SALT - GILA RIVERS

GPS PROJECT COORDINATES

GPS CONTROL SURVEY

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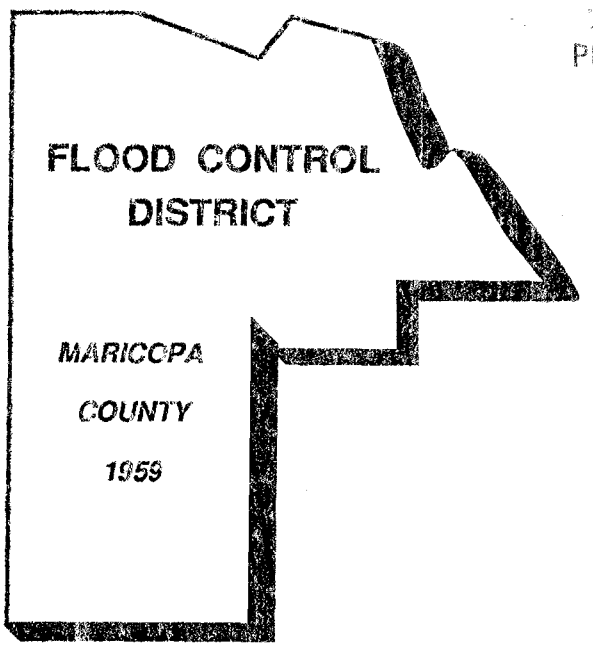

Baker
Michael Baker Jr., Inc

Greiner

MARICOPA COUNTY SALT-GILA WATERCOURSE MASTER PLAN PHASE 1 AERIAL MAPPING GPS CONTROL SURVEY NETWORK PHOENIX, ARIZONA GREINER, INC. 1991

SUMMARY

The intent of this GPS Control Survey was to provide a photogrammetric horizontal control network for a 400 scale 4-foot contour aerial topographic map of the Salt-Gila Rivers in the general vicinity of Phoenix Arizona. Approximately 150 record monuments were targeted and occupied using Trimble 4000 ST single frequency receivers in accordance with the FGCC "Geometric Accuracy Standards and Specifications for using GPS Relative Positioning Techniques" in order to develop the photogrammetric horizontal control for this aerial mapping project. The photogrammetric vertical control for this aerial mapping project was developed by a Least Squares Adjustment of conventional leveling and is not a part of this report.

In accordance with the contract specifications, this GPS horizontal control network was tied into the Arizona State Plane Coordinate System by direct measurements to 3 NGS first order triangulation stations within the immediate vicinity of this mapping project. These first order NGS triangulation stations are: Broadway, Etta and Val Vista. Additionally, in consideration of the fact that the East-West scope of this aerial mapping project extended approximately 80 miles, several other NGS first order triangulation stations were occupied around the project perimeter. These additional first order triangulation stations were occupied in order to verify the existence of a uniform State Plane Coordinate Network and to identify any "Local Control" coordinate discrepancies which may exist and thereby have an impact on this project or future projects within the same general area. Although verification of the existing NGS triangulation network is beyond the scope of this 400 scale 4-foot contour aerial topographic mapping project, all baselines between the NGS triangulation stations listed below were measured at least twice in order to provide redundant measurements as defined in the FGCC specifications. Due to its historical significance, as the initial point of the Arizona public lands survey system, one NGS second order triangulation station "Initial Point" was occupied instead of the NGS first order triangulation station "Initial Monument" only a few feet away. The published NAD83 record coordinates of triangulation stations Etta, Broadway, Squaw Peak, Litchfield, and Initial Point (not Initial Monument) appear to be in general agreement due to the lack of significant differences between the record coordinate values and the (measured) coordinate values generated by the unconstrained GPS project adjustment. However, triangulation stations Val Vista, Powers Butte, and Wintersburg exhibit larger positional differences between the published record coordinate values and the (measured) coordinate values generated by the unconstrained GPS project adjustment. This positional discrepancy would appear to cast some doubt on the accuracy of the published record coordinates of these three triangulation stations in relation to the overall area network. Please see the attached table entitled "NAD83 Grid Coordinate Value Comparisons (International Foot)".

Once again, it should be emphasized that the intent of this particular GPS control survey was to provide photogrammetric horizontal control for a 4-foot contour 400 scale aerial topographic map of the Salt-Gila Rivers, and an examination of the precision of the unconstrained adjustment proved to be well within the PPM requirements specified in the contract for this GPS control network. Under no circumstances should the resultant coordinate values of this GPS control survey be used for boundary analysis or land net control of a GIS digital mapping database.

THE FOLLOWING APPENDICES ARE INCLUDED AS PART OF THIS PROJECT REPORT:

An Appendix entitled GPS PROJECT COORDINATES which contains the following sections: NAD83 Arizona State Plane Ground Coordinates in International Feet, NAD83 Arizona State Plane Grid Coordinates in International Feet, NAD83 State Plane Grid Coordinates in Meters, and NAD27 Arizona State Plane Grid Coordinates in U.S. Survey Feet. Once again, it should be noted that the intent of this GPS control survey was to develop horizontal photogrammetric control for a 400 scale, 4-foot contour aerial topographic map of the Salt-Gila Rivers and under no circumstances should the resultant coordinate values be used for boundary analysis or land net control of a GIS digital mapping database.

An Appendix entitled GPS PROJECT ADJUSTMENTS which contains a GEOLAB least squares statistical adjustment with the title "Unscaled, #8 Constrained NAD83 Adjustment - Salt River GPS - 1991". This project adjustment was developed by the constrained NAD83 values of the following 8 NGS triangulation stations: Initial Point (not Initial Monument), Powers Butte, Wintersburg, Litchfield, Etta, Squaw Peak, Val Vista, and Broadway. It should be noted that due to the relatively large distance away from the immediate project, the record coordinate values of these 8 NGS control points were held "fixed" in the Geolab least squares adjustment but were not heavily weighted. Therefore, minor differences in the final coordinates of these points will be evident in the least squares adjustment report and the resultant coordinate listings due to a lack of agreement between the record coordinate values and the redundant GPS baseline vector measurements. The average ppm of the constrained project adjustment was 6 ppm, with a low value of 1 ppm and a high value of 35 ppm in a vector distance of 685 meters. This constrained adjustment was used to develop the NAD83 Coordinate values for this 400 scale 4-foot contour aerial topographic mapping project.

An Appendix entitled GPS PROJECT ADJUSTMENTS which contains a GEOLAB least squares statistical adjustment with the title: "Unscaled, #8 Constrained NAD27 Adjustment - Salt River GPS - 1991". This project adjustment was developed from the constrained NAD27 values of the following 8 NGS triangulation stations: Initial Point (not Initial Monument), Powers Butte, Wintersburg, Litchfield, Etta, Squaw Peak, Val Vista, and Broadway. It should be noted that due to the relatively large distance away from the immediate project, the record coordinate values of these 8 NGS control points were held "fixed" in the Geolab least squares adjustment but were not heavily weighted. Therefore, minor differences in the final coordinates of these points will be evident in the least squares adjustment report and the resultant coordinate listings due to a lack of agreement between the record coordinate values and the redundant GPS baseline vector measurements. The average ppm of this constrained project adjustment was 6 ppm with a low value of 1 ppm and a high value of 31 ppm in a vector distance of 685 meters. This constrained adjustment was used to develop the NAD27 coordinate values for this 400 scale 4-foot contour aerial topographic mapping project.

An Appendix entitled GPS PROJECT ADJUSTMENTS which contains a GEOLAB least squares statistical adjustment with the title: "Scaled Unconstrained Project Adjustment - Salt River GPS - 1991". This project adjustment was developed by constraining the NAD83 value of a single NGS triangulation station (Etta), in order to provide a quality check of the internal consistency of the GPS measurements. This adjustment was scaled to better fit a bell curve graph and to pass the Chi-squared test. The average ppm of this scaled unconstrained project network was 3 ppm with a low value of 1 ppm, and a high value of 13 ppm, in a vector distance of 685 meters. This scaled unconstrained adjustment is well within contract specifications and was produced in order to examine the actual precision of the GPS measurements used for this 400 scale 4-foot contour aerial topographic mapping project.

An Appendix entitled GPS PROJECT PROCESSING which contains the Trimble (Rev E) automatic baseline processing software parameters for the GPS observations of the NGS triangulation station network verification along with the resulting baseline summary reports and a Trimble "TMAP" plot of the baselines observed. In consideration of the relatively long baselines measured in the NGS triangulation station verification, the GPS observation data was first processed using the Trimble preset "automatic" processing parameters and then reprocessed using "manually" modified processing parameters in order to provide a comparison of the resultant vector differences. For all intents and purposes, the resultant raw GPS baseline vectors developed from the program preset "automatic" processing parameters were nearly identical to the resultant raw GPS baseline vectors developed from the "manually" modified processing. Therefore, the "automatic" GPS vectors were considered to be adequate for the NGS triangulation station verification of this 400 scale, 4 foot contour aerial mapping project. Please see the attached comparison tables entitled "Trimble 4000 ST Single Frequency Field Calibration and Comparisons".

An Appendix entitled GPS PROJECT PROCESSING which contains the Trimble (Rev E) manually modified baseline processing software parameters for the GPS observations of the NGS triangulation station verification along with the resulting baseline summary reports and a Trimble "TMAP" plot of the baselines observed. In consideration of the relatively long baseline measurements included in the NGS triangulation station verification, the Trimble processing parameters were manually modified in order to provide a comparison to the preset automatic processing sequence. Although the positional dilution of precision (PDOP) improved noticeably, the resultant raw GPS "Manual" baseline vectors were only slightly different than the processed preset "Automatic" baselines. Therefore, the program processed and adjusted "Automatic" baselines were considered to be adequate for the NGS triangulation station verification of this 400 scale, 4 foot contour aerial mapping project. Please see the attached comparison tables entitled "Trimble 4000 ST Single Frequency Field Calibration and Comparisons".

An Appendix entitled GPS PROJECT CLOSURES which contains the Trimble (Rev E) "Tclose" traverse closure reports for the NGS triangulation station verification and the 20 project loops. In accordance with the FGCC standards and specifications, all 20 project network loops were 10 sides or less. The average ppm closure for the loops in the project network was 2 ppm with a low value of 1 ppm and a high value of 5 ppm. The average value of 2 ppm for all the loops in this project network was considerably less than the specified allowable average of 16 ppm, and the maximum project loop closure of 4.53 ppm for Loop #8 was also considerably less than the allowable maximum of 25 ppm as specified in the FGCC standards.

An Appendix entitled GPS OBSERVATION REPORTS which contains the daily work reports recorded by the GPS field crew for each GPS observation day. These daily work reports are a general summary of the hours worked and points observed by each member of the GPS field crew. In order to satisfy contract requirements, daily work reports were recorded in addition to the GPS observation sheets which provide a detailed summary of each observation session.

An Appendix entitled GPS OBSERVATION SHEETS which contains the GPS observation sheets for all the points of this project as recorded by each member of the GPS field crew. These observation sheets show relevant information concerning each GPS occupation including: the name of the field operator, the model and serial number of the GPS receiver, the location and description of the point occupied, information regarding the satellite constellation for each individual observation session, and the antenna height entered into the receiver along with the three independent measurement checks required by the FGCC specifications.

An Appendix entitled GPS OBSERVATION WINDOWS which contains the satellite windows available for this project as well as the Trimble satellite "SKYPLOT" configurations for the individual observation sessions. All observations sessions were designed according to the "FGCC Geometric Accuracy Standards and Specifications for using GPS Relative Positioning Techniques".

An Appendix entitled GPS OBSERVATION POINTS which contains the recon sheet "Visibility", "To Reach", and "Point Identification" descriptions for all the GPS observation points of this project. This binder also includes the published record coordinates and "To Reach" descriptions for the occupied NGS triangulation stations surrounding the general vicinity of this 400 scale 4-foot contour aerial topographic mapping project.

David Paul Johnson
Project Surveyor, G.P.S.

Robert J. Pecha, P.L.S.
Project Manager

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
21080
ROBERT J.
PECHA
Date Signed 7-17-91
ARIZONA, U.S.A.

R00704

MARICOPA COUNTY SALT-GILA WATERCOURSE AERIAL MAPPING

NAD 83 GRID COORDINATE VALUE COMPARISONS (INTERNATIONAL FOOT)

NAME	NUMBER		RECORD	CONSTRAINED	± DIF	UNCONSTRAINED	± DIF
		N	864,981.997	864,981.987	-0.010	864,981.913	-0.084
INITIAL POINT	0001	E	581,116.248	581,116.362	+0.114	581,116.537	+0.289
		N	840,141.032	840,141.074	+0.042	840,141.285	+0.253
POWERS BUTTE	0005	E	450,010.732	450,011.135	+0.403	450,011.819	+1.087
		N	880,381.043	880,381.056	+0.013	880,381.027	-0.016
WINTERSBURG	0007	E	407,444.792	407,444.862	+0.070	407,446.665	+1.873
		N	917,126.638	917,126.633	-0.005	917,126.404	-0.234
LITCHFIELD	0009	E	564,283.971	564,283.975	+0.004	564,284.542	+0.571
		N	896,344.272	896,344.272	HELD	896,344.272	HELD
ETTA	0013	E	647,409.040	647,409.040	HELD	647.409.040	HELD
		N	926,687.833	926,687.747	-0.086	926,687.466	-0.367
SQUAW PEAK	0015	E	668,215.780	668,215.769	-0.011	668,215.654	-0.126
		N	900,292.414	900,292.274	-0.140	900,292.259	-0.155
VAL VISTA	0019	E	750,259.803	750,259.198	-0.605	750,258.834	-0.969
		N	875,535.738	875,535.795	+0.057	875,535.783	+0.045
BROADWAY	0021	E	684,546.463	684,546.424	-0.039	684,546.338	-0.125

* NOTE: Although verification of the local existing NGS triangulation network is beyond the scope of this 400 scale, 4-foot contour aerial mapping project, the published NAD83 Record Coordinates of Triangulation Stations Etta, Broadway, Squaw Peak, Litchfield, and Initial Point (not Initial Monument) appear to be in general agreement according the lack of major differences between the record coordinate values and the (measured) coordinate values generated by the unconstrained adjustment. Triangulation stations Val Vista, Powers Butte and Wintersburg exhibit larger positional differences between the (measured) unconstrained coordinates and the published record values. This discrepancy would appear to cast some doubt on the accuracy of the published record coordinates of these three triangulation stations relative to the overall area network.

MARICOPA COUNTY SALT-GILA WATERCOURSE AERIAL MAPPING

RAW GPS "AUTOMATIC" BASELINE MEASUREMENT COMPARISONS (DIRECTORY VCTR1)

TRIMBLE 4000 ST SINGLE FREQUENCY RECEIVER FIELD CALIBRATION AND COMPARISONS

STATION FROM	RECEIVER FROM	STATION TO	RECEIVER TO	GPS DAY	VECTOR DISTANCE (m)
0001	WHITE	0013	BLUE	330-1	22,356.121 *
0001	WHITE	0013	BLUE	330-2	22,356.297
0001	RED	0013	WHITE	337-1	22,356.248
0001	RED	0013	WHITE	337-2	22,356.214
0001	GREEN	0013	RED	339-1	22,356.396
0001	GREEN	0013	RED	339-4	22,356.352

#2934A00381 = RED #2934A00379 = WHITE #2934A00382 = BLUE #2934A00373 = GREEN

* NOTE: As noted per the attached letter, Trimble GPS receivers are calibrated before they leave the factory, and also undergo a self calibration routine each time they are turned on. However, in an effort to provide an actual project field comparison, a common network baseline was measured repeatedly using three different receiver combinations with the resultant raw GPS vector distances shown above. Except for the first raw GPS vector distance which would appear to contain operator error, the maximum difference between any pair of measured "automatic" vectors is 182mm in 22,356m, or 8ppm. Of further note is the fact that the maximum difference realized between any raw GPS vector developed from preset "Automatic" processing and the corresponding raw GPS vector developed from "Manual" processing (set to process each measurement observation) was only 91mm in 22,356 meters, or 4ppm (please refer to the following page).

MARICOPA COUNTY SALT-GILA WATERCOURSE AERIAL MAPPING

RAW GPS "MANUAL" BASELINE MEASUREMENT COMPARISONS (DIRECTORY VCTR1M)

TRIMBLE 4000 ST SINGLE FREQUENCY RECEIVER FIELD CALIBRATION AND COMPARISONS

STATION FROM	RECEIVER FROM	STATION TO	RECEIVER TO	GPS DAY	VECTOR DISTANCE (m)
0001	WHITE	0013	BLUE	330-1	22,356.139 *
0001	WHITE	0013	BLUE	330-2	22,356.273
0001	RED	0013	WHITE	337-1	22,356.291
0001	RED	0013	WHITE	337-2	22,356.281
0001	GREEN	0013	RED	339-1	22,356.305
0001	GREEN	0013	RED	339-4	22,356.288

#2934A00381 = RED #2934A00379 = WHITE #2934A00382 = BLUE #2934A00373 = GREEN

* NOTE: As noted per the attached letter, Trimble GPS receivers are calibrated before they leave the factory, and also undergo a self calibration routine each time they are turned on. However, in an effort to provide an actual project field comparison, a common network baseline was measured repeatedly using three different receiver combinations with the resultant raw GPS vector distances shown above. Except for the first raw GPS vector distance which would appear to contain operator error, the maximum difference between any pair of measured "manual" vectors is 32mm in 22,356m, or 1ppm. Of further note is the fact that the maximum difference realized between any raw GPS vector developed from preset "Automatic" processing and the corresponding raw GPS vector developed from "Manual" processing (set to process each measurement observation) was only 91mm in 22,356 meters, or 4ppm (please refer to the previous page).

RECEIVED
DEC 1991
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TrimbleNavigation

1 November 1991

Dave Johnson
GREINER, INC.
1261 East Dyer Road
Santa Ana, CA 92705-5605

Dear Mr. Johnson:

As per your request for information regarding the calibration of GPS Carrier Phase Tracking receivers. All receivers are calibrated before leaving Trimble Navigation Ltd by our Q.A. group. This calibration includes measuring a baseline of known coordinates to determine any abnormalities in the antenna phase center or the receivers tracking loop. The receivers also do a self calibration between all the channels every time a survey is started. The results of this calibration are available for the user to analyze, and are located in the double difference output file.

Should you have any further questions or if I can be of service to you, please call me at 1-800-874-6253 extension 2019.

Regards,

TRIMBLE NAVIGATION LTD.

Ken Mooyman

Ken Mooyman
Survey Sales
Western Region

645 North Mary Avenue
Post Office Box 3642
Sunnyvale, CA 94088-3642

(408) 730-2900
FAX (408) 730-2997
Telex 6713973

Greiner

SALT-GILA WATERCOURSE - PHASE I

15 JANUARY 1992

AERIAL CONTROL
NAD 83 STATE PLANE COORDINATES - GROUND VALUES
CENTRAL ZONE - INTERNATIONAL FOOT

REGISTERED LAND SURVEYOR
CERTIFICATE NO. 21080
ROBERT J. PECHA
Date signed 2-18-92
ARIZONA, U.S.A.

GROUND TO GRID FACTOR IS 0.999863

* - denotes revised elevation - 22 January 1992
** - denotes control for the Hohokam Floodplain
*** - denotes elevation revision per Jay-Kim Engineering - 18 Feb 1992

Pt No	Northing	Easting	Elev
1	865100.49	581195.98	
5	840256.17	450072.79	
7	880501.67	407500.68	
9	917252.28	564361.28	
13	896467.07	647497.74	
15	926814.70	668307.32	
19	900415.61	750361.98	
21	875655.74	684640.21	
101			946.64
102	878288.36	575938.80	950.56
103			937.81
104	878502.98	560200.53	942.35
105			910.34
106			912.43
107	870588.84	544379.37	889.83
108	875993.89	539108.94	901.91
109			892.33
110			886.16
111	873279.23	528518.29	897.97
112	870760.87	528505.91	882.38
113	862840.49	528713.32	881.73
114			872.73
115	870817.10	520744.17	889.23
116	862908.36	515509.87	860.96
117	868258.46	510202.82	879.27
118			854.85
119	865590.51	502305.11	875.97

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Pt No	Northing	Easting	Elev
120	863073.42	499569.92	861.00
121			874.31
122			824.99
123	863077.53	478553.87	879.80
124	860461.85	473134.95	864.23
125	855176.32	473122.00	831.85
126	849996.53	473106.87	806.54
127	857899.94	467905.53	858.05
128			828.38
129	855375.52	457251.66	837.64
130	852878.43	449325.01	930.45
131			864.73
132	847204.82	441331.70	803.01
133	847526.40	436046.24	832.68
134	845321.49	432277.33	809.33
135			775.61
136	839591.88	432291.83	800.32
137	832945.64	427266.96	794.97
138			769.44
139			764.80
140	824859.36	429824.86	784.40
141	819153.68	427949.84	807.66
142	817959.68	433855.20	767.15
143			811.29
144	811233.58	437926.26	780.81
145	811420.21	440470.58	753.29
146	816152.52	441896.73	770.22
147	824194.60	441399.88	765.01
148	832142.48	446725.02	794.02
149			785.89 *
150	839620.36	451266.60	793.51
151	839620.15	457153.91	795.88
152	839622.24	462420.33	822.79
153	847397.71	457394.41	809.64
154			805.85
155			808.01
156	842141.47	473008.57	824.96
157			808.77
158			815.06
159			824.20 *
160	839479.88	483537.64	887.00
161	844617.28	488831.98	872.30

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Pt No	Northing	Easting	Elev
162	847327.29	491747.94	836.66
163	849658.90	494112.93	839.59
164	855159.74	488940.96	829.91
165			839.16
166			850.70
167			957.86
168	849720.48	515280.46	902.82
169	854155.17	515388.81	859.16
170			879.88
171			899.52
172	852246.98	531141.73	928.86
173	854882.79	531143.08	917.48
174			934.47
175			885.31
176	860036.93	541991.70	943.28
177			894.51
178	860014.65	544641.33	957.26
179			916.49
180	866574.13	560079.87	933.92
181	870796.55	560117.28	923.16
182			921.87
183			963.87
184	870443.61	575981.79	936.00
185	862488.90	575947.72	962.13
186	862455.55	581179.25	959.18 *
187	859917.90	581117.32	1013.70 *
188			952.17
189	859157.10	595690.73	965.16
190	865153.99	591621.07	960.05
191	870574.12	591593.42	961.10
192	875725.42	591563.39	985.58
193	878384.64	586330.48	965.08
194			948.49
301	894502.59	707644.00	1192.68
302	891842.04	702354.01	1188.89
303	889279.04	702220.05	1181.35 *
304	889201.85	697116.69	1187.97
305			1183.29
306	889145.32	681252.10	1153.94
307	889009.15	674148.59	1123.60
308	886395.21	671245.08	1117.01
309	883942.93	665410.64	1100.63

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Pt No	Northing	Easting	Elev
310	881303.24	665383.66	1095.80
311			1083.92
312	883448.33	649511.41	1069.40
313	883447.73	644200.89	1059.71
314			1048.28
315	881425.43	633615.24	1039.06
316			1020.48
317	881369.06	622997.35	1024.07
318	878848.15	617750.17	1015.13
319			1005.17
320	876392.08	607094.97	995.22
321	870355.35	607520.14	982.47
322	873375.09	602330.68	981.80
323			979.38
324			972.34
325	862445.87	607445.82	982.90
326	865064.55	612842.69	994.65
327	867717.22	618008.14	1002.50
328	870330.89	618040.17	1005.57
329			1011.38
330	870368.01	628596.36	1021.05
331	873028.49	633868.97	1032.75
332	875582.61	633771.69	1035.58
333			1050.31
334	875663.11	649635.83	1067.61
335			1081.26
336	875718.82	665565.85	1101.42
337			1127.34
338			1114.61
339	878288.63	681346.81	1139.83
340	881071.07	681549.39	1135.35
341			1150.13
342	880898.47	697151.62	1174.88
343			1175.08
344	881227.76	710364.42	1192.57
345			1190.00
346			1189.94 *
501	918537.62	771169.79	1326.03
502	918773.77	765558.42	1426.19
503			1312.01
504	915874.60	760622.47	1331.81
505	913230.50	760625.91	1302.81

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Pt No	Northing	Easting	Elev
506			1303.80
507	913216.50	750064.48	1290.31
508	907939.09	750077.22	1274.71
509			1261.89
510			1277.82
511	909468.66	735769.73	1278.20
512			1236.12
513	907849.35	728933.36	1272.63
514	905210.75	728933.28	1262.14
515	905177.06	723655.06	1252.17
516	899862.11	718381.46	1231.04
517	897227.37	718321.00	1219.13 *
518			1218.39
519	883888.90	718506.34	1234.21
520	889194.60	718516.63	1205.30
521			1216.49
522	891932.70	728843.09	1225.33
523	897370.21	728761.28	1227.29
524			1238.11
525	894712.73	739475.14	1292.83
526	897371.28	739498.33	1255.22
527	902651.29	739489.71	1254.16
528			1340.67
529	905154.48	757906.33	1307.79
530	902716.24	760543.64	1372.04
531	907952.63	760009.18	1307.37
532	910991.10	771050.81	1516.87
533	913236.05	771045.67	1390.83
701			1148.65 **
702	875926.64	691771.78	1160.64 **
703	865258.75	691789.96	1180.98 **
704	859961.33	691173.69	1196.70 **
705	859963.12	682439.69	1311.26 **
706			1206.85 ***
707	863990.15	675163.72	1220.13 **
708	865194.41	670746.72	1178.12 **
709			1269.36 **
710			1177.99 ***
711	857675.04	652457.90	1306.15 **
712	865117.73	649219.33	1156.13 **
801	875666.65	652272.41	
802	875665.02	657623.26	

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Pt No	Northing	Easting	Elev
803	886583.10	665437.76	
804	881157.02	676053.60	
805	878500.03	676065.31	
901	883807.59	702415.45	
902	883666.52	697162.59	
903	883775.75	689212.38	

sghv1.lgl

Greiner

Job: Salt Gila | Computed By: DB | Date: 11 Jan 92

Description: Ground-grid factor | Checked By: | Date:

Sheet 1 of 1

① by scale from SGX.DGN Ave Elev 1000'

x = 400 069 y = 863 125

② x' = 500 000 − x

= 500 000 − 400 069

= 99 931

③ x' factor from 2A

90 000	0.999 909
99 931	0.999 910 986 ←
100,000	0.999 911

④ Mean Elev assumed to be 1000'

⑤ from table 1 elev factor

1000 → 0.999 952 ←

⑥ GRF = (x' factor)(elev factor)

= (0.999 910 986)(0.999 952)

= 0.999 862 99

⑦ Ground = 1/GRF = 1.000 137 03

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Trimble Navigation Ltd., State Plane Conversion Utility

Datum: NAD83
Zone : 0202 Arizona Central
State Plane in: Meters

Coordinate Source [GEOLAB]: c:\gps\gila\net\gila8\gila-83.lst

Latitude	Longitude	Northing	Easting	Convergence	Scale factor	Name
33:27'49.89516" N	112:05'20.82657" W	273205.734	197330.276	-0:05'42.331"	0.999903167	0013
33:22'37.82166" N	112:18'22.00202" W	263646.510	177124.267	-0:12'51.317"	0.999916183	0001
33:32'50.39028" N	112:01'15.56748" W	282454.425	203672.166	-0:03'27.548"	0.999901157	0015
33:24'59.04491" N	112:52'31.61780" W	268340.146	124189.194	-0:31'40.999"	0.999998001	0007
33:31'13.06856" N	112:21'43.13690" W	279540.198	171993.756	-0:14'45.316"	0.999921089	0009
33:28'28.99462" N	111:45'06.62541" W	274409.085	228679.003	0:05'27.287"	0.999902892	0019
33:24'24.40616" N	111:58'02.30731" W	266863.310	208649.750	-0:01'40.374"	0.999900273	0021
33:18'24.53672" N	112:44'05.73323" W	256074.999	137163.394	-0:26'57.645"	0.999971559	0005
33:27'30.88385" N	111:53'30.91365" W	272607.043	215660.345	0:00'49.116"	0.999900065	0301
33:29'42.79954" N	111:49'19.50292" W	276674.578	222148.454	0:03'07.909"	0.999900952	0513
33:21'49.14871" N	111:58'28.16061" W	262080.855	207979.126	-0:01'54.478"	0.999900357	0705
33:22'38.48100" N	112:12'08.84510" W	263635.555	186768.865	-0:09'26.023"	0.999908715	0326
33:21'26.20840" N	112:04'21.59452" W	261383.542	198841.927	-0:05'08.797"	0.999902598	0711
33:24'23.29813" N	112:16'20.18535" W	266884.544	180283.821	-0:11'44.844"	0.999913484	0192
33:20'54.64748" N	112:42'42.51824" W	260682.746	139351.216	-0:26'13.684"	0.999967508	0129
33:14'54.00035" N	112:48'24.23686" W	249643.839	130421.245	-0:29'16.883"	0.999984784	0141
33:19'10.45218" N	112:36'29.45062" W	257404.082	148975.579	-0:22'47.522"	0.999951092	0161
33:20'28.42667" N	112:28'11.38888" W	259729.298	161869.824	-0:18'14.539"	0.999932677	0172
33:17'04.01420" N	112:44'44.41325" W	253602.284	136143.135	-0:27'17.914"	0.999973488	0148
33:18'18.33958" N	112:43'51.61073" W	255881.229	137527.217	-0:26'49.815"	0.999970877	0150
33:19'35.74119" N	112:42'40.11916" W	258251.441	139394.719	-0:26'11.451"	0.999967429	0153
33:18'16.53715" N	112:47'35.13938" W	255872.552	131744.500	-0:28'52.550"	0.999982099	0136
33:17'10.37186" N	112:48'33.66401" W	253847.055	130213.131	-0:29'23.829"	0.999985209	0137
33:15'50.59827" N	112:48'02.73127" W	251382.694	130992.670	-0:29'05.821"	0.999983620	0140
33:19'32.58257" N	112:45'49.37453" W	258192.658	134499.475	-0:27'55.406"	0.999976650	0132
33:19'35.33458" N	112:46'51.68565" W	258290.662	132888.688	-0:28'29.680"	0.999979813	0133
33:22'12.37438" N	112:38'32.06978" W	263029.996	145843.239	-0:23'56.810"	0.999956184	0123
33:21'46.12171" N	112:39'35.73638" W	262232.845	144191.778	-0:24'31.549"	0.999958966	0124
33:14'42.68150" N	112:47'14.59741" W	249279.959	132220.949	-0:28'38.552"	0.999981144	0142
33:22'38.78261" N	112:33'52.23384" W	263795.849	153081.626	-0:21'23.121"	0.999944782	0119
33:20'54.74848" N	112:36'28.99030" W	260616.983	149008.790	-0:22'48.321"	0.999951039	0164
33:22'13.03515" N	112:31'16.35526" W	262978.441	157105.886	-0:19'57.130"	0.999939003	0116
33:22'13.71327" N	112:34'24.29670" W	263028.744	152248.053	-0:21'40.522"	0.999946030	0120
33:18'19.27992" N	112:37'31.42170" W	255838.418	147362.084	-0:23'21.038"	0.999953685	0160
33:20'53.83561" N	112:39'35.44463" W	260622.039	144187.832	-0:24'30.822"	0.999958973	0125
33:20'02.59506" N	112:39'35.18767" W	259043.453	144183.222	-0:24'30.126"	0.999958981	0126
33:18'18.78670" N	112:42'42.25454" W	255881.167	139321.425	-0:26'11.732"	0.999967563	0151
33:18'19.20000" N	112:41'40.21274" W	255881.802	140926.408	-0:25'37.665"	0.999964665	0152
33:13'36.47946" N	112:46'26.02189" W	247230.125	133461.640	-0:28'11.089"	0.999978682	0144
33:19'37.45050" N	112:35'55.30112" W	258229.982	149864.240	-0:22'29.030"	0.999949691	0162
33:20'00.66770" N	112:35'27.60993" W	258940.558	150584.992	-0:22'14.043"	0.999948569	0163
33:13'38.53099" N	112:45'56.09314" W	247287.003	134237.043	-0:27'54.712"	0.999977162	0145
33:23'30.54263" N	112:25'36.42684" W	265319.130	165904.104	-0:16'50.717"	0.999927756	0107
33:22'13.09472" N	112:28'40.68291" W	262957.757	161129.745	-0:18'31.497"	0.999933622	0113
33:14'25.45769" N	112:45'39.75723" W	248729.212	134671.673	-0:27'46.338"	0.999976317	0146
33:23'31.43572" N	112:28'43.63238" W	265371.556	161066.535	-0:18'33.761"	0.999933704	0112
33:23'56.34917" N	112:28'43.64671" W	266139.049	161070.309	-0:18'33.973"	0.999933699	0111
33:23'31.56799" N	112:30'15.16945" W	265388.693	158701.080	-0:19'24.145"	0.999936822	0115
33:23'05.65124" N	112:32'19.30147" W	264608.928	155488.518	-0:20'32.233"	0.999941277	0117

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Trimble Navigation Ltd., State Plane Conversion Utility

Datum: NAD83
Zone : 0202 Arizona Central
State Plane in: Meters

Coordinate Source [GEOLAB]: c:\gps\gila\net\gila8\gila-83.lst

Latitude	Longitude	Northing	Easting	Convergence	Scale factor	Name
33:20'46.43780" N	112:31'17.18354" W	260310.833	157068.992	-0:19'56.822"	0.999939054	0169
33:20'54.50159" N	112:28'11.53792" W	260532.582	161870.234	-0:18'14.831"	0.999932676	0173
33:24'23.75230" N	112:26'38.90394" W	266966.364	164297.895	-0:17'25.513"	0.999929667	0108
33:15'44.97082" N	112:45'46.37277" W	251180.103	134520.254	-0:27'50.947"	0.999976610	0147
33:24'27.11251" N	111:56'38.18779" W	266945.868	210823.157	-0:00'54.061"	0.999900079	0702
33:25'43.69173" N	111:55'34.60852" W	269304.660	212466.050	-0:00'19.065"	0.999900010	0902
33:21'45.94948" N	112:25'32.72797" W	262096.558	165983.938	-0:16'47.905"	0.999927663	0178
33:21'46.04070" N	112:26'03.96593" W	262103.348	165176.441	-0:17'05.086"	0.999928614	0176
33:25'45.84026" N	111:51'22.78371" W	269372.433	218970.734	0:01'59.666"	0.999900388	0519
33:25'16.30780" N	111:55'34.73498" W	268461.076	212462.705	-0:00'19.131"	0.999900010	0342
33:25'44.75525" N	111:57'08.40916" W	269337.950	210043.158	-0:01'10.741"	0.999900136	0903
33:20'02.56157" N	112:31'18.15731" W	258959.324	157035.969	-0:19'56.971"	0.999939100	0168
33:19'13.21260" N	112:47'35.87739" W	257618.696	131740.081	-0:28'53.680"	0.999982108	0134
33:27'59.02981" N	111:47'14.91164" W	273481.300	225368.215	0:04'16.472"	0.999901777	0526
33:29'15.74765" N	111:43'37.46512" W	275853.294	230978.206	0:06'16.595"	0.999903826	0529
33:24'48.08625" N	112:19'24.59812" W	267665.623	175522.100	-0:13'26.527"	0.999917645	0102
33:24'49.56196" N	112:22'30.25826" W	267731.028	170725.731	-0:15'08.780"	0.999922403	0104
33:24'49.42385" N	112:17'22.02086" W	267694.965	178689.050	-0:12'19.032"	0.999914815	0193
33:27'05.34033" N	111:49'20.73932" W	271823.848	222120.942	0:03'07.011"	0.999900946	0522
33:22'51.54935" N	112:22'31.06159" W	264095.614	170688.959	-0:15'08.433"	0.999922441	0180
33:23'33.32177" N	112:22'30.83966" W	265382.431	170700.362	-0:15'08.590"	0.999922429	0181
33:23'30.48242" N	112:19'23.72955" W	265274.870	175535.200	-0:13'25.589"	0.999917633	0184
33:23'32.33873" N	112:16'19.62362" W	265314.643	180292.974	-0:11'44.271"	0.999913476	0191
33:21'20.40572" N	112:40'37.16305" W	261452.082	142598.070	-0:25'05.049"	0.999961714	0127
33:20'29.33830" N	112:44'15.71336" W	259921.738	136935.502	-0:27'04.620"	0.999971987	0130
33:18'44.88429" N	112:39'35.68646" W	256649.559	144153.262	-0:24'29.557"	0.999959032	0156
33:27'59.13326" N	111:49'21.64671" W	273480.972	222096.011	0:03'06.584"	0.999900941	0523
33:27'57.79656" N	111:51'24.88000" W	273437.440	218914.249	0:01'58.626"	0.999900380	0517
33:25'19.55030" N	111:52'58.85658" W	268561.428	216489.417	0:01'06.726"	0.999900121	0344
33:22'11.78748" N	112:19'23.76504" W	262850.605	175524.817	-0:13'25.142"	0.999917643	0185
33:24'54.96909" N	112:11'11.40051" W	267836.221	188264.460	-0:08'54.956"	0.999907762	0318
33:24'30.38077" N	112:13'17.00943" W	267087.716	185017.200	-0:10'04.021"	0.999909901	0320
33:24'00.39287" N	112:14'13.09721" W	266168.263	183565.243	-0:10'34.764"	0.999910941	0322
33:25'20.03831" N	112:10'09.57435" W	268604.491	189863.581	-0:08'21.000"	0.999906804	0317
33:22'38.71969" N	112:16'19.07939" W	263662.815	180301.401	-0:11'43.694"	0.999913469	0190
33:23'30.67305" N	112:13'11.78682" W	265247.973	185146.774	-0:10'00.881"	0.999909810	0321
33:23'30.71694" N	112:11'07.72002" W	265240.516	188352.839	-0:08'52.599"	0.999907707	0328
33:23'04.85955" N	112:11'08.01817" W	264443.979	188343.077	-0:08'52.662"	0.999907713	0327
33:23'31.33645" N	112:09'03.22804" W	265251.828	191569.927	-0:07'44.084"	0.999905852	0330
33:23'57.76922" N	112:08'01.11144" W	266062.631	193176.798	-0:07'09.981"	0.999905021	0331
33:25'41.04167" N	112:05'59.46893" W	269237.983	196325.535	-0:06'03.295"	0.999903576	0313
33:25'41.13573" N	112:04'56.81381" W	269238.165	197943.959	-0:05'28.779"	0.999902929	0312
33:25'20.83351" N	112:08'04.31139" W	268621.669	193099.472	-0:07'12.006"	0.999905059	0315
33:26'10.55787" N	112:00'40.42432" W	270136.251	204567.473	-0:03'07.577"	0.999900953	0308
33:26'12.35911" N	112:01'48.94992" W	270193.511	202797.644	-0:03'45.338"	0.999901375	0803
33:25'46.24006" N	112:01'49.23578" W	269388.899	202789.382	-0:03'45.452"	0.999901377	0309
33:25'20.12574" N	112:01'49.52010" W	268584.433	202781.158	-0:03'45.565"	0.999901379	0310
33:24'24.88171" N	112:01'47.29902" W	266882.534	202836.683	-0:03'44.251"	0.999901365	0336
33:24'24.11973" N	112:04'55.19991" W	266865.557	197981.877	-0:05'27.704"	0.999902915	0334

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Trimble Navigation Ltd., State Plane Conversion Utility

Datum: NAD83
Zone : 0202 Arizona Central
State Plane in: Meters

Coordinate Source [GEOLAB]: c:\gps\gila\net\gila8\gila-83.lst

Latitude	Longitude	Northing	Easting	Convergence	Scale factor	Name
33:24'24.19503" N	112:04'24.10040" W	266866.633	198785.396	-0:05'10.582"	0.999902618	0801
33:24'24.25422" N	112:03'20.98477" W	266866.138	200416.112	-0:04'35.832"	0.999902065	0802
33:24'23.03476" N	112:08'02.32172" W	266841.022	193147.151	-0:07'10.727"	0.999905035	0332
33:21'46.54879" N	112:18'22.70093" W	262067.074	177100.295	-0:12'51.410"	0.999916204	0187
33:21'39.52848" N	112:15'30.86074" W	261835.213	181541.663	-0:11'16.870"	0.999912478	0189
33:22'12.42384" N	112:13'12.39153" W	262837.492	185124.124	-0:10'00.868"	0.999909826	0325
33:22'11.65533" N	112:18'22.08258" W	262840.441	177119.171	-0:12'51.212"	0.999916187	0186
33:24'50.43551" N	111:58'41.17287" W	267665.705	207646.059	-0:02'01.796"	0.999900402	0339
33:25'17.96306" N	111:58'38.80229" W	268513.677	207707.798	-0:02'00.515"	0.999900394	0340
33:25'18.77687" N	111:59'43.63959" W	268539.871	206032.909	-0:02'36.228"	0.999900662	0804
33:24'52.49164" N	111:59'43.47761" W	267730.130	206036.481	-0:02'36.109"	0.999900661	0805
33:22'28.93973" N	111:59'53.97899" W	263308.125	205761.713	-0:02'41.721"	0.999900712	0707
33:22'40.81616" N	112:00'46.07355" W	263675.134	204415.595	-0:03'10.396"	0.999900986	0708
33:22'41.57593" N	111:56'37.94045" W	263694.742	210828.698	-0:00'53.883"	0.999900079	0703
33:21'49.16704" N	111:56'45.18986" W	262080.308	210640.882	-0:00'57.849"	0.999900091	0704
33:22'39.78886" N	112:04'59.91358" W	263651.765	197854.945	-0:05'30.046"	0.999902963	0712
33:26'38.32867" N	111:51'22.62593" W	270989.388	218973.870	0:01'59.799"	0.999900388	0520
33:25'45.08782" N	111:54'32.63279" W	269347.652	214066.901	0:00'15.076"	0.999900006	0901
33:26'37.83869" N	111:58'42.36618" W	270974.369	207617.195	-0:02'02.550"	0.999900406	0306
33:26'36.44199" N	112:00'06.18962" W	270932.871	205452.345	-0:02'48.745"	0.999900771	0307
33:26'39.21622" N	111:54'34.93389" W	271015.121	214007.352	0:00'13.814"	0.999900005	0303
33:27'04.57148" N	111:54'33.35097" W	271796.216	214048.176	0:00'14.689"	0.999900006	0302
33:28'23.86119" N	111:51'24.14845" W	274240.399	218932.674	0:01'59.052"	0.999900383	0516
33:26'38.45195" N	111:55'35.15618" W	270991.598	212452.062	-0:00'19.375"	0.999900010	0304
33:29'43.42691" N	111:45'09.84679" W	276701.927	228592.218	0:05'25.688"	0.999902860	0508
33:29'16.69647" N	111:49'19.53222" W	275870.442	222148.430	0:03'07.857"	0.999900952	0514
33:28'51.26384" N	111:47'14.93589" W	275090.425	225365.588	0:04'16.557"	0.999901776	0527
33:31'01.74827" N	111:43'05.15526" W	279120.337	231805.972	0:06'34.728"	0.999904193	0504
33:30'35.59105" N	111:43'05.17445" W	278314.528	231807.019	0:06'34.642"	0.999904194	0505
33:29'43.39029" N	111:43'12.57557" W	276706.053	231619.067	0:06'30.407"	0.999904109	0531
33:28'51.57812" N	111:43'06.38303" W	275110.221	231781.948	0:06'33.675"	0.999904183	0530
33:27'32.72962" N	111:47'15.22435" W	272671.085	225361.148	0:04'16.250"	0.999901775	0525
33:29'16.40644" N	111:50'21.84960" W	275860.176	220539.850	0:02'33.472"	0.999900635	0515
33:30'35.63501" N	111:45'09.89880" W	278310.261	228588.336	0:05'25.784"	0.999902858	0507
33:29'58.74999" N	111:47'58.76135" W	277168.074	224231.894	0:03'52.495"	0.999901457	0511
33:31'27.87552" N	111:41'00.51706" W	279931.915	235020.354	0:07'43.641"	0.999905782	0501
33:31'30.33158" N	111:42'06.78910" W	280003.885	233310.242	0:07'07.047"	0.999904905	0502
33:30'35.43179" N	111:41'02.12358" W	278316.220	234982.527	0:07'42.576"	0.999905762	0533
33:30'13.22313" N	111:41'02.12224" W	277632.053	234984.095	0:07'42.502"	0.999905763	0532

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Trimble Navigation Ltd., State Plane Conversion Utility

Datum: NAD83
Zone : 0202 Arizona Central
State Plane in: International Feet

Coordinate Source [GEOLAB]: c:\gps\gila\net\gila8\gila-83.lst

Latitude	Longitude	Northing	Easting	Convergence	Scale factor	Name
33:27'49.89516" N	112:05'20.82657" W	896344.272	647409.040	-0:05'42.331"	0.999903167	0013
33:22'37.82166" N	112:18'22.00202" W	864981.987	581116.362	-0:12'51.317"	0.999916183	0001
33:32'50.39028" N	112:01'15.56748" W	926687.747	668215.769	-0:03'27.548"	0.999901157	0015
33:24'59.04491" N	112:52'31.61780" W	880381.056	407444.862	-0:31'40.999"	0.999998001	0007
33:31'13.06856" N	112:21'43.13690" W	917126.633	564283.975	-0:14'45.316"	0.999921089	0009
33:28'28.99462" N	111:45'06.62541" W	900292.274	750259.198	0:05'27.287"	0.999902892	0019
33:24'24.40616" N	111:58'02.30731" W	875535.795	684546.424	-0:01'40.374"	0.999900273	0021
33:18'24.53672" N	112:44'05.73323" W	840141.074	450011.135	-0:26'57.645"	0.999971559	0005
33:27'30.88385" N	111:53'30.91365" W	894380.064	707547.064	0:00'49.116"	0.999900065	0301
33:29'42.79954" N	111:49'19.50292" W	907724.993	728833.511	0:03'07.909"	0.999900952	0513
33:21'49.14871" N	111:58'28.16061" W	859845.325	682346.213	-0:01'54.478"	0.999900357	0705
33:22'38.48100" N	112:12'08.84510" W	864946.048	612758.743	-0:09'26.023"	0.999908715	0326
33:21'26.20840" N	112:04'21.59452" W	857557.551	652368.526	-0:05'08.797"	0.999902598	0711
33:24'23.29813" N	112:16'20.18535" W	875605.460	591482.353	-0:11'44.844"	0.999913484	0192
33:20'54.64748" N	112:42'42.51824" W	855258.354	457189.029	-0:26'13.684"	0.999967508	0129
33:14'54.00035" N	112:48'24.23686" W	819041.466	427891.222	-0:29'16.883"	0.999984784	0141
33:19'10.45218" N	112:36'29.45062" W	844501.582	488765.021	-0:22'47.522"	0.999951092	0161
33:20'28.42667" N	112:28'11.38888" W	852130.242	531068.977	-0:18'14.539"	0.999932677	0172
33:17'04.01420" N	112:44'44.41325" W	832028.489	446663.828	-0:27'17.914"	0.999973488	0148
33:18'18.33958" N	112:43'51.61073" W	839505.345	451204.781	-0:26'49.815"	0.999970877	0150
33:19'35.74119" N	112:42'40.11916" W	847281.632	457331.755	-0:26'11.451"	0.999967429	0153
33:18'16.53715" N	112:47'35.13938" W	839476.877	432232.610	-0:28'52.550"	0.999982099	0136
33:17'10.37186" N	112:48'33.66401" W	832831.544	427208.436	-0:29'23.829"	0.999985209	0137
33:15'50.59827" N	112:48'02.73127" W	824746.373	429765.978	-0:29'05.821"	0.999983620	0140
33:19'32.58257" N	112:45'49.37453" W	847088.774	441271.242	-0:27'55.406"	0.999976650	0132
33:19'35.33458" N	112:46'51.68565" W	847410.309	435986.509	-0:28'29.680"	0.999979813	0133
33:22'12.37438" N	112:38'32.06978" W	862959.303	478488.315	-0:23'56.810"	0.999956184	0123
33:21'46.12171" N	112:39'35.73638" W	860343.979	473070.137	-0:24'31.549"	0.999958966	0124
33:14'42.68150" N	112:47'14.59741" W	817847.634	433795.766	-0:28'38.552"	0.999981144	0142
33:22'38.78261" N	112:33'52.23384" W	865471.946	502236.307	-0:21'23.121"	0.999944782	0119
33:20'54.74848" N	112:36'28.99030" W	855042.594	488873.984	-0:22'48.321"	0.999951039	0164
33:22'13.03515" N	112:31'16.35526" W	862790.161	515439.257	-0:19'57.130"	0.999939003	0116
33:22'13.71327" N	112:34'24.29670" W	862955.198	499501.486	-0:21'40.522"	0.999946030	0120
33:18'19.27992" N	112:37'31.42170" W	839364.888	483471.405	-0:23'21.038"	0.999953685	0160
33:20'53.83561" N	112:39'35.44463" W	855059.182	473057.190	-0:24'30.822"	0.999958973	0125
33:20'02.59506" N	112:39'35.18767" W	849880.094	473042.067	-0:24'30.126"	0.999958981	0126
33:18'18.78670" N	112:42'42.25454" W	839505.139	457091.288	-0:26'11.732"	0.999967563	0151
33:18'19.20000" N	112:41'40.21274" W	839507.224	462356.983	-0:25'37.665"	0.999964665	0152
33:13'36.47946" N	112:46'26.02189" W	811122.459	437866.272	-0:28'11.089"	0.999978682	0144
33:19'37.45050" N	112:35'55.30112" W	847211.227	491680.577	-0:22'29.030"	0.999949691	0162
33:20'00.66770" N	112:35'27.60993" W	849542.514	494045.248	-0:22'14.043"	0.999948569	0163
33:13'38.53099" N	112:45'56.09314" W	811309.065	440410.247	-0:27'54.712"	0.999977162	0145
33:23'30.54263" N	112:25'36.42684" W	870469.586	544304.802	-0:16'50.717"	0.999927756	0107
33:22'13.09472" N	112:28'40.68291" W	862722.301	528640.896	-0:18'31.497"	0.999933622	0113
33:14'25.45769" N	112:45'39.75723" W	816040.722	441836.198	-0:27'46.338"	0.999976317	0146
33:23'31.43572" N	112:28'43.63238" W	870641.589	528433.512	-0:18'33.761"	0.999933704	0112
33:23'56.34917" N	112:28'43.64671" W	873159.609	528445.895	-0:18'33.973"	0.999933699	0111
33:23'31.56799" N	112:30'15.16945" W	870697.812	520672.936	-0:19'24.145"	0.999936822	0115
33:23'05.65124" N	112:32'19.30147" W	868139.529	510132.932	-0:20'32.233"	0.999941277	0117

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Trimble Navigation Ltd., State Plane Conversion Utility

Datum: NAD83
Zone : 0202 Arizona Central
State Plane in: International Feet

Coordinate Source [GEOLAB]: c:\gps\gila\net\gila8\gila-83.lst

Latitude	Longitude	Northing	Easting	Convergence	Scale factor	Name
33:20'46.43780" N	112:31'17.18354" W	854038.164	515318.214	-0:19'56.822"	0.999939054	0169
33:20'54.50159" N	112:28'11.53792" W	854765.689	531070.321	-0:18'14.831"	0.999932676	0173
33:24'23.75230" N	112:26'38.90394" W	875873.898	539035.090	-0:17'25.513"	0.999929667	0108
33:15'44.97082" N	112:45'46.37277" W	824081.703	441339.415	-0:27'50.947"	0.999976610	0147
33:24'27.11251" N	111:56'38.18779" W	875806.653	691677.024	-0:00'54.061"	0.999900079	0702
33:25'43.69173" N	111:55'34.60852" W	883545.472	697067.093	-0:00'19.065"	0.999900010	0902
33:21'45.94948" N	112:25'32.72797" W	859896.845	544566.725	-0:16'47.905"	0.999927663	0178
33:21'46.04070" N	112:26'03.96593" W	859919.121	541917.458	-0:17'05.086"	0.999928614	0176
33:25'45.84026" N	111:51'22.78371" W	883767.826	718407.919	0:01'59.666"	0.999900388	0519
33:25'16.30780" N	111:55'34.73498" W	880777.807	697056.120	-0:00'19.131"	0.999900010	0342
33:25'44.75525" N	111:57'08.40916" W	883654.691	689117.973	-0:01'10.741"	0.999900136	0903
33:20'02.56157" N	112:31'18.15731" W	849604.081	515209.874	-0:19'56.971"	0.999939100	0168
33:19'13.21260" N	112:47'35.87739" W	845205.697	432218.114	-0:28'53.680"	0.999982108	0134
33:27'59.02981" N	111:47'14.91164" W	897248.359	739397.032	0:04'16.472"	0.999901777	0526
33:29'15.74765" N	111:43'37.46512" W	905030.491	757802.514	0:06'16.595"	0.999903826	0529
33:24'48.08625" N	112:19'24.59812" W	878168.055	575859.908	-0:13'26.527"	0.999917645	0102
33:24'49.56196" N	112:22'30.25826" W	878382.639	560123.790	-0:15'08.780"	0.999922403	0104
33:24'49.42385" N	112:17'22.02086" W	878264.320	586250.165	-0:12'19.032"	0.999914815	0193
33:27'05.34033" N	111:49'20.73932" W	891810.526	728743.249	0:03'07.011"	0.999900946	0522
33:22'51.54935" N	112:22'31.06159" W	866455.428	560003.145	-0:15'08.433"	0.999922441	0180
33:23'33.32177" N	112:22'30.83966" W	870677.268	560040.558	-0:15'08.590"	0.999922429	0181
33:23'30.48242" N	112:19'23.72955" W	870324.378	575902.887	-0:13'25.589"	0.999917633	0184
33:23'32.33873" N	112:16'19.62362" W	870454.866	591512.381	-0:11'44.271"	0.999913476	0191
33:21'20.40572" N	112:40'37.16305" W	857782.422	467841.438	-0:25'05.049"	0.999961714	0127
33:20'29.33830" N	112:44'15.71336" W	852761.607	449263.459	-0:27'04.620"	0.999971987	0130
33:18'44.88429" N	112:39'35.68646" W	842026.113	472943.774	-0:24'29.557"	0.999959032	0156
33:27'59.13326" N	111:49'21.64671" W	897247.285	728661.454	0:03'06.584"	0.999900941	0523
33:27'57.79656" N	111:51'24.88000" W	897104.462	718222.603	0:01'58.626"	0.999900380	0517
33:25'19.55030" N	111:52'58.85658" W	881107.047	710267.116	0:01'06.726"	0.999900121	0344
33:22'11.78748" N	112:19'23.76504" W	862370.751	575868.822	-0:13'25.142"	0.999917643	0185
33:24'54.96909" N	112:11'11.40051" W	878727.761	617665.550	-0:08'54.956"	0.999907762	0318
33:24'30.38077" N	112:13'17.00943" W	876272.033	607011.811	-0:10'04.021"	0.999909901	0320
33:24'00.39287" N	112:14'13.09721" W	873255.457	602248.173	-0:10'34.764"	0.999910941	0322
33:25'20.03831" N	112:10'09.57435" W	881248.329	622912.010	-0:08'21.000"	0.999906804	0317
33:22'38.71969" N	112:16'19.07939" W	865035.481	591540.029	-0:11'43.694"	0.999913469	0190
33:23'30.67305" N	112:13'11.78682" W	870236.133	607436.924	-0:10'00.881"	0.999909810	0321
33:23'30.71694" N	112:11'07.72002" W	870211.668	617955.509	-0:08'52.599"	0.999907707	0328
33:23'04.85955" N	112:11'08.01817" W	867598.358	617923.482	-0:08'52.662"	0.999907713	0327
33:23'31.33645" N	112:09'03.22804" W	870248.781	628510.258	-0:07'44.084"	0.999905852	0330
33:23'57.76922" N	112:08'01.11144" W	872908.896	633782.146	-0:07'09.981"	0.999905021	0331
33:25'41.04167" N	112:05'59.46893" W	883326.715	644112.647	-0:06'03.295"	0.999903576	0313
33:25'41.13573" N	112:04'56.81381" W	883327.313	649422.439	-0:05'28.779"	0.999902929	0312
33:25'20.83351" N	112:08'04.31139" W	881304.689	633528.451	-0:07'12.006"	0.999905059	0315
33:26'10.55787" N	112:00'40.42432" W	886273.789	671153.128	-0:03'07.577"	0.999900953	0308
33:26'12.35911" N	112:01'48.94992" W	886461.651	665346.603	-0:03'45.338"	0.999901375	0803
33:25'46.24006" N	112:01'49.23578" W	883821.847	665319.494	-0:03'45.452"	0.999901377	0309
33:25'20.12574" N	112:01'49.52010" W	881182.523	665292.513	-0:03'45.565"	0.999901379	0310
33:24'24.88171" N	112:01'47.29902" W	875598.866	665474.681	-0:03'44.251"	0.999901365	0336
33:24'24.11973" N	112:04'55.19991" W	875543.165	649546.840	-0:05'27.704"	0.999902915	0334

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Trimble Navigation Ltd., State Plane Conversion Utility

Datum: NAD83
Zone : 0202 Arizona Central
State Plane in: International Feet

Coordinate Source [GEOLAB]: c:\gps\gila\net\gila8\gila-83.lst

Latitude	Longitude	Northing	Easting	Convergence	Scale factor	Name
33:24'24.19503" N	112:04'24.10040" W	875546.697	652183.059	-0:05'10.582"	0.999902618	0801
33:24'24.25422" N	112:03'20.98477" W	875545.074	657533.176	-0:04'35.832"	0.999902065	0802
33:24'23.03476" N	112:08'02.32172" W	875462.670	633684.878	-0:07'10.727"	0.999905035	0332
33:21'46.54879" N	112:18'22.70093" W	859800.111	581037.713	-0:12'51.410"	0.999916204	0187
33:21'39.52848" N	112:15'30.86074" W	859039.412	595609.130	-0:11'16.870"	0.999912478	0189
33:22'12.42384" N	112:13'12.39153" W	862327.728	607362.611	-0:10'00.868"	0.999909826	0325
33:22'11.65533" N	112:18'22.08258" W	862337.406	581099.642	-0:12'51.212"	0.999916187	0186
33:24'50.43551" N	111:58'41.17287" W	878168.323	681253.475	-0:02'01.796"	0.999900402	0339
33:25'17.96306" N	111:58'38.80229" W	880950.383	681456.030	-0:02'00.515"	0.999900394	0340
33:25'18.77687" N	111:59'43.63959" W	881036.321	675960.988	-0:02'36.228"	0.999900662	0804
33:24'52.49164" N	111:59'43.47761" W	878379.691	675972.706	-0:02'36.109"	0.999900661	0805
33:22'28.93973" N	111:59'53.97899" W	863871.800	675071.237	-0:02'41.721"	0.999900712	0707
33:22'40.81616" N	112:00'46.07355" W	865075.900	670654.841	-0:03'10.396"	0.999900986	0708
33:22'41.57593" N	111:56'37.94045" W	865140.230	691695.203	-0:00'53.833"	0.999900079	0703
33:21'49.16704" N	111:56'45.18986" W	859843.530	691079.008	-0:00'57.849"	0.999900091	0704
33:22'39.78886" N	112:04'59.91358" W	864999.227	649130.399	-0:05'30.046"	0.999902963	0712
33:26'38.32867" N	111:51'22.62593" W	889072.794	718418.209	0:01'59.799"	0.999900388	0520
33:25'45.08782" N	111:54'32.63279" W	883686.522	702319.230	0:00'15.076"	0.999900006	0901
33:26'37.83869" N	111:58'42.36618" W	889023.521	681158.777	-0:02'02.550"	0.999900406	0306
33:26'36.44199" N	112:00'06.18962" W	888887.372	674056.248	-0:02'48.745"	0.999900771	0307
33:26'39.21622" N	111:54'34.93389" W	889157.220	702123.857	0:00'13.814"	0.999900005	0303
33:27'04.57148" N	111:54'33.35097" W	891719.869	702257.796	0:00'14.689"	0.999900006	0302
33:28'23.86119" N	111:51'24.14845" W	899738.842	718283.052	0:01'59.052"	0.999900383	0516
33:26'38.45195" N	111:55'35.15618" W	889080.045	697021.201	-0:00'19.375"	0.999900010	0304
33:29'43.42691" N	111:45'09.84679" W	907814.722	749974.469	0:05'25.688"	0.999902860	0508
33:29'16.69647" N	111:49'19.53222" W	905086.751	728833.432	0:03'07.857"	0.999900952	0514
33:28'51.26384" N	111:47'14.93589" W	902527.643	739388.412	0:04'16.557"	0.999901776	0527
33:31'01.74827" N	111:43'05.15526" W	915749.137	760518.281	0:06'34.728"	0.999904193	0504
33:30'35.59105" N	111:43'05.17445" W	913105.407	760521.715	0:06'34.642"	0.999904194	0505
33:29'43.39029" N	111:43'12.57557" W	907828.259	759905.076	0:06'30.407"	0.999904109	0531
33:28'51.57812" N	111:43'06.38303" W	902592.588	760439.461	0:06'33.675"	0.999904183	0530
33:27'32.72962" N	111:47'15.22435" W	894590.174	739373.845	0:04'16.250"	0.999901775	0525
33:29'16.40644" N	111:50'21.84960" W	905053.071	723555.937	0:02'33.472"	0.999900635	0515
33:30'35.63501" N	111:45'09.89880" W	913091.408	749961.732	0:05'25.784"	0.999902858	0507
33:29'58.74999" N	111:47'58.76135" W	909344.076	735668.945	0:03'52.495"	0.999901457	0511
33:31'27.87552" N	111:41'00.51706" W	918411.794	771064.154	0:07'43.641"	0.999905782	0501
33:31'30.33158" N	111:42'06.78910" W	918647.918	765453.549	0:07'07.047"	0.999904905	0502
33:30'35.43179" N	111;41'02.12358" W	913110.959	770940.048	0:07'42.576"	0.999905762	0533
33:30'13.22313" N	111:41'02.12224" W	910866.316	770945.195	0:07'42.502"	0.999905763	0532

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Trimble Navigation Ltd., State Plane Conversion Utility

Datum: NAD27
Zone : 0202 Arizona Central
State Plane in: US Survey Feet

Coordinate Source [GEOLAB]: c:\gps\gila\net\gila8\gila-27.lst

Latitude	Longitude	Northing	Easting	Convergence	Scale factor	Name
33:27'49.73970" N	112:05'18.28990" W	896297.608	447622.841	-0:05'40.932"	0.999903141	0013
33:22'37.66366" N	112:18'19.44372" W	864935.626	381330.847	-0:12'49.909"	0.999916125	0001
33:32'50.24118" N	112:01'13.03432" W	926640.898	468429.496	-0:03'26.148"	0.999901141	0015
33:24'58.90105" N	112:52'28.98520" W	880334.486	207661.992	-0:31'39.551"	0.999997855	0007
33:31'12.92209" N	112:21'40.56597" W	917079.651	364498.819	-0:14'43.896"	0.999921023	0009
33:28'28.83353" N	111:45'04.11796" W	900245.609	550472.626	0:05'28.670"	0.999902917	0019
33:24'24.24205" N	111:57'59.78149" W	875489.174	484760.214	-0:01'38.983"	0.999900266	0021
33:18'24.38255" N	112:44'03.12968" W	840095.039	250226.957	-0:26'56.216"	0.999971435	0005
33:27'30.72374" N	111:53'28.39355" W	894333.398	507760.718	0:00'50.505"	0.999900069	0301
33:29'42.64191" N	111:49'16.98799" W	907678.296	529047.078	0:03'09.297"	0.999900966	0513
33:21'48.97991" N	111:58'25.63539" W	859798.719	482560.013	-0:01'53.089"	0.999900348	0705
33:22'38.31805" N	112:12'06.29847" W	864899.401	412972.888	-0:09'24.621"	0.999908672	0326
33:21'26.04094" N	112:04'19.06069" W	857510.953	452582.452	-0:05'07.404"	0.999902575	0711
33:24'23.13961" N	112:16'17.63148" W	875558.775	391696.601	-0:11'43.437"	0.999913431	0192
33:20'54.49199" N	112:42'39.92521" W	855211.748	257403.992	-0:26'12.259"	0.999967389	0129
33:14'53.83624" N	112:48'21.63882" W	818994.979	228106.274	-0:29'15.460"	0.999984650	0141
33:19'10.29106" N	112:36'26.86845" W	844454.958	288979.782	-0:22'46.104"	0.999950988	0161
33:20'28.26494" N	112:28'08.81887" W	852083.586	331283.517	-0:18'13.126"	0.999932594	0172
33:17'03.85247" N	112:44'41.81948" W	831981.938	246878.805	-0:27'16.492"	0.999973364	0148
33:18'18.17980" N	112:43'49.01768" W	839458.777	251419.737	-0:26'48.392"	0.999970755	0150
33:19'35.58334" N	112:42'37.52716" W	847235.046	257546.691	-0:26'10.028"	0.999967310	0153
33:18'16.37874" N	112:47'32.54091" W	839430.330	232447.641	-0:28'51.125"	0.999981967	0136
33:17'10.21181" N	112:48'31.06469" W	832785.015	227423.485	-0:29'22.404"	0.999985075	0137
33:15'50.43566" N	112:48'00.13328" W	824699.864	229981.023	-0:29'04.397"	0.999983486	0140
33:19'32.42568" N	112:45'46.77797" W	847042.190	241486.240	-0:27'53.981"	0.999976522	0132
33:19'35.17818" N	112:46'49.08764" W	847363.732	236201.520	-0:28'28.254"	0.999979683	0133
33:22'12.22018" N	112:38'29.48259" W	862912.715	278703.163	-0:23'55.387"	0.999956075	0123
33:21'45.96675" N	112:39'33.14727" W	860297.363	273285.055	-0:24'30.126"	0.999958854	0124
33:14'42.51651" N	112:47'12.00105" W	817801.134	234010.803	-0:28'37.130"	0.999981013	0142
33:22'38.62660" N	112:33'49.65548" W	865425.249	302450.872	-0:21'21.703"	0.999944685	0119
33:20'54.59057" N	112:36'26.40758" W	854995.954	289088.720	-0:22'46.901"	0.999950935	0164
33:22'12.87776" N	112:31'13.78102" W	862743.498	315653.762	-0:19'55.714"	0.999938912	0116
33:22'13.55665" N	112:34'21.71768" W	862908.502	299716.069	-0:21'39.104"	0.999945931	0120
33:18'19.11763" N	112:37'28.83852" W	839318.278	283686.180	-0:23'19.620"	0.999953579	0160
33:20'53.67872" N	112:39'32.85759" W	855012.543	273271.970	-0:24'29.400"	0.999958861	0125
33:20'02.43661" N	112:39'32.60099" W	849833.464	273256.852	-0:24'28.705"	0.999958869	0126
33:18'18.62664" N	112:42'39.66326" W	839458.581	257306.213	-0:26'10.310"	0.999967444	0151
33:18'19.03978" N	112:41'37.62322" W	839460.683	262571.866	-0:25'36.244"	0.999964549	0152
33:13'36.31219" N	112:46'23.42723" W	811075.972	238081.295	-0:28'09.668"	0.999978553	0144
33:19'37.28979" N	112:35'52.71976" W	847164.575	291895.309	-0:22'27.612"	0.999949589	0162
33:20'00.50739" N	112:35'25.02916" W	849495.843	294259.962	-0:22'12.625"	0.999948468	0163
33:13'38.36361" N	112:45'53.49913" W	811262.577	240625.265	-0:27'53.292"	0.999977035	0145
33:23'30.38571" N	112:25'33.86018" W	870422.913	344519.201	-0:16'49.304"	0.999927680	0107
33:22'12.93648" N	112:28'38.11240" W	862675.641	328855.354	-0:18'30.083"	0.999933538	0113
33:14'25.29166" N	112:45'37.16325" W	815994.225	242051.209	-0:27'44.917"	0.999976190	0146
33:23'31.27990" N	112:28'41.06145" W	870594.917	328647.947	-0:18'32.346"	0.999933620	0112
33:23'56.19411" N	112:28'41.07553" W	873112.932	328660.334	-0:18'32.558"	0.999933615	0111
33:23'31.41263" N	112:30'12.59618" W	870651.133	320887.310	-0:19'22.728"	0.999936734	0115
33:23'05.49567" N	112:32'16.72533" W	868092.842	310347.451	-0:20'30.816"	0.999941184	0117

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Trimble Navigation Ltd., State Plane Conversion Utility

Datum: NAD27
Zone : 0202 Arizona Central
State Plane in: US Survey Feet

Coordinate Source [GEOLAB]: c:\gps\gila\net\gila8\gila-27.lst

Latitude	Longitude	Northing	Easting	Convergence	Scale factor	Name
33:20'46.27775" N	112:31'14.60883" W	853991.513	315532.818	-0:19'55.407"	0.999938963	0169
33:20'54.34065" N	112:28'08.96785" W	854719.028	331284.848	-0:18'13.418"	0.999932593	0173
33:24'23.59733" N	112:26'36.33557" W	875827.213	339249.488	-0:17'24.098"	0.999929588	0108
33:15'44.80716" N	112:45'43.77807" W	824035.182	241554.420	-0:27'49.525"	0.999976483	0147
33:24'26.94788" N	111:56'35.66437" W	875760.018	491890.756	-0:00'52.671"	0.999900075	0702
33:25'43.52911" N	111:55'32.08631" W	883498.828	497280.782	-0:00'17.676"	0.999900008	0902
33:21'45.78958" N	112:25'30.16201" W	859850.213	344781.144	-0:16'46.493"	0.999927587	0178
33:21'45.88087" N	112:26'01.39914" W	859872.478	342131.893	-0:17'03.674"	0.999928537	0176
33:25'45.67633" N	111:51'20.26746" W	883721.187	518621.543	0:02'01.052"	0.999900397	0519
33:25'16.14437" N	111:55'32.21289" W	880731.171	497269.817	-0:00'17.742"	0.999900009	0342
33:25'44.59319" N	111:57'05.88472" W	883608.047	489331.686	-0:01'09.350"	0.999900130	0903
33:20'02.40003" N	112:31'15.58293" W	849557.422	315424.477	-0:19'55.556"	0.999939009	0168
33:19'13.05587" N	112:47'33.27849" W	845159.134	232433.140	-0:28'52.254"	0.999981976	0134
33:27'58.86841" N	111:47'12.40082" W	897201.686	539610.541	0:04'17.856"	0.999901797	0526
33:29'15.58742" N	111:43'34.95883" W	904983.812	558015.969	0:06'17.977"	0.999903854	0529
33:24'47.92952" N	112:19'22.03969" W	878121.364	376074.204	-0:13'25.118"	0.999917585	0102
33:24'49.40634" N	112:22'27.69556" W	878335.948	360338.123	-0:15'07.368"	0.999922334	0104
33:24'49.26646" N	112:17'19.46521" W	878217.628	386464.438	-0:12'17.624"	0.999914760	0193
33:27'05.17810" N	111:49'18.22575" W	891763.871	528956.806	0:03'08.396"	0.999900960	0522
33:22'51.39026" N	112:22'28.49976" W	866408.769	360217.484	-0:15'07.023"	0.999922373	0180
33:23'33.16393" N	112:22'28.27748" W	870630.600	360254.898	-0:15'07.180"	0.999922361	0181
33:23'30.32343" N	112:19'21.17164" W	870277.711	376117.194	-0:13'24.181"	0.999917573	0184
33:23'32.17879" N	112:16'17.07009" W	870408.203	391726.636	-0:11'42.865"	0.999913423	0191
33:21'20.25032" N	112:40'34.57271" W	857735.810	268056.373	-0:25'03.625"	0.999961600	0127
33:20'29.18261" N	112:44'13.11851" W	852715.011	249478.434	-0:27'03.195"	0.999971864	0130
33:18'44.72379" N	112:39'33.09990" W	841979.530	273158.603	-0:24'28.137"	0.999958921	0156
33:27'58.97258" N	111:49'19.13249" W	897200.612	528875.029	0:03'07.970"	0.999900955	0523
33:27'57.63653" N	111:51'22.36268" W	897057.789	518436.225	0:02'00.014"	0.999900389	0517
33:25'19.38612" N	111:52'56.33817" W	881060.413	510480.773	0:01'08.113"	0.999900126	0344
33:22'11.62604" N	112:19'21.20838" W	862324.092	376083.077	-0:13'23.735"	0.999917582	0185
33:24'54.80983" N	112:11'08.85381" W	878681.076	417879.708	-0:08'53.553"	0.999907722	0318
33:24'30.22149" N	112:13'14.46004" W	876225.354	407225.994	-0:10'02.617"	0.999909855	0320
33:24'00.23300" N	112:14'10.54677" W	873208.783	402462.368	-0:10'33.359"	0.999910893	0322
33:25'19.87945" N	112:10'07.02895" W	881201.640	423126.148	-0:08'19.597"	0.999906767	0317
33:22'38.55810" N	112:16'16.52667" W	864988.826	391754.254	-0:11'42.289"	0.999913416	0190
33:23'30.51197" N	112:13'09.23799" W	870189.469	407651.110	-0:09'59.478"	0.999909765	0321
33:23'30.55518" N	112:11'05.17424" W	870165.007	418169.653	-0:08'51.197"	0.999907667	0328
33:23'04.69707" N	112:11'05.47279" W	867551.707	418137.610	-0:08'51.260"	0.999907673	0327
33:23'31.17406" N	112:09'00.68531" W	870202.125	428724.361	-0:07'42.684"	0.999905817	0330
33:23'57.60733" N	112:07'58.57016" W	872862.241	433996.217	-0:07'08.581"	0.999904988	0331
33:25'40.88220" N	112:05'56.93013" W	883280.040	444326.649	-0:06'01.896"	0.999903549	0313
33:25'40.97598" N	112:04'54.27651" W	883280.646	449636.424	-0:05'27.381"	0.999902904	0312
33:25'20.67412" N	112:08'01.76948" W	881258.016	433742.513	-0:07'10.605"	0.999905027	0315
33:26'10.39763" N	112:00'37.89435" W	886227.124	471366.920	-0:03'06.182"	0.999900939	0308
33:26'12.19936" N	112:01'46.41775" W	886414.991	465560.460	-0:03'43.942"	0.999901358	0803
33:25'46.07954" N	112:01'46.70377" W	883775.193	465533.355	-0:03'44.057"	0.999901360	0309
33:25'19.96443" N	112:01'46.98830" W	881135.874	465506.373	-0:03'44.171"	0.999901362	0310
33:24'24.71873" N	112:01'44.76767" W	875552.229	465688.546	-0:03'42.857"	0.999901348	0336
33:24'23.95782" N	112:04'52.66374" W	875496.530	449760.785	-0:05'26.308"	0.999902890	0334

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Trimble Navigation Ltd., State Plane Conversion Utility

Datum: NAD27
Zone : 0202 Arizona Central
State Plane in: US Survey Feet

Coordinate Source [GEOLAB]: c:\gps\gila\net\gila8\gila-27.lst

Latitude	Longitude	Northing	Easting	Convergence	Scale factor	Name
33:24'24.03293" N	112:04'21.56521" W	875500.060	452396.975	-0:05'09.186"	0.999902595	0801
33:24'24.09177" N	112:03'18.45104" W	875498.438	457747.079	-0:04'34.436"	0.999902044	0802
33:24'22.87370" N	112:07'59.78051" W	875416.017	433898.923	-0:07'09.327"	0.999905003	0332
33:21'46.38623" N	112:18'20.14592" W	859753.457	381251.952	-0:12'50.004"	0.999916146	0187
33:21'39.36482" N	112:15'28.30982" W	858992.768	395823.326	-0:11'15.467"	0.999912427	0189
33:22'12.26040" N	112:13'09.84352" W	862281.080	407576.780	-0:09'59.466"	0.999909781	0325
33:22'11.49355" N	112:18'19.52733" W	862290.749	381313.885	-0:12'49.806"	0.999916129	0186
33:24'50.27224" N	111:58'38.64580" W	878121.680	481467.285	-0:02'00.404"	0.999900393	0339
33:25'17.80059" N	111:58'36.27556" W	880903.733	481669.796	-0:01'59.123"	0.999900385	0340
33:25'18.61481" N	111:59'41.11073" W	880989.672	476174.821	-0:02'34.835"	0.999900650	0804
33:24'52.32880" N	111:59'40.94898" W	878333.049	476186.537	-0:02'34.716"	0.999900649	0805
33:22'28.77268" N	111:59'51.45139" W	863825.192	475285.061	-0:02'40.330"	0.999900699	0707
33:22'40.64971" N	112:00'43.54424" W	865029.284	470868.710	-0:03'09.004"	0.999900972	0708
33:22'41.40801" N	111:56'35.41732" W	865093.605	491908.983	-0:00'52.495"	0.999900075	0703
33:21'48.99764" N	111:56'42.66696" W	859796.921	491292.791	-0:00'56.461"	0.999900087	0704
33:22'39.62384" N	112:04'57.37827" W	864952.614	449344.333	-0:05'28.651"	0.999902938	0712
33:26'38.16631" N	111:51'20.10943" W	889026.144	518631.819	0:02'01.186"	0.999900397	0520
33:25'44.92492" N	111:54'30.11200" W	883639.882	502532.906	0:00'16.465"	0.999900007	0901
33:26'37.67875" N	111:58'39.83910" W	888976.865	481372.513	-0:02'01.157"	0.999900397	0306
33:26'36.28239" N	112:00'03.66037" W	888840.708	474270.022	-0:02'47.351"	0.999900758	0307
33:26'39.05492" N	111:54'32.41275" W	889110.565	502337.523	0:00'15.204"	0.999900006	0303
33:27'04.41094" N	111:54'30.82954" W	891673.209	502471.471	0:00'16.079"	0.999900007	0302
33:28'23.70194" N	111:51'21.63092" W	899692.164	518496.674	0:02'00.440"	0.999900392	0516
33:26'38.29097" N	111:55'32.63346" W	889033.390	497234.895	-0:00'17.984"	0.999900009	0304
33:29'43.26786" N	111:45'07.33766" W	907768.021	550187.984	0:05'27.072"	0.999902884	0508
33:29'16.53807" N	111:49'17.01747" W	905040.060	529047.003	0:03'09.244"	0.999900966	0514
33:28'51.10397" N	111:47'12.42424" W	902480.956	539601.956	0:04'17.942"	0.999901796	0527
33:31'01.59085" N	111:43'02.64844" W	915702.419	560731.766	0:06'36.112"	0.999904223	0504
33:30'35.43285" N	111:43'02.66783" W	913058.694	560735.201	0:06'36.026"	0.999904224	0505
33:29'43.23058" N	111:43'10.06926" W	907781.558	560118.557	0:06'31.790"	0.999904138	0531
33:28'51.41692" N	111:43'03.87755" W	902545.906	560652.918	0:06'35.057"	0.999904212	0530
33:27'32.56746" N	111:47'12.71362" W	894543.509	539587.364	0:04'17.634"	0.999901794	0525
33:29'16.24839" N	111:50'19.33333" W	905006.380	523769.527	0:02'34.860"	0.999900647	0515
33:30'35.47754" N	111:45'07.38922" W	913044.699	550175.249	0:05'27.169"	0.999902883	0507
33:29'58.59237" N	111:47'56.24819" W	909297.374	535882.493	0:03'53.882"	0.999901474	0511
33:31'27.71816" N	111:40'58.01293" W	918365.069	571277.613	0:07'45.024"	0.999905817	0501
33:31'30.17467" N	111:42'04.28344" W	918601.192	565667.019	0:07'08.430"	0.999904937	0502
33:30'35.27287" N	111:40'59.61991" W	913064.244	571153.500	0:07'43.958"	0.999905797	0533
33:30'13.06364" N	111:40'59.61903" W	910819.615	571158.623	0:07'43.883"	0.999905798	0532

ARIZONA TRANSPORTATION INFORMATION SYSTEM

Arizona Department of Transportation
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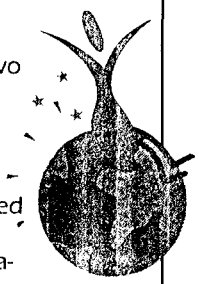
Mailing Address Line 3
Mailing Address Line 4
Mailing Address Line 5

ARCVIEW TRAINING

ADOT provides ESRI certified training three times a year at no or little cost for ADOT employees. The same certified class is available through private entities for around $350. A list of certified instructors can be found on ESRI's internet web site at http://www.esri.com.



There are about 13 certified instructors in Arizona as well as two ESRI Authorized Learning Centers: Mesa Community College (602-461-6105) and MRJ Technology Solutions in Tucson (520-326-7005). ESRI also provides a virtual campus on their internet site where you can learn the basics of ArcView at your own pace through the internet. Or if you prefer, self-paced training manuals can be purchased on the internet from On-Word Press at http://www.onwordpress.com (search their catalogue by subject area: ArcView). ●

IN OUR NEXT ISSUE...

Real World GIS – GIS User Stories... see how GIS is used in a "Real World" application.

GIS on the internet – ADOT is going global with GIS! Soon we'll have interactive maps on our website for anyone with internet access to see! Powered by ArcView Internet Map Server, with a java-enable browser you'll be able to view our maps interactively. Zoom in, zoom out, select your themes and identify features!

Results of our survey will be in the next issue. Turn your survey in today! (see page 5) ●