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# *Field Sampling Protocol*

August 9, 1996

Version 3.0



Flood Control District of Maricopa County  
2801 West Durango Street  
Phoenix, Arizona 85009  
602-506-1501

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## Changes from Second Edition

1. The methodology for processing composite samples has again changed. Because the samples must be preserved as quickly as possible, splitting/compositing will be done in one of two ways, depending upon the time collected. If the samples are collected during business hours (or within a few hours of opening), the contract laboratory will perform the splitting/compositing. If the composite samples are collected late in the evening or on Saturday or Sunday, we will composite the samples. Some examples are given below.

Grab Samples and Composites samples collected at the same time - Submit all samples to the lab for processing.

Composite samples collected at 4:00 am, Tuesday morning - Submit composite samples to lab for processing.

A storm occurs at 6:00 pm on Wednesday evening - call lab to see if anyone is available. If no one is available, composite at the District.

Composite samples collected anytime Saturday or Sunday - split and preserve samples at District.

2. A new QC sample section has been added.
3. A second sampler has been added to the setup at PHX3 and PHX4. The setup is not included in the NPDES sampling but is being done to determine how the pollutant load changes over an hour of a hydrograph.

## I. Priorities

Safety of personnel is the highest priority. Care must be exercised when handling samples and sample containers, and when out on busy streets collecting samples. Sample integrity and quality is the next highest priority. Collection, preservation, and delivery of samples to the lab take priority over any other activity, such as cleaning stations, related to the monitoring stations.

Please note the following items:

- ▶ Always wear gloves when handling samples. This will minimize contact between samples and skin.
- ▶ Use caution when entering manholes to service the sampler intake tubing or depth sensors. Proper Standard Operating Procedures must be followed for Confined Space Entry.
- ▶ Always keep samples as cool as possible. The regulations require samples to be kept near 4 degrees Celsius. Actually cooling the samples to that temperature may not be possible. However, keeping the samples iced and as cool as possible shows a good faith effort in following the regulations. Lower temperature discourages bacterial growth and slows the breakdown process of nutrient and organics in the sample. Always use ice or ice packs during all phases of sample collection.
- ▶ Collect samples as quickly as possible. Ideally, no sample should sit more than two hours once sampling has ended.
- ▶ Preserve samples ASAP. Once samples are collected and cooled, samples should be transferred to the plastic and glass bottles/jars for delivery to the lab. Preservation of samples inhibits bacterial growth and breakdown of pollutants.
- ▶ Follow the Sample Bottle Fill priority sheet located in the Appendix. This will allow the most important parameters to be analyzed when an insufficient sample has been collected by the sampler.

## II. Site Basics

The District has 10 stormwater monitoring sites that it currently maintains. There are five land-based sites in Mesa, four in Phoenix, and one at the Gila Drain on the Gila River Indian Community.

The sites are identified as follows:

MESA-1	Horne and Sixth Streets	644-1691
MESA-2	Broadway and Lindsay	644-1998
MESA-3	Falcon Field	830-6929
MESA-4	Horne and Grandview	644-1455
MESA-5	Dobson and Broadway	644-1599
PHX-1	Salt River and 35th Avenue	278-9457
PHX-2	Sky Harbor Airport (north bank)	231-6490
PHX-3	Salt River (south bank) at 40th Street	470-0127
PHX-4	Indian Bend Wash at 40th Street	494-9926
Gila Drain	Maricopa Road and I-10	809-0277

An additional site is being added at South Mountain Park to monitor an undeveloped watershed. Furthermore, a second monitoring site at an undeveloped watershed is being sought, and is expected to be installed in 1996.

The monitoring sites for PHX 3 and PHX 4 are being modified to include a second sampling unit to collect a time weighted grab sample to determine the effects of time on the pollutant load. Specifics are addressed in the Sampling Procedures section.

## II. Equipment Setup

### A. Site Specific Equipment

An assortment of equipment is employed in the notification and sampling efforts.

The five sites in Mesa have identical setups. The following equipment is used:

- Sigma 800SL Automatic Sampler with Integral Flowmeter
- 8 jar configuration, jar volume = 1900 mL
- Autodialer
- Modem
- Raingage

Each site in Mesa also contains a large grey tote with eight bottles in addition to the eight in the sampler unit.

The four sites in Phoenix and the Gila Drain use an Isco flowmeter and sampler.

- Isco 3700 Automatic Sampler
- 4 jar configuration, jar volume = 3800 mL
- Isco 4230 Flowmeter with integral modem and autodialer
- Raingage

In addition, PHX\_3 and PHX\_4 have an additional Isco sampler, with a 24 1-liter plastic bottle configuration.

### B. Programming of Equipment

The end of the Appendix contains the programs for the equipment at each site. Updates will be forwarded to you.

### III. Safety

A number of safety issues need to be considered when sampling. There are concerns of traffic safety, and sample/chemical handling safety. Furthermore, when performing routine maintenance involving manhole entry, additional precautions must be taken.

#### A. Traffic Safety

Most of the samplers are not located on busy streets. However, a few samplers are adjacent to busy streets. Care should be exercised so that activities will not be endangered by traffic. When working in manholes in major streets, barricades should be set up to direct traffic away from work activities.

#### B. Sample / Chemical Safety

The collected stormwater samples contain contaminants of unknown composition. In most cases, the concentrations of contaminants in the stormwater are so low as to not be of concern. However, since the makeup of the stormwater is unknown at the time of sampling, it is required that latex gloves be worn when handling stormwater. Furthermore, the latex gloves will protect skin from contacting with the preservatives in some of the laboratory sample containers. The preservatives are made up of either acids or bases. Both can burn skin. Also of concern, is that contamination could be passed from the skin to the sample.

If contact between skin and stormwater and/or preservatives occurs, wash the affected area with large amounts of water to dilute the contamination.

#### C. Maintenance Safety

Entering manholes may cause exposure to unknown vapors and gases in manholes. Proper Confined Space Entry procedures must be followed prior to entering the manholes.

#### IV. Sampling Procedures

##### A. Sampler Storm Setup

Samplers must be ready to sample 72 hours after a storm event with precipitation of 0.10 inches or greater. If the event had precipitation between 0.05 and 0.10 inches, then the sampler likely started, and must be reset as quickly as possible.

A number of bottles are necessary for the proper collection and preservation of the samples for analysis. Grab sample bottles as well as equipment sample jars will be kept at each site. Composite sample bottles will be kept at the District offices. Two of all bottle sets should be on hand at all times.

Each site should contain the following:

One set of grab sample bottles contains the following:

- 2- 1 liter plastic, nonpreserved
- 2- sterile bacti bottles
- 2- 1 liter amber glass,  $H_2SO_4$  preserved
- 3- 40 mL vials, HCL preserved
- 3- 40 mL vials, nonpreserved
- 6- travel blanks

1 set of composite bottles with lids, in the sampler

In addition to the bottles stored on-site, 2 sets of composite sample bottles should be available at all times. Because we are responsible for a maximum of 10 sites, we should have 20 sets of composite bottles on hand at any given time. The composite bottles are to be kept at the District office in the Instrumentation Lab.

One set of composite bottles contains the following:

- 2- 1 liter plastic, nonpreserved
- 1- 1 liter plastic, H<sub>2</sub>SO<sub>4</sub> preserved
- 1- 1 liter plastic, NaOH preserved
- 1- 1 liter plastic, HNO<sub>3</sub> preserved
- 2- 1 liter amber glass, H<sub>2</sub>SO<sub>4</sub> preserved
- 3- 1 liter amber glass, nonpreserved

By always having backup sets of all bottles / jars, delays caused by bottles not being cleaned and returned, and lab not providing replacement grab / composite bottles prior to another storm are avoided.

Always request and pick up (or request delivery) a replacement of the bottles taken into the lab for analysis. Use the Bottle Request Form in the Appendix.

B. Sample Event

GENERAL

All of the samplers (except Gila Drain) are set to activate when 0.05 inches of rain, and 0.5 in. of water level is received at the gage. Gila Drain is set to activate at 0.08 inches of rain and a level of 1.0 inches at the gage. All of the sites have dial out alarms. The dial out alarms will call the central voice mail number 506-7300. The voice mail then pages the responders to notify them that conditions are such that one or more monitors have activated.

Occasionally, a dial out alarm will fail to notify the voice mail. It is recommended that if other nearby gages have been activated, to check all of the gages whether or not notification has been received.

GRAB SAMPLES

All of the samplers are programmed to automatically collect a grab sample when the sampler has been activated.

For Sigma Samplers:

The grab samples are placed into the first two bottles.

For Isco Samplers:

The grab samples are placed into the first bottle only.

The two bacterial samples have a short hold time of six hours. This means that from the time the sampler was activated, the sample must be collected, preserved, transported to the lab, and the analysis begun at the lab within six hours. Proper coordination with the lab must be done to ensure that this six-hour window is met. If it is not possible to get to the lab with the sample taken automatically by the sampler within the hold time, another sample can be taken when it would be possible to get the sample to the lab within six hours. The sample is taken manually using the Manual Sample feature on the sampler.

As mentioned previously, chilling the samples is extremely important. Ice is to be taken to all of the sites and placed around the jars in the sampler unit to keep the pumped samples as cool as possible. Samples remaining at ambient temperatures run the risk of having their chemical content altered from bacterial action and / or volatilization.

On first arriving at the site:

1. Remove the sample jar(s) containing the grab sample. It is desirable that this be done without pausing the sampler program.
2. Place ice around the remaining jars in the sampler unit.
3. Transfer the grab sample from the sampler unit jar into the 8 lab provided bottles. Be careful not to overfill the bottles and spill out any preservative. If any bottles were overfilled, DO NOT submit those bottles, as the sample is no longer properly preserved. Use another bottle if it is available.
4. Place all labeled bottles into an ice chest (with ice) for transport to the lab.
5. Fill out the chain of custody form noting the sample ID, and time sample was collected.
6. Before leaving the site, ensure that the sampler is running and not paused.

## COMPOSITE SAMPLES

Along with the grab samples, a flow-weighted composite sample is collected. This sample is based on a set quantity of water passing over the flow sensor between each aliquot collection. Each site has a different flow interval.

The composite will require from 2 to 24 hours to complete, depending upon the strength and intensity of the storm. In general, sampling is usually complete within 8 hours. No sample should sit more than two hours once sampling is complete.

Both Sigma and Isco samplers will indicate on the sampler unit's display if the program is complete. Occasionally, insufficient flow is produced from the storm to complete a sampling routine.

Composite samples will be collected in jars 3 through 8 in Sigma samplers, and jars 2 through 4 in Isco samplers. As previously mentioned, the splitting/compositing procedure will be done by the lab Monday through Friday, and by us on weekends. The samples need to be composited and preserved as quickly as possible.

The method for composite sample collection / compositing / preservation is as follows:

1. Remove the composite sample jars from the sampler unit. Cap the jars and place them into a suitable carrying case, adding ice to the case to keep the samples chilled. *Do not reset the sampler program at this time. If this is done on Sigma samplers, all of the flow data will be erased. If this is done on Isco samplers, the sampler will 'start over' looking to fill the grab sample jars again. If the sampler is accidentally reset, DO NOT submit the samples to the lab. The water quality data is not useful without corresponding flow data.*
2. Fill out a chain of Custody sheet indicating date and time samples were collected, and note 'COMPOSITE' as the sample.
3. Transport the samples to the District Instrumentation Lab.
4. If the composite jars are taken to the lab, skip steps 5-8. If

we are splitting and compositing, follow steps 5-8.

5. Take the composite jars for a single site and combine the contents into a single large glass container with a volume greater than 4 gallons.
6. Using a clean glass rod or a clean stainless steel spoon or spatula, gently mix the contents of the large glass container.
7. Using the Sample Bottle Priority sheet in the Appendix as a guide, fill the laboratory provided sample bottles from the large container using either a pipette or stopcock on the glass container. The sample bottles should be filled to almost full capacity. DO NOT overfill the bottle. If the bottle contained a preservative and it was overfilled, discard the sample in the overfilled bottle. If the lab sample bottle was unpreserved, overfilling is not critical.
8. Fill out the 'Lab Analysis Sheet' in Appendix A indicating which bottles are being submitted. Use a separate sheet for each sample site.

If the glass container is to be used again, it must be cleaned prior to reuse. (This procedure can also be used to clean the sampler jars).

Cleaning involves:

1. Pour out any remaining contents, and rinse with tap water.
2. Wash the container with Liquinox solution.
3. Rinse the container with tap water.
4. Rinse the container with Nitric Acid
5. Rinse with Deionized water
6. Rinse with Methanol or Isopropyl Alcohol
7. Rinse with Deionized water
8. Rinse with Acetone if the vessel is immediately to be used again.

It is recommended that at least 3 glass containers be available for compositing. This will allow time for cleaning and drying while another vessel is being used.

The lab will wash the composite jars regardless of who splits and composites the samples.

## QUALITY CONTROL SAMPLES

To ensure that the data received from the lab for the grab and composite samples is of highest quality, it is necessary to submit QC samples for analysis. We will submit four types of QC samples: Equipment Blanks, Field Blanks, Travel Blanks, Split Samples.

### Equipment Blanks

Equipment blanks allow detection of contamination from sampling equipment. All equipment contacting with the sample is subject to an equipment blank sample. Equipment blanks are supposed to be taken by the equipment before a sampling event. Because many of the sampling intake tubings are located in manholes, sampling immediately before each sampling event is not practical. However, we will run an equipment blank each time we access the manhole. This should be at least twice per year.

Since both the sample jars and the intake tubing contact stormwater, both parts will require an equipment blank. Approximately eight gallons of water will be needed to conduct an equipment blank sample at each site. Analyte free deionized water is available from the lab upon request. Obtain the necessary bottles from the lab for the following parameters:

Total Metals, Nitrate, Nitrite, Total & Dissolved Phosphorus  
Bacteria, Oil & Grease, EPA 625

For the intake tubing blanks, take approximately 4 gallons of the DI water and pump the entire 4 gallons through the intake tubing into the individual laboratory provided sample containers. Fill all bottles for the sample. This will determine if contaminants are present in the sample intake tubing.

For the sample jar equipment blank, take approximately 4 gallons of the DI water and pour it directly into the 8 Sigma or 4 Isco glass jars. Fill the laboratory provided bottles with the water from the jars. The analyses will be the same as that for the intake tubing blanks. This will determine if contaminants are present in the sample jars.

Taking the equipment blank samples as described above can help

pinpoint if contamination is present in the intake tubing, the sample jars, or both. Once determined, corrective actions can be taken.

#### Field Blanks

Field Blanks will determine if any contamination has occurred in the laboratory or if contamination occurred during sample collection and transport.

The samples will be collected after the bottles have been cleaned and dried, following a sample event. DI water will be added to a random sample of sample jars and poured into the appropriate laboratory provided sample containers. One sample should be taken after a sample event to determine how the cleaning of the equipment is doing. Samples will be analyzed as for the Equipment Blanks.

#### Travel Blanks

The laboratory furnishes trip blanks. The blank samples are used to determine whether any contamination occurred during transport to the lab, during storage at the lab, or in the lab itself. A comparison can be made with the actual sample if any contamination appears in the blank sample. The blank sample is simply analyte free water containing no contamination.

#### Split Samples

A split sample is two or more samples taken from one homogenous sample. A large quantity of sample is taken and thoroughly mixed. For instance, if metals are to be analyzed, then two laboratory provided containers should be filled from the single source and submitted as separate samples (preferable to different laboratories). This type of sample is more appropriate for the automatic samplers than a duplicate sample. Because we are using all of the contents of the sample for the grab and composite samples, there is actually none left to do a split sample.

Split samples will be taken at one randomly chosen monitoring site for each storm event. Once all of the grab and composite sample has been retrieved, approximately 2 gallons of liquid is to be pumped through the

sample intake tubing from any flowing of stagnant water in a storm pipe. This sample will then be mixed totally and split equally into two samples. Both samples will be analyzed for:

Nitrates, nitrites  
Total Metals  
Total / Dissolved Phosphorous

Each sample will be submitted to a different lab.

#### MULTIPLE SAMPLER SITES

Two sites have been chosen to have a second sampler. The sites are PHX\_3 and PHX\_4. The purpose of this activity is to determine how pollutants are distributed during a hydrograph. Six individual samples will be taken over a 60 minute period, starting at time = 0, and sampling at twelve minute intervals until time = 60 minutes.

The second sampler will be an Isco sampler with 24 1-liter plastic bottles. Each of the six individual samples will be taken in four bottles.

t = 0, bottles 1 - 4  
t = 12, bottles 5 - 8  
t = 24, bottles 9 - 12  
t = 36, bottles 13-16  
t = 48, bottles 17-20  
t = 60, bottles 21-24

Each of the six samples will be analyzed for identical parameters.

Total metals - Cu, Pb, Cr, Cd, Zn  
TKN  
TSS/TDS  
Total Ammonia/ Total Phosphorous  
Dissolved Phosphorous  
Nitrates/Nitrites  
BOD5

The required bottles should use the four liters allotted for each sample and are as follows:

- 2- 1 liter plastic, nonpreserved
- 1- 1 liter plastic, HNO<sub>3</sub> preserved
- 1- 1 liter plastic, H<sub>2</sub>SO<sub>4</sub> preserved

Six sets of bottles will be required for each site. These samples should be treated like grab samples, meaning that no compositing is needed.

### POST SAMPLE

#### Flow Data Collection

It is desirable to collect the flow data remotely from the office. However, this is not always possible due to modem problems or lack of a phone line.

As a backup, data will be retrieved in the field as well as from the office.

The Sigma equipment requires use of a DTU or laptop computer. The DTU is by far the easiest method of collection. The laptop requires retrieving the data through a program called SIGMA. Instructions for the DTU are on the DTU, and instructions for SIGMA are within the SIGMA program.

The Isco equipment requires use of a laptop computer using the program FLOWLINK. This is accomplished by connecting a cable from the laptop to the flowmeter. Each flowmeter stores flow, level, rainfall, and sample data in memory. The steps involved in collection are as follows:

1. Connect the computer to the INTERROGATOR socket on the flowmeter. Start the FLOWLINK software.
2. Open the proper site file. (These should be set up for each individual Isco site. See me if you need this set up).
3. Connect to the flowmeter.
4. Go into the MEMORY section. Click on the INTERROGATE screen button.

5. Once complete, end the connection.
6. Select REPORT.
7. Select DETAIL REPORT; set the begin and end times based on the storm; send the report to a file named for the date and site number. For example

021394P4 (automatic .PRN extension)

would indicate a storm that occurred on February 13, 1994 at PHX\_4 (IBW/40th Street).

8. Transfer the file to a disk. The files are stored in the directory:

C:\FLOWDATA

### POST EVENT CLEANING

Cleaning of the equipment is a very important step in obtaining high quality samples. The sample intake lines will be cleaned as follows:

1. Pump the line with a lot of tap water
2. Pump a small amount of Nitric Acid through the line
3. Pump deionized water through the line
4. Pump a small amount of methanol through the line
5. Pump deionized water through the line

Put back the cleaned sampler jars at the site.

#### IV. Periodic Maintenance

##### A. Six Month Maintenance

1. Calibrate the flow depth sensor
2. Calibrate the pumped sample volume
3. Adjust bubble lines and rates
4. Check and clean rain gages of debris
5. Inspect connect cables, sample intake lines, bubble lines, flow sensors, sampler pump tubing, solar panel, batteries, sampler pump operation.

##### B. Annual Maintenance

Each year in October (or other convenient time), the maintenance will include the above Six Month Maintenance plus the following:

1. Sample intake tubing will be replaced
2. Sampler pump tubing will be replaced
3. Rinse the new tubing as described for the POST EVENT cleaning. This will remove any contaminants present in the new line.

##### C. As-Needed Maintenance

As equipment ages and fails, equipment should be replaced as quickly as possible. A small inventory of parts should be maintained for replacing failing parts. Replacements of stocked parts should be done within 2 weeks of reported problem. Ordered parts should be replaced within a week of being received. As equipment is replaced, calibrations need to be performed.

##### D. Monthly Status Report

A monthly status report will be provided. This report should include at least the following information:

- Sites sampled / sites not sampled
- Reasons for sites not sampled
- Repairs / Servicing during the month

**Appendix A**

**Sample Analysis Sheet**

**Sample Bottle Request Form**

**Sample Bottle Filling Priority**

**Sigma and Isco Programs**

# NPDES STORMWATER ANALYSIS FORM

SITE \_\_\_\_\_ DATE \_\_\_\_\_

## GRAB SAMPLE

			<u>Bottle(s) Required</u>
<input checked="" type="checkbox"/>	BOD5	405.1	1- 1 liter plastic, unpreserved
<input checked="" type="checkbox"/>	Dissolved Oxygen	4500-O	1- 500 mL plastic, unpreserved
<input checked="" type="checkbox"/>	Chlorine, Total Residual	330.3	1- 100 mL plastic, unpreserved
<input checked="" type="checkbox"/>	Fecal Coliform	9222C	1- bacterial bottle, tablet preserved
<input checked="" type="checkbox"/>	Fecal Streptococci	9230C	1- bacterial bottle, tablet preserved
<input checked="" type="checkbox"/>	Oil and Grease	413.1	1- 1 liter glass, HCl (acid) preserved
<input checked="" type="checkbox"/>	Purgeables	EPA 624	2- 40 mL glass vials, sodium thiosulfate preserved

## COMPOSITE SAMPLE

### Inorganic Chemistry - Non-Metals

<input checked="" type="checkbox"/>	pH	150.1	<input checked="" type="checkbox"/>	Nitrogen, NO2 + NO3	
<input checked="" type="checkbox"/>	COD	410.4	<input checked="" type="checkbox"/>	Nitrogen, Organic	351.4
<input checked="" type="checkbox"/>	Chloride	300.0	<input checked="" type="checkbox"/>	Nitrogen, Kjeldahl	351.3
<input checked="" type="checkbox"/>	Cyanide	335.3	<input checked="" type="checkbox"/>	Phosphorous, Total	365.3
<input checked="" type="checkbox"/>	Electrical Conductivity	2510B	<input checked="" type="checkbox"/>	Phosphorous, Dissolved	365.3
<input checked="" type="checkbox"/>	Total Dissolved Solids	160.1	<input checked="" type="checkbox"/>	Phenolics, Total Recoverable	420.1
<input checked="" type="checkbox"/>	Total Suspended Solids	160.2	<input checked="" type="checkbox"/>	Organic Carbon, Total	415.1
<input checked="" type="checkbox"/>	Nitrogen, Ammonia	350.3	<input checked="" type="checkbox"/>	Alkalinity, Total	310.1
<input checked="" type="checkbox"/>	Nitrogen, Nitrate	353.3	<input checked="" type="checkbox"/>	Hardness	200.7
<input checked="" type="checkbox"/>	Nitrogen, Nitrite	354.1	<input checked="" type="checkbox"/>	Sulfate, Dissolved	300.0
<input type="checkbox"/>			<input type="checkbox"/>		
<input type="checkbox"/>			<input type="checkbox"/>		

### Inorganic Chemistry - Metals, Total and Dissolved

<input checked="" type="checkbox"/>	Antimony, Total	200.9	<input checked="" type="checkbox"/>	Lead, Total	200.9
<input checked="" type="checkbox"/>	Antimony, dissolved	200.9	<input checked="" type="checkbox"/>	Lead, dissolved	200.9
<input checked="" type="checkbox"/>	Arsenic, Total	200.9	<input checked="" type="checkbox"/>	Mercury, Total	245.1
<input checked="" type="checkbox"/>	Arsenic, dissolved	200.9	<input checked="" type="checkbox"/>	Mercury, dissolved	245.1
<input checked="" type="checkbox"/>	Beryllium, Total	200.9	<input checked="" type="checkbox"/>	Nickel, Total	200.9
<input checked="" type="checkbox"/>	Beryllium, dissolved	200.9	<input checked="" type="checkbox"/>	Nickel, dissolved	200.9
<input checked="" type="checkbox"/>	Cadmium, Total	200.9	<input checked="" type="checkbox"/>	Selenium, Total	200.9
<input checked="" type="checkbox"/>	Cadmium, dissolved	200.9	<input checked="" type="checkbox"/>	Selenium, dissolved	200.9
<input checked="" type="checkbox"/>	Chromium, Total	200.9	<input checked="" type="checkbox"/>	Silver, Total	200.9
<input checked="" type="checkbox"/>	Chromium VI, Total	200.9	<input checked="" type="checkbox"/>	Silver, dissolved	200.9
<input checked="" type="checkbox"/>	Chromium, dissolved	200.9	<input checked="" type="checkbox"/>	Thallium, Total	200.9
<input checked="" type="checkbox"/>	Copper, Total	200.9	<input checked="" type="checkbox"/>	Thallium, dissolved	200.9
<input checked="" type="checkbox"/>	Copper, dissolved	200.9	<input checked="" type="checkbox"/>	Zinc, Total	200.9
<input type="checkbox"/>			<input checked="" type="checkbox"/>	Zinc, dissolved	200.9
<input type="checkbox"/>			<input type="checkbox"/>		
<input type="checkbox"/>			<input type="checkbox"/>		

### Organic Compounds

<input checked="" type="checkbox"/>	Organochlorine Pesticides	608	<input type="checkbox"/>		
<input checked="" type="checkbox"/>	Base/Neutral/Acid Extractable	625	<input type="checkbox"/>		
<input type="checkbox"/>			<input type="checkbox"/>		
<input type="checkbox"/>			<input type="checkbox"/>		



### Sample Priority

#### GRAB SAMPLES

1		Biochemical Oxygen Demand	405.1
2		Oil and Grease	413.1
3		Fecal Streptococci	9230C
4		Fecal Coliform	9221D
5		Purgeable Hydrocarbons	624
6		Chlorine, total residual	330.3
7		Dissolved Oxygen	4500-O

#### COMPOSITE SAMPLES

1	1	pH	150.1
2	2	Chemical Oxygen Demand	410.4
22	3	Chloride	300.0, 4500
21	4	Cyanide, Total	335.2
23	5	Electrical Conductivity	2510B
4	6	Dissolved Solids, Total	160.1
5	7	Suspended Solids, Total	160.2
6	8	Nitrogen, Ammonia	350.2
7	9	Nitrogen, Nitrate	353.3/300.0
8	10	Nitrogen, Nitrite	354.1/300.0
9	11	Nitrogen, NO <sub>2</sub> + NO <sub>3</sub>	calculation
10	12	Nitrogen, Organic	calculation
12	13	Nitrogen, Kjeldahl	351.3
13	14	Phosphorous, Total	365.3
14	15	Phosphorous, Dissolved	365.3
31	16	Metals, Total	200.9
↓	17	Metals, Dissolved	200.9
24	18	Phenolics, total recoverable	420.1
	19	Sulfate, dissolved	
16	20	Organochlorine Pesticides	608
	21	Base/Neutral/Acid Extractable	625
3	22	Chromium VI, total	218.5
	23	Alkalinity	310.1
3	24	Hardness	calculation
	25	Organic Carbon, Total	5310C

ok

Mesa 1 - Horne and 6th Street

Sigma Stormwater Sampler Program

---

To begin programming the sampler, press the #2 key (Change/Halt)

Press the star \* key.

- |     |                               |  |
|-----|-------------------------------|--|
| 1.  | Advanced Program Features     | <u>YES</u>   |
| 2.  | Number of Sample Bottles      | <u>8</u>   |
| 3.  | Units for Bottle volume       | <u>mL</u>  |
| 4.  | Volume                        | <u>1900 mL</u>   |
| 5.  | Enter Units for Tubing Length | <u>Feet</u>  |
| 6.  | Length of Intake Tubing       | <u>63 feet (change each time that tubing is replaced)</u>  |
| 7.  | Program Lock?                 | <u>YES</u>   |
| 8.  | Enable Internal Flowmeter?    | <u>YES</u>   |
| 9.  | Flow Units                    | <u>cfs</u>   |
| 10. | Program Delay?                | <u>NO</u>  |
| 11. | Flow Mode?                    | <u>YES</u>   |
| 12. | Variable Interval?            | <u>NO</u>  |
| 13. | Interval =                    | <u>1000 cu. ft. (Enter 10, the 00 is provided)</u>   |
| 14. | Timed Override?               | <u>NO</u>  |
| 15. | Discrete Mode?                | <u>YES</u>   |
| 16. | Sample/Bottle?                | <u>YES</u>   |
| 17. | Samples/Bottle                | <u>4</u>   |
| 18. | Change Volume                 | <u>YES</u>   |
| 19. | Sample Volume                 | <u>450 mL</u>  |
| 20. | Calibrate Volume              | <u>NO</u>  |
| 21. | Intake Rinses?                | <u>YES</u>   |
| 22. | Rinse Cycles                  | <u>1</u>   |
| 23. | Intake Faults?                | <u>YES</u>   |
| 24. | Intake Faults                 | <u>2</u>   |
| 25. | Enter I.D.                    | <u>0001</u>  |
| 26. | Set-up Flowmeter?             | <u>YES</u>   |
| 27. | Manning Formula?              | <u>YES</u>   |
| 28. | Pipe i.d.=                    | <u>36.00 in. (make sure to enter 3 6 0 0)</u>  |
| 29. | Roughness=                    | <u>0.013</u>   |
| 30. | Slope=                        | <u>0.29/100</u>  |
| 31. | Flow Recording Interval       | <u>2 min</u>   |
| 32. | Calibrate depth sensor?       | <u>NO (only done as necessary, or twice yearly)</u>  |
| 33. | Set current water level       | <u>      </u> Check at site, usually can enter 0.00, but if possible, check in the manhole to confirm. |

- Ready to Start -

Proceed to page 2

Page 2

Program for storm sampling by pressing and holding the Clear Entry key

- |     |                      |  |   |
|-----|----------------------|--|---|
| 1.  | Level Control?       | <u>YES</u>   |   |
| 2.  | Storm Mode?          | <u>YES</u>   |   |
| 3.  | External Start?      | <u>NO</u>  |   |
| 4.  | Start on             | <u>Depth and Rain</u>  | (the fourth choice)   |
| 5.  | Rain=                | <u>0.05 in.</u>  |   |
| 6.  | Rainfall Time Limit= | <u>90 min.</u>   |   |
| 7.  | Level=               | <u>0.2 in.</u>   |   |
| 8.  | First Flush Period   | <u>20 min.</u>   |   |
| 9.  | Number of Bottles    | <u>2</u>   |   |
| 10. | Set Timed Interval   | Interval 01= <u>0001</u> min<br>Interval 02= <u>0000</u> min | (use NO/pass key if 0000 is<br>already entered, else enter 0000<br>and press the NO/pass key. The<br>YES key will not work) |
| 11. | Samples/Bottle=      | <u>002</u>   |   |
| 12. | First Flush Vol=     | <u>950 mL</u>  |   |
| 13. | Calibrate Vol?       | <u>NO</u>  |   |
| 14. | Sample Time Limit?   | <u>1440</u>  |   |
| 15. | Special Output?      | <u>YES</u>   |   |
| 16. | Sample Output?       | <u>NO</u>  |   |
| 17. | Event Output?        | <u>YES</u>   |   |

- Ready to Start -

Programming is complete. Press the Start Sampling key to initiate the program/sampler.

If you have any questions, call me at 506-8401. Thanks

Mesa 2 - Broadway and Lindsay

Sigma Stormwater Sampler Program

---

To begin programming the sampler, press the #2 key (Change/Halt)

Press the star \* key.

- |     |                               |           |  |
|-----|-------------------------------|-----------|--|
| 1.  | Advanced Program Features     |           | <u>YES</u>   |
| 2.  | Number of Sample Bottles      |           | <u>8</u>   |
| 3.  | Units for Bottle volume       |           | <u>mL</u>  |
| 4.  | Volume                        |           | <u>1900 mL</u>   |
| 5.  | Enter Units for Tubing Length |           | <u>Feet</u>  |
| 6.  | Length of Intake Tubing       |           | <u>58 feet</u> (change each time that tubing is replaced)                                      |
| 7.  | Program Lock?                 |           | <u>YES</u>   |
| 8.  | Enable Internal Flowmeter?    |           | <u>YES</u>   |
| 9.  | Flow Units                    |           | <u>cfs</u>   |
| 10. | Program Delay?                | <u>NO</u> |  |
| 11. | Flow Mode?                    |           | <u>YES</u>   |
| 12. | Variable Interval?            |           | <u>NO</u>  |
| 13. | Interval =                    |           | <u>2000</u> cu. ft. (Enter 20, the 00 is provided)   |
| 14. | Timed Override?               |           | <u>NO</u>  |
| 15. | Discrete Mode?                |           | <u>YES</u>   |
| 16. | Sample/Bottle?                |           | <u>YES</u>   |
| 17. | Samples/Bottle                |           | <u>4</u>   |
| 18. | Change Volume                 |           | <u>YES</u>   |
| 19. | Sample Volume                 |           | <u>450 mL</u>  |
| 20. | Calibrate Volume              |           | <u>NO</u>  |
| 21. | Intake Rinses?                |           | <u>YES</u>   |
| 22. | Rinse Cycles                  |           | <u>1</u>   |
| 23. | Intake Faults?                |           | <u>YES</u>   |
| 24. | Intake Faults                 |           | <u>2</u>   |
| 25. | Enter I.D.                    |           | <u>0002</u>  |
| 26. | Set-up Flowmeter?             |           | <u>YES</u>   |
| 27. | Manning Formula?              |           | <u>YES</u>   |
| 28. | Pipe i.d.=                    |           | <u>72.00</u> in. (make sure to enter 7 2 0 0)  |
| 29. | Roughness=                    |           | <u>0.013</u>   |
| 30. | Slope=                        |           | <u>0.11/100</u>  |
| 31. | Flow Recording Interval       |           | <u>2</u> min   |
| 32. | Calibrate depth sensor?       |           | <u>NO</u> (only done as necessary, or twice yearly)  |
| 33. | Set current water level       |           | _____ Check at site, usually can enter 0.00, but if possible, check in the manhole to confirm. |

- Ready to Start -

Proceed to page 2

Page 2

Program for storm sampling by pressing and holding the Clear Entry key

- |     |                      |                              |  |
|-----|----------------------|------------------------------|--|
| 1.  | Level Control?       | <u>YES</u>                   |  |
| 2.  | Storm Mode?          | <u>YES</u>                   |  |
| 3.  | External Start?      | <u>NO</u>                    |  |
| 4.  | Start on             | <u>Depth and Rain</u>        | (the fourth choice)  |
| 5.  | Rain=                | <u>0.05 in.</u>              |  |
| 6.  | Rainfall Time Limit= | <u>90 min.</u>               |  |
| 7.  | Level=               | <u>0.2 in.</u>               |  |
| 8.  | First Flush Period   | <u>20 min.</u>               |  |
| 9.  | Number of Bottles    | <u>2</u>                     |  |
| 10. | Set Timed Interval   | Interval 01= <u>0001</u> min |  |
|     |                      | Interval 02= <u>0000</u> min | (use NO/pass key if 0000 is already entered, else enter 0000 and press the NO/pass key. The YES key will not work) |
| 11. | Samples/Bottle=      | <u>002</u>                   |  |
| 12. | First Flush Vol=     | <u>950 mL</u>                |  |
| 13. | Calibrate Vol?       | <u>NO</u>                    |  |
| 14. | Sample Time Limit?   | <u>1440</u>                  |  |
| 15. | Special Output?      | <u>YES</u>                   |  |
| 16. | Sample Output?       | <u>NO</u>                    |  |
| 17. | Event Output?        | <u>YES</u>                   |  |

- Ready to Start -

Programming is complete. Press the Start Sampling key to initiate the program/sampler.

If you have any questions, call me at 506-8401. Thanks

Mesa 3 - Falcon Field

Sigma Stormwater Sampler Program

---

To begin programming the sampler, press the #2 key (Change/Halt)

Press the star \* key.

- |     |                               |           |  |
|-----|-------------------------------|-----------|--|
| 1.  | Advanced Program Features     |           | <u>YES</u>   |
| 2.  | Number of Sample Bottles      |           | <u>8</u>   |
| 3.  | Units for Bottle volume       |           | <u>mL</u>  |
| 4.  | Volume                        |           | <u>1900 mL</u>   |
| 5.  | Enter Units for Tubing Length |           | <u>Feet</u>  |
| 6.  | Length of Intake Tubing       |           | <u>27 feet</u> (change each time that tubing is replaced)                                      |
| 7.  | Program Lock?                 |           | <u>YES</u>   |
| 8.  | Enable Internal Flowmeter?    |           | <u>YES</u>   |
| 9.  | Flow Units                    |           | <u>cfs</u>   |
| 10. | Program Delay?                | <u>NO</u> |  |
| 11. | Flow Mode?                    |           | <u>YES</u>   |
| 12. | Variable Interval?            |           | <u>NO</u>  |
| 13. | Interval =                    |           | <u>4500</u> cu. ft. (Enter 45, the 00 is provided)   |
| 14. | Timed Override?               |           | <u>NO</u>  |
| 15. | Discrete Mode?                |           | <u>YES</u>   |
| 16. | Sample/Bottle?                |           | <u>YES</u>   |
| 17. | Samples/Bottle                |           | <u>4</u>   |
| 18. | Change Volume                 |           | <u>YES</u>   |
| 19. | Sample Volume                 |           | <u>450 mL</u>  |
| 20. | Calibrate Volume              |           | <u>NO</u>  |
| 21. | Intake Rinses?                |           | <u>YES</u>   |
| 22. | Rinse Cycles                  |           | <u>1</u>   |
| 23. | Intake Faults?                |           | <u>YES</u>   |
| 24. | Intake Faults                 |           | <u>2</u>   |
| 25. | Enter I.D.                    |           | <u>0003</u>  |
| 26. | Set-up Flowmeter?             |           | <u>YES</u>   |
| 27. | Manning Formula?              |           | <u>YES</u>   |
| 28. | Pipe i.d.=                    |           | <u>48.00</u> in. (make sure to enter 4 8 0 0)  |
| 29. | Roughness=                    |           | <u>0.013</u>   |
| 30. | Slope=                        |           | <u>0.14/100</u>  |
| 31. | Flow Recording Interval       |           | <u>2</u> min   |
| 32. | Calibrate depth sensor?       |           | <u>NO</u> (only done as necessary, or twice yearly)  |
| 33. | Set current water level       |           | _____ Check at site, usually can enter 0.00, but if possible, check in the manhole to confirm. |

- Ready to Start -

Proceed to page 2

Page 2

Program for storm sampling by pressing and holding the Clear Entry key

- |     |                      |                              |  |
|-----|----------------------|------------------------------|--|
| 1.  | Level Control?       | <u>YES</u>                   |  |
| 2.  | Storm Mode?          | <u>YES</u>                   |  |
| 3.  | External Start?      | <u>NO</u>                    |  |
| 4.  | Start on             | <u>Depth and Rain</u>        | (the fourth choice)  |
| 5.  | Rain=                | <u>0.05</u>                  | in.  |
| 6.  | Rainfall Time Limit= | <u>90</u>                    | min.   |
| 7.  | Level=               | <u>0.2</u>                   | in.  |
| 8.  | First Flush Period   | <u>20</u>                    | min.   |
| 9.  | Number of Bottles    | <u>2</u>                     |  |
| 10. | Set Timed Interval   | Interval 01= <u>0001</u> min |  |
|     |                      | Interval 02= <u>0000</u> min | (use NO/pass key if 0000 is already entered, else enter 0000 and press the NO/pass key. The YES key will not work) |
| 11. | Samples/Bottle=      | <u>002</u>                   |  |
| 12. | First Flush Vol=     | <u>950</u>                   | mL   |
| 13. | Calibrate Vol?       | <u>NO</u>                    |  |
| 14. | Sample Time Limit?   | <u>1440</u>                  |  |
| 15. | Special Output?      | <u>YES</u>                   |  |
| 16. | Sample Output?       | <u>NO</u>                    |  |
| 17. | Event Output?        | <u>YES</u>                   |  |

- Ready to Start -

Programming is complete. Press the Start Sampling key to initiate the program/sampler.

If you have any questions, call me at 506-8401. Thanks

Mesa 4 - Horne and Grandview

Sigma Stormwater Sampler Program

---

To begin programming the sampler, press the #2 key (Change/Halt)

Press the star \* key.

- |     |                               |  |
|-----|-------------------------------|--|
| 1.  | Advanced Program Features     | <u>YES</u>   |
| 2.  | Number of Sample Bottles      | <u>8</u>   |
| 3.  | Units for Bottle volume       | <u>mL</u>  |
| 4.  | Volume                        | <u>1900 mL</u>   |
| 5.  | Enter Units for Tubing Length | <u>Feet</u>  |
| 6.  | Length of Intake Tubing       | <u>73 feet (change each time that tubing is replaced)</u>  |
| 7.  | Program Lock?                 | <u>YES</u>   |
| 8.  | Enable Internal Flowmeter?    | <u>YES</u>   |
| 9.  | Flow Units                    | <u>cfs</u>   |
| 10. | Program Delay?                | <u>NO</u>  |
| 11. | Flow Mode?                    | <u>YES</u>   |
| 12. | Variable Interval?            | <u>NO</u>  |
| 13. | Interval =                    | <u>1500 cu. ft. (Enter 15, the 00 is provided)</u>   |
| 14. | Timed Override?               | <u>NO</u>  |
| 15. | Discrete Mode?                | <u>YES</u>   |
| 16. | Sample/Bottle?                | <u>YES</u>   |
| 17. | Samples/Bottle                | <u>4</u>   |
| 18. | Change Volume                 | <u>YES</u>   |
| 19. | Sample Volume                 | <u>450 mL</u>  |
| 20. | Calibrate Volume              | <u>NO</u>  |
| 21. | Intake Rinses?                | <u>YES</u>   |
| 22. | Rinse Cycles                  | <u>1</u>   |
| 23. | Intake Faults?                | <u>YES</u>   |
| 24. | Intake Faults                 | <u>2</u>   |
| 25. | Enter I.D.                    | <u>0004</u>  |
| 26. | Set-up Flowmeter?             | <u>YES</u>   |
| 27. | Manning Formula?              | <u>YES</u>   |
| 28. | Pipe i.d.=                    | <u>54.00 in. (make sure to enter 5 4 0 0)</u>  |
| 29. | Roughness=                    | <u>0.013</u>   |
| 30. | Slope=                        | <u>0.40/100</u>  |
| 31. | Flow Recording Interval       | <u>2 min</u>   |
| 32. | Calibrate depth sensor?       | <u>NO (only done as necessary, or twice yearly)</u>  |
| 33. | Set current water level       | <u>        </u> Check at site, usually can enter 0.00, but if possible, check in the manhole to confirm. |

- Ready to Start -

Proceed to page 2

Page 2

Program for storm sampling by pressing and holding the Clear Entry key

- |     |                      |                              |  |
|-----|----------------------|------------------------------|--|
| 1.  | Level Control?       | <u>YES</u>                   |  |
| 2.  | Storm Mode?          | <u>YES</u>                   |  |
| 3.  | External Start?      | <u>NO</u>                    |  |
| 4.  | Start on             | <u>Depth and Rain</u>        | (the fourth choice)  |
| 5.  | Rain=                | <u>0.05</u>                  | in.  |
| 6.  | Rainfall Time Limit= | <u>90</u>                    | min.   |
| 7.  | Level=               | <u>0.2</u>                   | in.  |
| 8.  | First Flush Period   | <u>20</u>                    | min.   |
| 9.  | Number of Bottles    | <u>2</u>                     |  |
| 10. | Set Timed Interval   | Interval 01= <u>0001</u> min |  |
|     |                      | Interval 02= <u>0000</u> min | (use NO/pass key if 0000 is already entered, else enter 0000 and press the NO/pass key. The YES key will not work) |
| 11. | Samples/Bottle=      | <u>002</u>                   |  |
| 12. | First Flush Vol=     | <u>950</u>                   | mL   |
| 13. | Calibrate Vol?       | <u>NO</u>                    |  |
| 14. | Sample Time Limit?   | <u>1440</u>                  |  |
| 15. | Special Output?      | <u>YES</u>                   |  |
| 16. | Sample Output?       | <u>NO</u>                    |  |
| 17. | Event Output?        | <u>YES</u>                   |  |

- Ready to Start -

Programming is complete. Press the Start Sampling key to initiate the program/sampler.

If you have any questions, call me at 506-8401. Thanks

Mesa 5 - Dobson south of Broadway

Sigma Stormwater Sampler Program

---

To begin programming the sampler, press the #2 key (Change/Halt)

Press the star \* key.

- |     |                               |           |  |
|-----|-------------------------------|-----------|--|
| 1.  | Advanced Program Features     |           | <u>YES</u>   |
| 2.  | Number of Sample Bottles      |           | <u>8</u>   |
| 3.  | Units for Bottle volume       |           | <u>mL</u>  |
| 4.  | Volume                        |           | <u>1900 mL</u>   |
| 5.  | Enter Units for Tubing Length |           | <u>Feet</u>  |
| 6.  | Length of Intake Tubing       |           | <u>71 feet (change each time that tubing is replaced)</u>  |
| 7.  | Program Lock?                 |           | <u>YES</u>   |
| 8.  | Enable Internal Flowmeter?    |           | <u>YES</u>   |
| 9.  | Flow Units                    |           | <u>cfs</u>   |
| 10. | Program Delay?                | <u>NO</u> |  |
| 11. | Flow Mode?                    |           | <u>YES</u>   |
| 12. | Variable Interval?            |           | <u>NO</u>  |
| 13. | Interval =                    |           | <u>2000</u> cu. ft. (Enter 20, the 00 is provided)   |
| 14. | Timed Override?               |           | <u>NO</u>  |
| 15. | Discrete Mode?                |           | <u>YES</u>   |
| 16. | Sample/Bottle?                |           | <u>YES</u>   |
| 17. | Samples/Bottle                |           | <u>4</u>   |
| 18. | Change Volume                 |           | <u>YES</u>   |
| 19. | Sample Volume                 |           | <u>450 mL</u>  |
| 20. | Calibrate Volume              |           | <u>NO</u>  |
| 21. | Intake Rinses?                |           | <u>YES</u>   |
| 22. | Rinse Cycles                  |           | <u>1</u>   |
| 23. | Intake Faults?                |           | <u>YES</u>   |
| 24. | Intake Faults                 |           | <u>2</u>   |
| 25. | Enter I.D.                    |           | <u>0005</u>  |
| 26. | Set-up Flowmeter?             |           | <u>YES</u>   |
| 27. | Manning Formula?              |           | <u>YES</u>   |
| 28. | Pipe i.d.=                    |           | <u>30.00</u> in. (make sure to enter 3 0 0 0)  |
| 29. | Roughness=                    |           | <u>0.013</u>   |
| 30. | Slope=                        |           | <u>0.14/100</u>  |
| 31. | Flow Recording Interval       |           | <u>2</u> min   |
| 32. | Calibrate depth sensor?       |           | <u>NO</u> (only done as necessary, or twice yearly)  |
| 33. | Set current water level       |           | <u>      </u> Check at site, usually can enter 0.00, but if possible, check in the manhole to confirm. |

- Ready to Start -

Proceed to page 2

Page 2

Program for storm sampling by pressing and holding the Clear Entry key

- |     |                      |                              |  |
|-----|----------------------|------------------------------|--|
| 1.  | Level Control?       | <u>YES</u>                   |  |
| 2.  | Storm Mode?          | <u>YES</u>                   |  |
| 3.  | External Start?      | <u>NO</u>                    |  |
| 4.  | Start on             | <u>Depth and Rain</u>        | (the fourth choice)  |
| 5.  | Rain=                | <u>0.05</u>                  | in.  |
| 6.  | Rainfall Time Limit= | <u>90</u>                    | min.   |
| 7.  | Level=               | <u>0.2</u>                   | in.  |
| 8.  | First Flush Period   | <u>20</u>                    | min.   |
| 9.  | Number of Bottles    | <u>2</u>                     |  |
| 10. | Set Timed Interval   | Interval 01= <u>0001</u> min |  |
|     |                      | Interval 02= <u>0000</u> min | (use NO/pass key if 0000 is already entered, else enter 0000 and press the NO/pass key. The YES key will not work) |
| 11. | Samples/Bottle=      | <u>002</u>                   |  |
| 12. | First Flush Vol=     | <u>950</u>                   | mL   |
| 13. | Calibrate Vol?       | <u>NO</u>                    |  |
| 14. | Sample Time Limit?   | <u>1440</u>                  |  |
| 15. | Special Output?      | <u>YES</u>                   |  |
| 16. | Sample Output?       | <u>NO</u>                    |  |
| 17. | Event Output?        | <u>YES</u>                   |  |

- Ready to Start -

Programming is complete. Press the Start Sampling key to initiate the program/sampler.

If you have any questions, call me at 506-8401. Thanks

## PHX\_1 - Salt River and 35th Avenue

### Setup of Flowmeter and Sampler

---

#### Flowmeter Setup

**Program**, Setup

Level Units: **IN**

Flow Rate: **CFS**

Totalized Volume: **CF**

Rainfall: **IN**

pH: **Not Measured**

D.O.: **Not Measured**

Temp: **Not Measured**

Flow Conversion: **Manning**

Shape: **Round Pipe**

Slope: **0.0009**

Roughness: **0.013**

Diameter: **75** inches

Max Head: **72** inches

Max Flow: given

Parameter to Adjust: **adjust the level**

Flow Totalizer Reset: **No**

Sampler Pacing: **Vol.**

Vol. = **4000**

Sampler Enable - **Storm**

Level  $\geq$  **0.5** in.

Rain: **0.05** in.

Rainfall Time Limit: **4 hr**

Time Since Last Rain: **3 days**

When Enable Condition No Longer Met: **Keep Enabled**

Plotter ON/OFF with Enable: **Y**

Alarm Dialout Condition: **Storm**

Level:  $\geq$  **0.5** in.

Rain: **0.05** in.

Rainfall Time Limit: **4 hr**

Time Since Last Rain: **3 days**

Plotter Speed: **OFF**

Report Generation: **OFF**

Print Flow Meter History: **NO**

Clear History: **NO**

## PHX\_2 - Salt River and Sky Harbor Airport

### Setup of Flowmeter and Sampler

---

#### Flowmeter Setup

##### **Program, Setup**

Level Units: **IN**

Flow Rate: **CFS**

Totalized Volume: **CF**

Rainfall: **IN**

pH: **Not Measured**

D.O.: **Not Measured**

Temp: **Not Measured**

Flow Conversion: **Manning**

Shape: **Round Pipe**

Slope: **0.0023**

Roughness: **0.013**

Diameter: **90** inches

Max Head: **84** inches

Max Flow: given

Parameter to Adjust: **adjust the level**

Flow Totalizer Reset: **No**

Sampler Pacing: **Vol.**

Vol. = **5000**

Sampler Enable - **Storm**

Level **>0.5** in.

Rain: **0.05** in.

Rainfall Time Limit: **4 hr**

Time Since Last Rain: **3 days**

When Enable Condition No Longer Met: **Keep Enabled**

Plotter ON/OFF with Enable: **Y**

Alarm Dialout Condition: **Storm**

Level: **>0.5** in.

Rain: **0.05** in.

Rainfall Time Limit: **4 hr**

Time Since Last Rain: **3 days**

Plotter Speed: **OFF**

Report Generation: **OFF**

Print Flow Meter History: **NO**

Clear History: **NO**

**PHX\_3 - Salt River and 40th Street**

**Setup of Flowmeter and Sampler**

---

Flowmeter Setup

**Program**, Setup

Level Units: **IN**

Flow Rate: **CFS**

Totalized Volume: **CF**

Rainfall: **IN**

pH: **Not Measured**

D.O.: **Not Measured**

Temp: **Not Measured**

Flow Conversion: **Manning**

Shape: **Round Pipe**

Slope: **0.0024**

Roughness: **0.013**

Diameter: **54** inches

Max Head: **54** inches

Max Flow: given

Parameter to Adjust: **adjust the level**

Flow Totalizer Reset: **No**

Sampler Pacing: **Vol.**

Vol. = **1500**

Sampler Enable - **Storm**

Level **>0.5** in.

Rain: **0.05** in.

Rainfall Time Limit: **4 hr**

Time Since Last Rain: **3 days**

When Enable Condition No Longer Met: **Keep Enabled**

Plotter ON/OFF with Enable: **Y**

Alarm Dialout Condition: **Storm**

Level: **>0.5** in.

Rain: **0.05** in.

Rainfall Time Limit: **4 hr**

Time Since Last Rain: **3 days**

Plotter Speed: **OFF**

Report Generation: **OFF**

Print Flow Meter History: **NO**

Clear History: **NO**

PHX\_4 - IBW and 40th Street

Setup of Flowmeter and Sampler

---

Flowmeter Setup

**Program**, Setup

Level Units: **IN**

Flow Rate: **CFS**

Totalized Volume: **CF**

Rainfall: **IN**

pH: **Not Measured**

D.O.: **Not Measured**

Temp: **Not Measured**

Flow Conversion: **Manning**

Shape: **Round Pipe**

Slope: **0.0032**

Roughness: **0.013**

Diameter: **66** inches

Max Head: **60** inches

Max Flow: given

Parameter to Adjust: **adjust the level**

Flow Totalizer Reset: **No**

Sampler Pacing: **Vol.**

Vol. = **3500**

Sampler Enable - **Storm**

Level  $\geq$ **0.5** in.

Rain: **0.05** in.

Rainfall Time Limit: **4 hr**

Time Since Last Rain: **3 days**

When Enable Condition No Longer Met: **Keep Enabled**

Plotter ON/OFF with Enable: **Y**

Alarm Dialout Condition: **Storm**

Level:  $\geq$ **0.5** in.

Rain: **0.05** in.

Rainfall Time Limit: **4 hr**

Time Since Last Rain: **3 days**

Plotter Speed: **OFF**

Report Generation: **OFF**

Print Flow Meter History: **NO**

Clear History: **NO**

## Isco Sampler Program and Configure

**NOTE: All Isco samplers will have the same setup. Therefore, this program sheet is valid for PHX\_1, PHX\_2, PHX\_3, and PHX\_4. The Configuration for each site is the same with the exception of the intake tubing length. Enter the tubing length for each site.**

---

### Program

Enter Program mode through ENTER/PROGRAM button and select PROGRAM

**Storm** paced sampling  
Time Mode, First Bottle Group  
**0** minute delay to first sample group  
Take **1** timed sample event  
**1** bottles per sample event  
Sample Volumes of **3700** mL  
**Flow** second bottle group  
**after** first group  
Sample every **1** pulses  
Maximum flow interval of **4** hours **0** minutes  
**1** bottles per sample event  
**8** samples per bottle  
Sample volumes of **450** mL  
Calibrate sample volume? **yes/no**  
Enter Start Time? **NO**

END

## Isco Sampler Configuration

Enter configure mode through ENTER/PROGRAM button and select CONFIGURE

- Set Option - Set Clock <enter>  
Check time and date and set appropriately
- Set Option - Bottles and Sizes <enter>  
**Portable** sampler  
4 bottles  
Bottle Volume is **3785** mL  
Sample Continuously? **NO**
- Select Option - Suction Line <enter>  
Suction Line I.D. is **3/8** inch  
Suction Line is **vinyl**  
Suction Line length is **xxx** feet
- Select Option - Liquid Detector  
**Enable** liquid detector  
2 rinse cycles  
Enter Head Manually? **NO**  
Retry up to **1** times when sampling
- Select Option - Programming Mode <enter>  
**Extended** programming mode
- Select Option - Load Stored Program <enter>  
Load Program **NONE**
- Select Option - Save Stored Program <enter>  
Save Program As **NONE**
- Select Option - Flow Mode Sampling <enter>  
Take sample at start time **No**  
Take sample at time switch **No**
- Select Option - Nonuniform Time <enter>  
Enter interval in **minutes**
- Select Option - Calibrate Sampler <enter>  
**Enable** calibrate sampler
- Select Option - Sampling stop/resume <enter>  
**Disable** sampling stop/resume
- Select Option - Start time delay <enter>  
**0** minute delay to start
- Select Option - Select PIN <enter>  
Master/Slave mode **NO**  
Sample upon disable **NO**  
Sample upon enable **NO**  
Reset sample interval **NO**  
Inhibit countdown **NO**

Select Option - Event Mark <enter>

**Pulse**

at the beginning of **Purge**

Select Option - Purge counts <enter>

**150** pre-sample counts

**150** post-sample counts

Select Option - Tubing Life <enter>

x pump counts, warning at 500000

reset pump counter **No** (do reset the counter when the tubing is changed)

**2000000** pump counts to warning

Select Option - Program Lock <enter>

**Disable** program lock

Select Option - Sampler I.D. <enter>

I.D. # is 0000000001 for PHX\_1

0000000002 for PHX\_2

0000000003 for PHX\_3

0000000004 for PHX\_4

Select Option - Run diagnostics

<enter> runs diagnostics (this takes a few minutes)

< ▶ > skip diagnostics

Select Option - Exit Configuration

<enter> exits

< ◀ or ▶ > continues configure

END

**Multiple Sampling Sites program for second non-NPDES sampler**

PHX\_3 & PHX\_4

Program

Enter Program mode through ENTER/PROGRAM button and select PROGRAM

**Storm** paced sampling

Time Mode, First Bottle Group

**0** minute delay to first sample group

Take **1** timed sample event

**4** bottles per sample event

Sample Volumes of **975** mL

**Time** second bottle group

**12** minute delay to second group samples

Sample interval of **12** minutes

**4** bottles per sample event

Sample volumes of **975** mL

Calibrate sample volume? **yes/no**

Enter Start Time? **NO**

END

## Isco Sampler Configuration

Enter configure mode through ENTER/PROGRAM button and select CONFIGURE

- Set Option - Set Clock <enter>  
Check time and date and set appropriately
- Set Option - Bottles and Sizes <enter>  
**Portable** sampler  
**24** bottles  
Bottle Volume is **1000** mL  
Sample Continuously? **NO**
- Select Option - Suction Line <enter>  
Suction Line I.D. is **3/8** inch  
Suction Line is **vinyl**  
Suction Line length is **xxx** feet
- Select Option - Liquid Detector  
**Enable** liquid detector  
**2** rinse cycles  
Enter Head Manually? **NO**  
Retry up to **1** times when sampling
- Select Option - Programming Mode <enter>  
**Extended** programming mode
- Select Option - Load Stored Program <enter>  
Load Program **NONE**
- Select Option - Save Stored Program <enter>  
Save Program As **NONE**
- Select Option - Flow Mode Sampling <enter>  
Take sample at start time **No**  
Take sample at time switch **No**
- Select Option - Nonuniform Time <enter>  
Enter interval in **minutes**
- Select Option - Calibrate Sampler <enter>  
**Enable** calibrate sampler
- Select Option - Sampling stop/resume <enter>  
**Disable** sampling stop/resume
- Select Option - Start time delay <enter>  
**0** minute delay to start
- Select Option - Select PIN <enter>  
Master/Slave mode **NO**  
Sample upon disable **NO**  
Sample upon enable **NO**  
Reset sample interval **NO**  
Inhibit countdown **NO**

Select Option - Event Mark <enter>

Pulse

at the beginning of **Purge**

Select Option - Purge counts <enter>

150 pre-sample counts

150 post-sample counts

Select Option - Tubing Life <enter>

x pump counts, warning at 500000

reset pump counter **No** (do reset the counter when the tubing is changed)

2000000 pump counts to warning

Select Option - Program Lock <enter>

Disable program lock

Select Option - Sampler I.D. <enter>

I.D. # is 0000000032 for PHX\_3

0000000042 for PHX\_4

Select Option - Run diagnostics

<enter> runs diagnostics (this takes a few minutes)

< ▶ > skip diagnostics

Select Option - Exit Configuration

<enter> exits

< ◀ or ▶ > continues configure

END