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- [Adjustment Statistics](#)
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- [Adjusted Geodetic Coordinates](#)
- [Error Ellipse Components](#)
- [Adjusted GPS Observations](#)
- [Covariance Terms](#)

Global Positioning Services, Inc.
2603 Blueberry Road
Anchorage, Alaska

Phone: 907-569-2000
Fax: 907-569-2002

| Project Information | | Coordinate System | |
|---------------------|--|-------------------|---------------------|
| Name: | L:\Mat-Su Borough\West Susitna \TBC_Proj\Watana Base 1019-b.vce | Name: | US State Plane 1983 |
| Size: | 315 KB | Datum: | NAD 1983 (Alaska) |
| Modified: | 7/14/2011 11:45:42 AM | Zone: | Alaska Zone 4 5004 |
| Reference number: | | Geoid: | GEOID09 (Alaska) |
| Description: | | Vertical datum: | |

Network Adjustment Report

Adjustment Settings

Set-Up Errors

GNSS

Error in Height of Antenna: 0.0080 ft
Centering Error: 0.0090 ft

Covariance Display

Horizontal:

Propagated Linear Error [E]: U.S.
Constant Term [C]: 0.0000 ft

Scale on Linear Error [S]: 1.960
**Three-Dimensional
 Propagated Linear Error
 [E]:** U.S.
Constant Term [C]: 0.0000 ft
Scale on Linear Error [S]: 1.960

Adjustment Statistics

**Number of Iterations for Successful
 Adjustment:** 2
Network Reference Factor: 1.00
Chi Square Test (95%): Passed
Precision Confidence Level: 95%
Degrees of Freedom: 4

Post Processed Vector Statistics

Reference Factor: 1.00
Redundancy Number: 4.00
A Priori Scalar: 0.43

Adjusted Grid Coordinates

| Point ID | Easting (US survey foot) | Easting Error (US survey foot) | Northing (US survey foot) | Northing Error (US survey foot) | Elevation (US survey foot) | Elevation Error (US survey foot) | Fixed |
|----------|--------------------------|--------------------------------|---------------------------|---------------------------------|----------------------------|----------------------------------|-------|
| | | | | | | | |

| | | | | | | | |
|----------------------|--------------|--------|--------------|--------|-----------|--------|-----|
| 1019 | 1972003.1209 | 0.0093 | 3223051.2191 | 0.0109 | 2807.1623 | 0.0457 | |
| 11 | 1882679.9569 | ? | 3228964.7103 | ? | 2365.8096 | ? | LLh |
| 12 | 2049545.7153 | ? | 3201362.9384 | ? | 4196.1499 | ? | LLh |

Adjusted Geodetic Coordinates

| Point ID | Latitude | Longitude | Height (US survey foot) | Height Error (US survey foot) | Fixed |
|----------------------|------------------|-------------------|----------------------------|----------------------------------|-------|
| 1019 | N62°48'24.37152" | W148°01'05.30804" | 2858.4988 | 0.0457 | |
| 11 | N62°49'45.98795" | W148°33'03.52919" | 2414.5534 | ? | LLh |
| 12 | N62°44'24.80136" | W147°33'36.13749" | 4248.8278 | ? | LLh |

Error Ellipse Components

| Point ID | Semi-major axis (US survey foot) | Semi-minor axis (US survey foot) | Azimuth |
|----------------------|-------------------------------------|-------------------------------------|---------|
| 1019 | 0.0137 | 0.0116 | 177° |

Adjusted GPS Observations

Transformation Parameters

Azimuth Rotation: 0.015 sec (95%) 0.015 sec

Scale Factor:

1.00000018 (95%) 0.00000007

| Observation ID | | Observation | A-posteriori Error | Residual | Standardized Residual |
|---------------------------------------|--------------------|----------------|--------------------|------------|-----------------------|
| 11 --> 12 (PV80) | Az. | 100°40'52" | 0.015 sec | -0.001 sec | -0.189 |
| | ΔHt. | 1834.2740 ft | 0.0001 ft | 0.0039 ft | 0.131 |
| | Ellip Dist. | 169129.2273 ft | 0.0114 ft | -0.0088 ft | -1.950 |
| 12 --> 1019 (PV79) | Az. | 287°47'45" | 0.032 sec | 0.001 sec | 0.084 |
| | ΔHt. | -1390.3287 ft | 0.0457 ft | 0.0073 ft | 0.325 |
| | Ellip Dist. | 80513.9695 ft | 0.0111 ft | 0.0073 ft | 1.912 |
| 11 --> 1019 (PV81) | Az. | 95°04'36" | 0.029 sec | 0.005 sec | 0.427 |
| | ΔHt. | 443.9454 ft | 0.0457 ft | -0.0070 ft | -0.289 |
| | Ellip Dist. | 89519.1813 ft | 0.0110 ft | 0.0072 ft | 1.860 |

Covariance Terms

| From Point | To Point | | Components | A-posteriori Error | Horiz. Precision (Ratio) | 3D Precision (Ratio) |
|----------------------|--------------------|--------------------|---------------|--------------------|--------------------------|----------------------|
| 1019 | 11 | Az. | 275°33'03" | 0.025 sec | 1 : 9598859 | 1 : 9554143 |
| | | ΔHt. | -443.9455 ft | 0.0457 ft | | |
| | | ΔElev. | -441.3528 ft | 0.0457 ft | | |
| | | Ellip Dist. | 89519.1973 ft | 0.0093 ft | | |
| 1019 | 12 | Az. | 107°23'19" | 0.028 sec | 1 : 8488622 | 1 : 8346115 |
| | | ΔHt. | 1390.3289 ft | 0.0457 ft | | |
| | | ΔElev. | 1388.9875 ft | 0.0457 ft | | |
| | | Ellip Dist. | 80513.9838 ft | 0.0095 ft | | |

| | | | | | | |
|--------------------|--------------------|--------------------|----------------|-----------|-------|-------|
| 11 | 12 | Az. | 100°40'52" | 0.000 sec | 1 : 0 | 1 : 0 |
| | | ΔHt. | 1834.2744 ft | 0.0000 ft | | |
| | | ΔElev. | 1830.3403 ft | 0.0000 ft | | |
| | | Ellip Dist. | 169129.2574 ft | 0.0000 ft | | |

| | | |
|-----------------------------|---|-------------------------|
| Date: 7/14/2011 11:47:34 AM | Project: L:\Mat-Su Borough\West Susitna\TBC_Proj\Watana Base 1019-b.vce | Trimble Business Center |
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