

**TECHNICAL REPORT  
ENVIRONMENTAL DREDGING AND SEDIMENT  
DECONTAMINATION TECHNOLOGY DEMONSTRATION  
PILOT STUDY  
LOWER PASSAIC RIVER RESTORATION PROJECT  
Hydrographic Survey  
Side Scan Sonar Survey**

**SPONSOR**

**NEW JERSEY DEPARTMENT OF TRANSPORTATION-OMR  
OFFICE OF MARITIME RESOURCES  
1035 Parkway Avenue, E&O Building  
Trenton, NJ 08625-0837**

**SPONSOR REPRESENTATIVE**

**TAMS Consultants, Inc.  
300 Broadacres Drive  
Bloomfield, NJ 07003**

**NJDOT Agreement No. 2001-NJMR02  
Task Order #OMR-03-6**

**April 21, 2004 Draft  
May 25, 2004 Final**

**ASI Job No. 24-011**

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Figure 2a	Base Map (scale 1" = 100') 2 copies .....	Enclosed
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**SIGNATURE PAGE**

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This report as well as all records and raw data were audited and found to be an accurate reflection of the study. Copies of raw data will be maintained by Aqua Survey, Inc, 469 Point Breeze Road, Flemington, New Jersey, 08822.

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James A. Nickels  
Vice President and Field Project Manager

Date

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James M. Todd  
Executive Vice President

Date

## **I. INTRODUCTION**

### **A. Project Overview**

The objective of this study was to perform hydrographic and side-scan sonar surveys of an approximate 1000-foot section of the Lower Passaic River within the Harrison Reach. This information will be used, in conjunction with subsequent sediment chemistry data, to accurately characterize the site. ASI performed the Hydrographic Survey and Side Scan Sonar Survey.

## **II. TEST ADMINISTRATION**

### **A. Sponsor**

New Jersey Department of Transportation-OMR  
Office of Maritime Resources  
1035 Parkway Avenue, E&O Building  
Trenton, NJ 08625-0837

### **B. Sponsor Representative**

TAMS Consultants, Inc.  
300 Broadacres Drive  
Bloomfield, NJ 07003

### **C. Survey Company**

Aqua Survey, Inc.  
469 Point Breeze Road  
Flemington, New Jersey 08822

### **D. Dates of Surveys**

Date of Survey Initiation: March 17, 2004  
Date of Survey Completion: March 18, 2004  
Date of Draft Report : April 21, 2004

### **III. MATERIALS AND METHODS**

The hydrographic and side-scan sonar surveys were conducted in a section of the Lower Passaic River within the Harrison Reach using the R/V Delaware, a 21-foot survey vessel. The vessel was equipped with a real-time kinematic (RTK) system for positioning. Hypack Max survey management software was used for survey control and ship track recording. An Innerspace 455 survey grade fathometer was used to collect the water depth data. The RTK system used was a Trimble 5700. Specification for both pieces of equipment can be found in the Appendix Section of this report.

#### **A. Hydrographic Survey**

The hydrographic survey encompassed the entire river bottom to the mean low water (MLW) line along each shoreline. The survey work area extended for 1000 feet along the river from bank to bank. The survey was conducted using 25-foot lanes and single beam acoustical survey techniques to acquire depth soundings. Horizontal positioning of the depth soundings was obtained using a differential global positioning (DGPS) system with real time kinematic (RTK) correction applied to data. The survey was conducted in horizontal datum NAD 83 and NJ State Plane feet and vertical datum NGVD 1929.

The survey drawings show shoreline features in the vicinity of the Site that were supplied by TAMS consultants as geo-referenced base maps. The geo-referenced shoreline features are shown for more than 1000 feet along the riverbank. The features shown are limited to the horizontal position of the furthest riverward project of bulkhead walls and piers and the horizontal position of the highest elevation of earthen/rip-rap slopes

#### **B. Side Scan Sonar Survey**

A side scan survey was conducted in the same 1000-foot section of the river where the hydrographic survey was done. This survey was conducted using a Marine Sonic System running at 600 KHz frequency. RTK was used for positioning and Hypack Max survey management software was used for survey control and ship track recording. This survey was conducted by running lines parallel to the shoreline spaced 50-feet apart. Thirteen lines were run resulting in greater than 150% coverage.

A mosaic of the riverbed in the study area was created, accompanied by annotation of individual objects in a target file. All of the individual survey maps were plotted on Mylar and presented on the same scale to enable them to be combined using overlays. This enables the data to be layered together forming a composite picture of the project area. The sonar mosaic was plotted on bright white paper, as the image was nearly opaque and lost significant detail when plotted on Mylar.

As part of the side-scan sonar survey, sediment samples at 30 locations were to be selected from the top 2 inches for ground truthing to help characterize the side-scan sonar results. A total of 7 samples were actually collected (Table 1). A field geologist classified the samples. The locations were selected in the field, based on the side-scan sonar images and the need to verify signal/sediment types.

Table 1

### PILOT STUDY SAMPLE COORDINATES

Sample #	Depth (feet)	Time (PM)	Coordinates		Description
			Latitude	Longitude	
PR GS - 1	2.2	12:56	40°44.481N	74°.07.954W	Brown fine silt/clay
PR GS - 2	1.5	1:06	40°44.481N	74°.07.915 W	Brown/black silt/clay/sand
PR GS - 3	< 2	1:15	40°44.487N	74°.07.821 W	Black/green/fine sand/silt/shells/oil sheen
PR GS - 4	< 2	1:20	40°44.407N	74°.07.776 W	Brown/silt/fine clay/organic detritus
PR GS - 5	4.5	1:35	40°44.510N	74°.07.650 W	Brown/black/detritus/ fine silt/clay/oil sheen
PR GS - 6	6.3	1:42	40°44.513N	74°.07.649 W	Brown / mixed with some black/ silty
PR GS - 7	< 2	1:48	40°44.494N	74°.07.731 W	Brown sediments coating 90-95% black/ fine silt
PR GS - 8		1:58	40°44.490N	74°.07.850 W	

Table 2

### Pilot Study Area Coordinates

COORD_ID	X_NJSP83 (ft)	Y_NJSP83 (ft)	LAT	LONG
NW	593836.83218	695636.70265	40.74260	-74.13291
SW	593930.30747	695090.48985	40.74110	-74.13258
NE	594901.58273	695775.31583	40.74297	-74.12907
SE	594957.17076	695100.14481	40.74111	-74.12888



Table 1

## Sidescan Survey Target File

Designator	Easting	Northing	Description
Area 1	Entire length of North side of the survey area		Debris including tires, rocks, poles and other objects extend approx. 20 feet into the river from the sea wall along the North side of the survey area.
Target 1	594933.5	695720.1	Tree 15 feet long projecting 3' into the water column
Target 2	594644.3	695687.7	Probable 26 foot long piling laying on surface
Target 3	594363.6	695664.0	Probable 37 foot long piling laying on surface
Area 2	Entire length of survey area parallel with seawall		Parallel lines in the sediment extending between 100 and 200 feet off of the seawall along the Northern bank of the survey area. They are fairly shallow ridges probably caused by barges touching bottom or dragging ropes or chains while transiting the area.
Target 4	594297.3	695434.6	1420 square foot. area of probable differential bottom composition. Possibly organic debris.
Target 5	594776.9	695355.3	Propeller mark in sediment extending 78 feet to the South West
Target 6	594258.8	695228.5	250 square foot. area of probable differential bottom composition. Possibly organic debris.
Target 7	594181.0	695184.9	Propeller mark in sediment extending 36 feet to the South East
Area 3	Southwest area of survey area		Scattered debris over an approximately 30 foot wide area extending from the Western edge of the survey area about 500 feet to the East, about 90 feet from the Southern shore.

# APPENDIX

# INNERSPACE

## SURVEY DEPTH SOUNDER MODEL 455



## DESCRIPTION

The Innerspace Technology Model 455 Survey Depth Sounder provides analog and digital depth on high resolution LCD display screens. The small, lightweight unit is ideal for use on small boats for hydrographic and GIS surveys, and also has applications on general purpose workboats and Corps of Engineers reconnaissance vessels. The 455 has most of the capabilities of Innerspace's legendary thermal printing depth sounder recorders, except for the thermal chart recording, plus it has many new features. Designed with the operator in mind, the easy-to-use menu is controlled via up / down, left / right arrows; no numerical entries are required and, when power is turned off, all entries are saved for next power on. In the operation mode, operator entries are always in view on the LCD display screen, along with the large numeral, digitized depth. The 455's analog display provides a continuous, high resolution bottom profile with alphanumeric annotation of pertinent information including: Speed-of-Sound, Tide, Draft, Time and Fix Number. For a hard copy, a screen print of the analog data may be sent to a standard computer printer or it can be stored internally on a 24 or 48 mb integrated circuit for later recall.

# SPECIFICATIONS

## GRAPHIC DISPLAY

- 640 x 480 Pixel Monochrome Transflective LCD with Backlight and Contrast Control
- 5 ¾ in. x 4 ¾ in. viewing area
- Emulates paper chart recorder

## NUMERIC DISPLAY

- 4 lines x 40 characters with large 1 in. high numerics and Backlight

## OPERATION

- Menu driven parameter selection on alphanumeric display

## PARAMETER SELECTION

- Speed-of-Sound, Tide, Draft, Gate Width, Scale, Backlight, Com Ports and many more

## RESOLUTION

- .1 Unit graphic and numeric

## DEPTH RANGES

- 0-45, 40-85, 80-125, 120-165, 160-205 Feet or Meters (dm and cm selection)
- Multipliers: 1, 2, 10
- Auto Ranging

## ANNOTATION

- LCD graphic display numerically displays Speed-of-Sound, Tide, Draft, Date, Time, Depth, Fix number and GPS Data

## TRANSMITTER

- Front panel switch selectable power levels: 250 watts to 10 watts in 4 levels

## RECEIVER

- Time varied automatic gain adjustment under microprocessor control 20 or 30 Log
- Front panel manual gain control 20db
- Adjustable Blanking

## DIGITIZER

- Range Gated (selectable widths)
- Initial Depth Entry
- 4 Modes of Operation
- Gate Mark on Graphic Display

## UTILITIES

- Depth Simulator
- Chart Speed
- Screen capture to memory

## INPUTS/OUTPUTS

- RS232 Port A
- RS232 Port B
- RS232 Port C
- Parallel Port
- Keyboard and VGA Port
- GPS Antenna with GPS option
- Floppy Port

## TRANSDUCER

- 200kHz 8°
- Optional: 200kHz 3°

## POWER

- 12VDC, 2½ Amp

## ENCLOSURE

- Drawn aluminum case
- Aluminum panel painted to resist corrosion.
- Removable handle and soft carry bag included.

## OVERALL SIZE

- 13 in. Wide x 9 in. High x 9 in. Deep
- 38.1 cm Wide x 22.86 High x 22.86 Deep

## WEIGHT

- 15 lb.
- 6.8 kg

## OPTIONS:

- Heave sensor
- Remote VGA display
- Tabletop / overhead mounting bracket
- Custom annotation (1 Line 40 Characters)
- Remote readout (large numeric)
- Continuous analog storage, 48mb
- AC power supply
- Portable transducer mounts
- Floppy Disk Drive in travel case
- Mini keyboard (89 key) and adapter cable
- 125 kHz transceiver and transducer 125kHz 7°
- Laplink software
- Color graphic display

# Trimble 5700 Receiver

Advanced Dual Frequency GPS and WAAS/EGNOS receiver system with integrated UHF radio modem.

## GENERAL

- Tough, lightweight magnesium alloy casing
- Fully integrated internal radio modem fully sealed
- Compact flash data storage expandable up to 96MB
- Integral USB (Universal Serial Bus) for ultra fast download
- Up to 10 hours continuous receiver operation on 2 internal miniature camcorder batteries
- Tripod clip or integrated base case
- Mount rover on-the-pole, in a belt pouch or in a backpack
- Front panel for control of power, data logging & formatting of compact flash cards, ephemeris and application file deletion and restoring default controls. Panel indicators for satellite tracking, radio link operation data logging and power monitoring
- Low power consumption

## PERFORMANCE SPECIFICATIONS

### Measurements

- Advanced Maxwell 4 Custom Survey GPS Chip
- High precision multiple correlator L1 and L2 pseudorange measurements
- Unfiltered, unsmoothed pseudorange measurements data for low noise, low multipath error, low time domain correlation and high dynamic response
- Very low noise L1 and L2 carrier phase measurements with <1mm precision in a 1Hz bandwidth
- L1 and L2 Signal-to-Noise ratios reported in dB-Hz
- Proven Trimble low elevation tracking technology
- 24 Channels L1 C/A Code, L1/L2 Full Cycle Carrier, WAAS/EGNOS.

### Code Differential GPS Positioning

**Horizontal:** 0.25m + 1ppm RMS

**Vertical:** 0.50m + 1ppm RMS

WAAS differential positioning accuracy typically <5m 3DRMS<sup>1</sup>

### Static and Fast Static GPS Surveying

**Horizontal:** ±5mm + 0.5ppm RMS **Vertical:**

±5mm + 1ppm RMS **Kinematic Surveying**

Real Time and Post-Processed Kinematic Surveys.

**Horizontal:** 10mm + 1ppm RMS

**Vertical:** 20mm + 1ppm RMS

0.02 seconds (20 millisecond) latency **Initialization**

**Time:** Single / Multi-Base eRTK™ min 10 secs + 0.5

times baseline length in km, up to 30km

VRS initialization time <30 seconds typical any

where within coverage area

**Initialization**

**Reliability:** Typically >99.9%<sup>2</sup>

### eRTK Wide Area Coverage

- Conventional RTK typical coverage 300sq km (115 sq mi) per base
- Single Base eRTK up to 1,250 sq km (500 sq mi)<sup>3</sup>
- Multiple Base eRTK up to 3,750 sq km (1500 sq mi)<sup>3,4</sup>
- Virtual Reference Station eRTK 8500+ sq km (3300 sq mi)<sup>3,5</sup>

## HARDWARE

### Physical

Tough, lightweight fully sealed magnesium alloy IPX7 for submersion to depth of 1 meter Will survive a 1 meter drop onto concrete; shock and vibration tested to 40G random,  
**Casing:**  
**Waterproof:**  
**Shock:** passes testing per MIL-STD-810F, FIG. 514.5C-17 **Weight:** With internal batteries, internal radio, internal battery charger, standard UHF antenna: 3 lb. (1.4kg) As entire RTK Rover with batteries for 7 hours, less than 4kg (8.8lb)

### Electrical

**Power:** DC input 10.5 to 28V with over voltage protection  
**Power Consumption:** 2.5 Watts receiver only, 3.75 Watts including internal radio  
**Battery:** Approximately 10 hours postprocessed, 7 hours RTK (with two internal miniature batteries)  
**Battery weight:** 0.1kg (1.6oz)  
**Battery charger:** Internal with external AC power adapter; no requirement for external charger  
**Power output:** 10.5V - 20V (Port 1), 10.5V - 27.5V (Port 3)  
**Certification:** Class B Part 15 FCC certification and CE Mark approved Environmental  
**Operating Temp:** -40° to +65° C (-40° to +149° F) **Storage Temp:** -40° to +80° C (-40° to +176° F) **Humidity:** 100%, condensing

## COMMUNICATIONS AND DATA STORAGE

- 2 external power ports, 2 internal battery ports, 3 serial ports, 1 USB
- Integrated USB for data download speeds in excess of 1 megabit per second (10 times faster than even the fastest serial port)
- Compact Flash - advanced lightweight and compact removable data storage. Options of 48Mb or 96Mb from Trimble
- More than 2,500 hours continuous L1+L2 logging at 15 seconds with 6 satellites typical. (96Mb)
- Fully integrated, fully sealed internal UHF radio modem option
- GSM, Cell Phone and CDPD modem support for eRTK and VRS operation
- Range pole antenna for eRTK Wide Area Real Time Kinematic. For long range UHF communications without interference to GPS antenna phase center
- Dual event marker inputs
- 1Hz, 2Hz, 5Hz and 10Hz Positioning and Data Logging
- 1 Pulse Per Second Output
- CMR II, CMR+, RTCM 2.1 Input and Output Standard
- 10 NMEA outputs

# Trimble.



# Marine Sonic Technology, Ltd.

## New Product "CENTURION" Side Scan Sonar System



[Click for a larger version.](#)

Small, compact and rugged, the NEW "Centurion" Sea Scan<sup>®</sup> PC Splash Proof Computer System sets the industry standard for a high resolution, portable, self-contained, low cost sonar system. Designed with the Search and Recovery Community in mind, the system can be operational within minutes and only needs a 12 VDC power source. The software is user friendly and the daylight readable screen allows for easy target detection and identification. Incorporating many of the proven features found in the previous splash proof, the NEW "Centurion" has been updated to provide state of the art electronics and connectivity.

### New Features

- Computer is **13"x11"x6"** and weighs only **12 pounds**
- High-Bright, daylight readable, 10.4" color flat screen display
- Increased connectivity, network and USB compatible
- 300 MHz Processor and 20 GB Hard Drive
- Operates on a 12 VDC power source
- Case and connectors are fully waterproof and designed for increased durability and shock resistance
- Fully compatible with all previous MSTL towfish and cables

### Standard Components

- External R/W CD ROM Drive
- 2 USB ports and 100 base-T Ethernet connection
- JRC Self Contained DGPS, Garmin eTrex Legend GPS, keyboard and waterproof mouse
- Connection for standard keyboards and pointing devices

**Complete "Centurion" System Includes**

Single Frequency Towfish (150, 300, 600, 900 or 1200 kHz), 100 & 30 Meter Tow Cables, 1 Set of Line Weights, Rugged Shipping Containers, Tool Kit, Factory Training, Operator's Manual, 24/7 Technical Support and a One-Year Limited Warranty

**Points, Eastings, Northings, Elevation, Description**  
**PENZD of Hydrographic Data**

<b>Point</b>	<b>Easting</b>	<b>Northing</b>	<b>Z</b>	<b>Description</b>
1	594363.8	695127.0	0	Southern shoreline
2	594367.9	695127.4	0	Southern shoreline
3	594368.7	695105.8	0	Southern shoreline
4	594387.7	695106.4	0	Southern shoreline
5	594398.2	695115.6	0	Southern shoreline
6	594419.3	695128.7	0	Southern shoreline
7	594428.3	695133.7	0	Southern shoreline
8	594437.2	695138.6	0	Southern shoreline
9	594448.8	695145.3	0	Southern shoreline
10	594463.5	695147.5	0	Southern shoreline
11	594472.9	695147.8	0	Southern shoreline
12	594490.8	695145.5	0	Southern shoreline
13	594524.3	695136.8	0	Southern shoreline
14	594561.1	695128.4	0	Southern shoreline
15	594578.4	695124.8	0	Southern shoreline
16	594596.7	695118.5	0	Southern shoreline
17	594633.3	695112.1	0	Southern shoreline
18	594669.9	695105.7	0	Southern shoreline
19	594704.3	695114.7	0	Southern shoreline
20	594722.5	695122.0	0	Southern shoreline
21	594754.8	695130.8	0	Southern shoreline
22	594776.8	695134.4	0	Southern shoreline
23	594791.7	695134.6	0	Southern shoreline
24	594816.6	695130.4	0	Southern shoreline
25	594841.3	695127.5	0	Southern shoreline
26	594846.9	695128.6	0	Southern shoreline
27	594866.0	695124.7	0	Southern shoreline
28	594890.6	695123.1	0	Southern shoreline
29	594913.7	695122.8	0	Southern shoreline
30	594942.3	695121.7	0	Southern shoreline
31	594979.0	695121.4	0	Southern shoreline
32	594990.3	695117.2	0	Southern shoreline
33	595015.1	695112.9	0	Southern shoreline
34	595023.4	695111.8	0	Southern shoreline
35	595039.7	695111.4	0	Southern shoreline
36	595065.2	695114.1	0	Southern shoreline
37	595084.6	695122.8	0	Southern shoreline
38	595095.7	695133.5	0	Southern shoreline
39	595113.8	695155.7	0	Southern shoreline
40	595133.5	695181.5	0	Southern shoreline
41	595151.2	695200.3	0	Southern shoreline
42	595170.4	695211.8	0	Southern shoreline
43	595183.7	695214.5	0	Southern shoreline
44	595195.0	695223.1	0	Southern shoreline
45	595230.9	695243.8	0	Southern shoreline
46	595234.3	695243.5	0	Southern shoreline
47	595241.9	695240.6	0	Southern shoreline



**Points, Eastings, Northings, Elevation, Description**  
**PENZD of Hydrographic Data**

<b>Point</b>	<b>Eastings</b>	<b>Northing</b>	<b>Z</b>	<b>Description</b>
48	594490.8	695145.5	0	Southern shoreline
49	594524.3	695136.8	0	Southern shoreline
50	594561.1	695128.4	0	Southern shoreline
51	594578.4	695124.8	0	Southern shoreline
52	594596.7	695118.5	0	Southern shoreline
53	594633.3	695112.1	0	Southern shoreline
54	594669.9	695105.7	0	Southern shoreline
55	594704.3	695114.7	0	Southern shoreline
56	594722.5	695122.0	0	Southern shoreline
57	594754.8	695130.8	0	Southern shoreline
58	594767.4	695133.5	0	Southern shoreline
59	594776.8	695134.4	0	Southern shoreline
60	594791.7	695134.6	0	Southern shoreline
61	594816.6	695130.4	0	Southern shoreline
62	594841.3	695127.5	0	Southern shoreline
63	594846.9	695128.6	0	Southern shoreline
64	594866.0	695124.7	0	Southern shoreline
65	594890.6	695123.1	0	Southern shoreline
66	594913.7	695122.8	0	Southern shoreline
67	594942.3	695121.7	0	Southern shoreline
68	594979.0	695121.4	0	Southern shoreline
69	594990.3	695117.2	0	Southern shoreline
70	595015.1	695112.9	0	Southern shoreline
71	595023.4	695111.8	0	Southern shoreline
72	595039.7	695111.4	0	Southern shoreline
73	595065.2	695114.1	0	Southern shoreline
74	595084.6	695122.8	0	Southern shoreline
75	595095.7	695133.5	0	Southern shoreline
76	595113.8	695155.7	0	Southern shoreline
77	595133.5	695181.5	0	Southern shoreline
78	595151.2	695200.3	0	Southern shoreline
79	595170.4	695211.8	0	Southern shoreline
80	595183.7	695214.5	0	Southern shoreline
81	595195.0	695223.1	0	Southern shoreline
82	595230.9	695243.8	0	Southern shoreline
83	595234.3	695243.5	0	Southern shoreline
84	595241.9	695240.6	0	Southern shoreline
85	595231.1	695819.0	0	Northern shoreline
86	595186.8	695814.4	0	Northern shoreline
87	595149.2	695810.6	0	Northern shoreline
88	595097.1	695802.5	0	Northern shoreline
89	595069.1	695798.2	0	Northern shoreline
90	595055.0	695796.7	0	Northern shoreline
91	595012.1	695791.6	0	Northern shoreline
92	594984.6	695788.1	0	Northern shoreline
93	594943.8	695782.5	0	Northern shoreline
94	594913.0	695779.3	0	Northern shoreline

**Points, Eastings, Northings, Elevation, Description**  
**PENZD of Hydrographic Data**

<b>Point</b>	<b>Easting</b>	<b>Northing</b>	<b>Z</b>	<b>Description</b>
95	594900.2	695778.0	0	Northern shoreline
96	594848.7	695770.7	0	Northern shoreline
97	594810.6	695766.0	0	Northern shoreline
98	594780.5	695761.6	0	Northern shoreline
99	594751.9	695755.9	0	Northern shoreline
100	594715.2	695750.1	0	Northern shoreline
101	594653.0	695741.6	0	Northern shoreline
102	594595.6	695733.0	0	Northern shoreline
103	594553.9	695728.6	0	Northern shoreline
104	594516.9	695726.2	0	Northern shoreline
105	594454.5	695719.7	0	Northern shoreline
106	594417.5	695716.6	0	Northern shoreline
107	594392.5	695716.0	0	Northern shoreline
108	594324.1	695707.6	0	Northern shoreline
109	594299.8	695706.4	0	Northern shoreline
110	594280.2	695705.8	0	Northern shoreline
111	594255.3	695704.5	0	Northern shoreline
112	594188.8	695697.7	0	Northern shoreline
113	594121.0	695690.7	0	Northern shoreline
114	594076.6	695687.4	0	Northern shoreline
115	594005.6	695678.7	0	Northern shoreline
116	593957.0	695676.4	0	Northern shoreline
117	593907.6	695668.6	0	Northern shoreline
118	593862.4	695659.8	0	Northern shoreline
119	593835.6	695656.4	0	Northern shoreline
120	593820.1	695655.5	0	Northern shoreline
121	593783.6	695647.6	0	Northern shoreline
122	593764.8	695645.7	0	Northern shoreline
123	593735.6	695639.9	0	Northern shoreline
124	593719.5	695638.3	0	Northern shoreline
125	593692.9	695632.8	0	Northern shoreline
126	593682.2	695631.7	0	Northern shoreline
127	593659.5	695628.0	0	Northern shoreline
128	593641.4	695625.5	0	Northern shoreline
129	593627.3	695624.0	0	Northern shoreline
130	593611.3	695621.7	0	Northern shoreline
131	594914.1	695739.8	-5.54	Elevation in NGVD29
132	594907.8	695736.7	-5.94	Elevation in NGVD29
133	594901.9	695732.4	-6.54	Elevation in NGVD29
134	594897.2	695727.0	-7.35	Elevation in NGVD29
135	594893.8	695720.4	-8.46	Elevation in NGVD29
136	594892.5	695713.5	-9.36	Elevation in NGVD29
137	594892.7	695706.5	-10.2	Elevation in NGVD29
138	594893.7	695699.5	-11.1	Elevation in NGVD29
139	594895.4	695691.4	-11.4	Elevation in NGVD29
140	594897.0	695683.4	-12.1	Elevation in NGVD29
141	594899.2	695673.6	-12.6	Elevation in NGVD29

**Points, Eastings, Northings, Elevation, Description**  
**PENZD of Hydrographic Data**

<b>Point</b>	<b>Easting</b>	<b>Northing</b>	<b>Z</b>	<b>Description</b>
142	594901.7	695660.2	-12.9	Elevation in NGVD29
143	594902.7	695652.9	-12.8	Elevation in NGVD29
144	594903.3	695645.8	-12.8	Elevation in NGVD29
145	594903.7	695635.6	-12.7	Elevation in NGVD29
146	594903.8	695628.3	-12.9	Elevation in NGVD29
147	594903.7	695618.8	-12.7	Elevation in NGVD29
148	594903.5	695609.5	-12.9	Elevation in NGVD29
149	594903.3	695598.7	-12.8	Elevation in NGVD29
150	594903.3	695591.5	-13.2	Elevation in NGVD29
151	594903.2	695582.8	-12.9	Elevation in NGVD29
152	594903.6	695573.4	-13.1	Elevation in NGVD29
153	594904.2	695564.6	-13	Elevation in NGVD29
154	594906.1	695553.4	-13	Elevation in NGVD29
155	594908.0	695543.4	-13	Elevation in NGVD29
156	594910.3	695533.4	-12.7	Elevation in NGVD29
157	594912.7	695524.6	-12.6	Elevation in NGVD29
158	594914.6	695517.0	-12.2	Elevation in NGVD29
159	594916.4	695509.3	-12	Elevation in NGVD29
160	594917.9	695502.3	-11.7	Elevation in NGVD29
161	594919.4	695495.3	-11.2	Elevation in NGVD29
162	594921.2	695486.9	-10.8	Elevation in NGVD29
163	594922.6	695479.8	-10.3	Elevation in NGVD29
164	594925.0	695471.3	-9.87	Elevation in NGVD29
165	594926.9	695463.1	-9.57	Elevation in NGVD29
166	594928.4	695455.4	-9.27	Elevation in NGVD29
167	594929.9	695446.7	-8.97	Elevation in NGVD29
168	594931.1	695437.5	-8.57	Elevation in NGVD29
169	594932.2	695430.4	-8.27	Elevation in NGVD29
170	594933.0	695423.0	-7.97	Elevation in NGVD29
171	594933.1	695414.6	-7.67	Elevation in NGVD29
172	594932.6	695407.5	-7.17	Elevation in NGVD29
173	594932.1	695399.8	-6.97	Elevation in NGVD29
174	594931.3	695392.4	-6.37	Elevation in NGVD29
175	594930.3	695384.9	-5.97	Elevation in NGVD29
176	594929.2	695377.5	-5.87	Elevation in NGVD29
177	594927.3	695369.9	-5.47	Elevation in NGVD29
178	594925.6	695363.1	-5.08	Elevation in NGVD29
179	594923.6	695354.3	-4.78	Elevation in NGVD29
180	594922.1	695347.0	-4.38	Elevation in NGVD29
181	594920.7	695338.6	-4.08	Elevation in NGVD29
182	594920.0	695331.1	-3.68	Elevation in NGVD29
183	594919.6	695323.6	-3.48	Elevation in NGVD29
184	594919.6	695316.5	-2.98	Elevation in NGVD29
185	594921.0	695301.7	-3.17	Elevation in NGVD29
186	594922.2	695293.0	-2.97	Elevation in NGVD29
187	594800.6	695738.3	-3.6	Elevation in NGVD29
188	594794.6	695734.4	-4.4	Elevation in NGVD29

**Points, Eastings, Northings, Elevation, Description**  
**PENZD of Hydrographic Data**

<b>Point</b>	<b>Easting</b>	<b>Northing</b>	<b>Z</b>	<b>Description</b>
189	594790.5	695728.0	-5.2	Elevation in NGVD29
190	594789.4	695720.4	-6.41	Elevation in NGVD29
191	594790.1	695713.2	-7.72	Elevation in NGVD29
192	594791.1	695705.7	-8.82	Elevation in NGVD29
193	594792.2	695698.7	-9.83	Elevation in NGVD29
194	594793.5	695691.7	-10.6	Elevation in NGVD29
195	594795.3	695684.4	-11.3	Elevation in NGVD29
196	594796.8	695677.4	-11.8	Elevation in NGVD29
197	594798.3	695670.5	-12.2	Elevation in NGVD29
198	594800.6	695659.3	-12.4	Elevation in NGVD29
199	594801.6	695652.3	-12.8	Elevation in NGVD29
200	594802.6	695644.2	-13.2	Elevation in NGVD29
201	594803.1	695637.2	-12.8	Elevation in NGVD29
202	594803.8	695629.1	-12.7	Elevation in NGVD29
203	594804.3	695619.8	-12.7	Elevation in NGVD29
204	594804.8	695611.8	-12.9	Elevation in NGVD29
205	594805.1	695604.8	-12.8	Elevation in NGVD29
206	594805.6	695597.7	-13.1	Elevation in NGVD29
207	594806.1	695590.6	-12.7	Elevation in NGVD29
208	594807.4	695578.3	-12.8	Elevation in NGVD29
209	594808.2	695570.2	-13	Elevation in NGVD29
210	594809.3	695559.7	-12.8	Elevation in NGVD29
211	594810.7	695546.6	-12.7	Elevation in NGVD29
212	594812.1	695533.7	-12.9	Elevation in NGVD29
213	594813.4	695521.8	-12.3	Elevation in NGVD29
214	594814.4	695514.5	-12.6	Elevation in NGVD29
215	594815.6	695503.2	-12	Elevation in NGVD29
216	594816.0	695493.1	-11.5	Elevation in NGVD29
217	594815.9	695480.9	-11.1	Elevation in NGVD29
218	594815.8	695473.1	-10.7	Elevation in NGVD29
219	594815.5	695465.3	-10.2	Elevation in NGVD29
220	594815.3	695456.3	-9.83	Elevation in NGVD29
221	594815.1	695445.9	-9.53	Elevation in NGVD29
222	594815.4	695436.4	-9.14	Elevation in NGVD29
223	594816.1	695429.3	-8.94	Elevation in NGVD29
224	594817.5	695421.9	-8.64	Elevation in NGVD29
225	594819.0	695415.1	-8.24	Elevation in NGVD29
226	594820.7	695407.5	-7.94	Elevation in NGVD29
227	594822.0	695400.2	-7.53	Elevation in NGVD29
228	594823.3	695393.2	-7.23	Elevation in NGVD29
229	594824.2	695386.0	-6.83	Elevation in NGVD29
230	594825.1	695377.4	-6.33	Elevation in NGVD29
231	594825.8	695368.1	-5.92	Elevation in NGVD29
232	594826.5	695358.8	-5.42	Elevation in NGVD29
233	594827.0	695349.6	-5.11	Elevation in NGVD29
234	594826.9	695342.5	-4.71	Elevation in NGVD29
235	594826.8	695335.4	-4.42	Elevation in NGVD29

**Points, Eastings, Northings, Elevation, Description**  
**PENZD of Hydrographic Data**

<b>Point</b>	<b>Easting</b>	<b>Northing</b>	<b>Z</b>	<b>Description</b>
236	594826.3	695327.4	-4.13	Elevation in NGVD29
237	594825.9	695319.7	-3.83	Elevation in NGVD29
238	594825.3	695310.2	-3.34	Elevation in NGVD29
239	594825.2	695302.9	-3.04	Elevation in NGVD29
240	594824.9	695295.6	-3.54	Elevation in NGVD29
241	594804.1	695310.4	-3.33	Elevation in NGVD29
242	594798.9	695316.7	-3.63	Elevation in NGVD29
243	594794.0	695322.0	-3.82	Elevation in NGVD29
244	594789.1	695327.4	-4.01	Elevation in NGVD29
245	594784.4	695332.8	-4.39	Elevation in NGVD29
246	594780.8	695339.4	-4.68	Elevation in NGVD29
247	594778.6	695346.7	-4.98	Elevation in NGVD29
248	594777.4	695353.8	-5.38	Elevation in NGVD29
249	594777.1	695362.0	-5.78	Elevation in NGVD29
250	594778.1	695369.9	-6.18	Elevation in NGVD29
251	594779.6	695377.4	-6.48	Elevation in NGVD29
252	594781.3	695384.5	-6.68	Elevation in NGVD29
253	594783.3	695392.1	-7.08	Elevation in NGVD29
254	594785.5	695401.1	-7.38	Elevation in NGVD29
255	594786.7	695408.5	-7.78	Elevation in NGVD29
256	594787.6	695416.1	-8.08	Elevation in NGVD29
257	594787.6	695423.1	-8.38	Elevation in NGVD29
258	594786.9	695430.8	-8.68	Elevation in NGVD29
259	594785.3	695439.6	-8.98	Elevation in NGVD29
260	594783.1	695446.8	-9.28	Elevation in NGVD29
261	594780.8	695453.5	-9.58	Elevation in NGVD29
262	594777.5	695462.9	-10.1	Elevation in NGVD29
263	594775.2	695469.9	-10.4	Elevation in NGVD29
264	594772.8	695477.8	-10.8	Elevation in NGVD29
265	594770.5	695484.7	-11.1	Elevation in NGVD29
266	594768.0	695492.3	-11.5	Elevation in NGVD29
267	594765.8	695499.2	-11.7	Elevation in NGVD29
268	594763.4	695507.3	-11.9	Elevation in NGVD29
269	594761.5	695514.2	-12.4	Elevation in NGVD29
270	594759.8	695521.0	-12.9	Elevation in NGVD29
271	594757.9	695528.9	-13	Elevation in NGVD29
272	594756.4	695536.6	-12.8	Elevation in NGVD29
273	594755.3	695546.7	-12.9	Elevation in NGVD29
274	594754.9	695554.1	-13.4	Elevation in NGVD29
275	594754.4	695561.5	-12.9	Elevation in NGVD29
276	594753.8	695569.3	-12.5	Elevation in NGVD29
277	594752.5	695579.6	-12.7	Elevation in NGVD29
278	594751.7	695587.0	-12.4	Elevation in NGVD29
279	594751.1	695594.3	-12.6	Elevation in NGVD29
280	594750.6	695605.7	-12.5	Elevation in NGVD29
281	594750.6	695613.3	-12.5	Elevation in NGVD29
282	594750.4	695620.8	-12.4	Elevation in NGVD29

**Points, Eastings, Northings, Elevation, Description**  
**PENZD of Hydrographic Data**

<b>Point</b>	<b>Easting</b>	<b>Northing</b>	<b>Z</b>	<b>Description</b>
283	594750.1	695627.9	-12.4	Elevation in NGVD29
284	594749.9	695638.1	-12.8	Elevation in NGVD29
285	594749.4	695648.9	-12.7	Elevation in NGVD29
286	594748.9	695658.3	-12.6	Elevation in NGVD29
287	594748.3	695665.9	-12.5	Elevation in NGVD29
288	594747.2	695675.4	-11.5	Elevation in NGVD29
289	594746.2	695682.6	-11.1	Elevation in NGVD29
290	594744.8	695690.2	-10.4	Elevation in NGVD29
291	594743.1	695697.2	-9.47	Elevation in NGVD29
292	594741.1	695704.2	-8.46	Elevation in NGVD29
293	594705.3	695726.9	-3.85	Elevation in NGVD29
294	594700.2	695722.0	-4.45	Elevation in NGVD29
295	594696.5	695715.9	-5.26	Elevation in NGVD29
296	594694.8	695708.9	-6.07	Elevation in NGVD29
297	594695.2	695701.5	-7.58	Elevation in NGVD29
298	594696.0	695693.6	-8.68	Elevation in NGVD29
299	594697.0	695686.4	-9.58	Elevation in NGVD29
300	594697.8	695679.2	-10.5	Elevation in NGVD29
301	594699.0	695672.1	-11.1	Elevation in NGVD29
302	594700.4	695664.2	-11.7	Elevation in NGVD29
303	594702.2	695651.9	-12	Elevation in NGVD29
304	594703.2	695643.6	-12.5	Elevation in NGVD29
305	594704.1	695634.4	-12.9	Elevation in NGVD29
306	594704.8	695623.9	-12.6	Elevation in NGVD29
307	594705.5	695614.7	-12.5	Elevation in NGVD29
308	594706.4	695601.3	-12.4	Elevation in NGVD29
309	594707.4	695589.0	-12.5	Elevation in NGVD29
310	594708.2	695581.8	-12.5	Elevation in NGVD29
311	594709.3	695572.7	-12.4	Elevation in NGVD29
312	594710.3	695565.2	-12.8	Elevation in NGVD29
313	594712.1	695553.6	-12.7	Elevation in NGVD29
314	594713.4	695545.6	-12.8	Elevation in NGVD29
315	594715.0	695535.3	-12.6	Elevation in NGVD29
316	594716.3	695525.5	-12.8	Elevation in NGVD29
317	594717.2	695518.0	-12.4	Elevation in NGVD29
318	594718.5	695505.5	-12.4	Elevation in NGVD29
319	594719.2	695493.8	-12.2	Elevation in NGVD29
320	594719.4	695486.6	-11.8	Elevation in NGVD29
321	594719.6	695478.9	-11.3	Elevation in NGVD29
322	594719.8	695467.7	-10.8	Elevation in NGVD29
323	594719.9	695458.7	-10.5	Elevation in NGVD29
324	594719.8	695448.2	-10.1	Elevation in NGVD29
325	594720.0	695440.8	-9.82	Elevation in NGVD29
326	594719.9	695433.1	-9.52	Elevation in NGVD29
327	594720.3	695423.7	-9.23	Elevation in NGVD29
328	594720.8	695416.3	-8.93	Elevation in NGVD29
329	594721.7	695408.5	-8.43	Elevation in NGVD29

**Points, Eastings, Northings, Elevation, Description**  
**PENZD of Hydrographic Data**

<b>Point</b>	<b>Easting</b>	<b>Northing</b>	<b>Z</b>	<b>Description</b>
330	594723.2	695399.9	-8.04	Elevation in NGVD29
331	594725.2	695392.1	-7.74	Elevation in NGVD29
332	594727.4	695384.5	-7.43	Elevation in NGVD29
333	594729.7	695377.2	-7.13	Elevation in NGVD29
334	594732.2	695369.6	-6.63	Elevation in NGVD29
335	594735.0	695361.8	-6.23	Elevation in NGVD29
336	594737.4	695355.0	-5.83	Elevation in NGVD29
337	594740.0	695347.1	-5.43	Elevation in NGVD29
338	594741.8	695340.3	-5.23	Elevation in NGVD29
339	594743.0	695332.7	-4.93	Elevation in NGVD29
340	594743.6	695324.2	-4.42	Elevation in NGVD29
341	594743.5	695316.6	-4.12	Elevation in NGVD29
342	594742.8	695309.4	-3.92	Elevation in NGVD29
343	594741.5	695301.5	-3.62	Elevation in NGVD29
344	594739.0	695291.6	-3.23	Elevation in NGVD29
345	594736.8	695283.6	-3.04	Elevation in NGVD29
346	594734.8	695276.1	-3.44	Elevation in NGVD29
347	594697.7	695252.8	-3.19	Elevation in NGVD29
348	594692.6	695258.5	-3.19	Elevation in NGVD29
349	594689.4	695265.9	-3.18	Elevation in NGVD29
350	594685.5	695280.7	-3.18	Elevation in NGVD29
351	594683.7	695287.7	-3.38	Elevation in NGVD29
352	594681.9	695294.4	-3.68	Elevation in NGVD29
353	594680.1	695302.1	-3.97	Elevation in NGVD29
354	594678.3	695310.4	-4.17	Elevation in NGVD29
355	594676.9	695318.1	-4.57	Elevation in NGVD29
356	594675.8	695326.4	-4.87	Elevation in NGVD29
357	594675.0	695333.7	-5.17	Elevation in NGVD29
358	594674.2	695341.3	-5.57	Elevation in NGVD29
359	594673.7	695348.4	-5.87	Elevation in NGVD29
360	594673.2	695355.6	-6.27	Elevation in NGVD29
361	594673.0	695363.8	-6.57	Elevation in NGVD29
362	594673.0	695371.2	-7.07	Elevation in NGVD29
363	594673.3	695379.9	-7.47	Elevation in NGVD29
364	594673.5	695388.5	-7.77	Elevation in NGVD29
365	594673.5	695397.5	-8.17	Elevation in NGVD29
366	594673.2	695405.2	-8.67	Elevation in NGVD29
367	594673.3	695413.1	-8.87	Elevation in NGVD29
368	594673.1	695423.7	-9.27	Elevation in NGVD29
369	594672.8	695432.1	-9.47	Elevation in NGVD29
370	594672.2	695440.7	-9.88	Elevation in NGVD29
371	594671.5	695448.8	-10.2	Elevation in NGVD29
372	594670.8	695455.8	-10.5	Elevation in NGVD29
373	594669.9	695463.5	-10.9	Elevation in NGVD29
374	594669.3	695470.7	-11.2	Elevation in NGVD29
375	594668.6	695477.9	-11.7	Elevation in NGVD29
376	594667.9	695485.5	-12	Elevation in NGVD29

**Points, Eastings, Northings, Elevation, Description**  
**PENZD of Hydrographic Data**

<b>Point</b>	<b>Easting</b>	<b>Northing</b>	<b>Z</b>	<b>Description</b>
377	594666.8	695498.8	-12.2	Elevation in NGVD29
378	594666.0	695506.3	-12.8	Elevation in NGVD29
379	594665.2	695517.2	-12.7	Elevation in NGVD29
380	594664.6	695524.8	-12.9	Elevation in NGVD29
381	594663.7	695536.1	-12.7	Elevation in NGVD29
382	594663.1	695544.1	-13.2	Elevation in NGVD29
383	594662.4	695551.7	-12.6	Elevation in NGVD29
384	594660.8	695563.5	-12.4	Elevation in NGVD29
385	594659.1	695575.2	-12.5	Elevation in NGVD29
386	594658.1	695582.7	-12.5	Elevation in NGVD29
387	594656.5	695594.3	-12.5	Elevation in NGVD29
388	594655.0	695603.7	-12.5	Elevation in NGVD29
389	594653.6	695612.0	-12.6	Elevation in NGVD29
390	594652.3	695619.1	-12.8	Elevation in NGVD29
391	594649.6	695633.1	-12.2	Elevation in NGVD29
392	594647.2	695645.0	-12.7	Elevation in NGVD29
393	594645.7	695652.6	-12.3	Elevation in NGVD29
394	594644.0	695659.8	-11.9	Elevation in NGVD29
395	594642.0	695666.7	-11.5	Elevation in NGVD29
396	594639.4	695674.8	-10.8	Elevation in NGVD29
397	594637.4	695681.7	-9.78	Elevation in NGVD29
398	594635.2	695688.4	-8.88	Elevation in NGVD29
399	594632.6	695695.9	-7.88	Elevation in NGVD29
400	594605.4	695715.4	-4.1	Elevation in NGVD29
401	594598.2	695712.8	-4.31	Elevation in NGVD29
402	594591.0	695707.5	-4.7	Elevation in NGVD29
403	594586.7	695701.8	-5.71	Elevation in NGVD29
404	594584.5	695695.1	-6.81	Elevation in NGVD29
405	594583.6	695688.0	-7.82	Elevation in NGVD29
406	594583.3	695680.9	-8.82	Elevation in NGVD29
407	594583.3	695672.2	-9.72	Elevation in NGVD29
408	594583.9	695664.6	-10.5	Elevation in NGVD29
409	594585.0	695657.2	-11.1	Elevation in NGVD29
410	594586.9	695650.3	-11.7	Elevation in NGVD29
411	594589.2	695643.4	-12.1	Elevation in NGVD29
412	594591.8	695636.2	-12.4	Elevation in NGVD29
413	594596.2	695625.7	-12.8	Elevation in NGVD29
414	594598.8	695619.1	-12.9	Elevation in NGVD29
415	594601.4	695612.3	-12.9	Elevation in NGVD29
416	594604.1	695605.4	-12.5	Elevation in NGVD29
417	594607.7	695596.8	-12.5	Elevation in NGVD29
418	594612.3	695586.1	-12.5	Elevation in NGVD29
419	594616.9	695575.5	-12.5	Elevation in NGVD29
420	594619.6	695568.8	-12.6	Elevation in NGVD29
421	594622.3	695561.8	-12.4	Elevation in NGVD29
422	594625.1	695554.6	-12.7	Elevation in NGVD29
423	594629.0	695541.9	-12.7	Elevation in NGVD29



**Points, Eastings, Northings, Elevation, Description**  
**PENZD of Hydrographic Data**

<b>Point</b>	<b>Easting</b>	<b>Northing</b>	<b>Z</b>	<b>Description</b>
424	594630.5	695534.0	-13	Elevation in NGVD29
425	594631.4	695524.4	-12.8	Elevation in NGVD29
426	594631.6	695516.5	-13	Elevation in NGVD29
427	594631.6	695508.7	-13	Elevation in NGVD29
428	594631.4	695501.7	-12.8	Elevation in NGVD29
429	594631.2	695490.5	-12.6	Elevation in NGVD29
430	594631.1	695481.3	-12.4	Elevation in NGVD29
431	594631.2	695473.6	-12.1	Elevation in NGVD29
432	594631.7	695465.6	-11.7	Elevation in NGVD29
433	594632.4	695457.5	-11.3	Elevation in NGVD29
434	594633.2	695450.0	-10.8	Elevation in NGVD29
435	594634.1	695442.0	-10.5	Elevation in NGVD29
436	594634.8	695434.0	-10.1	Elevation in NGVD29
437	594635.4	695426.1	-9.85	Elevation in NGVD29
438	594636.0	695417.7	-9.54	Elevation in NGVD29
439	594636.4	695410.6	-9.24	Elevation in NGVD29
440	594636.7	695403.1	-8.93	Elevation in NGVD29
441	594636.8	695395.6	-8.73	Elevation in NGVD29
442	594636.6	695388.4	-8.33	Elevation in NGVD29
443	594636.4	695381.3	-8.03	Elevation in NGVD29
444	594635.8	695372.5	-7.62	Elevation in NGVD29
445	594635.4	695364.5	-7.22	Elevation in NGVD29
446	594634.9	695357.3	-6.92	Elevation in NGVD29
447	594634.4	695350.1	-6.62	Elevation in NGVD29
448	594633.6	695342.6	-6.22	Elevation in NGVD29
449	594632.9	695334.9	-5.82	Elevation in NGVD29
450	594632.1	695327.3	-5.42	Elevation in NGVD29
451	594631.5	695319.6	-5.12	Elevation in NGVD29
452	594630.9	695311.6	-4.92	Elevation in NGVD29
453	594630.3	695303.9	-4.52	Elevation in NGVD29
454	594629.9	695296.1	-4.21	Elevation in NGVD29
455	594629.6	695289.1	-3.91	Elevation in NGVD29
456	594629.7	695281.3	-3.61	Elevation in NGVD29
457	594629.8	695274.0	-3.31	Elevation in NGVD29
458	594630.1	695265.5	-3.11	Elevation in NGVD29
459	594630.8	695240.2	-3.4	Elevation in NGVD29
460	594514.3	695704.6	-3.85	Elevation in NGVD29
461	594507.1	695703.0	-4.86	Elevation in NGVD29
462	594500.3	695699.6	-5.17	Elevation in NGVD29
463	594494.9	695694.6	-5.57	Elevation in NGVD29
464	594491.4	695688.5	-6.48	Elevation in NGVD29
465	594489.2	695681.5	-7.28	Elevation in NGVD29
466	594488.1	695674.4	-8.18	Elevation in NGVD29
467	594488.0	695666.8	-9.09	Elevation in NGVD29
468	594488.8	695659.5	-9.79	Elevation in NGVD29
469	594490.8	695652.6	-10.3	Elevation in NGVD29
470	594493.3	695645.5	-10.9	Elevation in NGVD29

**Points, Eastings, Northings, Elevation, Description**  
**PENZD of Hydrographic Data**

<b>Point</b>	<b>Easting</b>	<b>Northing</b>	<b>Z</b>	<b>Description</b>
471	594496.0	695638.2	-11.4	Elevation in NGVD29
472	594498.3	695631.2	-11.8	Elevation in NGVD29
473	594500.4	695623.7	-12.2	Elevation in NGVD29
474	594502.5	695616.0	-12.6	Elevation in NGVD29
475	594505.4	695605.1	-12.6	Elevation in NGVD29
476	594509.2	695592.4	-12.1	Elevation in NGVD29
477	594511.8	695584.4	-12.2	Elevation in NGVD29
478	594514.1	695577.4	-12.2	Elevation in NGVD29
479	594517.0	695567.2	-12.1	Elevation in NGVD29
480	594520.2	695554.7	-12.2	Elevation in NGVD29
481	594522.2	695545.6	-12.4	Elevation in NGVD29
482	594523.7	695535.8	-12.7	Elevation in NGVD29
483	594524.4	695523.6	-12.3	Elevation in NGVD29
484	594524.3	695516.4	-12.9	Elevation in NGVD29
485	594523.7	695507.0	-12.7	Elevation in NGVD29
486	594522.8	695499.8	-12.9	Elevation in NGVD29
487	594521.1	695490.3	-12.5	Elevation in NGVD29
488	594519.2	695481.4	-12	Elevation in NGVD29
489	594516.6	695469.0	-12.2	Elevation in NGVD29
490	594515.4	695461.9	-12	Elevation in NGVD29
491	594514.1	695452.8	-11.9	Elevation in NGVD29
492	594512.8	695444.4	-11.7	Elevation in NGVD29
493	594511.9	695437.4	-11.1	Elevation in NGVD29
494	594511.1	695430.0	-10.7	Elevation in NGVD29
495	594510.6	695421.5	-10.2	Elevation in NGVD29
496	594510.4	695413.1	-9.96	Elevation in NGVD29
497	594510.2	695405.7	-9.56	Elevation in NGVD29
498	594510.1	695396.3	-9.26	Elevation in NGVD29
499	594510.1	695388.1	-8.86	Elevation in NGVD29
500	594510.6	695375.2	-8.56	Elevation in NGVD29
501	594511.0	695367.8	-8.16	Elevation in NGVD29
502	594511.4	695360.4	-7.96	Elevation in NGVD29
503	594511.8	695353.1	-7.46	Elevation in NGVD29
504	594512.5	695345.8	-7.26	Elevation in NGVD29
505	594513.0	695338.6	-6.86	Elevation in NGVD29
506	594513.7	695331.3	-6.55	Elevation in NGVD29
507	594514.4	695323.7	-6.25	Elevation in NGVD29
508	594515.0	695316.1	-5.85	Elevation in NGVD29
509	594515.6	695307.3	-5.46	Elevation in NGVD29
510	594516.2	695298.1	-5.05	Elevation in NGVD29
511	594516.5	695290.2	-4.65	Elevation in NGVD29
512	594516.8	695282.1	-4.35	Elevation in NGVD29
513	594516.9	695274.5	-4.05	Elevation in NGVD29
514	594517.1	695265.5	-3.75	Elevation in NGVD29
515	594517.2	695257.5	-3.35	Elevation in NGVD29
516	594517.3	695249.6	-3.15	Elevation in NGVD29
517	594509.9	695218.1	-3.14	Elevation in NGVD29

**Points, Eastings, Northings, Elevation, Description**  
**PENZD of Hydrographic Data**

<b>Point</b>	<b>Easting</b>	<b>Northing</b>	<b>Z</b>	<b>Description</b>
518	594503.0	695220.0	-3.21	Elevation in NGVD29
519	594497.0	695225.8	-3.26	Elevation in NGVD29
520	594492.8	695231.4	-3.31	Elevation in NGVD29
521	594489.5	695238.7	-3.36	Elevation in NGVD29
522	594487.5	695246.0	-3.4	Elevation in NGVD29
523	594486.3	695254.2	-3.45	Elevation in NGVD29
524	594486.0	695261.7	-3.49	Elevation in NGVD29
525	594486.2	695269.5	-3.81	Elevation in NGVD29
526	594486.9	695276.6	-4.11	Elevation in NGVD29
527	594487.8	695285.2	-4.51	Elevation in NGVD29
528	594488.7	695292.4	-4.71	Elevation in NGVD29
529	594489.3	695300.1	-5.01	Elevation in NGVD29
530	594489.6	695307.5	-5.31	Elevation in NGVD29
531	594489.3	695314.5	-5.71	Elevation in NGVD29
532	594489.0	695321.7	-6.01	Elevation in NGVD29
533	594488.3	695329.0	-6.41	Elevation in NGVD29
534	594487.0	695337.8	-6.81	Elevation in NGVD29
535	594485.3	695345.2	-7.01	Elevation in NGVD29
536	594483.1	695352.4	-7.41	Elevation in NGVD29
537	594480.0	695360.8	-7.81	Elevation in NGVD29
538	594477.5	695367.5	-8.11	Elevation in NGVD29
539	594474.5	695375.0	-8.5	Elevation in NGVD29
540	594472.2	695381.8	-8.8	Elevation in NGVD29
541	594470.4	695388.9	-9.1	Elevation in NGVD29
542	594469.2	695397.5	-9.3	Elevation in NGVD29
543	594468.1	695404.4	-9.5	Elevation in NGVD29
544	594467.6	695411.7	-9.71	Elevation in NGVD29
545	594467.3	695421.3	-10.2	Elevation in NGVD29
546	594467.5	695428.4	-10.5	Elevation in NGVD29
547	594467.7	695435.6	-10.9	Elevation in NGVD29
548	594467.8	695445.2	-11.2	Elevation in NGVD29
549	594467.9	695456.8	-11.5	Elevation in NGVD29
550	594467.8	695464.4	-11.5	Elevation in NGVD29
551	594467.8	695471.5	-12	Elevation in NGVD29
552	594467.3	695479.1	-12.3	Elevation in NGVD29
553	594466.8	695486.4	-12.6	Elevation in NGVD29
554	594465.8	695499.6	-12.5	Elevation in NGVD29
555	594465.0	695506.7	-12.4	Elevation in NGVD29
556	594463.2	695519.0	-12.1	Elevation in NGVD29
557	594461.9	695526.9	-12.4	Elevation in NGVD29
558	594460.6	695534.4	-12	Elevation in NGVD29
559	594459.0	695541.8	-12.6	Elevation in NGVD29
560	594457.6	695548.7	-12.2	Elevation in NGVD29
561	594456.1	695557.1	-12.1	Elevation in NGVD29
562	594454.1	695568.2	-12.1	Elevation in NGVD29
563	594452.9	695577.3	-12	Elevation in NGVD29
564	594451.8	695589.6	-12	Elevation in NGVD29

**Points, Eastings, Northings, Elevation, Description**  
**PENZD of Hydrographic Data**

<b>Point</b>	<b>Easting</b>	<b>Northing</b>	<b>Z</b>	<b>Description</b>
565	594451.5	695596.9	-12.2	Elevation in NGVD29
566	594451.1	695604.1	-13	Elevation in NGVD29
567	594450.9	695611.8	-12.5	Elevation in NGVD29
568	594450.4	695619.1	-12.7	Elevation in NGVD29
569	594449.6	695626.2	-11.8	Elevation in NGVD29
570	594448.1	695634.8	-10.6	Elevation in NGVD29
571	594445.1	695645.8	-10.6	Elevation in NGVD29
572	594442.2	695654.2	-10	Elevation in NGVD29
573	594439.0	695661.8	-9.4	Elevation in NGVD29
574	594435.5	695669.0	-8.69	Elevation in NGVD29
575	594413.4	695691.6	-4.27	Elevation in NGVD29
576	594403.8	695692.1	-4.38	Elevation in NGVD29
577	594396.6	695690.3	-4.69	Elevation in NGVD29
578	594389.9	695686.1	-5.29	Elevation in NGVD29
579	594385.3	695680.4	-5.89	Elevation in NGVD29
580	594382.9	695673.6	-7.19	Elevation in NGVD29
581	594381.9	695662.8	-7.6	Elevation in NGVD29
582	594382.7	695655.4	-8.7	Elevation in NGVD29
583	594385.0	695648.5	-9.5	Elevation in NGVD29
584	594388.1	695641.8	-10	Elevation in NGVD29
585	594390.8	695635.1	-10.3	Elevation in NGVD29
586	594393.5	695628.4	-10.9	Elevation in NGVD29
587	594395.7	695621.7	-11.3	Elevation in NGVD29
588	594398.3	695614.3	-11.9	Elevation in NGVD29
589	594400.8	695607.3	-12.3	Elevation in NGVD29
590	594403.6	695599.7	-12.6	Elevation in NGVD29
591	594406.3	695591.6	-12.6	Elevation in NGVD29
592	594408.6	695584.0	-12.1	Elevation in NGVD29
593	594410.8	695575.9	-12	Elevation in NGVD29
594	594413.7	695564.8	-12.1	Elevation in NGVD29
595	594415.1	695557.7	-12	Elevation in NGVD29
596	594416.3	695548.9	-12.1	Elevation in NGVD29
597	594417.6	695537.8	-12.2	Elevation in NGVD29
598	594418.7	695525.4	-12.1	Elevation in NGVD29
599	594419.5	695518.0	-12.3	Elevation in NGVD29
600	594420.5	695509.4	-12.5	Elevation in NGVD29
601	594421.0	695501.9	-12.4	Elevation in NGVD29
602	594421.6	695494.0	-12.5	Elevation in NGVD29
603	594422.0	695486.8	-12.5	Elevation in NGVD29
604	594422.7	695476.9	-12.4	Elevation in NGVD29
605	594423.1	695468.5	-12	Elevation in NGVD29
606	594423.2	695459.8	-12.1	Elevation in NGVD29
607	594423.3	695448.7	-11.9	Elevation in NGVD29
608	594423.4	695441.5	-11.7	Elevation in NGVD29
609	594423.3	695433.8	-11.5	Elevation in NGVD29
610	594423.2	695425.2	-11	Elevation in NGVD29
611	594423.2	695417.1	-10.6	Elevation in NGVD29

**Points, Eastings, Northings, Elevation, Description**  
**PENZD of Hydrographic Data**

<b>Point</b>	<b>Easting</b>	<b>Northing</b>	<b>Z</b>	<b>Description</b>
612	594423.3	695409.2	-10.2	Elevation in NGVD29
613	594423.5	695401.5	-9.72	Elevation in NGVD29
614	594424.1	695393.8	-9.12	Elevation in NGVD29
615	594424.9	695385.3	-9.11	Elevation in NGVD29
616	594425.7	695377.7	-9.01	Elevation in NGVD29
617	594426.8	695367.1	-8.71	Elevation in NGVD29
618	594427.5	695359.1	-8.21	Elevation in NGVD29
619	594428.2	695351.9	-8.01	Elevation in NGVD29
620	594428.8	695344.6	-7.7	Elevation in NGVD29
621	594429.6	695337.4	-7.4	Elevation in NGVD29
622	594430.4	695328.8	-7	Elevation in NGVD29
623	594431.2	695321.6	-6.7	Elevation in NGVD29
624	594432.2	695313.1	-6.3	Elevation in NGVD29
625	594433.1	695305.5	-5.9	Elevation in NGVD29
626	594434.0	695297.9	-5.6	Elevation in NGVD29
627	594434.8	695290.6	-5.2	Elevation in NGVD29
628	594435.8	695282.3	-4.9	Elevation in NGVD29
629	594436.5	695274.7	-4.5	Elevation in NGVD29
630	594437.4	695266.3	-4.1	Elevation in NGVD29
631	594438.2	695258.3	-3.8	Elevation in NGVD29
632	594439.2	695250.2	-3.51	Elevation in NGVD29
633	594440.0	695242.5	-3.11	Elevation in NGVD29
634	594441.4	695230.6	-3.5	Elevation in NGVD29
635	594411.2	695211.4	-3.35	Elevation in NGVD29
636	594406.7	695219.7	-3.32	Elevation in NGVD29
637	594404.9	695226.6	-3.3	Elevation in NGVD29
638	594403.3	695234.5	-3.28	Elevation in NGVD29
639	594401.9	695242.7	-3.26	Elevation in NGVD29
640	594400.1	695249.8	-3.56	Elevation in NGVD29
641	594398.2	695257.1	-3.76	Elevation in NGVD29
642	594396.0	695263.9	-4.16	Elevation in NGVD29
643	594393.1	695271.7	-4.56	Elevation in NGVD29
644	594390.3	695278.6	-4.86	Elevation in NGVD29
645	594387.2	695286.0	-5.26	Elevation in NGVD29
646	594384.6	695292.7	-5.55	Elevation in NGVD29
647	594381.6	695300.7	-5.95	Elevation in NGVD29
648	594379.1	695307.4	-6.25	Elevation in NGVD29
649	594376.7	695314.3	-6.55	Elevation in NGVD29
650	594374.1	695322.0	-6.95	Elevation in NGVD29
651	594371.9	695329.4	-7.35	Elevation in NGVD29
652	594370.4	695337.6	-7.66	Elevation in NGVD29
653	594369.7	695344.8	-7.96	Elevation in NGVD29
654	594369.5	695351.8	-8.26	Elevation in NGVD29
655	594369.2	695360.3	-8.46	Elevation in NGVD29
656	594369.0	695368.1	-8.76	Elevation in NGVD29
657	594368.8	695376.1	-9.16	Elevation in NGVD29
658	594368.3	695383.7	-9.26	Elevation in NGVD29

**Points, Eastings, Northings, Elevation, Description**  
**PENZD of Hydrographic Data**

<b>Point</b>	<b>Easting</b>	<b>Northing</b>	<b>Z</b>	<b>Description</b>
659	594367.7	695393.1	-9.46	Elevation in NGVD29
660	594366.5	695402.5	-9.96	Elevation in NGVD29
661	594365.7	695409.5	-10.4	Elevation in NGVD29
662	594365.1	695418.8	-11	Elevation in NGVD29
663	594364.6	695426.9	-11.4	Elevation in NGVD29
664	594363.9	695437.3	-11.7	Elevation in NGVD29
665	594363.4	695445.6	-11.9	Elevation in NGVD29
666	594362.8	695454.3	-11.8	Elevation in NGVD29
667	594362.7	695461.4	-12.1	Elevation in NGVD29
668	594362.6	695471.1	-12.3	Elevation in NGVD29
669	594362.4	695478.6	-12.2	Elevation in NGVD29
670	594362.2	695486.9	-12.1	Elevation in NGVD29
671	594361.7	695494.2	-12.4	Elevation in NGVD29
672	594361.4	695501.3	-12.4	Elevation in NGVD29
673	594360.6	695513.2	-12.2	Elevation in NGVD29
674	594359.8	695521.8	-12.2	Elevation in NGVD29
675	594358.3	695532.4	-12.1	Elevation in NGVD29
676	594357.1	695539.8	-12	Elevation in NGVD29
677	594354.3	695551.2	-12	Elevation in NGVD29
678	594350.6	695563.9	-11.9	Elevation in NGVD29
679	594347.9	695571.8	-12	Elevation in NGVD29
680	594345.8	695579.4	-12	Elevation in NGVD29
681	594344.3	695588.2	-12.7	Elevation in NGVD29
682	594343.1	695595.5	-12.4	Elevation in NGVD29
683	594342.4	695602.7	-12.3	Elevation in NGVD29
684	594342.3	695610.8	-11.9	Elevation in NGVD29
685	594342.6	695618.2	-11.5	Elevation in NGVD29
686	594343.1	695626.5	-11	Elevation in NGVD29
687	594343.3	695634.1	-10.3	Elevation in NGVD29
688	594343.2	695641.4	-9.74	Elevation in NGVD29
689	594342.3	695652.0	-9.24	Elevation in NGVD29
690	594340.9	695659.5	-8.74	Elevation in NGVD29
691	594339.0	695666.6	-7.64	Elevation in NGVD29
692	594306.3	695688.0	-3.66	Elevation in NGVD29
693	594298.2	695685.7	-3.77	Elevation in NGVD29
694	594291.7	695681.8	-4.28	Elevation in NGVD29
695	594286.7	695676.7	-4.98	Elevation in NGVD29
696	594283.0	695669.8	-5.78	Elevation in NGVD29
697	594281.2	695662.9	-6.59	Elevation in NGVD29
698	594280.3	695655.8	-7.39	Elevation in NGVD29
699	594279.4	695648.6	-8.4	Elevation in NGVD29
700	594279.6	695641.4	-9.2	Elevation in NGVD29
701	594280.5	695634.1	-9.7	Elevation in NGVD29
702	594282.1	695625.6	-10.2	Elevation in NGVD29
703	594283.9	695618.4	-10.6	Elevation in NGVD29
704	594286.0	695611.1	-11.2	Elevation in NGVD29
705	594288.1	695604.0	-11.6	Elevation in NGVD29

**Points, Eastings, Northings, Elevation, Description**  
**PENZD of Hydrographic Data**

<b>Point</b>	<b>Easting</b>	<b>Northing</b>	<b>Z</b>	<b>Description</b>
706	594290.4	695596.7	-12.2	Elevation in NGVD29
707	594292.7	695590.0	-12.4	Elevation in NGVD29
708	594296.2	695579.7	-12.5	Elevation in NGVD29
709	594299.8	695569.9	-12	Elevation in NGVD29
710	594302.2	695563.3	-12	Elevation in NGVD29
711	594305.4	695553.4	-12.1	Elevation in NGVD29
712	594308.5	695540.4	-12.1	Elevation in NGVD29
713	594310.0	695533.0	-12.1	Elevation in NGVD29
714	594311.7	695525.2	-12.2	Elevation in NGVD29
715	594313.0	695517.6	-12.4	Elevation in NGVD29
716	594314.1	695509.4	-12.3	Elevation in NGVD29
717	594315.4	695499.4	-12.3	Elevation in NGVD29
718	594317.4	695486.4	-12.4	Elevation in NGVD29
719	594319.0	695472.3	-12.4	Elevation in NGVD29
720	594319.7	695464.4	-12.5	Elevation in NGVD29
721	594320.5	695457.0	-12.3	Elevation in NGVD29
722	594321.5	695449.8	-12.3	Elevation in NGVD29
723	594322.5	695441.6	-12.1	Elevation in NGVD29
724	594323.6	695433.9	-11.9	Elevation in NGVD29
725	594325.1	695420.2	-11.5	Elevation in NGVD29
726	594326.3	695412.6	-11.2	Elevation in NGVD29
727	594327.4	695404.7	-10.7	Elevation in NGVD29
728	594328.6	695396.2	-10.3	Elevation in NGVD29
729	594329.2	695388.9	-9.88	Elevation in NGVD29
730	594329.9	695381.1	-9.58	Elevation in NGVD29
731	594330.6	695373.7	-9.28	Elevation in NGVD29
732	594331.6	695363.7	-8.88	Elevation in NGVD29
733	594332.6	695356.5	-8.78	Elevation in NGVD29
734	594333.6	695349.4	-8.58	Elevation in NGVD29
735	594334.7	695341.8	-8.18	Elevation in NGVD29
736	594335.6	695334.1	-7.88	Elevation in NGVD29
737	594336.7	695325.9	-7.58	Elevation in NGVD29
738	594337.8	695317.6	-7.17	Elevation in NGVD29
739	594339.4	695308.7	-6.77	Elevation in NGVD29
740	594340.7	695301.7	-6.47	Elevation in NGVD29
741	594342.1	695294.4	-5.87	Elevation in NGVD29
742	594343.9	695284.0	-5.57	Elevation in NGVD29
743	594344.9	695277.0	-5.27	Elevation in NGVD29
744	594345.6	695269.5	-4.97	Elevation in NGVD29
745	594346.2	695262.4	-4.47	Elevation in NGVD29
746	594347.0	695254.6	-4.27	Elevation in NGVD29
747	594347.3	695246.7	-3.86	Elevation in NGVD29
748	594347.7	695239.4	-3.56	Elevation in NGVD29
749	594347.7	695231.8	-3.16	Elevation in NGVD29
750	594347.3	695210.7	-3.56	Elevation in NGVD29
751	594347.2	695202.9	-3.36	Elevation in NGVD29
752	594201.2	695664.6	-5.29	Elevation in NGVD29

**Points, Eastings, Northings, Elevation, Description**  
**PENZD of Hydrographic Data**

<b>Point</b>	<b>Easting</b>	<b>Northing</b>	<b>Z</b>	<b>Description</b>
753	594195.6	695660.4	-5.59	Elevation in NGVD29
754	594191.3	695654.6	-6.1	Elevation in NGVD29
755	594189.6	695647.3	-7.3	Elevation in NGVD29
756	594189.5	695639.7	-8.41	Elevation in NGVD29
757	594190.3	695632.4	-9.02	Elevation in NGVD29
758	594192.5	695625.4	-9.72	Elevation in NGVD29
759	594195.0	695618.1	-10.3	Elevation in NGVD29
760	594197.9	695610.0	-10.8	Elevation in NGVD29
761	594200.3	695603.1	-11.4	Elevation in NGVD29
762	594202.7	695594.9	-11.8	Elevation in NGVD29
763	594204.8	695587.5	-12.5	Elevation in NGVD29
764	594207.5	695577.5	-12.6	Elevation in NGVD29
765	594209.5	695570.8	-12.5	Elevation in NGVD29
766	594211.7	695562.9	-12.5	Elevation in NGVD29
767	594213.8	695555.3	-12.3	Elevation in NGVD29
768	594216.2	695543.1	-12.2	Elevation in NGVD29
769	594217.5	695532.6	-12.2	Elevation in NGVD29
770	594218.3	695523.3	-12.3	Elevation in NGVD29
771	594218.7	695513.4	-12.3	Elevation in NGVD29
772	594218.7	695502.9	-12.5	Elevation in NGVD29
773	594218.6	695494.1	-12.5	Elevation in NGVD29
774	594218.5	695484.7	-12.6	Elevation in NGVD29
775	594218.8	695472.9	-12.5	Elevation in NGVD29
776	594218.9	695464.9	-12.6	Elevation in NGVD29
777	594218.9	695457.7	-12.9	Elevation in NGVD29
778	594219.0	695450.0	-12.6	Elevation in NGVD29
779	594219.2	695442.7	-12.4	Elevation in NGVD29
780	594219.6	695434.2	-11.9	Elevation in NGVD29
781	594220.5	695424.0	-11.7	Elevation in NGVD29
782	594221.2	695415.9	-11.9	Elevation in NGVD29
783	594221.8	695408.3	-11.6	Elevation in NGVD29
784	594222.5	695400.1	-11.2	Elevation in NGVD29
785	594223.2	695392.9	-10.8	Elevation in NGVD29
786	594224.5	695384.0	-10.3	Elevation in NGVD29
787	594225.7	695376.1	-9.94	Elevation in NGVD29
788	594226.9	695369.1	-9.64	Elevation in NGVD29
789	594228.0	695361.5	-9.24	Elevation in NGVD29
790	594229.3	695353.6	-9.04	Elevation in NGVD29
791	594230.5	695346.0	-8.84	Elevation in NGVD29
792	594231.8	695338.4	-8.54	Elevation in NGVD29
793	594233.3	695329.1	-8.34	Elevation in NGVD29
794	594234.4	695322.0	-7.94	Elevation in NGVD29
795	594235.7	695313.7	-7.54	Elevation in NGVD29
796	594237.0	695304.6	-7.13	Elevation in NGVD29
797	594237.8	695297.4	-6.83	Elevation in NGVD29
798	594238.1	695289.2	-6.43	Elevation in NGVD29
799	594238.0	695281.4	-6.02	Elevation in NGVD29



**Points, Eastings, Northings, Elevation, Description**  
**PENZD of Hydrographic Data**

<b>Point</b>	<b>Easting</b>	<b>Northing</b>	<b>Z</b>	<b>Description</b>
800	594237.8	695274.1	-5.72	Elevation in NGVD29
801	594237.5	695266.9	-5.43	Elevation in NGVD29
802	594236.5	695258.8	-5.03	Elevation in NGVD29
803	594235.3	695251.0	-4.63	Elevation in NGVD29
804	594234.0	695243.7	-4.43	Elevation in NGVD29
805	594232.7	695236.2	-4.03	Elevation in NGVD29
806	594231.2	695226.9	-3.63	Elevation in NGVD29
807	594230.5	695219.8	-3.23	Elevation in NGVD29
808	594230.2	695207.0	-3.33	Elevation in NGVD29
809	594232.3	695190.8	-3.23	Elevation in NGVD29
810	594233.8	695183.0	-4.22	Elevation in NGVD29
811	594192.2	695179.8	-3.58	Elevation in NGVD29
812	594188.4	695185.9	-3.55	Elevation in NGVD29
813	594185.2	695192.5	-3.51	Elevation in NGVD29
814	594182.7	695201.2	-3.48	Elevation in NGVD29
815	594180.5	695209.5	-3.45	Elevation in NGVD29
816	594179.4	695218.9	-3.42	Elevation in NGVD29
817	594179.8	695226.7	-3.62	Elevation in NGVD29
818	594180.8	695235.3	-4.02	Elevation in NGVD29
819	594182.3	695242.6	-4.32	Elevation in NGVD29
820	594184.9	695251.3	-4.72	Elevation in NGVD29
821	594186.9	695258.1	-4.92	Elevation in NGVD29
822	594189.1	695265.9	-5.22	Elevation in NGVD29
823	594190.3	695273.2	-5.62	Elevation in NGVD29
824	594191.2	695281.0	-5.92	Elevation in NGVD29
825	594191.6	695288.3	-6.32	Elevation in NGVD29
826	594191.4	695295.8	-6.62	Elevation in NGVD29
827	594190.7	695302.8	-6.92	Elevation in NGVD29
828	594189.1	695310.6	-7.42	Elevation in NGVD29
829	594186.9	695317.7	-7.72	Elevation in NGVD29
830	594184.6	695324.4	-8.12	Elevation in NGVD29
831	594182.1	695330.9	-8.32	Elevation in NGVD29
832	594179.2	695338.6	-8.61	Elevation in NGVD29
833	594176.4	695345.8	-8.82	Elevation in NGVD29
834	594174.0	695352.6	-9.12	Elevation in NGVD29
835	594171.7	695359.6	-9.33	Elevation in NGVD29
836	594169.7	695366.3	-9.63	Elevation in NGVD29
837	594168.1	695373.7	-9.93	Elevation in NGVD29
838	594166.9	695381.5	-10.3	Elevation in NGVD29
839	594166.2	695388.8	-10.7	Elevation in NGVD29
840	594165.7	695397.3	-11.2	Elevation in NGVD29
841	594165.8	695404.8	-11.4	Elevation in NGVD29
842	594166.0	695414.2	-11.7	Elevation in NGVD29
843	594166.5	695421.8	-12	Elevation in NGVD29
844	594167.0	695428.8	-12.2	Elevation in NGVD29
845	594167.8	695441.5	-12.2	Elevation in NGVD29
846	594168.2	695453.4	-11.7	Elevation in NGVD29

**Points, Eastings, Northings, Elevation, Description**  
**PENZD of Hydrographic Data**

<b>Point</b>	<b>Easting</b>	<b>Northing</b>	<b>Z</b>	<b>Description</b>
847	594168.1	695462.3	-12.4	Elevation in NGVD29
848	594167.8	695469.3	-12.4	Elevation in NGVD29
849	594166.9	695481.6	-12.5	Elevation in NGVD29
850	594165.4	695491.8	-12.3	Elevation in NGVD29
851	594164.2	695498.8	-12.4	Elevation in NGVD29
852	594162.5	695507.4	-12.2	Elevation in NGVD29
853	594160.5	695516.8	-12.2	Elevation in NGVD29
854	594158.3	695527.2	-12.1	Elevation in NGVD29
855	594156.3	695538.9	-12.1	Elevation in NGVD29
856	594155.1	695549.8	-12.2	Elevation in NGVD29
857	594154.8	695556.9	-12.3	Elevation in NGVD29
858	594155.2	695564.8	-12.5	Elevation in NGVD29
859	594155.9	695578.8	-12.3	Elevation in NGVD29
860	594155.9	695592.6	-11.9	Elevation in NGVD29
861	594155.5	695599.9	-11.5	Elevation in NGVD29
862	594154.5	695607.6	-11	Elevation in NGVD29
863	594153.1	695615.0	-10.7	Elevation in NGVD29
864	594151.0	695622.9	-9.9	Elevation in NGVD29
865	594148.5	695630.3	-9.3	Elevation in NGVD29
866	594145.5	695637.5	-8.4	Elevation in NGVD29
867	594142.3	695644.1	-7.69	Elevation in NGVD29
868	594110.0	695663.9	-3.24	Elevation in NGVD29
869	594102.9	695662.2	-3.75	Elevation in NGVD29
870	594096.5	695659.1	-3.84	Elevation in NGVD29
871	594090.9	695654.5	-4.34	Elevation in NGVD29
872	594086.8	695648.5	-5.34	Elevation in NGVD29
873	594084.2	695641.7	-6.64	Elevation in NGVD29
874	594082.6	695634.5	-7.74	Elevation in NGVD29
875	594081.6	695626.2	-8.64	Elevation in NGVD29
876	594081.5	695618.8	-9.34	Elevation in NGVD29
877	594082.2	695611.7	-10.1	Elevation in NGVD29
878	594083.6	695604.5	-10.6	Elevation in NGVD29
879	594084.9	695597.3	-11.1	Elevation in NGVD29
880	594086.3	695590.1	-11.6	Elevation in NGVD29
881	594088.2	695581.0	-12	Elevation in NGVD29
882	594090.0	695573.9	-12.6	Elevation in NGVD29
883	594092.9	695563.3	-12.6	Elevation in NGVD29
884	594095.0	695556.6	-12.8	Elevation in NGVD29
885	594097.4	695548.5	-12.7	Elevation in NGVD29
886	594099.6	695541.7	-12.5	Elevation in NGVD29
887	594103.1	695530.6	-12.3	Elevation in NGVD29
888	594107.3	695517.6	-12.3	Elevation in NGVD29
889	594109.0	695510.6	-12.4	Elevation in NGVD29
890	594110.7	695503.1	-12.4	Elevation in NGVD29
891	594113.0	695491.9	-12.4	Elevation in NGVD29
892	594114.5	695484.2	-12.5	Elevation in NGVD29
893	594117.3	695470.3	-12.6	Elevation in NGVD29

**Points, Eastings, Northings, Elevation, Description**  
**PENZD of Hydrographic Data**

<b>Point</b>	<b>Easting</b>	<b>Northing</b>	<b>Z</b>	<b>Description</b>
894	594120.3	695456.3	-12.6	Elevation in NGVD29
895	594122.1	695447.8	-12.6	Elevation in NGVD29
896	594123.7	695440.7	-12.7	Elevation in NGVD29
897	594125.3	695431.7	-12.5	Elevation in NGVD29
898	594126.8	695422.6	-12.4	Elevation in NGVD29
899	594128.0	695414.9	-12.1	Elevation in NGVD29
900	594129.2	695406.6	-12	Elevation in NGVD29
901	594130.3	695398.9	-11.7	Elevation in NGVD29
902	594131.3	695391.6	-11.4	Elevation in NGVD29
903	594132.5	695383.8	-11	Elevation in NGVD29
904	594133.7	695375.2	-10.5	Elevation in NGVD29
905	594134.8	695367.4	-10.1	Elevation in NGVD29
906	594136.0	695358.9	-9.68	Elevation in NGVD29
907	594137.0	695351.8	-9.38	Elevation in NGVD29
908	594137.8	695342.8	-9.08	Elevation in NGVD29
909	594138.2	695335.2	-8.87	Elevation in NGVD29
910	594138.4	695326.7	-8.47	Elevation in NGVD29
911	594138.5	695319.6	-8.37	Elevation in NGVD29
912	594138.1	695312.4	-7.97	Elevation in NGVD29
913	594137.7	695304.8	-7.67	Elevation in NGVD29
914	594137.0	695297.6	-7.36	Elevation in NGVD29
915	594136.2	695289.5	-7.06	Elevation in NGVD29
916	594135.3	695281.8	-6.66	Elevation in NGVD29
917	594134.6	695274.1	-6.26	Elevation in NGVD29
918	594133.9	695266.2	-5.96	Elevation in NGVD29
919	594133.4	695259.2	-5.56	Elevation in NGVD29
920	594133.2	695252.1	-5.26	Elevation in NGVD29
921	594133.4	695243.7	-4.76	Elevation in NGVD29
922	594134.2	695235.5	-4.36	Elevation in NGVD29
923	594135.4	695228.2	-4.06	Elevation in NGVD29
924	594137.0	695221.3	-3.55	Elevation in NGVD29
925	594139.9	695209.6	-3.25	Elevation in NGVD29
926	594142.7	695197.6	-3.64	Elevation in NGVD29
927	594144.4	695190.2	-3.54	Elevation in NGVD29
928	594146.1	695181.5	-3.33	Elevation in NGVD29
929	594005.6	695650.3	-3.72	Elevation in NGVD29
930	593998.5	695647.9	-4.03	Elevation in NGVD29
931	593990.7	695642.9	-4.43	Elevation in NGVD29
932	593985.8	695637.0	-5.14	Elevation in NGVD29
933	593982.8	695630.6	-6.04	Elevation in NGVD29
934	593981.6	695622.4	-6.65	Elevation in NGVD29
935	593982.5	695615.4	-8.26	Elevation in NGVD29
936	593984.8	695608.8	-9.37	Elevation in NGVD29
937	593987.5	695602.1	-10.2	Elevation in NGVD29
938	593990.6	695595.1	-10.8	Elevation in NGVD29
939	593993.9	695587.6	-11.1	Elevation in NGVD29
940	593997.3	695580.5	-11.5	Elevation in NGVD29

**Points, Eastings, Northings, Elevation, Description**  
**PENZD of Hydrographic Data**

<b>Point</b>	<b>Easting</b>	<b>Northing</b>	<b>Z</b>	<b>Description</b>
941	594000.3	695573.8	-11.9	Elevation in NGVD29
942	594003.5	695566.7	-12.4	Elevation in NGVD29
943	594006.3	695560.0	-12.6	Elevation in NGVD29
944	594009.0	695553.5	-12.7	Elevation in NGVD29
945	594011.9	695545.5	-12.7	Elevation in NGVD29
946	594014.9	695535.4	-12.7	Elevation in NGVD29
947	594017.4	695522.5	-12.7	Elevation in NGVD29
948	594018.3	695514.8	-12.6	Elevation in NGVD29
949	594018.6	695506.9	-12.6	Elevation in NGVD29
950	594019.0	695495.8	-12.5	Elevation in NGVD29
951	594019.2	695483.4	-12.6	Elevation in NGVD29
952	594018.9	695473.5	-12.7	Elevation in NGVD29
953	594018.7	695464.3	-12.8	Elevation in NGVD29
954	594018.6	695455.5	-12.8	Elevation in NGVD29
955	594018.7	695445.8	-12.7	Elevation in NGVD29
956	594019.1	695435.5	-12.7	Elevation in NGVD29
957	594020.1	695423.9	-12.6	Elevation in NGVD29
958	594022.1	695410.8	-12.4	Elevation in NGVD29
959	594024.0	695401.4	-12.1	Elevation in NGVD29
960	594026.2	695392.1	-11.9	Elevation in NGVD29
961	594028.2	695383.7	-11.6	Elevation in NGVD29
962	594030.1	695376.2	-11.2	Elevation in NGVD29
963	594032.1	695368.9	-10.9	Elevation in NGVD29
964	594034.4	695360.2	-10.5	Elevation in NGVD29
965	594036.0	695353.3	-10	Elevation in NGVD29
966	594037.8	695345.2	-9.59	Elevation in NGVD29
967	594039.3	695336.7	-9.29	Elevation in NGVD29
968	594040.0	695329.4	-9.08	Elevation in NGVD29
969	594040.2	695320.9	-8.78	Elevation in NGVD29
970	594040.0	695313.2	-8.48	Elevation in NGVD29
971	594039.4	695305.0	-8.18	Elevation in NGVD29
972	594038.3	695295.9	-7.68	Elevation in NGVD29
973	594037.1	695287.3	-7.38	Elevation in NGVD29
974	594036.0	695280.3	-7.08	Elevation in NGVD29
975	594034.5	695272.1	-6.57	Elevation in NGVD29
976	594033.1	695265.2	-6.37	Elevation in NGVD29
977	594031.2	695256.1	-5.87	Elevation in NGVD29
978	594029.5	695249.2	-5.57	Elevation in NGVD29
979	594027.5	695241.3	-5.27	Elevation in NGVD29
980	594025.7	695233.8	-4.87	Elevation in NGVD29
981	594024.3	695226.8	-4.57	Elevation in NGVD29
982	594022.9	695219.0	-4.27	Elevation in NGVD29
983	594021.6	695211.5	-3.97	Elevation in NGVD29
984	594020.6	695203.7	-3.47	Elevation in NGVD29
985	594019.7	695195.7	-3.26	Elevation in NGVD29
986	594019.0	695188.5	-3.46	Elevation in NGVD29
987	594018.4	695180.6	-3.56	Elevation in NGVD29

**Points, Eastings, Northings, Elevation, Description**  
**PENZD of Hydrographic Data**

<b>Point</b>	<b>Easting</b>	<b>Northing</b>	<b>Z</b>	<b>Description</b>
988	594007.1	695188.2	-4.02	Elevation in NGVD29
989	594001.4	695197.6	-3.32	Elevation in NGVD29
990	593998.5	695205.1	-3.72	Elevation in NGVD29
991	593996.3	695212.2	-3.92	Elevation in NGVD29
992	593994.3	695219.0	-4.21	Elevation in NGVD29
993	593992.4	695226.1	-4.61	Elevation in NGVD29
994	593990.4	695234.3	-5.01	Elevation in NGVD29
995	593988.8	695241.7	-5.31	Elevation in NGVD29
996	593987.3	695248.6	-5.61	Elevation in NGVD29
997	593986.0	695256.4	-5.91	Elevation in NGVD29
998	593984.7	695265.1	-6.31	Elevation in NGVD29
999	593983.6	695272.6	-6.71	Elevation in NGVD29
1000	593982.4	695280.5	-7.01	Elevation in NGVD29
1001	593981.2	695288.1	-7.41	Elevation in NGVD29
1002	593979.8	695296.3	-7.7	Elevation in NGVD29
1003	593978.5	695303.4	-8.2	Elevation in NGVD29
1004	593977.2	695310.6	-8.4	Elevation in NGVD29
1005	593975.8	695318.9	-8.69	Elevation in NGVD29
1006	593974.5	695326.8	-8.99	Elevation in NGVD29
1007	593973.3	695335.2	-9.39	Elevation in NGVD29
1008	593972.3	695343.2	-9.69	Elevation in NGVD29
1009	593971.5	695350.6	-9.99	Elevation in NGVD29
1010	593970.9	695359.1	-10.4	Elevation in NGVD29
1011	593970.5	695367.5	-10.9	Elevation in NGVD29
1012	593970.3	695375.1	-11.3	Elevation in NGVD29
1013	593970.0	695382.4	-11.6	Elevation in NGVD29
1014	593969.8	695389.7	-11.9	Elevation in NGVD29
1015	593969.2	695400.0	-12	Elevation in NGVD29
1016	593968.6	695408.3	-12.3	Elevation in NGVD29
1017	593967.9	695415.8	-12.6	Elevation in NGVD29
1018	593967.0	695424.7	-12.6	Elevation in NGVD29
1019	593966.2	695432.3	-12.7	Elevation in NGVD29
1020	593965.0	695442.6	-12.8	Elevation in NGVD29
1021	593964.1	695452.6	-12.9	Elevation in NGVD29
1022	593963.1	695462.7	-12.8	Elevation in NGVD29
1023	593962.1	695471.7	-12.8	Elevation in NGVD29
1024	593960.5	695484.7	-12.8	Elevation in NGVD29
1025	593959.2	695493.6	-12.7	Elevation in NGVD29
1026	593957.9	695502.5	-12.7	Elevation in NGVD29
1027	593956.6	695510.1	-12.7	Elevation in NGVD29
1028	593955.4	695517.9	-12.8	Elevation in NGVD29
1029	593954.1	695525.9	-12.8	Elevation in NGVD29
1030	593952.9	695533.4	-12.9	Elevation in NGVD29
1031	593951.6	695542.1	-12.9	Elevation in NGVD29
1032	593950.1	695555.9	-12.5	Elevation in NGVD29
1033	593949.3	695563.1	-12.5	Elevation in NGVD29
1034	593948.3	695570.2	-12	Elevation in NGVD29

**Points, Eastings, Northings, Elevation, Description**  
**PENZD of Hydrographic Data**

<b>Point</b>	<b>Easting</b>	<b>Northing</b>	<b>Z</b>	<b>Description</b>
1035	593946.9	695577.5	-11.6	Elevation in NGVD29
1036	593945.5	695585.0	-11.2	Elevation in NGVD29
1037	593943.9	695592.2	-11	Elevation in NGVD29
1038	593942.4	695599.2	-10.3	Elevation in NGVD29
1039	593941.0	695606.6	-9.72	Elevation in NGVD29
1040	593939.7	695613.5	-8.92	Elevation in NGVD29
1041	593938.2	695620.4	-7.82	Elevation in NGVD29
1042	593907.2	695185.2	-4.11	Elevation in NGVD29
1043	593906.1	695192.4	-3.92	Elevation in NGVD29
1044	593904.9	695200.3	-3.73	Elevation in NGVD29
1045	593903.8	695207.5	-4.03	Elevation in NGVD29
1046	593902.4	695214.8	-4.43	Elevation in NGVD29
1047	593900.8	695223.2	-4.93	Elevation in NGVD29
1048	593899.3	695230.5	-5.13	Elevation in NGVD29
1049	593897.7	695238.4	-5.53	Elevation in NGVD29
1050	593895.8	695246.8	-5.93	Elevation in NGVD29
1051	593894.3	695254.0	-6.22	Elevation in NGVD29
1052	593892.4	695262.4	-6.62	Elevation in NGVD29
1053	593890.8	695270.2	-7.02	Elevation in NGVD29
1054	593889.3	695277.9	-7.41	Elevation in NGVD29
1055	593888.2	695285.1	-7.71	Elevation in NGVD29
1056	593886.6	695296.1	-8.21	Elevation in NGVD29
1057	593885.1	695306.3	-8.61	Elevation in NGVD29
1058	593884.0	695313.5	-8.91	Elevation in NGVD29
1059	593882.8	695320.6	-9.31	Elevation in NGVD29
1060	593881.7	695327.6	-9.52	Elevation in NGVD29
1061	593880.7	695335.1	-9.92	Elevation in NGVD29
1062	593879.9	695343.6	-10.3	Elevation in NGVD29
1063	593879.5	695351.4	-10.5	Elevation in NGVD29
1064	593879.2	695358.9	-11.1	Elevation in NGVD29
1065	593878.8	695366.3	-11.4	Elevation in NGVD29
1066	593878.3	695373.8	-11.8	Elevation in NGVD29
1067	593877.5	695382.1	-12	Elevation in NGVD29
1068	593876.1	695390.5	-12.2	Elevation in NGVD29
1069	593874.5	695397.8	-12.5	Elevation in NGVD29
1070	593872.4	695406.2	-12.7	Elevation in NGVD29
1071	593869.6	695417.8	-12.8	Elevation in NGVD29
1072	593867.1	695428.7	-13	Elevation in NGVD29
1073	593865.7	695437.1	-13.1	Elevation in NGVD29
1074	593864.0	695449.5	-13	Elevation in NGVD29
1075	593862.6	695459.1	-13	Elevation in NGVD29
1076	593861.3	695469.6	-13.1	Elevation in NGVD29
1077	593860.7	695477.3	-13.2	Elevation in NGVD29
1078	593860.6	695484.4	-13	Elevation in NGVD29
1079	593860.4	695491.9	-12.9	Elevation in NGVD29
1080	593860.0	695503.3	-13	Elevation in NGVD29
1081	593859.4	695510.4	-13.2	Elevation in NGVD29

