76.95 |
| 83 | 162.03 | 78.36 |
| 84 | 163.42 | 79.80 |
| 85 | 164.79 | 81.27 |
| 86 | 166.13 | 82.75 |
| 87 | 167.44 | 84.26 |
| 88 | 168.72 | 85.79 |
| 89 | 169.98 | 87.35 |
| 90 | 171.21 | 88.92 |
| 91 | 172.42 | 90.52 |
| 92 | 173.60 | 92.14 |
| 93 | 174.74 | 93.77 |
| 94 | 174.90 | 94.00 |

Circle Center At X = 79.9 ; Y = 159.1 and Radius, 115.2

\*\*\* 2.914 \*\*\*

Failure Surface Specified by 80 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 22.31       | 66.00       |
| 2         | 23.80       | 64.67       |
| 3         | 25.33       | 63.37       |

result.out

|    |        |       |
|----|--------|-------|
| 4  | 26.88  | 62.12 |
| 5  | 28.47  | 60.90 |
| 6  | 30.08  | 59.72 |
| 7  | 31.73  | 58.58 |
| 8  | 33.40  | 57.48 |
| 9  | 35.10  | 56.42 |
| 10 | 36.82  | 55.41 |
| 11 | 38.57  | 54.44 |
| 12 | 40.34  | 53.50 |
| 13 | 42.13  | 52.62 |
| 14 | 43.94  | 51.77 |
| 15 | 45.77  | 50.97 |
| 16 | 47.63  | 50.22 |
| 17 | 49.50  | 49.51 |
| 18 | 51.38  | 48.85 |
| 19 | 53.29  | 48.23 |
| 20 | 55.20  | 47.66 |
| 21 | 57.13  | 47.14 |
| 22 | 59.08  | 46.66 |
| 23 | 61.03  | 46.24 |
| 24 | 62.99  | 45.86 |
| 25 | 64.97  | 45.52 |
| 26 | 66.95  | 45.24 |
| 27 | 68.93  | 45.00 |
| 28 | 70.92  | 44.82 |
| 29 | 72.92  | 44.68 |
| 30 | 74.92  | 44.59 |
| 31 | 76.92  | 44.55 |
| 32 | 78.92  | 44.55 |
| 33 | 80.92  | 44.61 |
| 34 | 82.91  | 44.72 |
| 35 | 84.91  | 44.87 |
| 36 | 86.90  | 45.07 |
| 37 | 88.86  | 45.32 |
| 38 | 90.86  | 45.62 |
| 39 | 92.83  | 45.97 |
| 40 | 94.79  | 46.37 |
| 41 | 96.74  | 46.81 |
| 42 | 98.68  | 47.30 |
| 43 | 100.60 | 47.84 |
| 44 | 102.52 | 48.42 |
| 45 | 104.41 | 49.05 |
| 46 | 106.30 | 49.73 |
| 47 | 108.16 | 50.45 |
| 48 | 110.01 | 51.22 |
| 49 | 111.83 | 52.04 |
| 50 | 113.64 | 52.89 |
| 51 | 115.43 | 53.79 |
| 52 | 117.19 | 54.74 |
| 53 | 118.93 | 55.73 |
| 54 | 120.64 | 56.75 |
| 55 | 122.33 | 57.83 |
| 56 | 124.00 | 58.94 |
| 57 | 125.63 | 60.09 |
| 58 | 127.24 | 61.28 |
| 59 | 128.81 | 62.51 |
| 60 | 130.36 | 63.78 |
| 61 | 131.87 | 65.09 |
| 62 | 133.36 | 66.43 |
| 63 | 134.81 | 67.81 |
| 64 | 136.22 | 69.22 |
| 65 | 137.60 | 70.67 |
| 66 | 138.95 | 72.15 |
| 67 | 140.26 | 73.66 |
| 68 | 141.53 | 75.20 |
| 69 | 142.76 | 76.78 |
| 70 | 143.95 | 78.38 |
| 71 | 145.11 | 80.02 |
| 72 | 146.22 | 81.68 |
| 73 | 147.30 | 83.37 |
| 74 | 148.33 | 85.08 |
| 75 | 149.32 | 86.82 |
| 76 | 150.26 | 88.58 |
| 77 | 151.17 | 90.36 |
| 78 | 152.03 | 92.17 |
| 79 | 152.84 | 93.99 |
| 80 | 152.85 | 94.00 |

Circle Center At x = 77.6 ; Y = 126.5 and Radius, 82.0

\*\*\* 2.928 \*\*\*

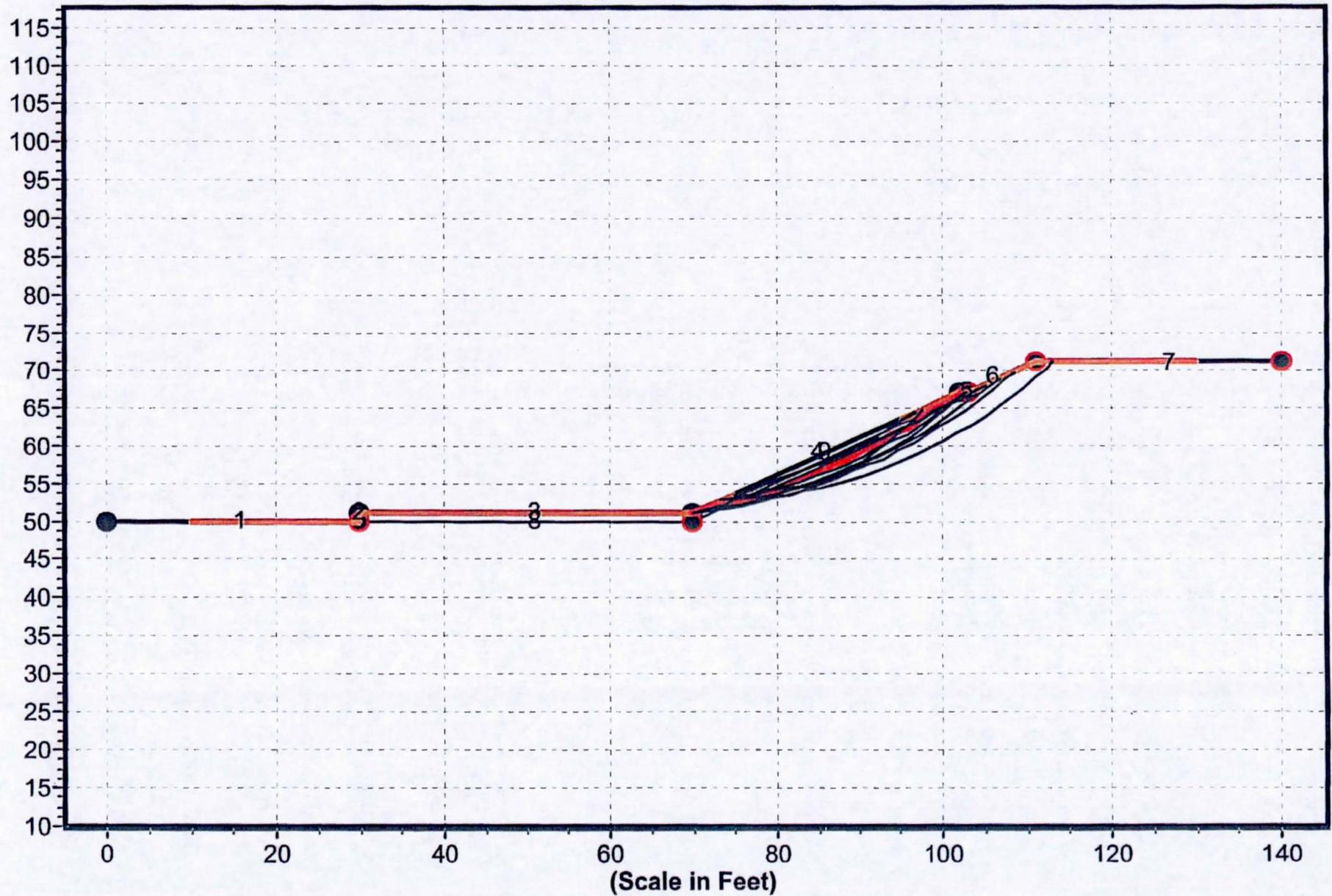
|   | 0.00   | 22.50 | 45.00 | 67.50           | 90.00 | 112.50 |
|---|--------|-------|-------|-----------------|-------|--------|
| X | 0.00   |       |       | *               |       |        |
|   |        |       |       |                 |       |        |
|   |        |       |       | .7              |       |        |
|   |        |       |       | 771             |       |        |
|   |        |       |       | .7411           |       |        |
|   | 22.50  |       |       | .4113           |       |        |
|   |        |       |       | .4113.          |       |        |
|   |        |       |       | .7113..         |       |        |
|   |        |       |       | .7113...        |       |        |
|   |        |       |       | .413....        |       |        |
|   |        |       |       | .713.....       |       |        |
| A | 45.00  |       |       | .21.....        |       |        |
|   |        |       |       | .7*.....        |       |        |
|   |        |       |       | .21.....        |       |        |
|   |        |       |       | .71*.....       |       |        |
|   |        |       |       | .51.....        |       |        |
|   |        |       |       | .31.....        |       |        |
| X | 67.50  |       |       | .31.....        |       |        |
|   |        |       |       | .31.....        |       |        |
|   |        |       |       | .31.....        |       |        |
|   |        |       |       | .631.....       |       |        |
|   |        |       |       | .631.....*      |       |        |
|   |        |       |       | .631.....       |       |        |
| I | 90.00  |       |       | .31.....        |       |        |
|   |        |       |       | .512.....       |       |        |
|   |        |       |       | .511.....       |       |        |
|   |        |       |       | .531.....       |       |        |
|   |        |       |       | .511.....       |       |        |
|   |        |       |       | .5712.....      |       |        |
| S | 112.50 |       |       | .55112.....     |       |        |
|   |        |       |       | .56122.....     |       |        |
|   |        |       |       | .55712.....     |       |        |
|   |        |       |       | .56112.....     |       |        |
|   |        |       |       | .56112.....     |       |        |
|   |        |       |       | .567122.....    |       |        |
|   | 135.00 |       |       | .5567132.....   |       |        |
|   |        |       |       | .5671322.....*  |       |        |
|   |        |       |       | .56611322.....* |       |        |
|   |        |       |       | .566114322..... |       |        |
|   |        |       |       | .55661143220**  |       |        |
|   |        |       |       | .556661144222   |       |        |
| F | 157.50 |       |       | .95566611444    |       |        |
|   |        |       |       | .555666111      |       |        |
|   |        |       |       | .95556666       |       |        |
|   |        |       |       | .985577         |       |        |
|   |        |       |       | .855            |       |        |
|   |        |       |       | .9              |       |        |
| T | 180.00 |       |       | *               |       |        |

# Slope Stability analyses For South Bank

- Case I: End of construction**
- Case II: Sudden drawdown**
- Case III: Critical flood stage**
- Case IV: Steady seepage at flood stage**
- Case V: Earthquake (Case I with seismic force)**

# Geometry and Boundary Conditions

Problem: PSHIA Salt River South Bank 2:1 Slope End of Construction - FS Min = 1.554



\*\* PCSTABL6 \*\*

by  
Purdue University

--Slope Stability Analysis--  
Simplified Janbu, Simplified Bishop  
or Spencer's Method of Slices

Run Date:  
Time of Run:  
Run By:  
Input Data Filename: run.in  
Output Filename: result.out  
Unit: ENGLISH  
Plotted Output Filename: result.plt

PROBLEM DESCRIPTION PSHIA Salt River South Bank 2:1 Slope End of Construction

BOUNDARY COORDINATES

7 Top Boundaries  
9 Total Boundaries

| Boundary No. | X-Left (ft) | Y-Left (ft) | X-Right (ft) | Y-Right (ft) | Soil Type Below Bnd |
|--------------|-------------|-------------|--------------|--------------|---------------------|
| 1            | 0.00        | 50.00       | 30.00        | 50.00        | 1                   |
| 2            | 30.00       | 50.00       | 30.01        | 51.00        | 2                   |
| 3            | 30.01       | 51.00       | 70.00        | 51.00        | 2                   |
| 4            | 70.00       | 51.00       | 101.80       | 67.00        | 2                   |
| 5            | 101.80      | 67.00       | 103.10       | 67.00        | 2                   |
| 6            | 103.10      | 67.00       | 111.00       | 71.00        | 1                   |
| 7            | 111.00      | 71.00       | 140.00       | 71.00        | 1                   |
| 8            | 30.00       | 50.00       | 70.00        | 50.00        | 1                   |
| 9            | 70.00       | 50.00       | 103.10       | 67.00        | 1                   |

ISOTROPIC SOIL PARAMETERS

2 Type(s) of soil

| Soil Type No. | Total Unit wt. (pcf) | Saturated Unit wt. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Param. | Pressure Constant (psf) | Piez. Surface No. |
|---------------|----------------------|--------------------------|--------------------------|----------------------|----------------------|-------------------------|-------------------|
| 1             | 130.0                | 140.0                    | 0.0                      | 37.0                 | 0.00                 | 0.0                     | 1                 |
| 2             | 145.0                | 145.0                    | 0.0                      | 42.0                 | 0.00                 | 0.0                     | 1                 |

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.

1000 Trial Surfaces Have Been Generated.

25 Surfaces Initiate From Each Of 40 Points Equally Spaced Along The Ground Surface Between X = 10.00 ft. and X = 75.00 ft.

Each Surface Terminates Between X = 95.00 ft. and X = 130.00 ft.

Unless Further Limitations Were Imposed, The Minimum Elevation At Which A Surface Extends Is Y = 0.00 ft.

2.00 ft. Line Segments Define Each Trial Failure Surface.

result.out

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

\* \* Safety Factors Are Calculated By The Modified Bishop Method \* \*

Failure Surface Specified By 20 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 70.00       | 51.00       |
| 2         | 71.92       | 51.55       |
| 3         | 73.83       | 52.14       |
| 4         | 75.73       | 52.78       |
| 5         | 77.61       | 53.45       |
| 6         | 79.48       | 54.16       |
| 7         | 81.34       | 54.91       |
| 8         | 83.17       | 55.70       |
| 9         | 84.99       | 56.53       |
| 10        | 86.80       | 57.40       |
| 11        | 88.58       | 58.30       |
| 12        | 90.34       | 59.24       |
| 13        | 92.09       | 60.22       |
| 14        | 93.81       | 61.24       |
| 15        | 95.51       | 62.29       |
| 16        | 97.19       | 63.38       |
| 17        | 98.85       | 64.50       |
| 18        | 100.48      | 65.66       |
| 19        | 102.08      | 66.85       |
| 20        | 102.27      | 67.00       |

Circle Center At X = 44.9 ; Y = 142.2 and Radius, 94.6

\*\*\* 1.554 \*\*\*

Individual data on the 22 slices

| Slice No. | width (ft) | weight (lbs) | Water Force |           | Force Norm (lbs) | Force Tan (lbs) | Earthquake Force |           | Surcharge Load (lbs) |
|-----------|------------|--------------|-------------|-----------|------------------|-----------------|------------------|-----------|----------------------|
|           |            |              | Top (lbs)   | Bot (lbs) |                  |                 | Hor (lbs)        | Ver (lbs) |                      |
| 1         | 1.9        | 57.9         | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 2         | 1.9        | 166.3        | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 3         | 1.0        | 122.0        | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 4         | 0.9        | 137.2        | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 5         | 1.9        | 331.2        | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 6         | 1.9        | 389.4        | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 7         | 1.9        | 435.0        | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 8         | 1.8        | 468.4        | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 9         | 1.8        | 489.7        | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 10        | 1.8        | 499.3        | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 11        | 1.8        | 497.4        | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 12        | 1.8        | 484.3        | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 13        | 1.7        | 460.5        | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 14        | 1.7        | 426.4        | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 15        | 1.7        | 382.3        | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 16        | 1.7        | 328.8        | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 17        | 1.7        | 266.4        | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 18        | 1.6        | 192.0        | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 19        | 0.0        | 3.6          | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 20        | 1.3        | 99.1         | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 21        | 0.3        | 10.4         | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 22        | 0.2        | 2.1          | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |

Failure Surface Specified By 20 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 70.00       | 51.00       |
| 2         | 71.90       | 51.63       |
| 3         | 73.79       | 52.28       |
| 4         | 75.67       | 52.97       |
| 5         | 77.54       | 53.69       |
| 6         | 79.39       | 54.43       |
| 7         | 81.24       | 55.20       |

result.out

|    |        |       |
|----|--------|-------|
| 8  | 83.07  | 56.01 |
| 9  | 84.89  | 56.84 |
| 10 | 86.69  | 57.70 |
| 11 | 88.48  | 58.59 |
| 12 | 90.26  | 59.51 |
| 13 | 92.02  | 60.45 |
| 14 | 93.77  | 61.42 |
| 15 | 95.50  | 62.42 |
| 16 | 97.22  | 63.45 |
| 17 | 98.92  | 64.51 |
| 18 | 100.60 | 65.59 |
| 19 | 102.27 | 66.69 |
| 20 | 102.71 | 67.00 |

Circle Center At X = 31.2 ; Y = 171.7 and Radius, 126.7

\*\*\* 1.556 \*\*\*

1

Failure Surface Specified By 18 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 73.33       | 52.68       |
| 2         | 75.30       | 53.07       |
| 3         | 77.24       | 53.53       |
| 4         | 79.17       | 54.05       |
| 5         | 81.09       | 54.63       |
| 6         | 82.98       | 55.28       |
| 7         | 84.85       | 55.99       |
| 8         | 86.69       | 56.76       |
| 9         | 88.51       | 57.59       |
| 10        | 90.30       | 58.49       |
| 11        | 92.06       | 59.44       |
| 12        | 93.79       | 60.45       |
| 13        | 95.48       | 61.51       |
| 14        | 97.14       | 62.63       |
| 15        | 98.76       | 63.81       |
| 16        | 100.33      | 65.03       |
| 17        | 101.87      | 66.31       |
| 18        | 102.64      | 67.00       |

Circle Center At X = 62.5 ; Y = 112.0 and Radius, 60.3

\*\*\* 1.582 \*\*\*

Failure Surface Specified By 18 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 75.00       | 53.52       |
| 2         | 76.88       | 54.20       |
| 3         | 78.75       | 54.90       |
| 4         | 80.62       | 55.63       |
| 5         | 82.47       | 56.38       |
| 6         | 84.31       | 57.16       |
| 7         | 86.15       | 57.96       |
| 8         | 87.97       | 58.78       |
| 9         | 89.78       | 59.63       |
| 10        | 91.58       | 60.50       |
| 11        | 93.37       | 61.39       |
| 12        | 95.14       | 62.31       |
| 13        | 96.91       | 63.25       |
| 14        | 98.66       | 64.22       |
| 15        | 100.40      | 65.21       |
| 16        | 102.13      | 66.21       |
| 17        | 103.84      | 67.25       |
| 18        | 104.97      | 67.95       |

Circle Center At X = 23.9 ; Y = 197.9 and Radius, 153.2

\*\*\* 1.590 \*\*\*

1

## Failure Surface Specified By 22 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 70.00       | 51.00       |
| 2         | 71.97       | 51.35       |
| 3         | 73.93       | 51.76       |
| 4         | 75.87       | 52.22       |
| 5         | 77.81       | 52.73       |
| 6         | 79.72       | 53.30       |
| 7         | 81.62       | 53.93       |
| 8         | 83.51       | 54.60       |
| 9         | 85.37       | 55.33       |
| 10        | 87.21       | 56.11       |
| 11        | 89.03       | 56.94       |
| 12        | 90.82       | 57.83       |
| 13        | 92.59       | 58.76       |
| 14        | 94.33       | 59.74       |
| 15        | 96.05       | 60.77       |
| 16        | 97.73       | 61.85       |
| 17        | 99.38       | 62.98       |
| 18        | 101.00      | 64.15       |
| 19        | 102.59      | 65.37       |
| 20        | 104.14      | 66.63       |
| 21        | 105.66      | 67.93       |
| 22        | 106.56      | 68.75       |

Circle Center At X = 58.5 ; Y = 121.1 and Radius, 71.0

\*\*\* 1.613 \*\*\*

## Failure Surface Specified By 14 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 75.00       | 53.52       |
| 2         | 76.90       | 54.15       |
| 3         | 78.78       | 54.83       |
| 4         | 80.64       | 55.56       |
| 5         | 82.48       | 56.34       |
| 6         | 84.30       | 57.16       |
| 7         | 86.10       | 58.04       |
| 8         | 87.88       | 58.96       |
| 9         | 89.63       | 59.92       |
| 10        | 91.36       | 60.93       |
| 11        | 93.05       | 61.99       |
| 12        | 94.72       | 63.09       |
| 13        | 96.37       | 64.23       |
| 14        | 96.50       | 64.33       |

Circle Center At X = 51.8 ; Y = 126.5 and Radius, 76.6

\*\*\* 1.622 \*\*\*

1

## Failure Surface Specified By 18 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 73.33       | 52.68       |
| 2         | 75.32       | 52.89       |
| 3         | 77.30       | 53.19       |
| 4         | 79.26       | 53.57       |
| 5         | 81.21       | 54.05       |
| 6         | 83.12       | 54.61       |
| 7         | 85.02       | 55.26       |
| 8         | 86.88       | 55.99       |
| 9         | 88.71       | 56.80       |
| 10        | 90.49       | 57.70       |
| 11        | 92.24       | 58.67       |
| 12        | 93.94       | 59.72       |
| 13        | 95.59       | 60.85       |

result.out

|    |        |       |
|----|--------|-------|
| 14 | 97.19  | 62.05 |
| 15 | 98.74  | 63.32 |
| 16 | 100.22 | 64.66 |
| 17 | 101.65 | 66.07 |
| 18 | 102.52 | 67.00 |

Circle Center At x = 69.7 ; y = 97.0 and Radius, 44.5

\*\*\* 1.628 \*\*\*

Failure Surface Specified By 23 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 70.00       | 51.00       |
| 2         | 71.98       | 51.29       |
| 3         | 73.95       | 51.65       |
| 4         | 75.90       | 52.06       |
| 5         | 77.85       | 52.53       |
| 6         | 79.78       | 53.05       |
| 7         | 81.69       | 53.63       |
| 8         | 83.59       | 54.27       |
| 9         | 85.46       | 54.96       |
| 10        | 87.32       | 55.71       |
| 11        | 89.15       | 56.51       |
| 12        | 90.96       | 57.37       |
| 13        | 92.74       | 58.28       |
| 14        | 94.49       | 59.24       |
| 15        | 96.22       | 60.25       |
| 16        | 97.91       | 61.32       |
| 17        | 99.57       | 62.43       |
| 18        | 101.20      | 63.59       |
| 19        | 102.80      | 64.80       |
| 20        | 104.35      | 66.05       |
| 21        | 105.87      | 67.35       |
| 22        | 107.36      | 68.70       |
| 23        | 108.36      | 69.66       |

Circle Center At x = 61.0 ; y = 118.3 and Radius, 67.9

\*\*\* 1.634 \*\*\*

1

Failure Surface Specified By 15 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 75.00       | 53.52       |
| 2         | 77.00       | 53.59       |
| 3         | 78.99       | 53.81       |
| 4         | 80.95       | 54.17       |
| 5         | 82.89       | 54.67       |
| 6         | 84.79       | 55.31       |
| 7         | 86.63       | 56.08       |
| 8         | 88.42       | 56.98       |
| 9         | 90.14       | 58.00       |
| 10        | 91.78       | 59.14       |
| 11        | 93.34       | 60.40       |
| 12        | 94.80       | 61.76       |
| 13        | 96.16       | 63.23       |
| 14        | 97.42       | 64.78       |
| 15        | 97.43       | 64.80       |

Circle Center At x = 74.9 ; y = 81.6 and Radius, 28.1

\*\*\* 1.682 \*\*\*

Failure Surface Specified By 24 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
|-----------|-------------|-------------|

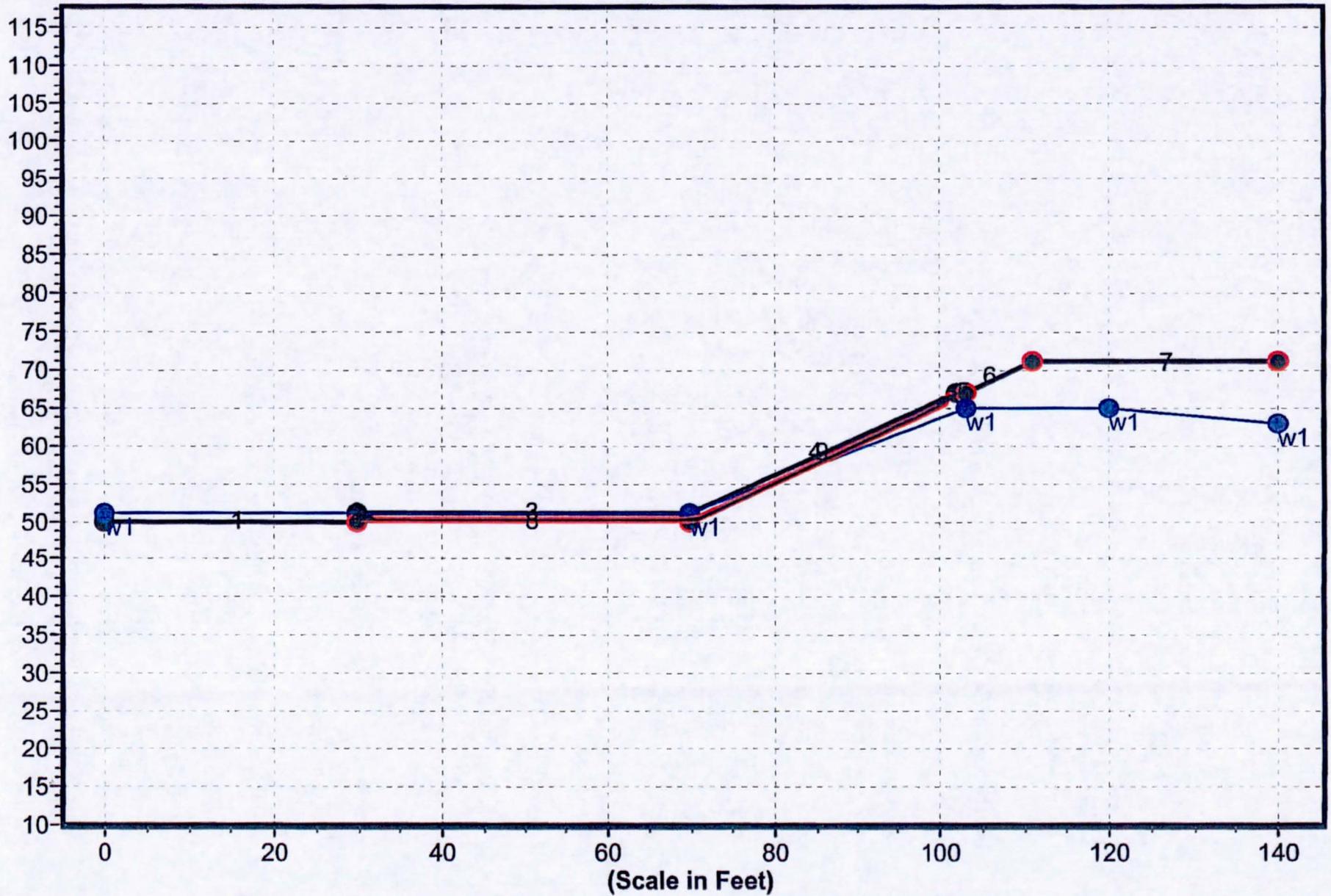


T 140.00 +

result.out  
#

# Geometry and Boundary Conditions

Problem: PSHIA South Bank 2:1 Slope Sudden Drawdown Gabion Slide - FS Min = 2.744



\*\* PCSTABL6 \*\*

by  
Purdue University

--Slope Stability Analysis--  
Simplified Janbu, Simplified Bishop  
or Spencer's Method of Slices

Run Date:  
Time of Run:  
Run By:  
Input Data Filename: run.in  
Output Filename: result.out  
Unit: ENGLISH  
Plotted Output Filename: result.plt

PROBLEM DESCRIPTION PSHIA South Bank 2:1 Slope Sudden Drawdown Gabion Slide

BOUNDARY COORDINATES

7 Top Boundaries  
9 Total Boundaries

| Boundary No. | X-Left (ft) | Y-Left (ft) | X-Right (ft) | Y-Right (ft) | Soil Type Below Bnd |
|--------------|-------------|-------------|--------------|--------------|---------------------|
| 1            | 0.00        | 50.00       | 30.00        | 50.00        | 1                   |
| 2            | 30.00       | 50.00       | 30.01        | 51.00        | 2                   |
| 3            | 30.01       | 51.00       | 70.00        | 51.00        | 2                   |
| 4            | 70.00       | 51.00       | 101.80       | 67.00        | 2                   |
| 5            | 101.80      | 67.00       | 103.10       | 67.00        | 2                   |
| 6            | 103.10      | 67.00       | 111.00       | 71.00        | 1                   |
| 7            | 111.00      | 71.00       | 140.00       | 71.00        | 1                   |
| 8            | 30.00       | 50.00       | 70.00        | 50.00        | 1                   |
| 9            | 70.00       | 50.00       | 103.10       | 67.00        | 1                   |

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

| Soil Type No. | Total Unit wt. (pcf) | Saturated Unit wt. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Param. | Pressure Constant (psf) | Piez. Surface No. |
|---------------|----------------------|--------------------------|--------------------------|----------------------|----------------------|-------------------------|-------------------|
| 1             | 130.0                | 140.0                    | 0.0                      | 37.0                 | 0.00                 | 0.0                     | 1                 |
| 2             | 145.0                | 145.0                    | 0.0                      | 42.0                 | 0.00                 | 0.0                     | 1                 |

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

Unit weight of water = 62.40

Piezometric Surface No. 1 Specified by 5 Coordinate Points

| Point No. | X-water (ft) | Y-water (ft) |
|-----------|--------------|--------------|
| 1         | 0.00         | 51.00        |
| 2         | 70.00        | 51.00        |
| 3         | 102.90       | 65.00        |
| 4         | 120.00       | 65.00        |
| 5         | 140.00       | 63.00        |

Janbus Empirical Coef is being used for the case of c & phi both > 0

A Critical Failure Surface Searching Method, Using A Random

result.out

Technique For Generating Sliding Block Surfaces, Has Been Specified.

100 Trial Surfaces Have Been Generated.

4 Boxes Specified For Generation Of Central Block Base

Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 5.0

| Box No. | X-Left (ft) | Y-Left (ft) | X-Right (ft) | Y-Right (ft) | Height (ft) |
|---------|-------------|-------------|--------------|--------------|-------------|
| 1       | 31.00       | 50.00       | 32.50        | 50.00        | 0.03        |
| 2       | 68.00       | 50.00       | 69.50        | 50.00        | 0.03        |
| 3       | 70.00       | 50.00       | 71.50        | 50.50        | 0.03        |
| 4       | 99.00       | 65.00       | 100.50       | 65.50        | 0.03        |

1

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

\* \* Safety Factors Are Calculated By The Modified Janbu Method \* \*

Failure surface specified by 6 coordinate points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 30.01       | 50.58       |
| 2         | 32.38       | 49.99       |
| 3         | 69.44       | 50.00       |
| 4         | 71.13       | 50.37       |
| 5         | 100.42      | 65.49       |
| 6         | 101.21      | 66.70       |

\*\*\* 2.744 \*\*\*

Individual data on the 12 slices

| Slice No. | width (ft) | Weight (lbs) | Water Force |           | Force Norm (lbs) | Force Tan (lbs) | Earthquake Force |           | Surcharge Load (lbs) |
|-----------|------------|--------------|-------------|-----------|------------------|-----------------|------------------|-----------|----------------------|
|           |            |              | Top (lbs)   | Bot (lbs) |                  |                 | Hor (lbs)        | Ver (lbs) |                      |
| 1         | 0.0        | 0.1          | 5.6         | 0.1       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 2         | 2.3        | 240.5        | 0.0         | 106.6     | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 3         | 0.0        | 5.2          | 0.0         | 2.3       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 4         | 37.1       | 5397.9       | 0.0         | 2323.3    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 5         | 0.6        | 75.9         | 0.0         | 33.4      | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 6         | 0.4        | 55.5         | 0.0         | 22.2      | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 7         | 0.7        | 114.3        | 0.0         | 44.1      | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 8         | 10.2       | 1673.7       | 0.0         | 431.7     | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 9         | 2.1        | 313.8        | 0.0         | 12.6      | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 10        | 17.0       | 2256.5       | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 11        | 0.1        | 14.6         | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 12        | 0.7        | 32.1         | 0.0         | 0.0       | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |

Failure surface specified by 6 coordinate points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 30.03       | 51.00       |
| 2         | 32.07       | 50.00       |
| 3         | 68.99       | 49.99       |
| 4         | 71.24       | 50.40       |
| 5         | 100.25      | 65.43       |
| 6         | 100.53      | 66.36       |

\*\*\* 2.774 \*\*\*

1

## Failure Surface Specified By 6 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 30.00       | 50.19       |
| 2         | 32.00       | 49.99       |
| 3         | 69.40       | 49.99       |
| 4         | 71.18       | 50.40       |
| 5         | 99.98       | 65.33       |
| 6         | 101.48      | 66.84       |

\*\*\* 2.776 \*\*\*

## Failure Surface Specified By 6 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 30.00       | 50.26       |
| 2         | 31.60       | 50.01       |
| 3         | 69.12       | 49.99       |
| 4         | 71.46       | 50.48       |
| 5         | 99.61       | 65.19       |
| 6         | 100.18      | 66.19       |

\*\*\* 2.786 \*\*\*

1

## Failure Surface Specified By 6 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 30.78       | 51.00       |
| 2         | 32.26       | 49.99       |
| 3         | 68.17       | 49.99       |
| 4         | 71.00       | 50.35       |
| 5         | 100.25      | 65.41       |
| 6         | 101.26      | 66.73       |

\*\*\* 2.786 \*\*\*

## Failure Surface Specified By 6 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 30.01       | 50.71       |
| 2         | 32.05       | 49.99       |
| 3         | 69.12       | 50.00       |
| 4         | 71.46       | 50.49       |
| 5         | 99.90       | 65.30       |
| 6         | 100.36      | 66.27       |

\*\*\* 2.788 \*\*\*

1

## Failure Surface Specified By 6 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 30.01       | 50.72       |

result.out

|   |        |       |
|---|--------|-------|
| 2 | 31.14  | 49.99 |
| 3 | 69.20  | 50.00 |
| 4 | 71.11  | 50.38 |
| 5 | 100.23 | 65.42 |
| 6 | 101.80 | 67.00 |

\*\*\* 2.791 \*\*\*

Failure Surface Specified By 6 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 30.00       | 50.04       |
| 2         | 32.17       | 49.99       |
| 3         | 68.28       | 50.01       |
| 4         | 70.75       | 50.25       |
| 5         | 100.20      | 65.41       |
| 6         | 101.10      | 66.65       |

\*\*\* 2.793 \*\*\*

1

Failure Surface Specified By 6 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 30.08       | 51.00       |
| 2         | 31.24       | 50.00       |
| 3         | 68.28       | 49.99       |
| 4         | 71.04       | 50.34       |
| 5         | 100.17      | 65.38       |
| 6         | 101.45      | 66.82       |

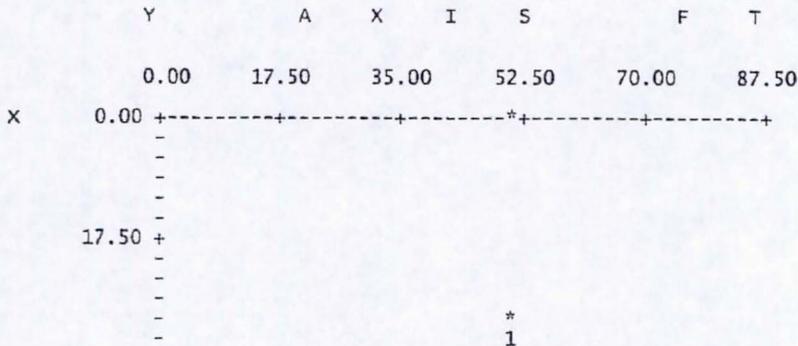
\*\*\* 2.802 \*\*\*

Failure Surface Specified By 6 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 30.00       | 50.45       |
| 2         | 31.02       | 49.99       |
| 3         | 68.07       | 50.00       |
| 4         | 71.40       | 50.48       |
| 5         | 99.75       | 65.25       |
| 6         | 101.19      | 66.69       |

\*\*\* 2.803 \*\*\*

1



A 35.00 +  
-  
-  
-  
X 52.50 +  
-  
-  
-  
I 70.00 +  
-  
-  
-  
S 87.50 +  
-  
-  
-  
105.00 +  
-  
-  
-  
F 122.50 +  
-  
-  
-  
T 140.00 +

5  
\*  
6

12  
W\*

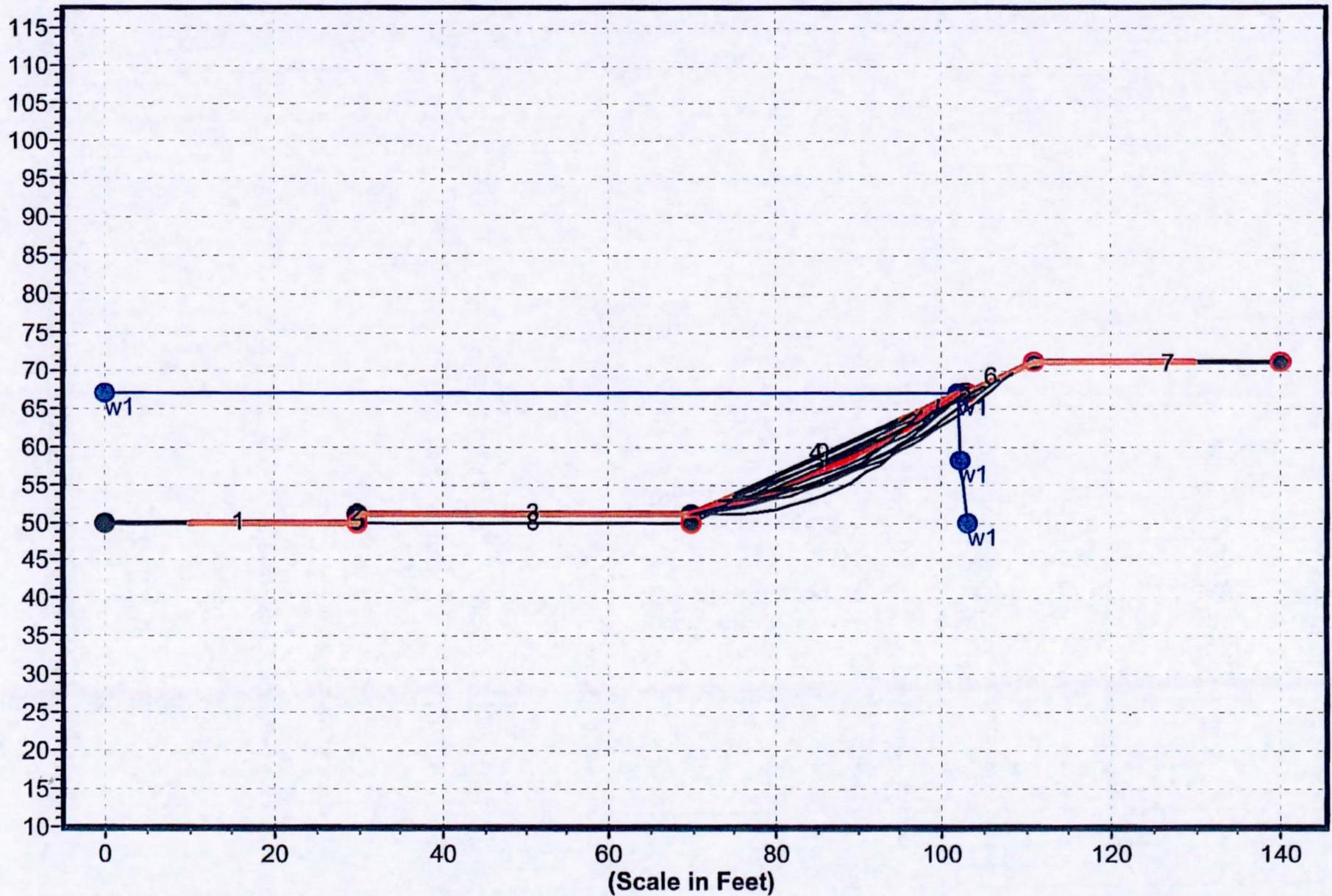
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W

W \*

# Geometry and Boundary Conditions

Problem: Levee Certification 2:1 Slope Critical Flood Stage - FS Min = 1.554



\*\* PCSTABL6 \*\*

by  
Purdue University

--Slope Stability Analysis--  
Simplified Janbu, Simplified Bishop  
or Spencer's Method of Slices

Run Date:  
Time of Run:  
Run By:  
Input Data Filename: run.in  
Output Filename: result.out  
Unit: ENGLISH  
Plotted Output Filename: result.plt

PROBLEM DESCRIPTION Levee Certification 2:1 slope Critical  
Flood Stage

BOUNDARY COORDINATES

7 Top Boundaries  
9 Total Boundaries

| Boundary No. | X-Left (ft) | Y-Left (ft) | X-Right (ft) | Y-Right (ft) | Soil Type Below Bnd |
|--------------|-------------|-------------|--------------|--------------|---------------------|
| 1            | 0.00        | 50.00       | 30.00        | 50.00        | 1                   |
| 2            | 30.00       | 50.00       | 30.01        | 51.00        | 2                   |
| 3            | 30.01       | 51.00       | 70.00        | 51.00        | 2                   |
| 4            | 70.00       | 51.00       | 101.80       | 67.00        | 2                   |
| 5            | 101.80      | 67.00       | 103.10       | 67.00        | 2                   |
| 6            | 103.10      | 67.00       | 111.00       | 71.00        | 1                   |
| 7            | 111.00      | 71.00       | 140.00       | 71.00        | 1                   |
| 8            | 30.00       | 50.00       | 70.00        | 50.00        | 1                   |
| 9            | 70.00       | 50.00       | 103.10       | 67.00        | 1                   |

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

| Soil Type No. | Total Unit wt. (pcf) | Saturated Unit wt. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Param. | Pressure Constant (psf) | Piez. Surface No. |
|---------------|----------------------|--------------------------|--------------------------|----------------------|----------------------|-------------------------|-------------------|
| 1             | 130.0                | 140.0                    | 0.0                      | 37.0                 | 0.00                 | 0.0                     | 1                 |
| 2             | 145.0                | 145.0                    | 0.0                      | 42.0                 | 0.00                 | 0.0                     | 1                 |

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

Unit weight of water = 62.40

Piezometric surface No. 1 Specified by 4 Coordinate Points

| Point No. | X-water (ft) | Y-water (ft) |
|-----------|--------------|--------------|
| 1         | 0.00         | 67.00        |
| 2         | 102.00       | 67.00        |
| 3         | 102.10       | 58.00        |
| 4         | 103.00       | 50.00        |

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.

1000 Trial Surfaces Have Been Generated.

25 Surfaces Initiate From Each Of 40 Points Equally Spaced  
 Along The Ground Surface Between X = 10.00 ft.  
 and X = 75.00 ft.

Each Surface Terminates Between X = 95.00 ft.  
 and X = 130.00 ft.

Unless Further Limitations Were Imposed, The Minimum Elevation  
 At Which A Surface Extends Is Y = 0.00 ft.

2.00 ft. Line Segments Define Each Trial Failure Surface.

1

Following Are Displayed The Ten Most Critical Of The Trial  
 Failure Surfaces Examined. They Are Ordered - Most Critical  
 First.

\* \* Safety Factors Are Calculated By The Modified Bishop Method \* \*

Failure Surface Specified By 20 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 70.00       | 51.00       |
| 2         | 71.92       | 51.55       |
| 3         | 73.83       | 52.14       |
| 4         | 75.73       | 52.78       |
| 5         | 77.61       | 53.45       |
| 6         | 79.48       | 54.16       |
| 7         | 81.34       | 54.91       |
| 8         | 83.17       | 55.70       |
| 9         | 84.99       | 56.53       |
| 10        | 86.80       | 57.40       |
| 11        | 88.58       | 58.30       |
| 12        | 90.34       | 59.24       |
| 13        | 92.09       | 60.22       |
| 14        | 93.81       | 61.24       |
| 15        | 95.51       | 62.29       |
| 16        | 97.19       | 63.38       |
| 17        | 98.85       | 64.50       |
| 18        | 100.48      | 65.66       |
| 19        | 102.08      | 66.85       |
| 20        | 102.27      | 67.00       |

Circle Center At X = 44.9 ; Y = 142.2 and Radius, 94.6

\*\*\* 1.554 \*\*\*

Individual data on the 24 slices

| Slice No. | width (ft) | weight (lbs) | Water Force |           | Force Norm (lbs) | Force Tan (lbs) | Earthquake Force |           | Surcharge Load (lbs) |
|-----------|------------|--------------|-------------|-----------|------------------|-----------------|------------------|-----------|----------------------|
|           |            |              | Top (lbs)   | Bot (lbs) |                  |                 | Hor (lbs)        | Ver (lbs) |                      |
| 1         | 1.9        | 57.9         | 2083.7      | 1962.4    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 2         | 1.9        | 166.3        | 1941.9      | 1891.0    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 3         | 1.0        | 122.0        | 936.6       | 937.2     | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 4         | 0.9        | 138.0        | 865.1       | 877.4     | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 5         | 1.9        | 337.2        | 1663.5      | 1733.2    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 6         | 1.9        | 400.3        | 1527.4      | 1646.9    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 7         | 1.9        | 450.1        | 1393.5      | 1555.6    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 8         | 1.8        | 486.6        | 1262.1      | 1459.4    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 9         | 1.8        | 510.1        | 1133.3      | 1358.4    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 10        | 1.8        | 520.9        | 1007.4      | 1252.6    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 11        | 1.8        | 519.4        | 884.6       | 1142.0    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 12        | 1.8        | 505.9        | 764.9       | 1026.8    | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 13        | 1.7        | 480.8        | 648.6       | 906.9     | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 14        | 1.7        | 444.6        | 535.9       | 782.4     | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 15        | 1.7        | 397.6        | 426.7       | 653.3     | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |
| 16        | 1.7        | 340.6        | 321.4       | 519.8     | 0.0              | 0.0             | 0.0              | 0.0       | 0.0                  |

|    |     |       |       |       |     |     | result.out |     |     |
|----|-----|-------|-------|-------|-----|-----|------------|-----|-----|
| 17 | 1.7 | 273.8 | 220.0 | 381.8 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 18 | 1.6 | 194.5 | 120.9 | 235.7 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 19 | 0.0 | 3.6   | 1.7   | 3.8   | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 20 | 1.3 | 99.1  | 30.8  | 87.3  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 21 | 0.2 | 8.2   | 0.0   | 4.4   | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 22 | 0.0 | 0.1   | 0.0   | 0.0   | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 23 | 0.1 | 2.1   | 0.0   | 0.0   | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 24 | 0.2 | 2.1   | 0.0   | 0.0   | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |

Failure Surface Specified By 20 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 70.00       | 51.00       |
| 2         | 71.90       | 51.63       |
| 3         | 73.79       | 52.28       |
| 4         | 75.67       | 52.97       |
| 5         | 77.54       | 53.69       |
| 6         | 79.39       | 54.43       |
| 7         | 81.24       | 55.20       |
| 8         | 83.07       | 56.01       |
| 9         | 84.89       | 56.84       |
| 10        | 86.69       | 57.70       |
| 11        | 88.48       | 58.59       |
| 12        | 90.26       | 59.51       |
| 13        | 92.02       | 60.45       |
| 14        | 93.77       | 61.42       |
| 15        | 95.50       | 62.42       |
| 16        | 97.22       | 63.45       |
| 17        | 98.92       | 64.51       |
| 18        | 100.60      | 65.59       |
| 19        | 102.27      | 66.69       |
| 20        | 102.71      | 67.00       |

Circle Center At X = 31.2 ; Y = 171.7 and Radius, 126.7

\*\*\* 1.562 \*\*\*

1

Failure Surface Specified By 18 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 73.33       | 52.68       |
| 2         | 75.30       | 53.07       |
| 3         | 77.24       | 53.53       |
| 4         | 79.17       | 54.05       |
| 5         | 81.09       | 54.63       |
| 6         | 82.98       | 55.28       |
| 7         | 84.85       | 55.99       |
| 8         | 86.69       | 56.76       |
| 9         | 88.51       | 57.59       |
| 10        | 90.30       | 58.49       |
| 11        | 92.06       | 59.44       |
| 12        | 93.79       | 60.45       |
| 13        | 95.48       | 61.51       |
| 14        | 97.14       | 62.63       |
| 15        | 98.76       | 63.81       |
| 16        | 100.33      | 65.03       |
| 17        | 101.87      | 66.31       |
| 18        | 102.64      | 67.00       |

Circle Center At X = 62.5 ; Y = 112.0 and Radius, 60.3

\*\*\* 1.586 \*\*\*

Failure surface Specified By 18 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 75.00       | 53.52       |
| 2         | 76.88       | 54.20       |
| 3         | 78.75       | 54.90       |
| 4         | 80.62       | 55.63       |

result.out

|    |        |       |
|----|--------|-------|
| 5  | 82.47  | 56.38 |
| 6  | 84.31  | 57.16 |
| 7  | 86.15  | 57.96 |
| 8  | 87.97  | 58.78 |
| 9  | 89.78  | 59.63 |
| 10 | 91.58  | 60.50 |
| 11 | 93.37  | 61.39 |
| 12 | 95.14  | 62.31 |
| 13 | 96.91  | 63.25 |
| 14 | 98.66  | 64.22 |
| 15 | 100.40 | 65.21 |
| 16 | 102.13 | 66.21 |
| 17 | 103.84 | 67.25 |
| 18 | 104.97 | 67.95 |

Circle Center At X = 23.9 ; Y = 197.9 and Radius, 153.2

\*\*\* 1.620 \*\*\*

1

Failure Surface Specified By 14 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 75.00       | 53.52       |
| 2         | 76.90       | 54.15       |
| 3         | 78.78       | 54.83       |
| 4         | 80.64       | 55.56       |
| 5         | 82.48       | 56.34       |
| 6         | 84.30       | 57.16       |
| 7         | 86.10       | 58.04       |
| 8         | 87.88       | 58.96       |
| 9         | 89.63       | 59.92       |
| 10        | 91.36       | 60.93       |
| 11        | 93.05       | 61.99       |
| 12        | 94.72       | 63.09       |
| 13        | 96.37       | 64.23       |
| 14        | 96.50       | 64.33       |

Circle Center At X = 51.8 ; Y = 126.5 and Radius, 76.6

\*\*\* 1.621 \*\*\*

Failure Surface Specified By 18 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 73.33       | 52.68       |
| 2         | 75.32       | 52.89       |
| 3         | 77.30       | 53.19       |
| 4         | 79.26       | 53.57       |
| 5         | 81.21       | 54.05       |
| 6         | 83.12       | 54.61       |
| 7         | 85.02       | 55.26       |
| 8         | 86.88       | 55.99       |
| 9         | 88.71       | 56.80       |
| 10        | 90.49       | 57.70       |
| 11        | 92.24       | 58.67       |
| 12        | 93.94       | 59.72       |
| 13        | 95.59       | 60.85       |
| 14        | 97.19       | 62.05       |
| 15        | 98.74       | 63.32       |
| 16        | 100.22      | 64.66       |
| 17        | 101.65      | 66.07       |
| 18        | 102.52      | 67.00       |

Circle Center At X = 69.7 ; Y = 97.0 and Radius, 44.5

\*\*\* 1.630 \*\*\*

Failure Surface Specified By 22 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 70.00       | 51.00       |
| 2         | 71.97       | 51.35       |
| 3         | 73.93       | 51.76       |
| 4         | 75.87       | 52.22       |
| 5         | 77.81       | 52.73       |
| 6         | 79.72       | 53.30       |
| 7         | 81.62       | 53.93       |
| 8         | 83.51       | 54.60       |
| 9         | 85.37       | 55.33       |
| 10        | 87.21       | 56.11       |
| 11        | 89.03       | 56.94       |
| 12        | 90.82       | 57.83       |
| 13        | 92.59       | 58.76       |
| 14        | 94.33       | 59.74       |
| 15        | 96.05       | 60.77       |
| 16        | 97.73       | 61.85       |
| 17        | 99.38       | 62.98       |
| 18        | 101.00      | 64.15       |
| 19        | 102.59      | 65.37       |
| 20        | 104.14      | 66.63       |
| 21        | 105.66      | 67.93       |
| 22        | 106.56      | 68.75       |

Circle Center At X = 58.5 ; Y = 121.1 and Radius, 71.0

\*\*\* 1.652 \*\*\*

Failure Surface Specified By 15 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 75.00       | 53.52       |
| 2         | 77.00       | 53.59       |
| 3         | 78.99       | 53.81       |
| 4         | 80.95       | 54.17       |
| 5         | 82.89       | 54.67       |
| 6         | 84.79       | 55.31       |
| 7         | 86.63       | 56.08       |
| 8         | 88.42       | 56.98       |
| 9         | 90.14       | 58.00       |
| 10        | 91.78       | 59.14       |
| 11        | 93.34       | 60.40       |
| 12        | 94.80       | 61.76       |
| 13        | 96.16       | 63.23       |
| 14        | 97.42       | 64.78       |
| 15        | 97.43       | 64.80       |

Circle Center At X = 74.9 ; Y = 81.6 and Radius, 28.1

\*\*\* 1.681 \*\*\*

1

Failure Surface Specified By 23 Coordinate Points

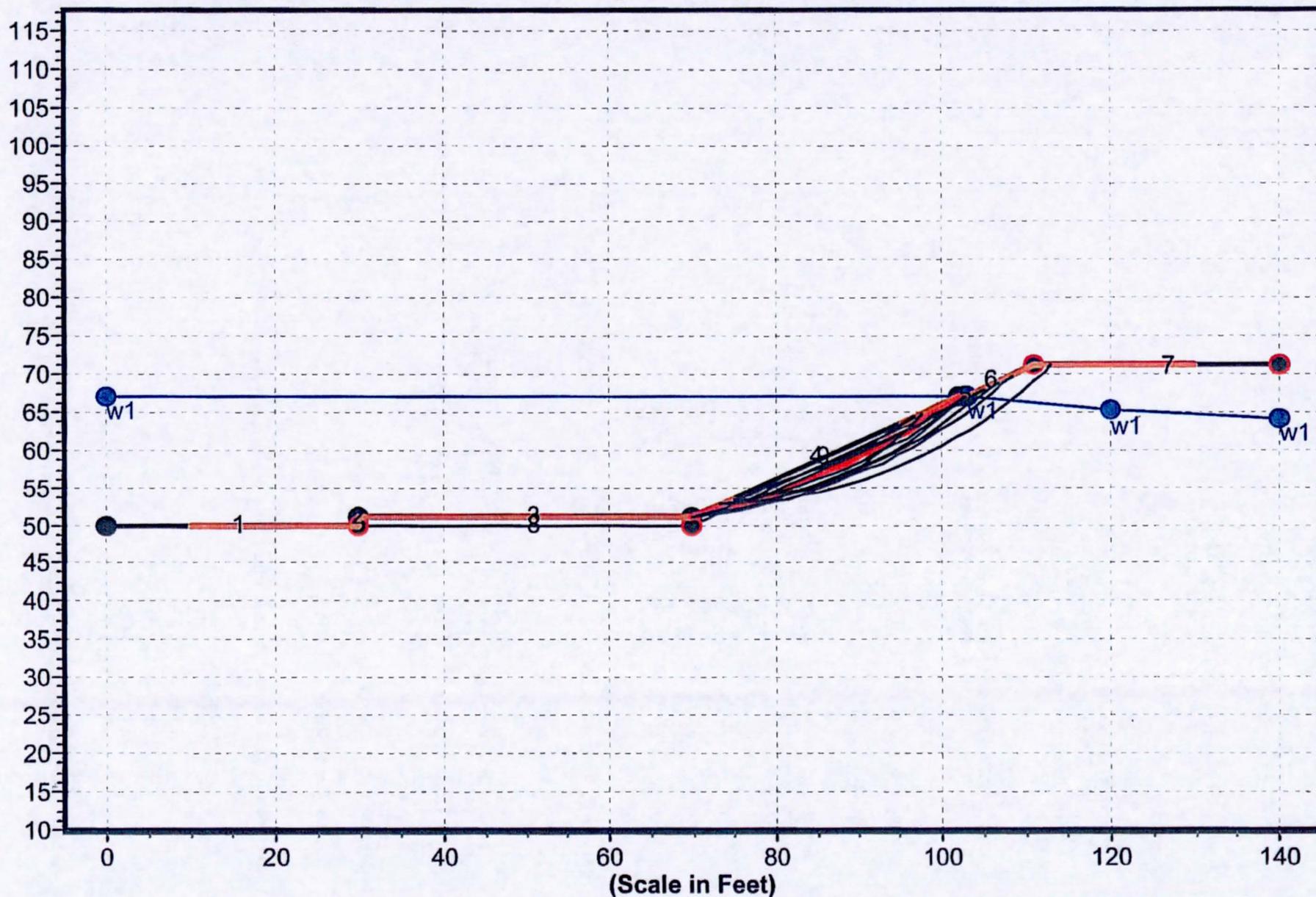
| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 70.00       | 51.00       |
| 2         | 71.98       | 51.29       |
| 3         | 73.95       | 51.65       |
| 4         | 75.90       | 52.06       |
| 5         | 77.85       | 52.53       |
| 6         | 79.78       | 53.05       |
| 7         | 81.69       | 53.63       |
| 8         | 83.59       | 54.27       |
| 9         | 85.46       | 54.96       |
| 10        | 87.32       | 55.71       |
| 11        | 89.15       | 56.51       |
| 12        | 90.96       | 57.37       |
| 13        | 92.74       | 58.28       |
| 14        | 94.49       | 59.24       |
| 15        | 96.22       | 60.25       |





### Geometry and Boundary Conditions

Problem: PSHIA River South Bank 2:1 Slope Steady Seepage Flood Stage - FS Min = 1.553



\*\* PCSTABL6 \*\*

by  
Purdue University

--Slope Stability Analysis--  
Simplified Janbu, Simplified Bishop  
or Spencer's Method of Slices

Run Date:  
Time of Run:  
Run By:  
Input Data Filename: run.in  
Output Filename: result.out  
Unit: ENGLISH  
Plotted Output Filename: result.plt

PROBLEM DESCRIPTION PSHIA River South Bank 2:1 Slope Steady Seepage Flood Stage

BOUNDARY COORDINATES

7 Top Boundaries  
9 Total Boundaries

| Boundary No. | X-Left (ft) | Y-Left (ft) | X-Right (ft) | Y-Right (ft) | Soil Type Below Bnd |
|--------------|-------------|-------------|--------------|--------------|---------------------|
| 1            | 0.00        | 50.00       | 30.00        | 50.00        | 1                   |
| 2            | 30.00       | 50.00       | 30.01        | 51.00        | 2                   |
| 3            | 30.01       | 51.00       | 70.00        | 51.00        | 2                   |
| 4            | 70.00       | 51.00       | 101.80       | 67.00        | 2                   |
| 5            | 101.80      | 67.00       | 103.10       | 67.00        | 2                   |
| 6            | 103.10      | 67.00       | 111.00       | 71.00        | 1                   |
| 7            | 111.00      | 71.00       | 140.00       | 71.00        | 1                   |
| 8            | 30.00       | 50.00       | 70.00        | 50.00        | 1                   |
| 9            | 70.00       | 50.00       | 103.10       | 67.00        | 1                   |

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

| Soil Type No. | Total Unit Wt. (pcf) | Saturated Unit Wt. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Param. | Pressure Constant (psf) | Piez. Surface No. |
|---------------|----------------------|--------------------------|--------------------------|----------------------|----------------------|-------------------------|-------------------|
| 1             | 130.0                | 140.0                    | 0.0                      | 37.0                 | 0.00                 | 0.0                     | 1                 |
| 2             | 145.0                | 145.0                    | 0.0                      | 42.0                 | 0.00                 | 0.0                     | 1                 |

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

Unit weight of water = 62.40

Piezometric Surface No. 1 Specified by 4 Coordinate Points

| Point No. | X-Water (ft) | Y-Water (ft) |
|-----------|--------------|--------------|
| 1         | 0.00         | 67.00        |
| 2         | 103.00       | 67.00        |
| 3         | 120.00       | 65.30        |
| 4         | 140.00       | 64.00        |

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.

1000 Trial Surfaces Have Been Generated.

result.out

25 Surfaces Initiate From Each Of 40 Points Equally Spaced  
 Along The Ground Surface Between X = 10.00 ft.  
 and X = 75.00 ft.

Each Surface Terminates Between X = 95.00 ft.  
 and X = 130.00 ft.

Unless Further Limitations Were Imposed, The Minimum Elevation  
 At Which A Surface Extends Is Y = 0.00 ft.

2.00 ft. Line Segments Define Each Trial Failure Surface.

1

Following Are Displayed The Ten Most Critical Of The Trial  
 Failure Surfaces Examined. They Are Ordered - Most Critical  
 First.

\* \* Safety Factors Are Calculated By The Modified Bishop Method \* \*

Failure Surface Specified By 20 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 70.00       | 51.00       |
| 2         | 71.92       | 51.55       |
| 3         | 73.83       | 52.14       |
| 4         | 75.73       | 52.78       |
| 5         | 77.61       | 53.45       |
| 6         | 79.48       | 54.16       |
| 7         | 81.34       | 54.91       |
| 8         | 83.17       | 55.70       |
| 9         | 84.99       | 56.53       |
| 10        | 86.80       | 57.40       |
| 11        | 88.58       | 58.30       |
| 12        | 90.34       | 59.24       |
| 13        | 92.09       | 60.22       |
| 14        | 93.81       | 61.24       |
| 15        | 95.51       | 62.29       |
| 16        | 97.19       | 63.38       |
| 17        | 98.85       | 64.50       |
| 18        | 100.48      | 65.66       |
| 19        | 102.08      | 66.85       |
| 20        | 102.27      | 67.00       |

Circle Center At X = 44.9 ; Y = 142.2 and Radius, 94.6

\*\*\* 1.553 \*\*\*

Individual data on the 22 slices

| Slice No. | width (ft) | weight (lbs) | Water           |                 | Force Norm (lbs) | Force Tan (lbs) | Earthquake      |                 |                      |
|-----------|------------|--------------|-----------------|-----------------|------------------|-----------------|-----------------|-----------------|----------------------|
|           |            |              | Force Top (lbs) | Force Bot (lbs) |                  |                 | Force Hor (lbs) | Force Ver (lbs) | Surcharge Load (lbs) |
| 1         | 1.9        | 57.9         | 2083.7          | 1962.4          | 0.0              | 0.0             | 0.0             | 0.0             | 0.0                  |
| 2         | 1.9        | 166.3        | 1941.9          | 1891.0          | 0.0              | 0.0             | 0.0             | 0.0             | 0.0                  |
| 3         | 1.0        | 122.0        | 936.6           | 937.2           | 0.0              | 0.0             | 0.0             | 0.0             | 0.0                  |
| 4         | 0.9        | 138.0        | 865.1           | 877.4           | 0.0              | 0.0             | 0.0             | 0.0             | 0.0                  |
| 5         | 1.9        | 337.2        | 1663.5          | 1733.2          | 0.0              | 0.0             | 0.0             | 0.0             | 0.0                  |
| 6         | 1.9        | 400.3        | 1527.4          | 1646.9          | 0.0              | 0.0             | 0.0             | 0.0             | 0.0                  |
| 7         | 1.9        | 450.1        | 1393.5          | 1555.6          | 0.0              | 0.0             | 0.0             | 0.0             | 0.0                  |
| 8         | 1.8        | 486.6        | 1262.1          | 1459.4          | 0.0              | 0.0             | 0.0             | 0.0             | 0.0                  |
| 9         | 1.8        | 510.1        | 1133.3          | 1358.4          | 0.0              | 0.0             | 0.0             | 0.0             | 0.0                  |
| 10        | 1.8        | 520.9        | 1007.4          | 1252.6          | 0.0              | 0.0             | 0.0             | 0.0             | 0.0                  |
| 11        | 1.8        | 519.4        | 884.6           | 1142.0          | 0.0              | 0.0             | 0.0             | 0.0             | 0.0                  |
| 12        | 1.8        | 505.9        | 764.9           | 1026.8          | 0.0              | 0.0             | 0.0             | 0.0             | 0.0                  |
| 13        | 1.7        | 480.8        | 648.6           | 906.9           | 0.0              | 0.0             | 0.0             | 0.0             | 0.0                  |
| 14        | 1.7        | 444.6        | 535.9           | 782.4           | 0.0              | 0.0             | 0.0             | 0.0             | 0.0                  |
| 15        | 1.7        | 397.6        | 426.7           | 653.3           | 0.0              | 0.0             | 0.0             | 0.0             | 0.0                  |
| 16        | 1.7        | 340.6        | 321.4           | 519.8           | 0.0              | 0.0             | 0.0             | 0.0             | 0.0                  |

|    |     |       |       |       |     |     | result.out |     |     |
|----|-----|-------|-------|-------|-----|-----|------------|-----|-----|
| 17 | 1.7 | 273.8 | 220.0 | 381.8 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 18 | 1.6 | 194.5 | 120.9 | 235.7 | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 19 | 0.0 | 3.6   | 1.7   | 3.8   | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 20 | 1.3 | 99.1  | 30.8  | 87.3  | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 21 | 0.3 | 10.4  | 0.0   | 5.6   | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |
| 22 | 0.2 | 2.1   | 0.0   | 1.1   | 0.0 | 0.0 | 0.0        | 0.0 | 0.0 |

Failure Surface Specified By 20 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 70.00       | 51.00       |
| 2         | 71.90       | 51.63       |
| 3         | 73.79       | 52.28       |
| 4         | 75.67       | 52.97       |
| 5         | 77.54       | 53.69       |
| 6         | 79.39       | 54.43       |
| 7         | 81.24       | 55.20       |
| 8         | 83.07       | 56.01       |
| 9         | 84.89       | 56.84       |
| 10        | 86.69       | 57.70       |
| 11        | 88.48       | 58.59       |
| 12        | 90.26       | 59.51       |
| 13        | 92.02       | 60.45       |
| 14        | 93.77       | 61.42       |
| 15        | 95.50       | 62.42       |
| 16        | 97.22       | 63.45       |
| 17        | 98.92       | 64.51       |
| 18        | 100.60      | 65.59       |
| 19        | 102.27      | 66.69       |
| 20        | 102.71      | 67.00       |

Circle Center At X = 31.2 ; Y = 171.7 and Radius, 126.7

\*\*\* 1.555 \*\*\*

1

Failure Surface Specified By 18 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 73.33       | 52.68       |
| 2         | 75.30       | 53.07       |
| 3         | 77.24       | 53.53       |
| 4         | 79.17       | 54.05       |
| 5         | 81.09       | 54.63       |
| 6         | 82.98       | 55.28       |
| 7         | 84.85       | 55.99       |
| 8         | 86.69       | 56.76       |
| 9         | 88.51       | 57.59       |
| 10        | 90.30       | 58.49       |
| 11        | 92.06       | 59.44       |
| 12        | 93.79       | 60.45       |
| 13        | 95.48       | 61.51       |
| 14        | 97.14       | 62.63       |
| 15        | 98.76       | 63.81       |
| 16        | 100.33      | 65.03       |
| 17        | 101.87      | 66.31       |
| 18        | 102.64      | 67.00       |

Circle Center At X = 62.5 ; Y = 112.0 and Radius, 60.3

\*\*\* 1.580 \*\*\*

Failure Surface Specified By 18 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 75.00       | 53.52       |
| 2         | 76.88       | 54.20       |
| 3         | 78.75       | 54.90       |
| 4         | 80.62       | 55.63       |
| 5         | 82.47       | 56.38       |
| 6         | 84.31       | 57.16       |

result.out

|    |        |       |
|----|--------|-------|
| 7  | 86.15  | 57.96 |
| 8  | 87.97  | 58.78 |
| 9  | 89.78  | 59.63 |
| 10 | 91.58  | 60.50 |
| 11 | 93.37  | 61.39 |
| 12 | 95.14  | 62.31 |
| 13 | 96.91  | 63.25 |
| 14 | 98.66  | 64.22 |
| 15 | 100.40 | 65.21 |
| 16 | 102.13 | 66.21 |
| 17 | 103.84 | 67.25 |
| 18 | 104.97 | 67.95 |

Circle Center At X = 23.9 ; Y = 197.9 and Radius, 153.2

\*\*\* 1.587 \*\*\*

1

Failure Surface Specified By 22 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 70.00       | 51.00       |
| 2         | 71.97       | 51.35       |
| 3         | 73.93       | 51.76       |
| 4         | 75.87       | 52.22       |
| 5         | 77.81       | 52.73       |
| 6         | 79.72       | 53.30       |
| 7         | 81.62       | 53.93       |
| 8         | 83.51       | 54.60       |
| 9         | 85.37       | 55.33       |
| 10        | 87.21       | 56.11       |
| 11        | 89.03       | 56.94       |
| 12        | 90.82       | 57.83       |
| 13        | 92.59       | 58.76       |
| 14        | 94.33       | 59.74       |
| 15        | 96.05       | 60.77       |
| 16        | 97.73       | 61.85       |
| 17        | 99.38       | 62.98       |
| 18        | 101.00      | 64.15       |
| 19        | 102.59      | 65.37       |
| 20        | 104.14      | 66.63       |
| 21        | 105.66      | 67.93       |
| 22        | 106.56      | 68.75       |

Circle Center At X = 58.5 ; Y = 121.1 and Radius, 71.0

\*\*\* 1.603 \*\*\*

Failure Surface Specified By 23 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 70.00       | 51.00       |
| 2         | 71.98       | 51.29       |
| 3         | 73.95       | 51.65       |
| 4         | 75.90       | 52.06       |
| 5         | 77.85       | 52.53       |
| 6         | 79.78       | 53.05       |
| 7         | 81.69       | 53.63       |
| 8         | 83.59       | 54.27       |
| 9         | 85.46       | 54.96       |
| 10        | 87.32       | 55.71       |
| 11        | 89.15       | 56.51       |
| 12        | 90.96       | 57.37       |
| 13        | 92.74       | 58.28       |
| 14        | 94.49       | 59.24       |
| 15        | 96.22       | 60.25       |
| 16        | 97.91       | 61.32       |
| 17        | 99.57       | 62.43       |
| 18        | 101.20      | 63.59       |
| 19        | 102.80      | 64.80       |
| 20        | 104.35      | 66.05       |
| 21        | 105.87      | 67.35       |
| 22        | 107.36      | 68.70       |
| 23        | 108.36      | 69.66       |

result.out

Circle Center At X = 61.0 ; Y = 118.3 and Radius, 67.9

\*\*\* 1.615 \*\*\*

1

Failure Surface Specified By 14 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 75.00       | 53.52       |
| 2         | 76.90       | 54.15       |
| 3         | 78.78       | 54.83       |
| 4         | 80.64       | 55.56       |
| 5         | 82.48       | 56.34       |
| 6         | 84.30       | 57.16       |
| 7         | 86.10       | 58.04       |
| 8         | 87.88       | 58.96       |
| 9         | 89.63       | 59.92       |
| 10        | 91.36       | 60.93       |
| 11        | 93.05       | 61.99       |
| 12        | 94.72       | 63.09       |
| 13        | 96.37       | 64.23       |
| 14        | 96.50       | 64.33       |

Circle Center At X = 51.8 ; Y = 126.5 and Radius, 76.6

\*\*\* 1.621 \*\*\*

Failure Surface Specified By 18 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 73.33       | 52.68       |
| 2         | 75.32       | 52.89       |
| 3         | 77.30       | 53.19       |
| 4         | 79.26       | 53.57       |
| 5         | 81.21       | 54.05       |
| 6         | 83.12       | 54.61       |
| 7         | 85.02       | 55.26       |
| 8         | 86.88       | 55.99       |
| 9         | 88.71       | 56.80       |
| 10        | 90.49       | 57.70       |
| 11        | 92.24       | 58.67       |
| 12        | 93.94       | 59.72       |
| 13        | 95.59       | 60.85       |
| 14        | 97.19       | 62.05       |
| 15        | 98.74       | 63.32       |
| 16        | 100.22      | 64.66       |
| 17        | 101.65      | 66.07       |
| 18        | 102.52      | 67.00       |

Circle Center At X = 69.7 ; Y = 97.0 and Radius, 44.5

\*\*\* 1.626 \*\*\*

1

Failure Surface Specified By 24 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 73.33       | 52.68       |
| 2         | 75.33       | 52.80       |
| 3         | 77.32       | 52.98       |
| 4         | 79.30       | 53.24       |
| 5         | 81.28       | 53.57       |
| 6         | 83.24       | 53.97       |
| 7         | 85.18       | 54.43       |
| 8         | 87.11       | 54.96       |
| 9         | 89.02       | 55.56       |

|    |        |       |
|----|--------|-------|
| 10 | 90.91  | 56.23 |
| 11 | 92.77  | 56.96 |
| 12 | 94.60  | 57.75 |
| 13 | 96.41  | 58.61 |
| 14 | 98.18  | 59.53 |
| 15 | 99.93  | 60.51 |
| 16 | 101.63 | 61.56 |
| 17 | 103.30 | 62.66 |
| 18 | 104.93 | 63.82 |
| 19 | 106.52 | 65.03 |
| 20 | 108.06 | 66.31 |
| 21 | 109.56 | 67.63 |
| 22 | 111.02 | 69.00 |
| 23 | 112.42 | 70.43 |
| 24 | 112.94 | 71.00 |

Circle Center At X = 70.9 ; Y = 109.8 and Radius, 57.2

\*\*\* 1.661 \*\*\*

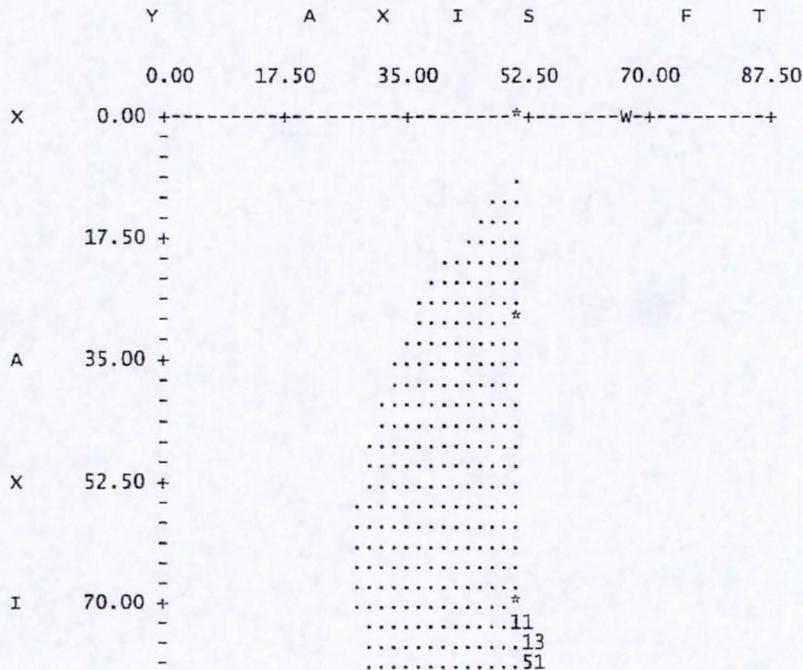
Failure surface specified by 15 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 75.00       | 53.52       |
| 2         | 77.00       | 53.59       |
| 3         | 78.99       | 53.81       |
| 4         | 80.95       | 54.17       |
| 5         | 82.89       | 54.67       |
| 6         | 84.79       | 55.31       |
| 7         | 86.63       | 56.08       |
| 8         | 88.42       | 56.98       |
| 9         | 90.14       | 58.00       |
| 10        | 91.78       | 59.14       |
| 11        | 93.34       | 60.40       |
| 12        | 94.80       | 61.76       |
| 13        | 96.16       | 63.23       |
| 14        | 97.42       | 64.78       |
| 15        | 97.43       | 64.80       |

Circle Center At X = 74.9 ; Y = 81.6 and Radius, 28.1

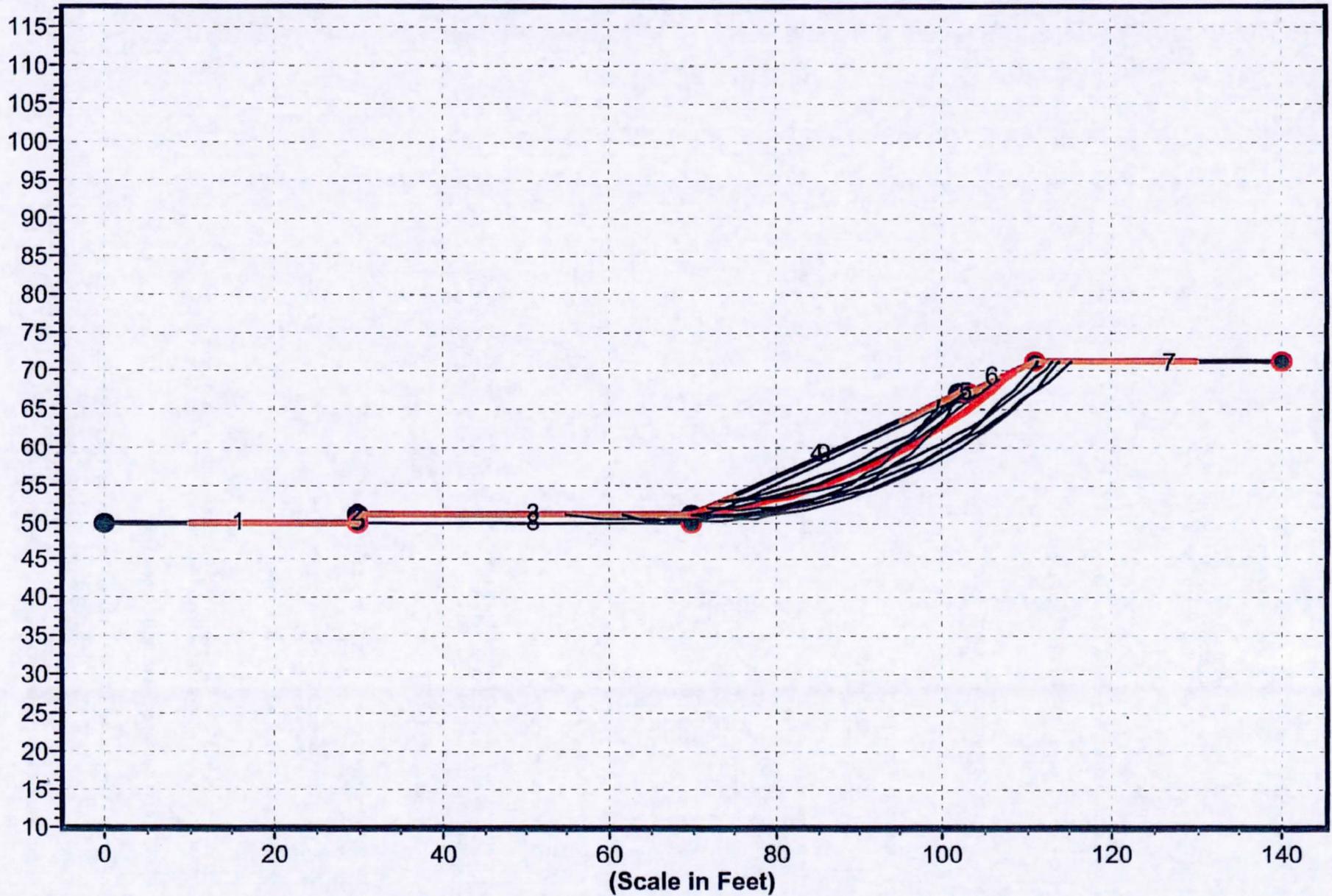
\*\*\* 1.681 \*\*\*

1





**Geometry and Boundary Conditions**  
**Problem: PSHIA Salt River South Bank 2:1 Slope Earthquake - FS Min = 1.676**



\*\* PCSTABL6 \*\*

result.out

by  
Purdue University

--Slope Stability Analysis--  
Simplified Janbu, Simplified Bishop  
or Spencer's Method of Slices

Run Date:  
Time of Run:  
Run By:  
Input Data Filename: run.in  
Output Filename: result.out  
Unit: ENGLISH  
Plotted Output Filename: result.plt

PROBLEM DESCRIPTION PSHIA Salt River South Bank 2:1 Slope E  
earthquake

BOUNDARY COORDINATES

7 Top Boundaries  
9 Total Boundaries

| Boundary No. | X-Left (ft) | Y-Left (ft) | X-Right (ft) | Y-Right (ft) | Soil Type Below Bnd |
|--------------|-------------|-------------|--------------|--------------|---------------------|
| 1            | 0.00        | 50.00       | 30.00        | 50.00        | 1                   |
| 2            | 30.00       | 50.00       | 30.01        | 51.00        | 2                   |
| 3            | 30.01       | 51.00       | 70.00        | 51.00        | 2                   |
| 4            | 70.00       | 51.00       | 101.80       | 67.00        | 2                   |
| 5            | 101.80      | 67.00       | 103.10       | 67.00        | 2                   |
| 6            | 103.10      | 67.00       | 111.00       | 71.00        | 1                   |
| 7            | 111.00      | 71.00       | 140.00       | 71.00        | 1                   |
| 8            | 30.00       | 50.00       | 70.00        | 50.00        | 1                   |
| 9            | 70.00       | 50.00       | 103.10       | 67.00        | 1                   |

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

| Soil Type No. | Total Unit Wt. (pcf) | Saturated Unit Wt. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Param. | Pressure Constant (psf) | Piez. Surface No. |
|---------------|----------------------|--------------------------|--------------------------|----------------------|----------------------|-------------------------|-------------------|
| 1             | 130.0                | 140.0                    | 50.0                     | 37.0                 | 0.00                 | 0.0                     | 1                 |
| 2             | 145.0                | 145.0                    | 0.0                      | 42.0                 | 0.00                 | 0.0                     | 1                 |

A Horizontal Earthquake Loading Coefficient of 0.070 Has Been Assigned

A Vertical Earthquake Loading Coefficient of 0.070 Has Been Assigned

Cavitation Pressure = 0.0 (psf)

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.

1000 Trial Surfaces Have Been Generated.

25 Surfaces Initiate From Each Of 40 Points Equally spaced Along The Ground Surface Between X = 10.00 ft. and X = 75.00 ft.

Each Surface Terminates Between X = 95.00 ft. and X = 130.00 ft.

result.out

Unless Further Limitations Were Imposed, The Minimum Elevation  
At Which A Surface Extends Is Y = 0.00 ft.

2.00 ft. Line Segments Define Each Trial Failure Surface.

1

Following Are Displayed The Ten Most Critical Of The Trial  
Failure Surfaces Examined. They Are Ordered - Most Critical  
First.

\* \* Safety Factors Are Calculated By The Modified Bishop Method \* \*

Failure Surface Specified By 23 Coordinate Points

| Point<br>No. | X-Surf<br>(ft) | Y-Surf<br>(ft) |
|--------------|----------------|----------------|
| 1            | 70.00          | 51.00          |
| 2            | 71.98          | 51.29          |
| 3            | 73.95          | 51.65          |
| 4            | 75.90          | 52.06          |
| 5            | 77.85          | 52.53          |
| 6            | 79.78          | 53.05          |
| 7            | 81.69          | 53.63          |
| 8            | 83.59          | 54.27          |
| 9            | 85.46          | 54.96          |
| 10           | 87.32          | 55.71          |
| 11           | 89.15          | 56.51          |
| 12           | 90.96          | 57.37          |
| 13           | 92.74          | 58.28          |
| 14           | 94.49          | 59.24          |
| 15           | 96.22          | 60.25          |
| 16           | 97.91          | 61.32          |
| 17           | 99.57          | 62.43          |
| 18           | 101.20         | 63.59          |
| 19           | 102.80         | 64.80          |
| 20           | 104.35         | 66.05          |
| 21           | 105.87         | 67.35          |
| 22           | 107.36         | 68.70          |
| 23           | 108.36         | 69.66          |

Circle Center At X = 61.0 ; Y = 118.3 and Radius, 67.9

\*\*\* 1.676 \*\*\*

Individual data on the 25 slices

| Slice<br>No. | width<br>(ft) | weight<br>(lbs) | water                 |                       | Force<br>Norm<br>(lbs) | Force<br>Tan<br>(lbs) | Earthquake            |                       | Surcharge<br>Load<br>(lbs) |
|--------------|---------------|-----------------|-----------------------|-----------------------|------------------------|-----------------------|-----------------------|-----------------------|----------------------------|
|              |               |                 | Force<br>Top<br>(lbs) | Force<br>Bot<br>(lbs) |                        |                       | Force<br>Hor<br>(lbs) | Force<br>Ver<br>(lbs) |                            |
| 1            | 2.0           | 100.5           | 0.0                   | 0.0                   | 0.0                    | 0.0                   | 7.0                   | 7.0                   | 0.0                        |
| 2            | 0.8           | 100.8           | 0.0                   | 0.0                   | 0.0                    | 0.0                   | 7.1                   | 7.1                   | 0.0                        |
| 3            | 1.1           | 187.1           | 0.0                   | 0.0                   | 0.0                    | 0.0                   | 13.1                  | 13.1                  | 0.0                        |
| 4            | 2.0           | 441.7           | 0.0                   | 0.0                   | 0.0                    | 0.0                   | 30.9                  | 30.9                  | 0.0                        |
| 5            | 1.9           | 575.3           | 0.0                   | 0.0                   | 0.0                    | 0.0                   | 40.3                  | 40.3                  | 0.0                        |
| 6            | 1.9           | 690.4           | 0.0                   | 0.0                   | 0.0                    | 0.0                   | 48.3                  | 48.3                  | 0.0                        |
| 7            | 1.9           | 786.9           | 0.0                   | 0.0                   | 0.0                    | 0.0                   | 55.1                  | 55.1                  | 0.0                        |
| 8            | 1.9           | 864.8           | 0.0                   | 0.0                   | 0.0                    | 0.0                   | 60.5                  | 60.5                  | 0.0                        |
| 9            | 1.9           | 924.4           | 0.0                   | 0.0                   | 0.0                    | 0.0                   | 64.7                  | 64.7                  | 0.0                        |
| 10           | 1.9           | 965.9           | 0.0                   | 0.0                   | 0.0                    | 0.0                   | 67.6                  | 67.6                  | 0.0                        |
| 11           | 1.8           | 989.7           | 0.0                   | 0.0                   | 0.0                    | 0.0                   | 69.3                  | 69.3                  | 0.0                        |
| 12           | 1.8           | 996.2           | 0.0                   | 0.0                   | 0.0                    | 0.0                   | 69.7                  | 69.7                  | 0.0                        |
| 13           | 1.8           | 986.0           | 0.0                   | 0.0                   | 0.0                    | 0.0                   | 69.0                  | 69.0                  | 0.0                        |
| 14           | 1.8           | 959.9           | 0.0                   | 0.0                   | 0.0                    | 0.0                   | 67.2                  | 67.2                  | 0.0                        |
| 15           | 1.7           | 918.4           | 0.0                   | 0.0                   | 0.0                    | 0.0                   | 64.3                  | 64.3                  | 0.0                        |
| 16           | 1.7           | 862.6           | 0.0                   | 0.0                   | 0.0                    | 0.0                   | 60.4                  | 60.4                  | 0.0                        |
| 17           | 1.7           | 793.3           | 0.0                   | 0.0                   | 0.0                    | 0.0                   | 55.5                  | 55.5                  | 0.0                        |
| 18           | 1.6           | 711.5           | 0.0                   | 0.0                   | 0.0                    | 0.0                   | 49.8                  | 49.8                  | 0.0                        |
| 19           | 0.6           | 241.3           | 0.0                   | 0.0                   | 0.0                    | 0.0                   | 16.9                  | 16.9                  | 0.0                        |
| 20           | 1.0           | 340.8           | 0.0                   | 0.0                   | 0.0                    | 0.0                   | 23.9                  | 23.9                  | 0.0                        |
| 21           | 0.3           | 82.2            | 0.0                   | 0.0                   | 0.0                    | 0.0                   | 5.8                   | 5.8                   | 0.0                        |
| 22           | 1.3           | 288.9           | 0.0                   | 0.0                   | 0.0                    | 0.0                   | 20.2                  | 20.2                  | 0.0                        |
| 23           | 1.5           | 260.4           | 0.0                   | 0.0                   | 0.0                    | 0.0                   | 18.2                  | 18.2                  | 0.0                        |

|    |     |       |     |     |     |     |     |      |      |     |
|----|-----|-------|-----|-----|-----|-----|-----|------|------|-----|
| 24 | 1.5 | 145.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 10.2 | 10.2 | 0.0 |
| 25 | 1.0 | 29.9  | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.1  | 2.1  | 0.0 |

result.out

Failure Surface Specified By 24 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 73.33       | 52.68       |
| 2         | 75.33       | 52.80       |
| 3         | 77.32       | 52.98       |
| 4         | 79.30       | 53.24       |
| 5         | 81.28       | 53.57       |
| 6         | 83.24       | 53.97       |
| 7         | 85.18       | 54.43       |
| 8         | 87.11       | 54.96       |
| 9         | 89.02       | 55.56       |
| 10        | 90.91       | 56.23       |
| 11        | 92.77       | 56.96       |
| 12        | 94.60       | 57.75       |
| 13        | 96.41       | 58.61       |
| 14        | 98.18       | 59.53       |
| 15        | 99.93       | 60.51       |
| 16        | 101.63      | 61.56       |
| 17        | 103.30      | 62.66       |
| 18        | 104.93      | 63.82       |
| 19        | 106.52      | 65.03       |
| 20        | 108.06      | 66.31       |
| 21        | 109.56      | 67.63       |
| 22        | 111.02      | 69.00       |
| 23        | 112.42      | 70.43       |
| 24        | 112.94      | 71.00       |

Circle Center At X = 70.9 ; Y = 109.8 and Radius, 57.2

\*\*\* 1.682 \*\*\*

1

Failure Surface Specified By 22 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 70.00       | 51.00       |
| 2         | 71.97       | 51.35       |
| 3         | 73.93       | 51.76       |
| 4         | 75.87       | 52.22       |
| 5         | 77.81       | 52.73       |
| 6         | 79.72       | 53.30       |
| 7         | 81.62       | 53.93       |
| 8         | 83.51       | 54.60       |
| 9         | 85.37       | 55.33       |
| 10        | 87.21       | 56.11       |
| 11        | 89.03       | 56.94       |
| 12        | 90.82       | 57.83       |
| 13        | 92.59       | 58.76       |
| 14        | 94.33       | 59.74       |
| 15        | 96.05       | 60.77       |
| 16        | 97.73       | 61.85       |
| 17        | 99.38       | 62.98       |
| 18        | 101.00      | 64.15       |
| 19        | 102.59      | 65.37       |
| 20        | 104.14      | 66.63       |
| 21        | 105.66      | 67.93       |
| 22        | 106.56      | 68.75       |

Circle Center At X = 58.5 ; Y = 121.1 and Radius, 71.0

\*\*\* 1.691 \*\*\*

Failure Surface Specified By 18 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 73.33       | 52.68       |
| 2         | 75.32       | 52.89       |

result.out

|    |        |       |
|----|--------|-------|
| 3  | 77.30  | 53.19 |
| 4  | 79.26  | 53.57 |
| 5  | 81.21  | 54.05 |
| 6  | 83.12  | 54.61 |
| 7  | 85.02  | 55.26 |
| 8  | 86.88  | 55.99 |
| 9  | 88.71  | 56.80 |
| 10 | 90.49  | 57.70 |
| 11 | 92.24  | 58.67 |
| 12 | 93.94  | 59.72 |
| 13 | 95.59  | 60.85 |
| 14 | 97.19  | 62.05 |
| 15 | 98.74  | 63.32 |
| 16 | 100.22 | 64.66 |
| 17 | 101.65 | 66.07 |
| 18 | 102.52 | 67.00 |

Circle Center At X = 69.7 ; Y = 97.0 and Radius, 44.5

\*\*\* 1.702 \*\*\*

1

Failure Surface Specified By 26 Coordinate Points

| Point No. | X-surf (ft) | Y-surf (ft) |
|-----------|-------------|-------------|
| 1         | 71.67       | 51.84       |
| 2         | 73.66       | 51.73       |
| 3         | 75.66       | 51.70       |
| 4         | 77.66       | 51.76       |
| 5         | 79.66       | 51.90       |
| 6         | 81.65       | 52.13       |
| 7         | 83.62       | 52.44       |
| 8         | 85.58       | 52.83       |
| 9         | 87.53       | 53.30       |
| 10        | 89.45       | 53.85       |
| 11        | 91.35       | 54.48       |
| 12        | 93.22       | 55.19       |
| 13        | 95.05       | 55.98       |
| 14        | 96.86       | 56.84       |
| 15        | 98.62       | 57.78       |
| 16        | 100.35      | 58.79       |
| 17        | 102.03      | 59.88       |
| 18        | 103.67      | 61.03       |
| 19        | 105.25      | 62.25       |
| 20        | 106.79      | 63.53       |
| 21        | 108.26      | 64.88       |
| 22        | 109.68      | 66.29       |
| 23        | 111.05      | 67.75       |
| 24        | 112.34      | 69.27       |
| 25        | 113.58      | 70.85       |
| 26        | 113.69      | 71.00       |

Circle Center At X = 75.3 ; Y = 99.6 and Radius, 47.9

\*\*\* 1.715 \*\*\*

Failure Surface Specified By 30 Coordinate Points

| Point No. | X-surf (ft) | Y-surf (ft) |
|-----------|-------------|-------------|
| 1         | 61.67       | 51.00       |
| 2         | 63.64       | 50.66       |
| 3         | 65.62       | 50.40       |
| 4         | 67.61       | 50.22       |
| 5         | 69.61       | 50.12       |
| 6         | 71.61       | 50.11       |
| 7         | 73.61       | 50.17       |
| 8         | 75.60       | 50.32       |
| 9         | 77.59       | 50.54       |
| 10        | 79.57       | 50.85       |
| 11        | 81.53       | 51.24       |
| 12        | 83.47       | 51.71       |
| 13        | 85.40       | 52.25       |
| 14        | 87.30       | 52.88       |
| 15        | 89.17       | 53.58       |

result.out

|    |        |       |
|----|--------|-------|
| 16 | 91.01  | 54.35 |
| 17 | 92.82  | 55.20 |
| 18 | 94.60  | 56.13 |
| 19 | 96.33  | 57.12 |
| 20 | 98.03  | 58.19 |
| 21 | 99.67  | 59.32 |
| 22 | 101.28 | 60.52 |
| 23 | 102.83 | 61.78 |
| 24 | 104.32 | 63.11 |
| 25 | 105.77 | 64.49 |
| 26 | 107.15 | 65.93 |
| 27 | 108.48 | 67.43 |
| 28 | 109.74 | 68.98 |
| 29 | 110.94 | 70.58 |
| 30 | 111.23 | 71.00 |

Circle Center At X = 71.0 ; Y = 99.2 and Radius, 49.1

\*\*\* 1.733 \*\*\*

1

Failure Surface Specified By 21 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 70.00       | 51.00       |
| 2         | 71.99       | 50.82       |
| 3         | 73.99       | 50.76       |
| 4         | 75.99       | 50.83       |
| 5         | 77.98       | 51.01       |
| 6         | 79.96       | 51.31       |
| 7         | 81.91       | 51.73       |
| 8         | 83.84       | 52.27       |
| 9         | 85.73       | 52.93       |
| 10        | 87.58       | 53.69       |
| 11        | 89.37       | 54.57       |
| 12        | 91.11       | 55.56       |
| 13        | 92.79       | 56.65       |
| 14        | 94.40       | 57.83       |
| 15        | 95.94       | 59.11       |
| 16        | 97.39       | 60.49       |
| 17        | 98.76       | 61.95       |
| 18        | 100.04      | 63.48       |
| 19        | 101.22      | 65.10       |
| 20        | 102.30      | 66.78       |
| 21        | 102.43      | 67.00       |

Circle Center At X = 74.0 ; Y = 83.9 and Radius, 33.1

\*\*\* 1.733 \*\*\*

Failure Surface Specified By 19 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 70.00       | 51.00       |
| 2         | 72.00       | 50.88       |
| 3         | 74.00       | 50.88       |
| 4         | 75.99       | 51.01       |
| 5         | 77.98       | 51.27       |
| 6         | 79.94       | 51.65       |
| 7         | 81.87       | 52.16       |
| 8         | 83.77       | 52.78       |
| 9         | 85.63       | 53.53       |
| 10        | 87.43       | 54.40       |
| 11        | 89.18       | 55.37       |
| 12        | 90.86       | 56.46       |
| 13        | 92.46       | 57.65       |
| 14        | 93.99       | 58.94       |
| 15        | 95.43       | 60.33       |
| 16        | 96.78       | 61.80       |
| 17        | 98.04       | 63.36       |
| 18        | 99.19       | 64.99       |
| 19        | 99.81       | 66.00       |

Circle Center At X = 72.9 ; Y = 82.3 and Radius, 31.4

\*\*\* 1.736 \*\*\*

## Failure Surface Specified By 18 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 73.33       | 52.68       |
| 2         | 75.30       | 53.07       |
| 3         | 77.24       | 53.53       |
| 4         | 79.17       | 54.05       |
| 5         | 81.09       | 54.63       |
| 6         | 82.98       | 55.28       |
| 7         | 84.85       | 55.99       |
| 8         | 86.69       | 56.76       |
| 9         | 88.51       | 57.59       |
| 10        | 90.30       | 58.49       |
| 11        | 92.06       | 59.44       |
| 12        | 93.79       | 60.45       |
| 13        | 95.48       | 61.51       |
| 14        | 97.14       | 62.63       |
| 15        | 98.76       | 63.81       |
| 16        | 100.33      | 65.03       |
| 17        | 101.87      | 66.31       |
| 18        | 102.64      | 67.00       |

Circle Center At X = 62.5 ; Y = 112.0 and Radius, 60.3

\*\*\* 1.737 \*\*\*

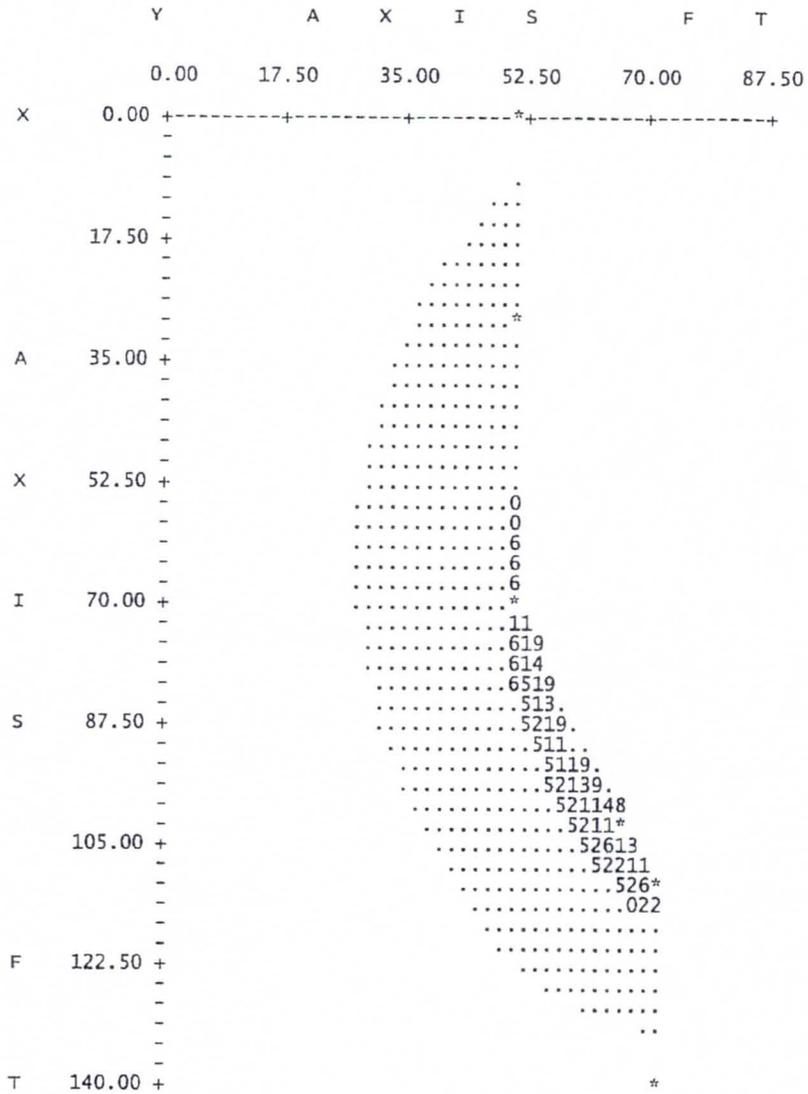
## Failure Surface Specified By 34 Coordinate Points

| Point No. | X-Surf (ft) | Y-Surf (ft) |
|-----------|-------------|-------------|
| 1         | 55.00       | 51.00       |
| 2         | 56.98       | 50.75       |
| 3         | 58.98       | 50.56       |
| 4         | 60.97       | 50.42       |
| 5         | 62.97       | 50.34       |
| 6         | 64.97       | 50.31       |
| 7         | 66.97       | 50.34       |
| 8         | 68.97       | 50.43       |
| 9         | 70.96       | 50.57       |
| 10        | 72.95       | 50.77       |
| 11        | 74.94       | 51.02       |
| 12        | 76.91       | 51.33       |
| 13        | 78.88       | 51.70       |
| 14        | 80.83       | 52.12       |
| 15        | 82.78       | 52.59       |
| 16        | 84.70       | 53.12       |
| 17        | 86.62       | 53.70       |
| 18        | 88.51       | 54.34       |
| 19        | 90.39       | 55.03       |
| 20        | 92.25       | 55.77       |
| 21        | 94.08       | 56.57       |
| 22        | 95.90       | 57.41       |
| 23        | 97.69       | 58.31       |
| 24        | 99.45       | 59.25       |
| 25        | 101.18      | 60.25       |
| 26        | 102.89      | 61.29       |
| 27        | 104.57      | 62.38       |
| 28        | 106.21      | 63.51       |
| 29        | 107.83      | 64.70       |
| 30        | 109.40      | 65.92       |
| 31        | 110.95      | 67.20       |
| 32        | 112.46      | 68.51       |
| 33        | 113.93      | 69.87       |
| 34        | 115.09      | 71.00       |

Circle Center At X = 64.9 ; Y = 121.6 and Radius, 71.2

\*\*\* 1.740 \*\*\*

1



**NOTES TO USERS**

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **Floodways** have been determined, users are encouraged to consult the Flood Profiles, Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on this FIRM represent rounded whole foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

**Coastal Base Flood Elevations** shown on this map apply only landward of 0.0' National Geodetic Vertical Datum of 1929 (NGVD 29). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Arizona State Plane Zone 3176 (central Arizona). The **horizontal datum** was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

Spatial Reference System Division  
National Geodetic Survey, NOAA  
Silver Spring Metro Center  
1315 East-West Highway  
Silver Spring, Maryland 20910  
(301) 713-3191

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov>.

**Base map** information shown on this FIRM was derived from multiple sources. Base map files were provided in digital format by Maricopa County. Orthophoto images were produced at a scale of 1:5000 using HARN for control. Aerial photography is dated December 2000 to December 2002.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report, which contain authoritative hydraulic data, may reflect stream channel distances that differ from what is shown on this map.

**Corporate limits** shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels, community map repository addresses, and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at <http://www.msc.fema.gov/>.

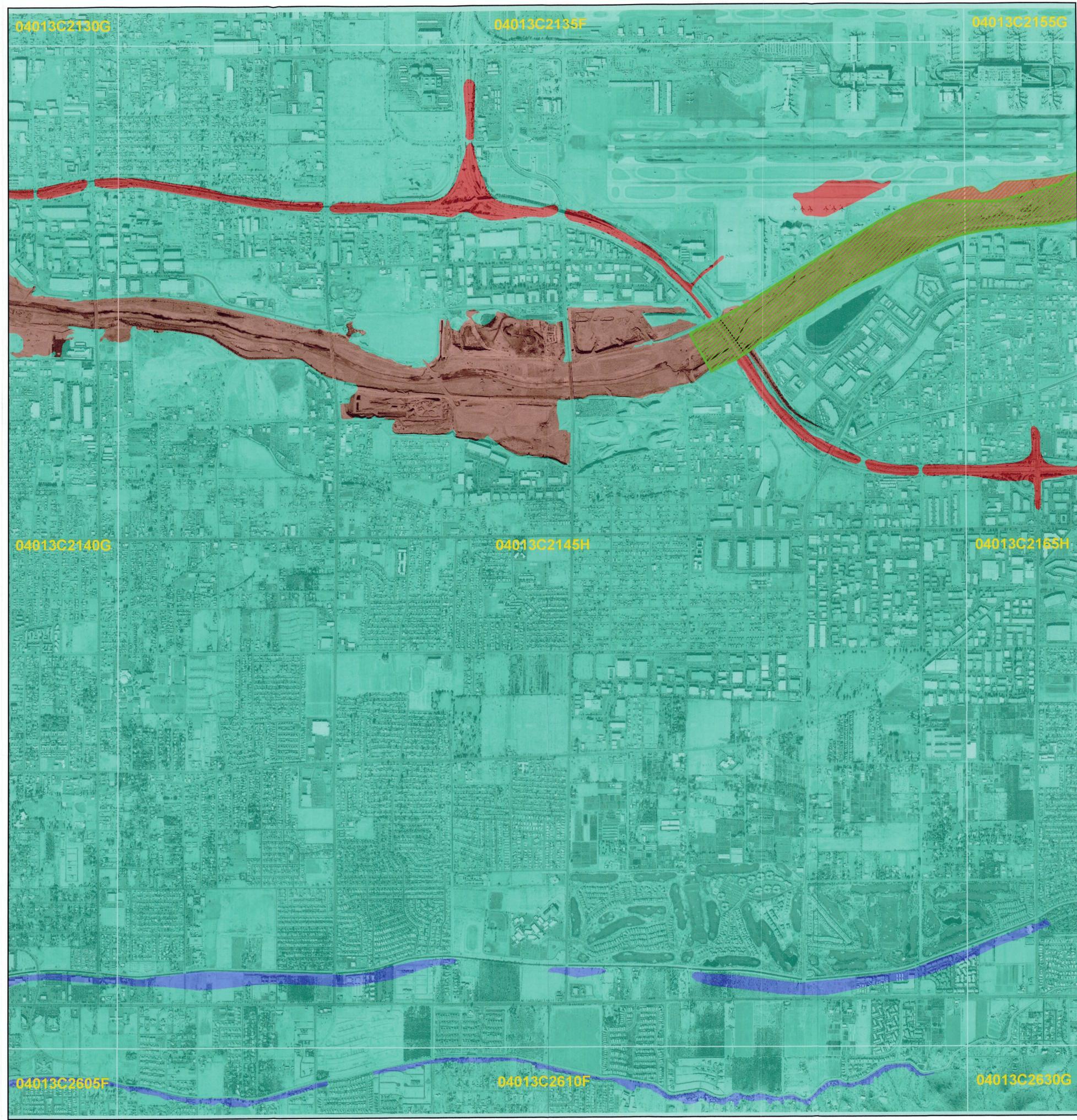
If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMAMAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/>.

**NFIP** PANEL 2145H  
**FIRM FLOOD INSURANCE RATE MAP**  
MARICOPA COUNTY,  
ARIZONA  
AND INCORPORATED AREAS

PANEL 2145 OF 4350  
SEE MAP INDEX FOR FIRM PANEL LAYOUT

CONTRACT:  
COMMUNITY: MARICOPA PANEL: 2145H  
PROJECT: 2145

MAP NUMBER  
04013C2145H  
MAP REVISED  
SEPTEMBER 30, 2005  
Federal Emergency Management Agency



**ANNOTATED D-FIRM**  
**MARICOPA COUNTY, ARIZONA**  
**MAP NUMBER 04013C2145H**  
**PANEL 2145 of 4350**

**LEGEND**

**SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD**

1% 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Areas that are subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, AV, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

**ZONE A** No Base Flood Elevations determined.

**ZONE AE** Base Flood Elevations determined.

**ZONE AH** Flood depths of 1 to 2 feet (usually areas of ponding); Base Flood Elevations determined.

**ZONE AO** Flood depths of 1 to 3 feet (usually short flow in sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

**ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently derelict. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

**ZONE AV** Area to be protected from 1% annual chance flood by a Federal flood protective system under construction; no Base Flood Elevations determined.

**ZONE VE** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

**ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

**FLOODWAY AREAS IN ZONE AE**

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachments so that the 1% annual chance flood can be carried without substantial increases in flood heights.

**OTHER FLOOD AREAS**

**ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile. Are areas protected by levees from 1% annual chance flood.

**OTHER AREAS**

**ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.

**ZONE D** Areas in which flood hazards are undetermined, but possible.

**COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**

**OTHERWISE PROTECTED AREAS (OPAs)**

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary  
0.2% annual chance floodplain boundary  
Floodway boundary  
Zone D boundary  
Zone X boundary  
CBRS and OPA boundary  
Boundary dividing Special Flood Hazard Areas, and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depth, or flood velocities.  
Base Flood Elevation line and value: elevation in feet\*  
Base Flood Elevation value where uniform within zone; elevation in feet\*

\* Referenced to the National Geodetic Vertical Datum of 1929

⊕ ⊗ Cross section line  
⊕ ⊗ Transect line

112° 07' 08".33" 25' 41" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere.  
76° E 1000-meter Universal Transverse Mercator grid tick values zone 12  
875000 FT 5000-foot grid tick values; Arizona State Plane coordinate system, central zone (FIPS ZONE 3176) NAD83 (Transverse Mercator)  
XDV2313 Bench mark (see explanation in Notes to Users section of this FIRM panel).  
MIS River Mile

**MAP REPOSITORY**  
Refer to Repositories Listing on Map Index

**EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP**  
April 15, 1988

**EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL**  
December 3, 1993, September 30, 1995, July 19, 2001

September 30, 2005 - to update corporate limits, to change Base Flood Elevations, to add Base Flood Elevations, to add Special Flood Hazard Areas, to change Special Flood Hazard Areas, to change zone designations, to add roads and road names, to incorporate previously issued Letters of Map Revision, and to incorporate previously issued Letters of Map Amendment.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

**MAP INDEX**

0 1,000 2,000 4,000 Feet

**CITY OF PHOENIX AVIATION DEPARTMENT**

**SALT RIVER LETTER OF MAP REVISION**

**TYLIN INTERNATIONAL**  
engineers | planners | scientists

**Legend**

Revised Zone AE Floodplain  
Revised Floodway  
0.2 PCT ANNUAL CHANCE FLOOD HAZARD  
A  
AE  
X  
Revised Shaded Zone X

**NOTES TO USERS**

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Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Arizona State Plane Zone 3176 (Central Arizona). The horizontal datum was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

Spatial Reference System Division  
National Geodetic Survey, NOAA  
Silver Spring Metro Center  
1315 East-West Highway  
Silver Spring, Maryland 20910  
(301) 713-3191

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242 or visit its website at <http://www.ngs.noaa.gov>.

Base map information shown on this FIRM was derived from multiple sources. Base map files were provided in digital format by Maricopa County. Orthophoto images were produced at a scale of 1:6000 using HARN for control. Aerial photography is dated December 2000 to December 2002.

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed Map Index for an overview map of the county showing the layout of map panels, community map repository addresses, and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the FEMA Map Service Center at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at <http://www.fema.gov>.

If you have questions about this map or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMAMAP (1-877-356-2627) or visit the FEMA website at <http://www.fema.gov>.

**NATIONAL FLOOD INSURANCE PROGRAM**

**PANEL 2165H**

**FIRM FLOOD INSURANCE RATE MAP MARICOPA COUNTY, ARIZONA AND INCORPORATED AREAS**

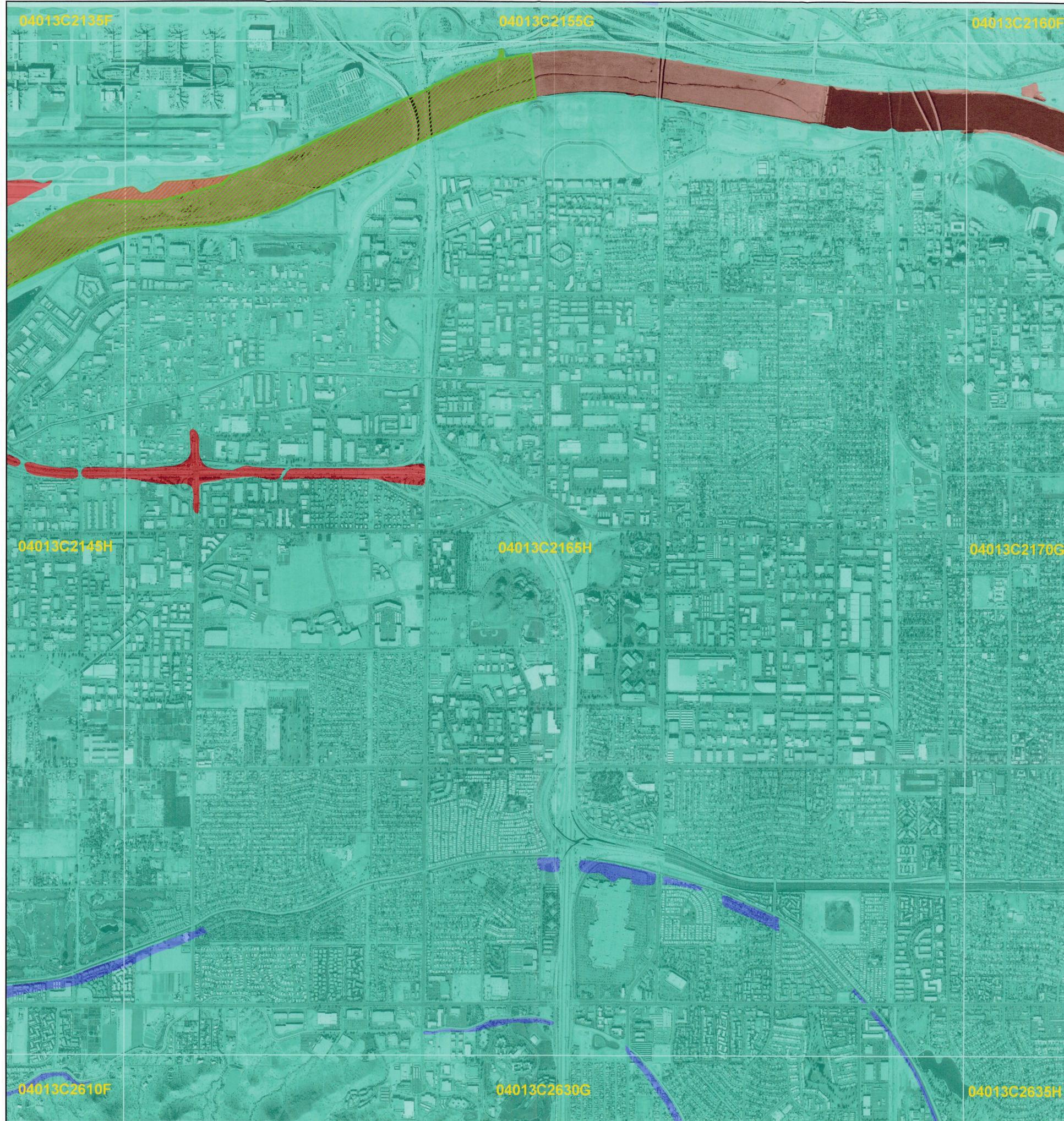
**PANEL 2165 OF 4350**

| COMMUNITY       | NUMBER | PANEL | SUFFIX |
|-----------------|--------|-------|--------|
| MARICOPA COUNTY | 04013C | 2165H | -      |
| MARICOPA COUNTY | 04013C | 2165H | -      |
| MARICOPA COUNTY | 04013C | 2165H | -      |
| MARICOPA COUNTY | 04013C | 2165H | -      |

MAP NUMBER  
**04013C2165H**  
MAP REVISED  
**SEPTEMBER 30, 2005**  
Federal Emergency Management Agency

**Legend**

- Revised Zone AE Floodplain
- Revised Floodway
- 0.2 PCT ANNUAL CHANCE FLOOD HAZARD
- A
- AE
- X
- Revised Shaded Zone X



**ANNOTATED D-FIRM  
MARICOPA COUNTY, ARIZONA  
MAP NUMBER 04013C2165H  
PANEL 2165 of 4350**

**LEGEND**

**SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD**

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, AV, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

**ZONE A** No Base Flood Elevations determined.

**ZONE AE** Base Flood Elevations determined.

**ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

**ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of stillwater fan flooding, velocities also determined.

**ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decommissioned. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

**ZONE AV** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

**ZONE VE** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

**FLOODWAY AREAS IN ZONE AE**  
The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachments so that the 1% annual chance flood can be carried without substantial increases in flood heights.

**OTHER FLOOD AREAS**

**ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

**OTHER AREAS**

**ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.

**ZONE D** Areas in which flood hazards are undetermined, but possible.

**COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**

**OTHERWISE PROTECTED AREAS (OPAs)**

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary of Special Flood Hazard Area Zones, and boundary of Special Flood Hazard Area of different Base Flood Elevations, flood depth, or flood velocities.
- Base Flood Elevation line and value; elevation in feet
- Base Flood Elevation value where uniform within zone; elevation in feet

\* Referenced to the National Geodetic Vertical Datum of 1929

- Cross section line
- Transect line

112° 07' 08", 33° 25' 41" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere.

476<sup>TH</sup>E 500-meter Universal Transverse Mercator grid tick values zone 12.

875000 FT 5000-foot grid tick values; Arizona State Plane coordinate system, central zone (FIPS ZONE 3176), NAD83 (Transverse Mercator).

XDV2313 Bench mark (see explanation in Notes to Users section of this FIRM panel).

\* M/S River Mile

MAP REPOSITORY  
Refer to Repositories Listing on Map Index

EFFECTIVE DATE OF COUNTY-WIDE FLOOD INSURANCE RATE MAP  
**April 15, 1988**

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL  
**December 3, 1993, September 30, 1995, July 19, 2001**

September 30, 2005 - to update corporate limits, to change Base Flood Elevations, to add Base Flood Elevations, to add Special Flood Hazard Areas, to change Special Flood Hazard Areas, to change zone designations, to add roads and road names, to incorporate previously issued Letters of Map Revision, and to incorporate previously issued Letters of Map Amendment.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

0 1,000 2,000 4,000 Feet

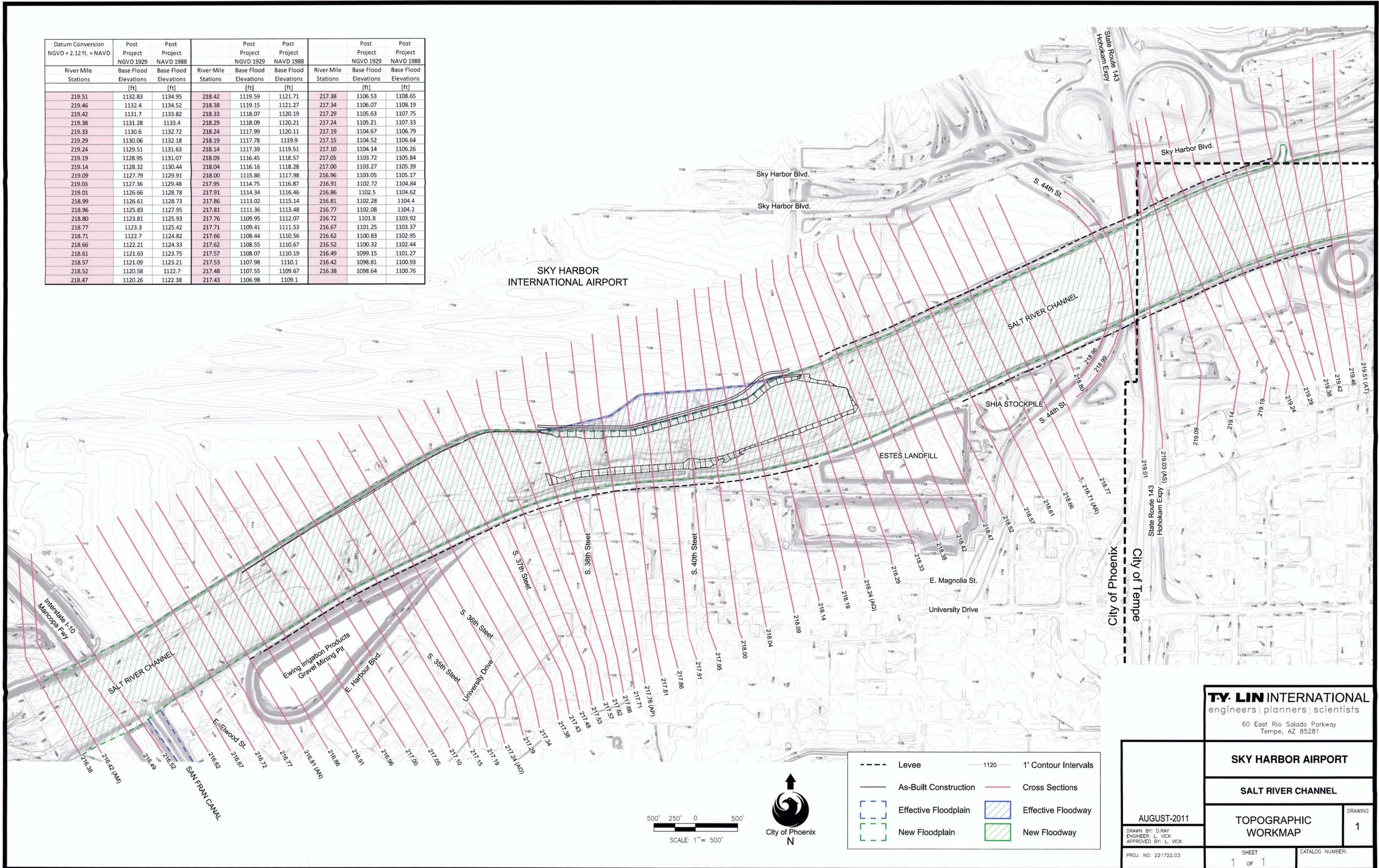
**CITY OF PHOENIX  
AVIATION DEPARTMENT**

**SALT RIVER LETTER OF MAP REVISION**

**TYLIN INTERNATIONAL**  
engineers | planners | scientists

Date Saved: 8/11/2011 6:28:03 PM

| Datum Conversion<br>NGVD + 2.12 ft. = NAVD |                                  | Post Project<br>NGVD 1929        |                        | Post Project<br>NAVD 1988        |                                  | Post Project<br>NGVD 1929 |                                  | Post Project<br>NAVD 1988        |                        |
|--|----------------------------------|----------------------------------|------------------------|----------------------------------|----------------------------------|---------------------------|----------------------------------|----------------------------------|------------------------|
| River Mile<br>Stations                     | Base Flood<br>Elevations<br>(ft) | Base Flood<br>Elevations<br>(ft) | River Mile<br>Stations | Base Flood<br>Elevations<br>(ft) | Base Flood<br>Elevations<br>(ft) | River Mile<br>Stations    | Base Flood<br>Elevations<br>(ft) | Base Flood<br>Elevations<br>(ft) | River Mile<br>Stations |
| 219.51                                     | 1132.83                          | 1134.95                          | 218.42                 | 1119.59                          | 1121.71                          | 217.38                    | 1106.53                          | 1108.65                          |                        |
| 219.46                                     | 1132.4                           | 1134.52                          | 218.38                 | 1119.15                          | 1121.27                          | 217.34                    | 1106.07                          | 1108.19                          |                        |
| 219.42                                     | 1131.7                           | 1133.82                          | 218.33                 | 1118.07                          | 1120.19                          | 217.29                    | 1105.63                          | 1107.75                          |                        |
| 219.38                                     | 1131.28                          | 1133.4                           | 218.29                 | 1118.09                          | 1120.21                          | 217.24                    | 1105.21                          | 1107.33                          |                        |
| 219.33                                     | 1130.6                           | 1132.72                          | 218.24                 | 1117.99                          | 1120.11                          | 217.19                    | 1104.67                          | 1106.79                          |                        |
| 219.29                                     | 1130.06                          | 1132.18                          | 218.19                 | 1117.78                          | 1119.9                           | 217.15                    | 1104.52                          | 1106.64                          |                        |
| 219.24                                     | 1129.51                          | 1131.63                          | 218.14                 | 1117.39                          | 1119.51                          | 217.10                    | 1104.14                          | 1106.26                          |                        |
| 219.19                                     | 1128.95                          | 1131.07                          | 218.09                 | 1116.45                          | 1118.57                          | 217.05                    | 1103.72                          | 1105.84                          |                        |
| 219.14                                     | 1128.32                          | 1130.44                          | 218.04                 | 1116.16                          | 1118.28                          | 217.00                    | 1103.27                          | 1105.39                          |                        |
| 219.09                                     | 1127.79                          | 1129.91                          | 218.00                 | 1115.86                          | 1117.98                          | 216.96                    | 1103.05                          | 1105.17                          |                        |
| 219.03                                     | 1127.36                          | 1129.48                          | 217.95                 | 1114.75                          | 1116.87                          | 216.91                    | 1102.72                          | 1104.84                          |                        |
| 219.01                                     | 1126.66                          | 1128.78                          | 217.91                 | 1114.34                          | 1116.46                          | 216.86                    | 1102.5                           | 1104.62                          |                        |
| 218.99                                     | 1126.61                          | 1128.73                          | 217.86                 | 1113.02                          | 1115.14                          | 216.81                    | 1102.28                          | 1104.4                           |                        |
| 218.96                                     | 1125.83                          | 1127.95                          | 217.81                 | 1111.36                          | 1113.48                          | 216.77                    | 1102.08                          | 1104.2                           |                        |
| 218.80                                     | 1123.81                          | 1125.93                          | 217.76                 | 1109.95                          | 1112.07                          | 216.72                    | 1101.8                           | 1103.92                          |                        |
| 218.77                                     | 1123.3                           | 1125.42                          | 217.71                 | 1109.41                          | 1111.53                          | 216.67                    | 1101.25                          | 1103.37                          |                        |
| 218.71                                     | 1122.7                           | 1124.82                          | 217.66                 | 1108.44                          | 1110.56                          | 216.62                    | 1100.83                          | 1102.95                          |                        |
| 218.66                                     | 1122.21                          | 1124.33                          | 217.62                 | 1108.55                          | 1110.67                          | 216.52                    | 1100.32                          | 1102.44                          |                        |
| 218.61                                     | 1121.63                          | 1123.75                          | 217.57                 | 1108.07                          | 1110.19                          | 216.49                    | 1099.15                          | 1101.27                          |                        |
| 218.57                                     | 1121.09                          | 1123.21                          | 217.53                 | 1107.98                          | 1110.1                           | 216.42                    | 1098.81                          | 1100.93                          |                        |
| 218.52                                     | 1120.58                          | 1122.7                           | 217.48                 | 1107.55                          | 1109.67                          | 216.38                    | 1098.64                          | 1100.76                          |                        |
| 218.47                                     | 1120.26                          | 1122.38                          | 217.43                 | 1106.98                          | 1109.1                           |                           |                                  |                                  |                        |



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engineers | planners | scientists  
60 East Rio Salado Parkway  
Tempe, AZ 85281

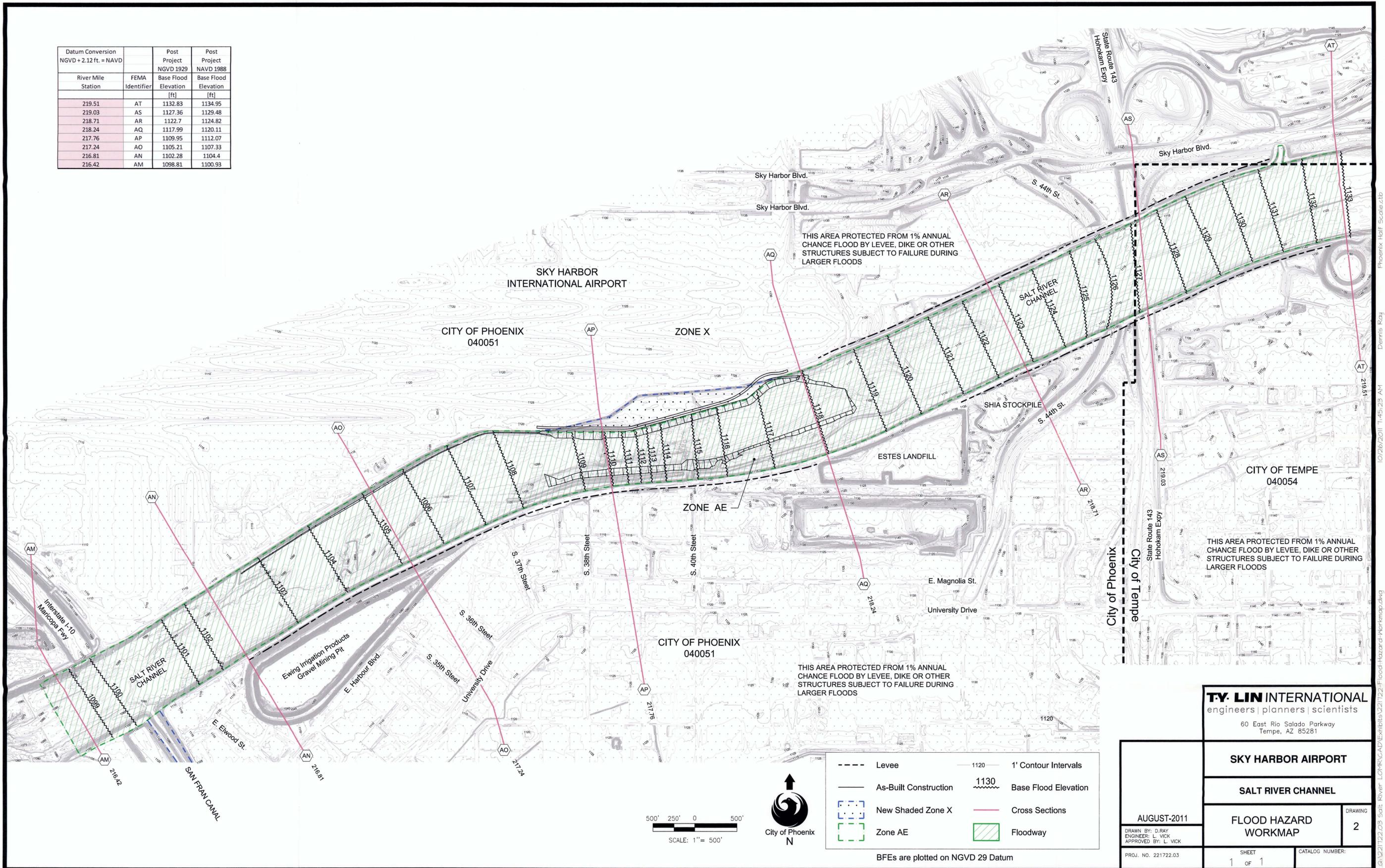
|                            |                 |
|----------------------------|-----------------|
| <b>SKY HARBOR AIRPORT</b>  |                 |
| <b>SALT RIVER CHANNEL</b>  |                 |
| <b>TOPOGRAPHIC WORKMAP</b> |                 |
| DRAWING<br><b>1</b>        | CATALOG NUMBER: |

AUGUST-2011  
DRAWN BY: D. RAY  
ENGINEER: L. VICK  
APPROVED BY: L. VICK  
PROJ. NO. 221722.03

SHEET  
1 OF 1

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| Datum Conversion<br>NGVD + 2.12 ft. = NAVD |                    | Post<br>Project<br>NGVD 1929    | Post<br>Project<br>NAVD 1988    |
|--|--------------------|---------------------------------|---------------------------------|
| River Mile<br>Station                      | FEMA<br>Identifier | Base Flood<br>Elevation<br>[ft] | Base Flood<br>Elevation<br>[ft] |
| 219.51                                     | AT                 | 1132.83                         | 1134.95                         |
| 219.03                                     | AS                 | 1127.36                         | 1129.48                         |
| 218.71                                     | AR                 | 1122.7                          | 1124.82                         |
| 218.24                                     | AQ                 | 1117.99                         | 1120.11                         |
| 217.76                                     | AP                 | 1109.95                         | 1112.07                         |
| 217.24                                     | AO                 | 1105.21                         | 1107.33                         |
| 216.81                                     | AM                 | 1102.28                         | 1104.4                          |
| 216.42                                     | AN                 | 1098.81                         | 1100.93                         |



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engineers | planners | scientists  
60 East Rio Salado Parkway  
Tempe, AZ 85281

|   |                 |                     |
|---|-----------------|---------------------|
| AUGUST-2011   |                 | DRAWING<br><b>2</b> |
| DRAINED BY: D. RAY<br>ENGINEER: L. VICK<br>APPROVED BY: L. VICK |                 |                     |
| PROJ. NO. 221722.03   | SHEET<br>1 OF 1 | CATALOG NUMBER:     |

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Dennis Roy  
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