



**Pacific Gas and  
Electric Company®**

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June 1, 2004

Norman Shopay  
Project Manager  
California Department of Toxic Substances Control  
Geology and Corrective Action Branch  
700 Heinz Avenue  
Berkeley, California 94710

Subject: Performance Monitoring Report No. 4  
Interim Measure No. 2  
PG&E Topock Compressor Station, Needles, California

Dear Mr. Shopay:

Enclosed is the fourth performance monitoring report for Interim Measure No. 2 for the Topock project. This report was prepared in conformance with Final Interim Measures Work Plan No. 2, and describes the activities performed and monitoring data collected during the period May 1 through 15, 2004. Please contact me at (805) 546-5243 if you have any questions or if you need additional information.

Sincerely,

*Terril Herson  
for Yvonne Meeks*

Enclosure

cc: CWG Members

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**Performance Monitoring Report No. 4,  
PG&E Topock Compressor Station,  
Interim Measure No. 2,  
May 1 through 15, 2004**

Prepared for  
**Pacific Gas and Electric Company**

June 1, 2004

**CH2MHILL**

**Performance Monitoring Report No. 4  
PG&E Topock Compressor Station, Interim Measures No. 2  
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Prepared for  
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This work plan was prepared under supervision of a  
California Registered Geologist,

A handwritten signature in cursive script, reading "Brian Schroth". The signature is written in black ink and is positioned above the printed name and title.

Brian Schroth, Registered Geologist No. 7423  
Senior Hydrogeologist

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# Performance Monitoring Report No. 4, PG&E Topock Compressor Station, Interim Measure No. 2 May 1 through 15, 2004

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Pacific Gas and Electric Company (PG&E) is implementing Interim Measure (IM) No. 2 at the Topock Compressor Station in Needles, California, as described in the *Final Interim Measures Work Plan No. 2* prepared by CH2M HILL on March 2, 2004 and *Addenda to Interim Measures Work Plan No. 2*, prepared by CH2M HILL on March 1, 2004. This performance monitoring report describes operational and monitoring information for IM No. 2 for the period between May 1 and May 15, 2004.

This performance monitoring report has been prepared in compliance with the *Final Interim Measures Work Plan No. 2*, which requires reporting of system operations and performance monitoring data. Future reports will be submitted to the Department of Toxic Substances Control (DTSC) on the 1<sup>st</sup> (for the first half of the preceding month) and the 15<sup>th</sup> (for the last half of the preceding month) of each month, with the schedule subject to reevaluation and adjustment by DTSC.

## System Operations

### System Description

The groundwater extraction system is located within a secured area on the monitoring well MW-20 bench. Existing monitoring wells MW-20-70, MW-20-100, and MW-20-130 were operated as temporary extraction wells from system start-up until May 13, 2004. Pumping operations were transferred to a new extraction well cluster TW-2S and TW-2D installed on the north side of the compound on May 13, 2004. Extracted groundwater is stored in holding tanks before transport to an off-site permitted treatment and disposal facility.

**Figure 1** is an updated facility map showing the location of the new extraction wells and recent expansion of the secondary containment area. **Attachment 1** includes photographs of recent site modifications.

### Pumping Operations

Table 1 summarizes the pumping data for the reporting period from the MW-20 cluster. A total of 96,157 gallons of groundwater were extracted during the reporting period. Scheduled shut-downs of the MW-20 pumps were implemented during this reporting period. The shutdowns were necessary to allow the aquifer to equilibrate before conducting the pump tests and to provide adequate storage in the holding tanks to manage water

generated during the tests. Continuous pumping from the MW-20 cluster was stopped on May 13, 2004 and the new extraction wells were brought online.

Table 2 summarizes the pumping data for the reporting period from the new extraction well cluster, TW-2S and TW-2D. A total of 260,340 gallons of groundwater were extracted from these wells during this reporting period, including that which was pumped during the constant rate and spinner log pump tests completed using each well. Continuous pumping from both wells TW-2S and TW-2D began on May 13, 2004. Full-time pumping from TW-2S and TW-2D will continue at flow rates similar to that achieved from the MW-20 Cluster (i.e., at least 16 gpm).

The total volume of groundwater extracted during this performance period was greater than that extracted during previous performance periods.

The extracted groundwater was manifested as a hazardous waste and transported to United States Filter Corporation in Los Angeles, California for treatment and disposal. Copies of field notes, field logs, and waste manifests are maintained on site. Completed waste manifests from the treatment and disposal facility are returned back to the Topock Station.

Daily inspections include tank inspections, flow measurements, site security, and desert tortoise sitings. Daily logs with documentation of inspections are maintained on site. No rainfall events occurred during this reporting period. No other operational changes were noted during the reporting period.

## **System Modifications**

The secondary containment for the existing holding tanks was expanded to accommodate a sixth tank (if needed), while continuing to meet the secondary containment requirements for hazardous waste tanks (22 CCR Part 66265.193).

**TABLE 1**

Pump Data from MW-20 Cluster (May 1 through May 13, 2004)

*Performance Monitoring Report No. 4, Topock Compressor Station, Interim Measure No. 2*

Extraction Well	Reporting Period		Project To Date	
	Average Pumping Rate (gpm)	Volume Pumped (gal)	Average Pumping Rate (gpm)	Volume Pumped (gal)
MW-20-70	2.0	13,942	3.0	243,657
MW-20-100	3.0	18,816	3.1	232,166
MW-20-130	10.0	63,849	9.9	748,502
<b>Total</b>	15.4	96,157	16.1	1,224,325

gpm: gallons per minute.

gal: gallons.

Note: "Average Pumping Rate" is an average of the periodic flow meter readings over the reporting period, whereas "Volume Pumped" is based on flow totalizer readings from the beginning and end of the reporting period.

**TABLE 2**

Pump Data from TW-2S and TW-2D (May 13 through May 15, 2004)

*Performance Monitoring Report No. 4, Topock Compressor Station, Interim Measure No. 2*

Extraction Well	Reporting Period		Project To Date	
	Average Pumping Rate (gpm)	Volume Pumped (gal)	Average Pumping Rate (gpm)	Volume Pumped (gal)
TW-2S	Varied <sup>1</sup>	128,712 <sup>2</sup>	Varied	128,712
TW-2D	Varied <sup>1</sup>	131,628 <sup>2</sup>	Varied	131,628
<b>Total</b>	---	260,340	---	260,340

gpm: gallons per minute.

gal: gallons.

<sup>1</sup>Average pumping rates varied widely over the reporting period due to the different pump tests completed (constant rate tests and spinner log tests). Continuous pumping started on May 13, 2004 at approximately 11:30 am.

<sup>2</sup>The estimated volume of groundwater pumped from each well includes the volumes pumping during pump tests.

## Monitoring Data

### Chemical Data

Weekly grab samples were not collected from the MW-20 cluster during this reporting period because the pumping operations were shut down. The MW-20 cluster was sampled during the week of May 10 as part of the bi-monthly sampling event for chromium concentrations and general geochemistry. The results of the bi-monthly sampling event will be presented in a future report.

Weekly grab sampling from TW-2S and TW-2D will begin during the next reporting period. Samples collected from TW-2S and TW-2D during step-drawdown pump tests and spinner log tests are summarized in Tables 3 and 4, respectively. Samples from the spinner log tests were obtained at specific depths.

### Hydraulic Data

Water levels were recorded with pressure transducers at 1 to 5 minute intervals in wells and a river monitoring station (I-3). The data are typically continuous with only short interruptions for sampling or maintenance. The wells monitored were:

**Floodplain Wells:** MW-27, MW-28-25, MW-29, MW-30 cluster (2), MW-32 cluster (2), MW-33 cluster (2), and MW-34 cluster (2), MW-36 cluster (6) and MW-39 cluster (6)

**Intermediate Wells:** MW-19, MW-20 cluster (3), MW-26, MW-31 cluster (2), MW-35 cluster (2), TW-2S, TW-2D

**Basin Wells:** MW-10, MW-25

Attachment 2 contains hydrographs for all transducer data collected between February 28 and May 15, 2004.

Pumping continued at the MW-20 cluster during May 1 through 13 at an average rate of approximately 15.4 gallons per minute (gpm). Pumping at the MW-20 cluster stopped only during periods of testing at TW-2, as described below.

Well and aquifer tests were conducted at the recently-completed TW-2S and TW-2D during the current reporting period (Table 5). Pumping from the MW-20 cluster wells was stopped in advance of and during the testing of the TW-2 wells. However, the net volume of water extracted increased during the testing, since the water removed from the TW-2 wells was greater than the volume that would have been extracted from the MW-20 wells alone, as confirmed by flow data in Table 2.

**TABLE 5**  
TW-2S & TW-2D Well / Aquifer Tests  
*Performance Monitoring Report No. 4, Topock Compressor Station, Interim Measure No. 2*

Test	Test Duration				Flow Rate (gpm)
	Start 1st Pulse	End 1st Pulse	Start 2nd Pulse	End 2nd Pulse	
TW-2S Step Test	Apr-24 10:32	Apr-24 16:00	--	--	15,30,50,70, and 85
TW-2D Step Test	Apr-25 09:52	Apr-25 14:52	--	--	20,50,75,85, and 90
TW-2S	Apr-30 15:45	May-01 05:30	May-01 07:30	May-01 09:30	85
TW-2D	May-05 18:00	May-06 02:00	--	--	98
TW-2S & TW-2D	May-09 20:00	May-10 01:00	--	--	60 (S) and 90 (D)

Step-drawdown tests were conducted during the previous reporting period to evaluate well efficiency and maximum well yield. Results from the step drawdown tests are provided in Table 6.

Longer-term or constant rate pumping tests were conducted at TW-2S on April 30 to May 1, 2004 and at TW-2D on May 4-5, 2004. The TW-2S test also included a second pumping "pulse" (2 hours) timed to coincide with a period of minimal river level change. A combined TW-2S and TW-2D aquifer test was conducted on May 9 and May 10, 2004. Spinner or velocity logging was conducted at the TW-2 wells during the period May 10 through May 12, 2004.

Analysis of Colorado River water levels (e.g., I-3, RRB, and the Topock Marsh Inlet) and United States Bureau of Reclamation records for Davis Dam discharge show that daily fluctuations in river levels are caused by the release of water from Davis Dam. There were extended and notable periods (e.g., 5/01 to 5/07 and 5/11 to 5/13) where Davis Dam discharge was reduced, and hence river levels were lower than preceding days. Water levels at I-3 are shown on all hydrographs provided in Attachment 2. Historic and predicted Davis Dam discharges and river elevations are being evaluated to assist with pumping test evaluation and in order to predict future river elevations.

Further analysis of these data, including removal of fluctuations in water level (caused by the Colorado River fluctuations) and calculation of aquifer properties, is currently being conducted. The pumping test results and geologic data obtained from the recent boring and well completions are also being compiled and evaluated so that assessment of target volume capture may be improved.

## Future Activities

Reporting of IM No. 2 activities will continue as described in the *Final Interim Measures Work Plan No. 2*. The next status report will be submitted on June 15, 2004 and will cover activities from May 16 to May 31, 2004.

Full-time pumping from TW-2S and TW-2D will continue and no pump tests are scheduled during the next reporting period. Weekly wellhead samples will be collected from each well



and the combined influent stream for total chromium, hexavalent chromium, and total dissolved solids (TDS).

The U.S. Bureau of Land Management (BLM) provided approval in late-May to modify the existing facilities to begin batch treatment of the extracted groundwater onsite. The onsite treatment will render the groundwater non-hazardous and provide PG&E greater flexibility to pursue local off-site disposal options. The modifications are tentatively scheduled to begin in June 2003 following procurement and installation of equipment.

## Tables

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Table 3  
Analytical Results - TW-2 Extraction Wells Step Test  
Topock Interim Measures

Step Number	TW-2S			TW-2D		
	Sample Date	Cr(T) mg/L	TDS mg/L	Sample Date	Cr(T) mg/L	TDS mg/L
1	24-Apr-04	10.4	2,560	25-Apr-04	7.29	8,590
2	24-Apr-04	7.76	2,530	25-Apr-04	7.09	8,860
3	24-Apr-04	7.99	2,600	25-Apr-04	7.38	9,000
4	24-Apr-04	7.91	2,730	25-Apr-04	7.38	8,860
5	24-Apr-04	8.42	2,820	25-Apr-04	7.24	8,610

Table 4  
Analytical Results - TW-2 Extraction Wells Spinner Log Test  
Topock Interim Measures

Well ID	Sample Date	Depth ft	Cr(T) mg/L	Cr(VI) mg/L	TDS mg/L
TW-2D	11-May-04	120	7.22	8.07	10,500
	11-May-04	132	4.22	4.63	12,900
	11-May-04	136	3.34	3.82	12,700
	11-May-04	143	0.522	0.458	12,700
	11-May-04	149	0.0631	0.0545	13,000
	11-May-04	Bulk Sample	6.90	7.82	12,400
TW-2S	12-May-04	56	10.1	8.31	2,870
	12-May-04	66	8.31	8.01	3,230
	12-May-04	75	7.16	7.52	3,390
	12-May-04	90	4.74	5.42	3,500
	12-May-04	Bulk Sample	7.53	7.06	2,690

**NOTES:**

- 1) All analytical results are unvalidated, subject to validation review and qualification.
- 2) Parameters analyzed: total dissolved chromium [Cr(T)], hexavalent chromium [Cr(VI)], and total dissolved solids (TDS)
- 3) Results in milligrams per liter (mg/L)

Table 6  
Well Capacity Testing at TW-2S and TW-2D  
Topock Interim Measures

Well Pumped	Flow Rate (gpm)	Date	Start	Finish	Static Water Level (ft BTOC)	Ending Water Level (ft BTOC)	Drawdown from SWL (ft)	Specific Capacity (gpm/ft)
<b>TW-2S Step Test</b>								
TW-2S	0	04/24/2004	10:32		42.80	42.80	0.00	--
TW-2S	15	04/24/2004	10:32	11:32	42.80	46.28	3.48	4.3
TW-2S	30	04/24/2004	11:32	12:32	42.80	50.87	8.07	3.7
TW-2S	52	04/24/2004	12:32	12:42	42.80	--	--	--
TW-2S	52	04/24/2004	13:00	14:00	42.80	52.96	10.16	5.1
TW-2S	70	04/24/2004	14:00	15:00	42.80	54.86	12.06	5.8
TW-2S	87.5	04/24/2004	15:00	16:00	42.80	59.57	16.77	5.2
<b>TW-2D Step Test</b>								
TW-2D	0	04/25/2004	9:52		43.44	43.44	0.00	--
TW-2D	20	04/25/2004	9:52	10:52	43.44	59.14	15.70	1.3
TW-2D	50	04/25/2004	10:52	11:52	43.44	72.88	29.44	1.7
TW-2D	75	04/25/2004	11:52	12:52	43.44	89.45	46.01	1.6
TW-2D	85	04/25/2004	12:52	13:52	43.44	96.80	53.36	1.6
TW-2D	90	04/25/2004	13:52	14:52	43.44	99.30	55.86	1.6

## Figures

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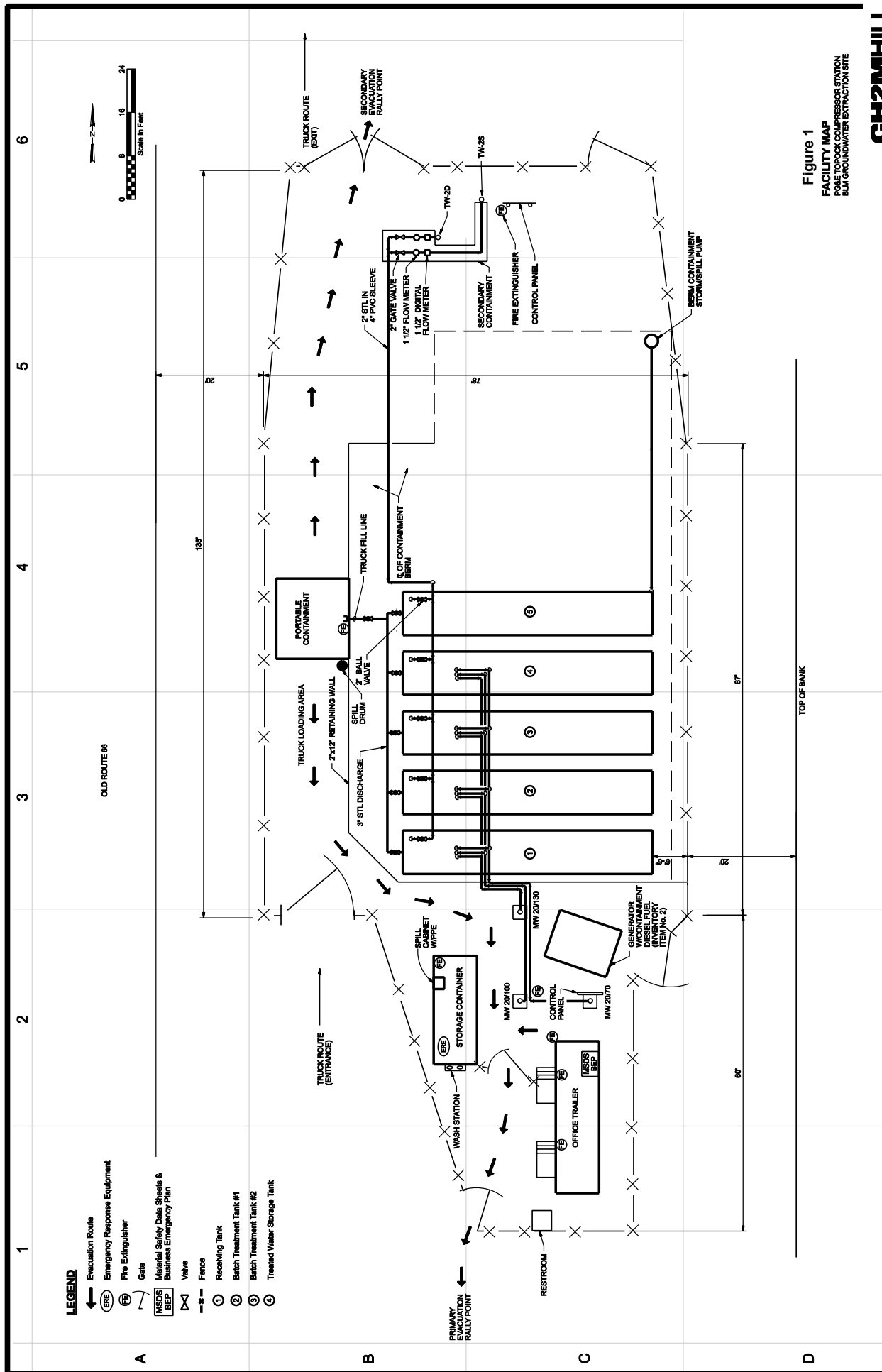


Figure 1  
FACILITY MAP  
PAGE TOPROCK COMPRESSOR STATION  
BLM GROUNDWATER EXTRACTION SITE

**Attachment 1**  
**Photographs**

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**PHOTO 1**  
Groundwater Extraction System



**PHOTO 2**  
Secondary containment expansion



**PHOTO 3**  
New Extraction Well TW-2S

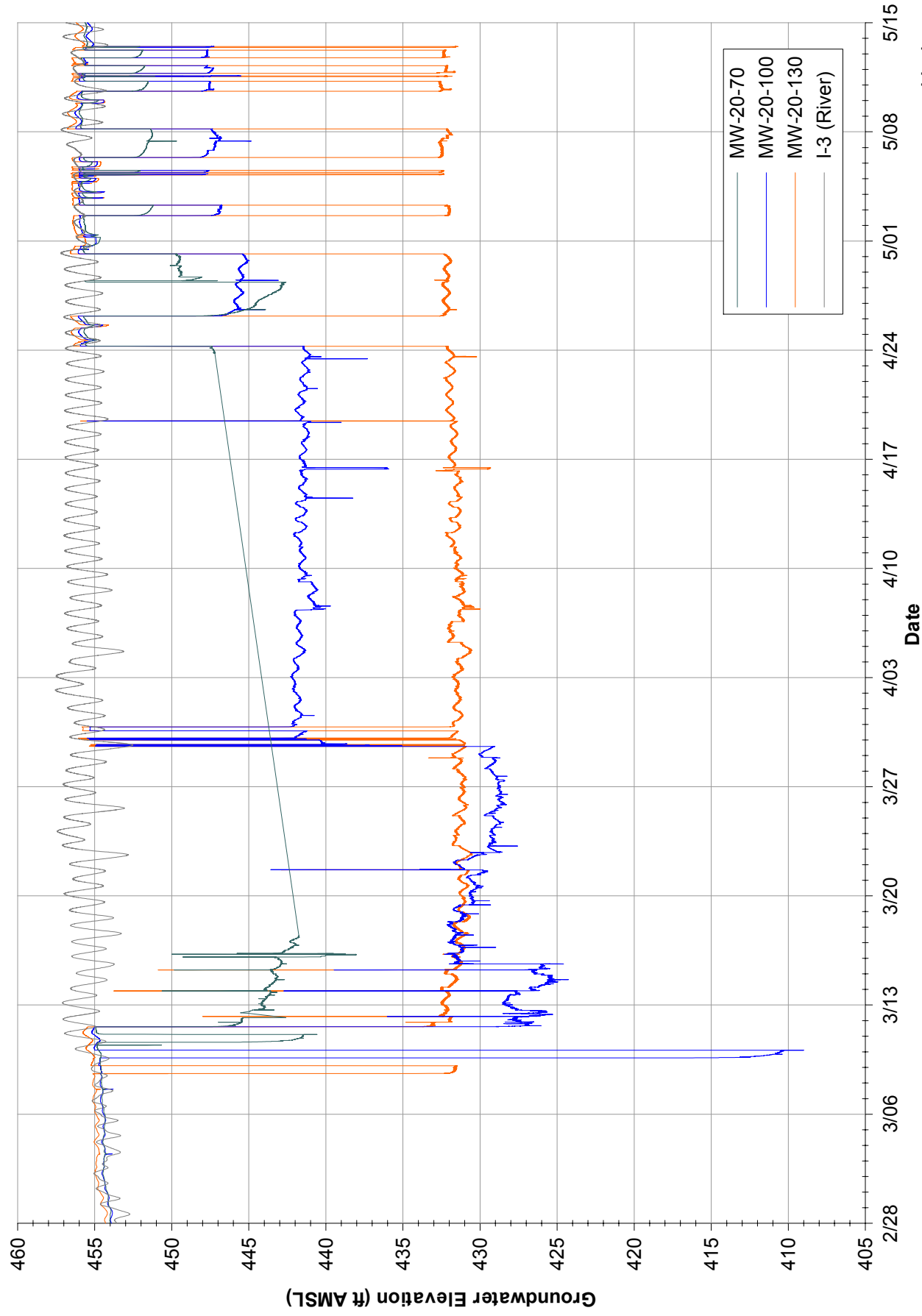


**PHOTO 4**  
Piping, Flow Meters, and Valves from TW-2S within the secondary containment trough.

## **Attachment 2**

### **Hydrographs**

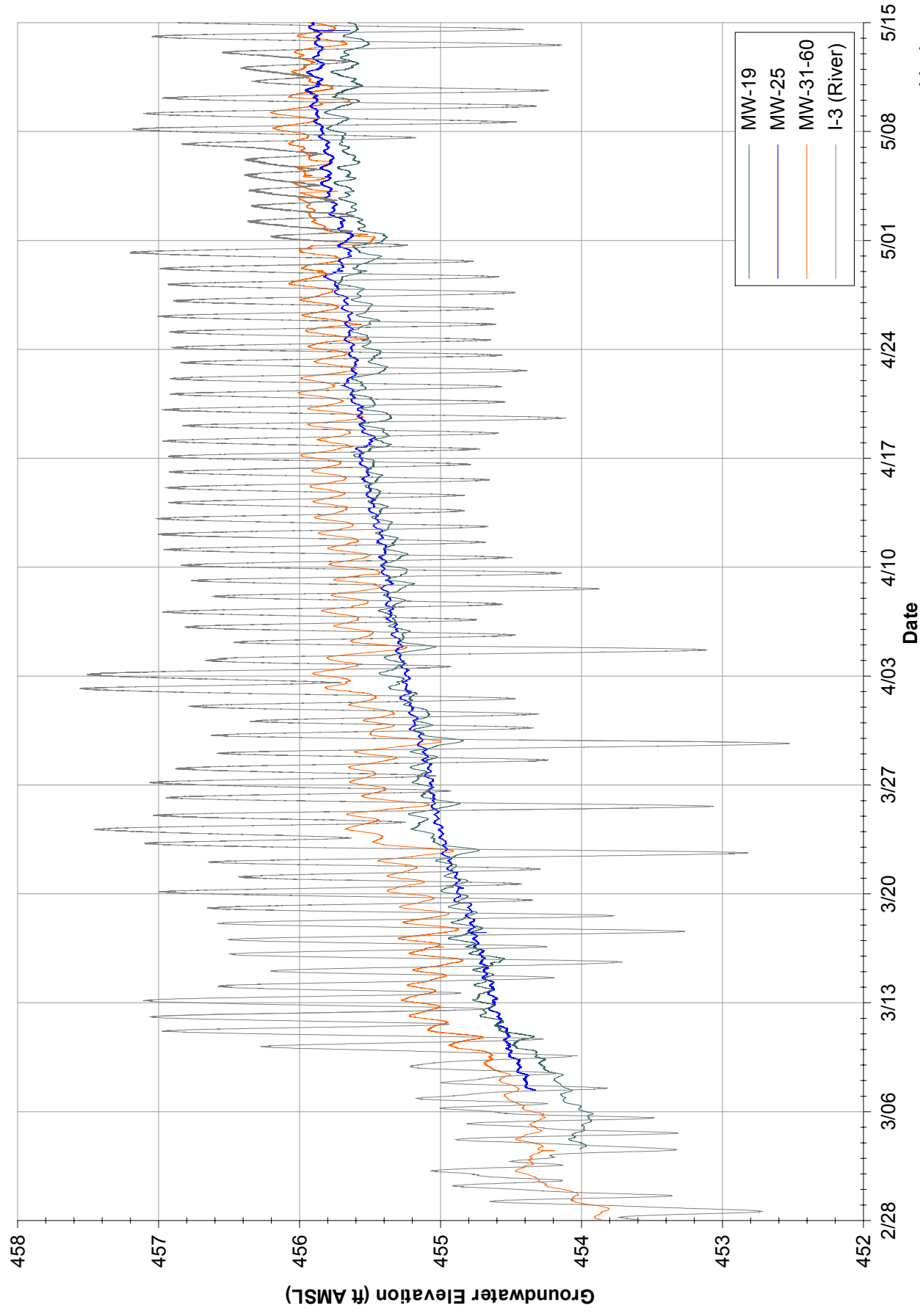
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Hydrograph  
PG&E TOPOCK COMPRESSOR STATION  
NEEDLES, CALIFORNIA

Note: Data subject to review.

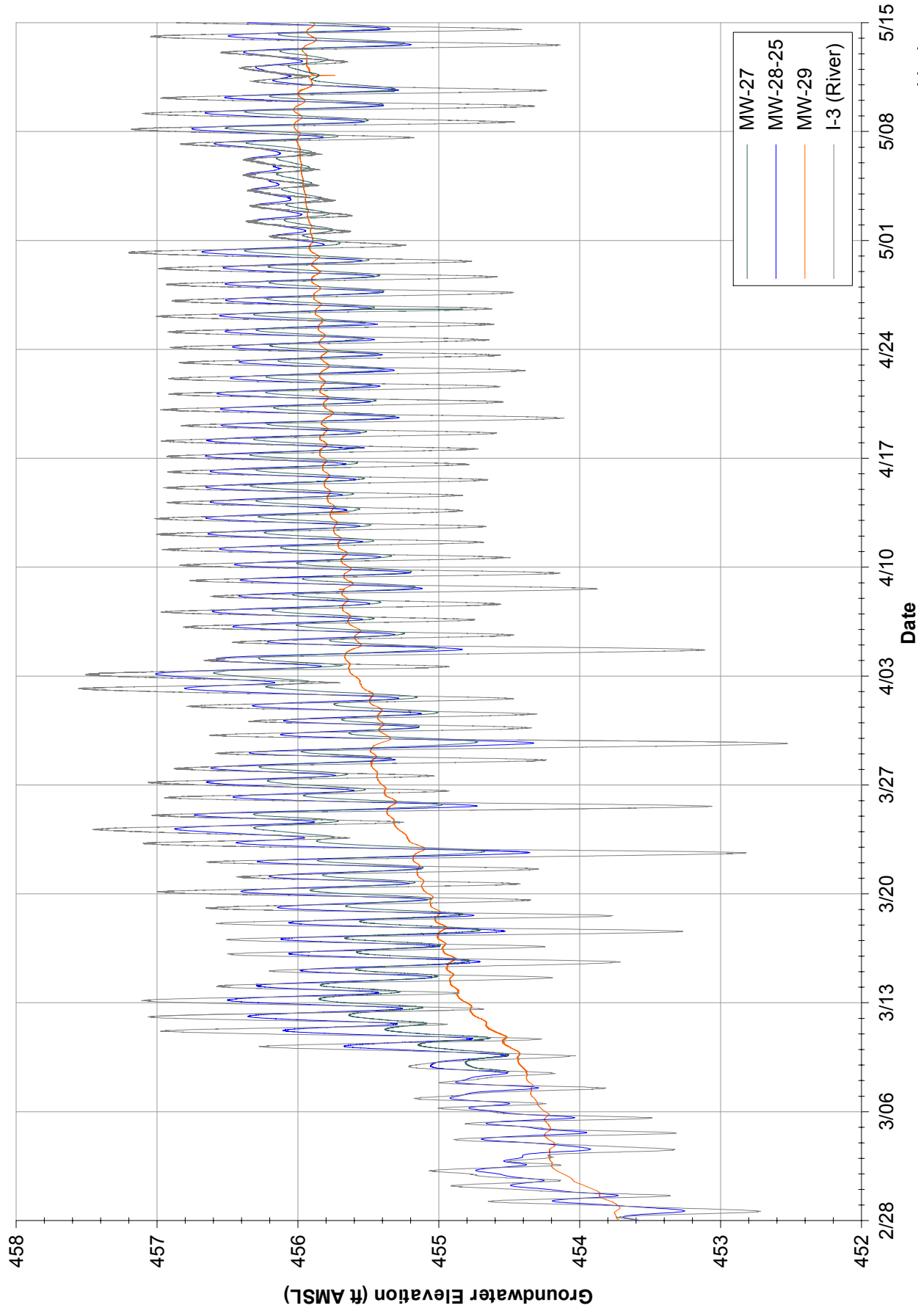
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Note: Data subject to review.

Hydrograph  
PG&E TOPOCK COMPRESSOR STATION  
NEEDLES, CALIFORNIA

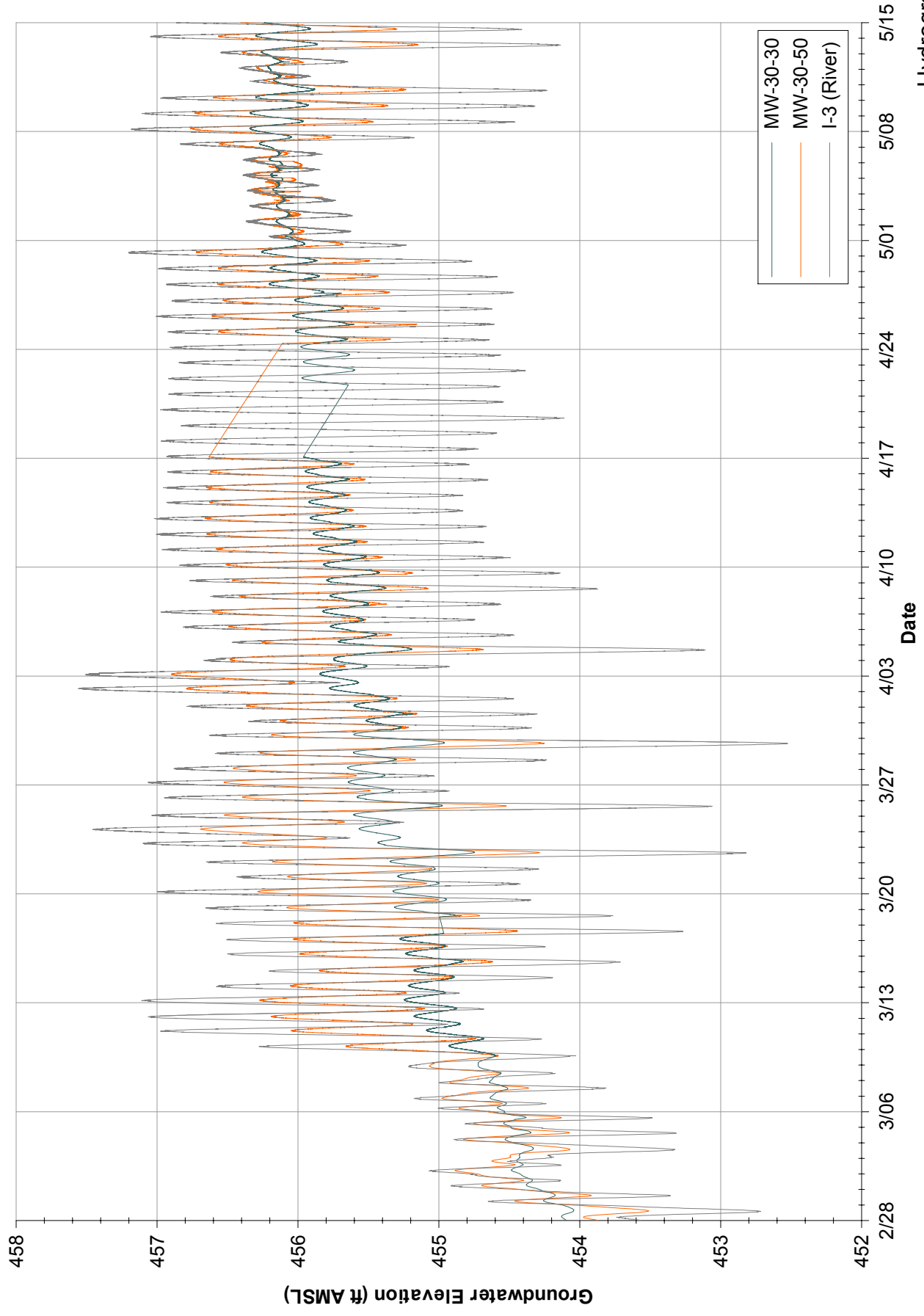
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Note: Data subject to review.

Hydrograph  
PG&E TOPOCK COMPRESSOR STATION  
NEEDLES, CALIFORNIA

CH2MHILL

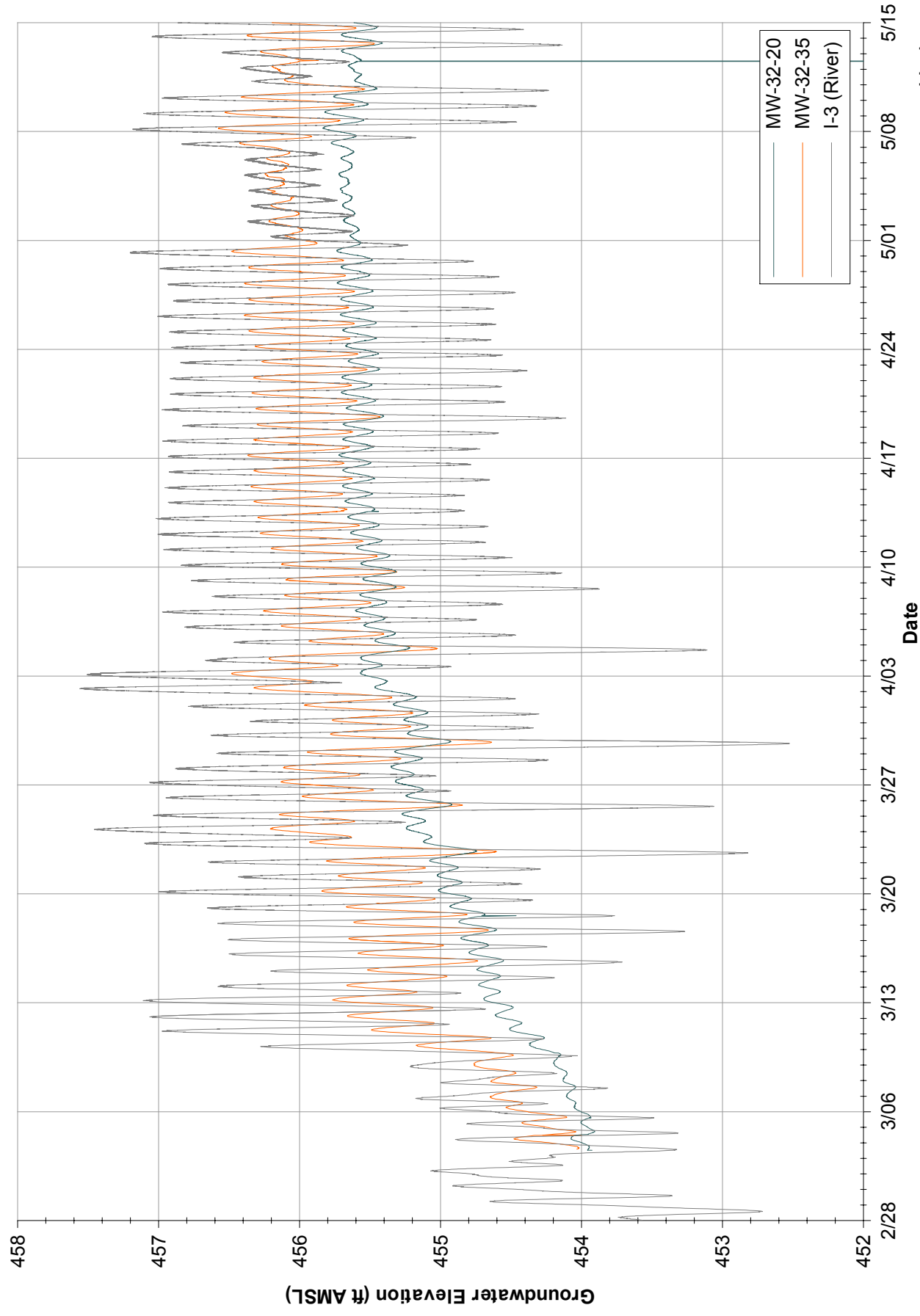


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Hydrograph  
PG&E TOPOCK COMPRESSOR STATION  
NEEDLES, CALIFORNIA

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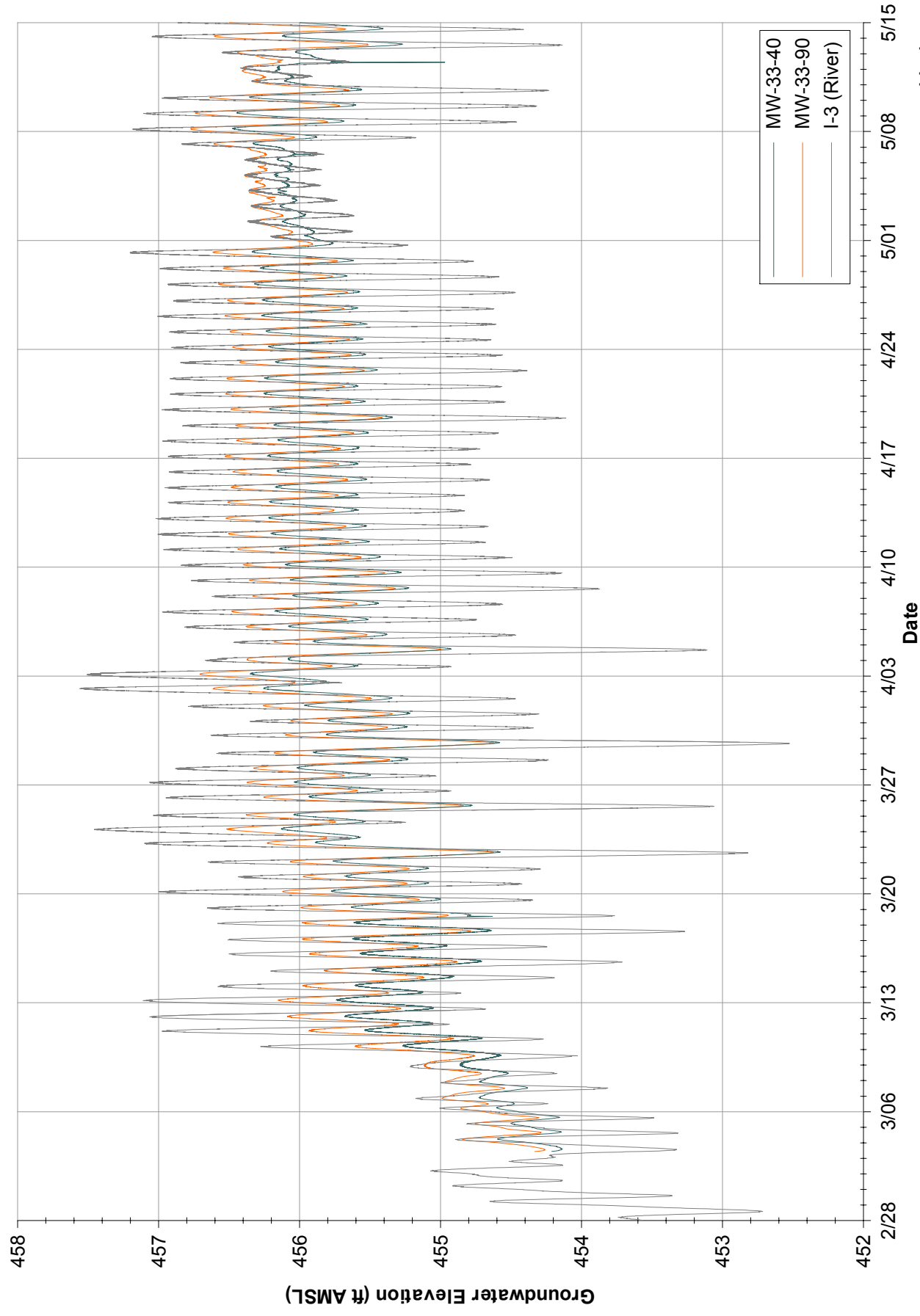


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Hydrograph  
PG&E TOPOCK COMPRESSOR STATION  
NEEDLES, CALIFORNIA

CH2MHILL

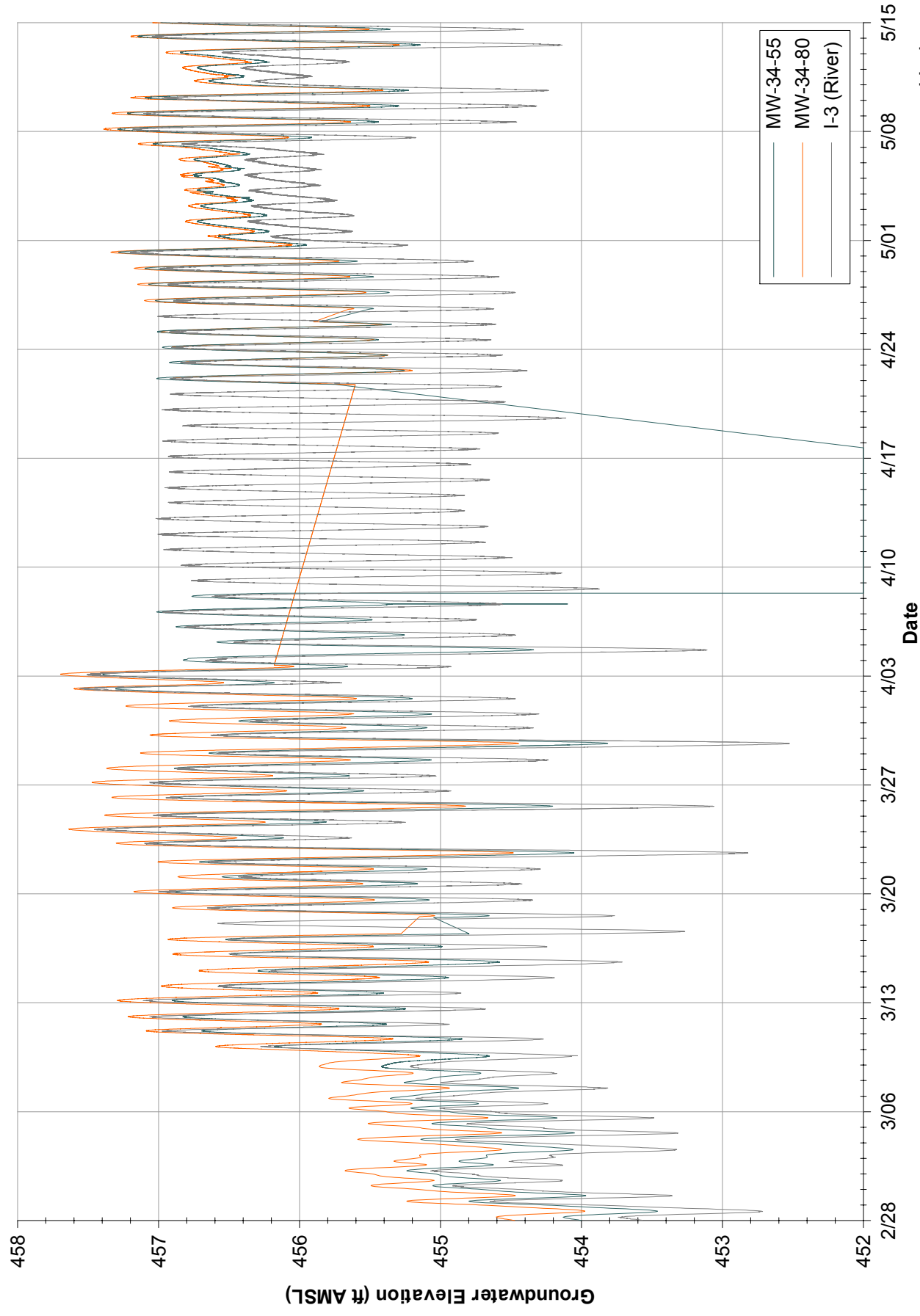




Note: Data subject to review.

Hydrograph  
PG&E TOPOCK COMPRESSOR STATION  
NEEDLES, CALIFORNIA

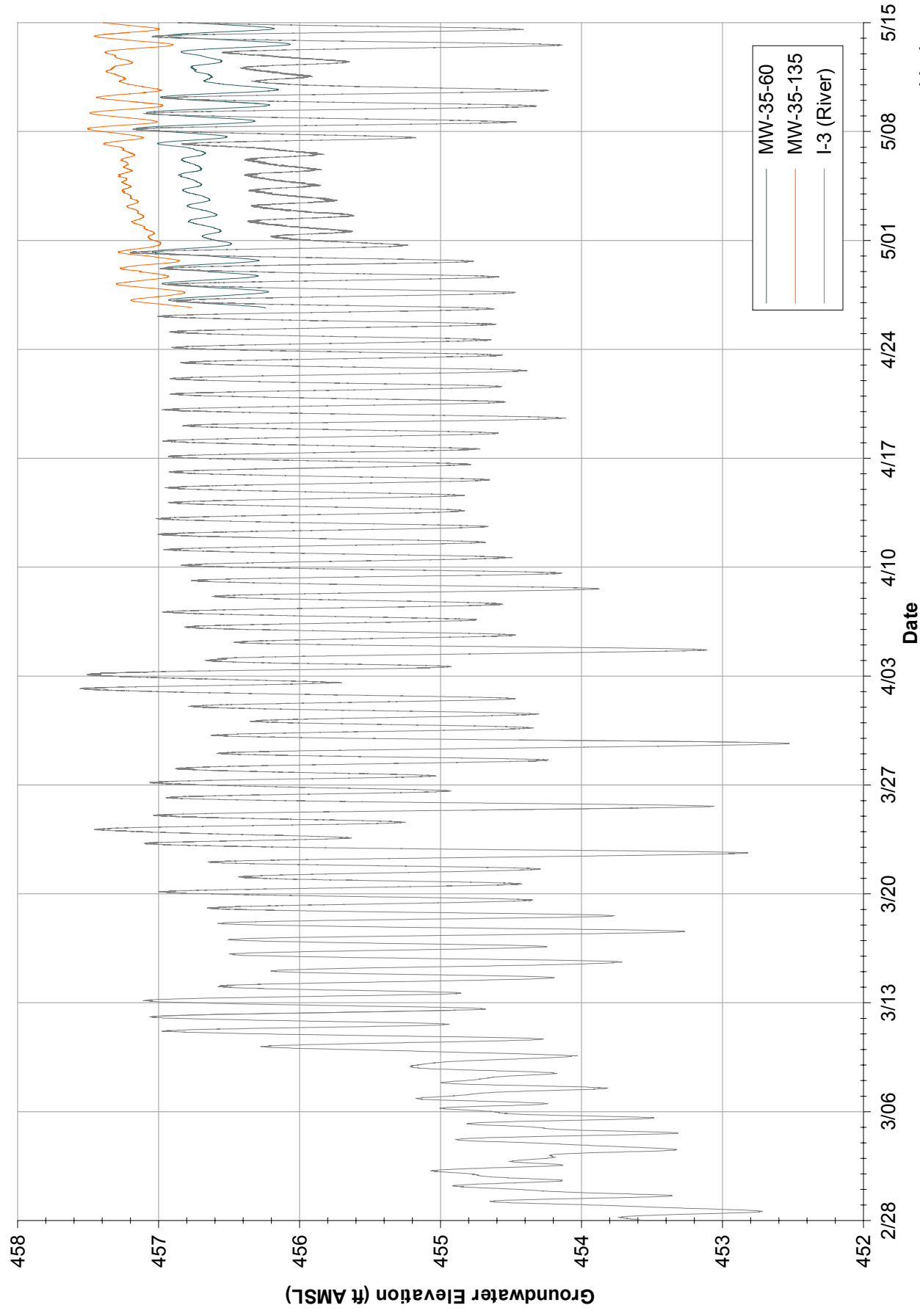
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Hydrograph  
PG&E TOPOCK COMPRESSOR STATION  
NEEDLES, CALIFORNIA

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