



**Pacific Gas and
Electric Company®**

Yvonne J. Meeks
Site Remediation - Portfolio Manager
Environmental Affairs

6588 Ontario Road
San Luis Obispo, CA 93405

Mailing Address
4325 South Higuera Street
San Luis Obispo, CA 93401

805.546.5243
Internal: 664.5243
Fax: 805.546.5232
Internet: YJM1@pge.com

August 13, 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. 8
Interim Measure No. 2
PG&E Topock Compressor Station, Needles, California

Dear Mr. Shopay:

Enclosed is the eighth 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 DTSC's Requirement for Future Monitoring Reports (letter dated July 21, 2004). This report describes the activities performed and monitoring data collected during the period July 1 through 31, 2004.

Please contact me at (805) 546-5243 if you have any questions or if you need additional information.

Sincerely,

*Tenit Hesson
For Yvonne Meeks*

Enclosure

cc: CWG Members

**Performance Monitoring Report No. 8,
PG&E Topock Compressor Station,
Interim Measures No. 2,
July 1 through 31, 2004**

Prepared for
Pacific Gas and Electric Company

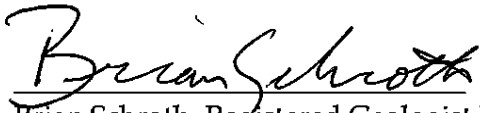
August 15, 2004

CH2MHILL

**Performance Monitoring Report No. 8
PG&E Topock Compressor Station, Interim Measures No. 2
July 1 through 31, 2004**

Prepared for
Pacific Gas and Electric Company

This monitoring report was prepared under supervision of a
California Registered Geologist,

A handwritten signature in black ink, reading "Brian Schroth". The signature is written in a cursive style with a horizontal line underneath the name.

Brian Schroth, Registered Geologist No. 7423
Senior Hydrogeologist

Performance Monitoring Report No. 8, PG&E Topock Compressor Station, Interim Measures No. 2 July 1 through 31, 2004

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 July 1 and July 31, 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 monthly on the 15th of each month, and each report will cover activities of the entire preceding month. The next report will be submitted on September 15th.

System Operations

Batch Plant Description

On May 21, 2004, the United States Bureau of Land Management approved the PG&E work plan to modify the existing operations to batch treat the water onsite. The modifications were started on June 9, 2004 and substantially completed on July 15, 2004. Start-up and testing of the batch plant began on July 19, 2004 and extended through the end of this reporting period.

Treatment is completed in three steps within a tank: (1) chromium reduction by reaction with ferrous chloride to reduce the hexavalent chromium to the less soluble trivalent form, (2) iron oxidation to precipitate out excess iron and reduced chromium, and (3) clarification to remove the precipitated solids from the water. Treated water from the clarifier is transferred to holding tanks for off-site disposal. Precipitated solids are periodically pumped from the clarifier into a container (phase separator) for off-site disposal.

Figure 1 provides an updated batch plant process diagram. The following sections summarize the pumping information and influent (test well) and effluent (treated water) testing completed during this reporting period.

System Operations

Table 1 summarizes the pumping data for the reporting period. A total of 925,040 gallons of groundwater were extracted during this reporting period, of which approximately 310,000

gallons were treated during start-up of the batch plant. All water managed during this reporting period was manifested as a hazardous waste and transported to United States Filter Corporation in Los Angeles, California for treatment and disposal.

PG&E will begin to manage the treated water as a RCRA-non hazardous waste in August 2004. Water will continue to be transported to United States Filter Corporation for treatment and disposal in the interim until other disposal options are reviewed and approved by PG&E. No sludge was taken off-site during this reporting period.

TABLE 1

Pump Data from TW-2S and TW-2D (July 1 through July 31, 2004)

Performance Monitoring Report No. 8, Topock Compressor Station, Interim Measure No. 2

Extraction Well	Reporting Period		Project To Date
	Average Pumping Rate (gpm)	Volume Pumped (gal)	Cumulative Volume Pumped (gal)
TW-2S ¹	0	0	486,358
TW-2D	20.1	925,040	2,095,710
Total	20.1	925,040	2,580,068
Volume Pumped from MW-20 Cluster:			1,224,325
Total Volume Pumped (gal)			3,806,393
Total Volume Pumped (ac-ft)			11.68

gpm: gallons per minute.

gal: gallons.

ac-ft: acre-feet.

¹Pumping from TW-2S was temporarily terminated on June 11, 2004 per DTSC direction and pumping from TW-2D was increased to a minimum of 20 gpm.

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.

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.

Influent and Effluent Analytical Results

Batch Plant Influent Analytical Data

Weekly grab samples were collected from TW-2D during this reporting period. Table 2 summarizes analytical results from TW-2S and TW-2D since May 19, 2004.

Batch Plant Effluent Analytical Data

Twenty-three batches of groundwater (an estimated 310,000 gallons) were treated during start-up and testing between July 19 and July 31, 2004. Table 3 summarizes the available

chemical results from effluent samples collected during start-up. The data will be used to establish field process quality control test requirements.

Batch Plant Modifications

Based on laboratory jar tests and observations during start-up, a polymer system will be installed in August 2004 to facilitate settling of precipitated solids in the clarifier. Addition of a polymer, an anionic polyelectrolyte, prior to the clarification step is expected to improve the solids settling in the clarifier, resulting in improved effluent quality.

Hydraulic Monitoring

Hydraulic Data

Water levels were recorded at intervals of 30 minutes with pressure transducers in multiple wells and two river monitoring stations (I-3 and RRB). The data are typically continuous with only short interruptions for sampling or maintenance. The wells monitored were:

- **Floodplain Wells:** MW-27, MW-28 cluster (2), MW-29, MW-30 cluster (2), MW-32 cluster (2), MW-33 cluster (2), 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.

Hydrographs for all wells with transducers are provided as Attachment 1; the Colorado River elevation at I-3 is shown on all hydrographs. Reported groundwater elevations (or hydraulic heads) are adjusted for salinity differences between wells (i.e., adjusted to a common freshwater equivalent). Starting this reporting period, the calculation of hydraulic head has been improved to also adjust for density differences due to groundwater temperature. The correction for temperature has been applied to the data presented in this report and retroactively to all historical data.

The average and the minimum and maximum daily average groundwater/river elevations have been calculated from the transducer data for the July reporting period (July 1 to 31, 2004).

Evaluation of Groundwater Gradients From the Reporting Period

Hydraulic data are summarized and groundwater elevations contoured by aquifer zone on the following figures:

Figure 2 – Upper Unconsolidated Aquifer Zone (Upper UA)

Figure 3 – Middle Unconsolidated Aquifer Zone (Middle UA)

Figure 4 – Lower Unconsolidated Aquifer Zone (Lower UA)

The groundwater elevations for all three zones indicate a landward hydraulic gradient and inferred flow away from the Colorado River. Further to the west, the hydraulic gradient is eastward, consistent with regional hydraulic gradients outside of the river area.

Figure 5 shows the location of a hydrogeologic section B1 that runs east-west through monitoring points between TW-2 and the river. It is used to present the vertical as well as lateral groundwater gradients in a key area of the site. The average elevations, plotted on Figure 6 and contoured on Figure 7, indicate an average upward and westward (landward) gradient away from the Colorado River during the month of July.

The correlation between Colorado River levels and United States Bureau of Reclamation (USBR) records for Davis Dam discharge has been used to estimate future river levels from of USBR discharge projections. The predicted river levels are input to the groundwater model to estimate the flux of groundwater in the coming months. Future groundwater extraction rates are evaluated using these model estimates. Measured Davis Dam discharges do not always agree with USBR projections.

The estimated and actual dam discharges and river elevations since April 2004 are summarized in Table 4. The actual Davis Dam July 2004 discharge (monthly average) was greater (951 cubic feet per second [cfs]) than the USBR projected discharge for the July reporting period. The actual Colorado River elevation at I-3 (monthly average) was correspondingly greater (0.7 feet) than the predicted elevation for the July reporting period. As a result, a pumping rate of 20 gpm maintained a landward groundwater gradient during July. Less extraction was necessary than a 46 gpm pumping rate previously predicted using the site groundwater model and the USBR projected releases shown in Table 4.

Future Activities

Reporting of Interim Measures No. 2 activities will continue as described in the *Final Interim Measures Work Plan No. 2*. The next status report will be submitted on September 15, 2004 and will cover activities from August 1 to August 31, 2004.

Full-time pumping from TW-2D will continue in August 2004. The USBR projects that Davis Dam releases in August 2004 will be reduced relative to July rates (Table 4). Calculations based on this projected dam release reduction indicate a corresponding drop in river level on the order of one foot. In anticipation of the calculated drop in river level and in accordance with DTSC's letter of June 30, 2004, PG&E submitted a request to the DTSC and BLM to increase the groundwater extraction rate from TW-2D to 30 gpm. The requested increase in extraction rate received final approval from DTSC on August 10 and will be implemented mid-August 2004.

Table 2
Analytical Results - TW-2 Extraction Wells
Topock Interim Measures No. 2

Sample Time Relative to TW-2 Pumping Start	TW-2S				TW-2D				TW-2 Combined			
	Sample Date	Total Dissolved Chromium mg/L	Hexavalent Chromium mg/L	Total Dissolved Solids mg/L	Sample Date	Total Dissolved Chromium mg/L	Hexavalent Chromium mg/L	Total Dissolved Solids mg/L	Sample Date	Total Dissolved Chromium mg/L	Hexavalent Chromium mg/L	Total Dissolved Solids mg/L
6 days	19-May-04	6.61	7.36	2,620	19-May-04	7.06	7.77	7,740	19-May-04	6.68	7.58	5,230
13 days	26-May-04	6.68	7.00	2,700	26-May-04	7.15	7.47	7,620	26-May-04	7.29	7.19	5,520
20 days	02-Jun-04	7.93	7.19	2,690	02-Jun-04	7.02	7.33	7,540	02-Jun-04	6.93	7.33	5,350
27 days	09-Jun-04	6.82	7.19	2,740	09-Jun-04	6.98	7.41	7,540	09-Jun-04	6.81	7.50	5,300
34 days	NS				16-Jun-04	7.55	7.11	7,400	NS			
41 days	NS				23-Jun-04	7.11	6.75	7,200	NS			
48 days	NS				30-Jun-04	6.37	6.64	7,060	NS			
56 days	NS				08-Jul-04	7.29	6.29	7,150	NS			
62 days	NS				14-Jul-04	5.92	6.15	7,020	NS			
69 days	NS				21-Jul-04	5.74	6.20	6,830	NS			
76 days	NS				28-Jul-04	5.66	6.01	6,760	NS			

Notes:

1. NS = Not Sampled
2. Sampling of TW-2S and TW-2 combined were halted when pumping from TW-2S was temporarily terminated on June 11, 2004 per DTSC direction.

TABLE 3
Analytical Results - Batch Plant Effluent
Topock Interim Measures No. 2

Batch ¹	Sample Date	Clarifier Effluent Chemical Data ²					
		Total Chromium mg/L	Total Dissolved Chromium mg/L	Hexavalent Chromium mg/L	Iron Total mg/L	Iron Dissolved Iron mg/L	Total Dissolved Solids mg/L
072004-B1-CLEFF	07/20/2004	0.343	ND (<0.001)	ND (<0.010)	---	---	6830
072204-B2-CLEFF	07/22/2004	1.21	0.002	---	14.8	ND (<0.500)	7290
072301-B2-CLEFF	07/23/2004	0.497	---	---	6.41	---	7320
072404-B2-CLEFF	07/24/2004	1.47	---	---	13.2	---	7280
072404-B3-CLEFF	07/24/2004	1.62	---	---	14.4	---	7200
072504-B1-CLEFF	07/25/2004	---	---	---	---	---	7350
072504-B2-CLEFF	07/25/2004	1.83	0.002	---	16.4	ND (<0.500)	7040
072604-B1-CLEFF	07/26/2004	1.14	0.0037	ND (<0.010)	12.60	ND (<0.500)	6760
072604-B2-CLEFF	07/26/2004	0.739	ND (<0.001)	---	7.58	ND (<0.500)	7170
072704-B1-CLEFF	07/27/2004	0.629	0.0014	---	6.80	ND	7180
072804-B1-CLEFF	07/28/2004	0.482	ND (<0.001)	---	5.09	ND	---
072804-B2-CLEFF	07/28/2004	0.851	0.0015	---	8.40	ND	---
072904-B1-CLEFF	07/29/2004	1.11	0.0050	---	9.04	ND	---
072904-B2-CLEFF	07/29/2004	1.29	0.0069	---	10.8	ND	---

NOTES:

ND: Not detected at the reporting limit.

1) The sample identification is as follows: 'Date of Batch' - 'Batch No.' - Sample Location

CLEFF = sample collected from the effluent line from the clarifier

2) Analytical results are unvalidated, subject to validation review and qualification.

Table 4
Predicted and Actual Monthly Average Davis Dam Discharge and Colorado River Elevation at I-3
PG&E Topock

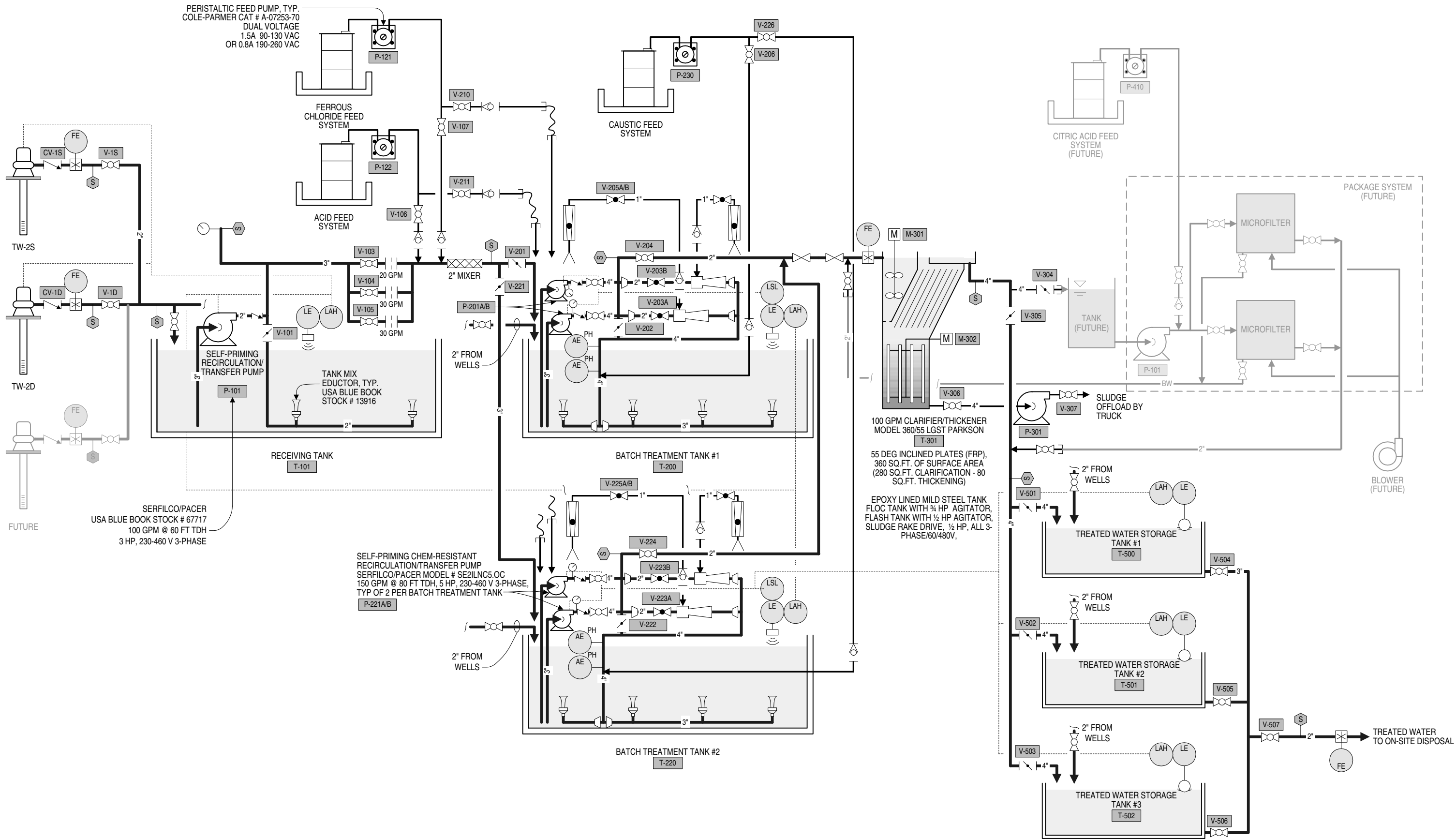
PG&E Topock						
Month	Davis Dam Release (cfs)			Colorado River Elevation at I-3 (ft AMSL or ft)		
	Projected	Actual	Difference	Predicted	Actual	Difference
April 2004	17,400	17,354	-46	456.4	456.2	-0.2
May 2004	17,100	16,788	-312	456.3	456.3	-0.1
June 2004	15,800	16,869	1,069	455.8	456.6	0.7
July 2004	14,000	14,951	951	455.2	455.9	0.7

Notes:

Projected Davis Dam Releases, updated monthly, are reported by the US Department of Interior, Bureau of Reclamation at <http://www.usbr.gov/lc/region/g4000/24mo.pdf>; listed projections are from April 2004, and have since been revised by USBR.

Colorado River levels at I-3 are predicted from a linear regression between historical dam releases and measured river levels at I-3.

cfs = cubic feet per second; ft AMSL = feet above mean sea level



DSGN	P MUELLER
DR	P MUELLER
CHK	
APVD	

NO.	DATE
-----	------

REVISION

BY

APVD

BAR IS ONE INCH ON ORIGINAL DRAWING
0 — 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

REUSE OF DOCUMENTS

THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL.

REVISED JUNE 2, 2004

PROCESS DIAGRAM

Figure 1

SHEET
DWG NO.
DATE
PROJ NO.

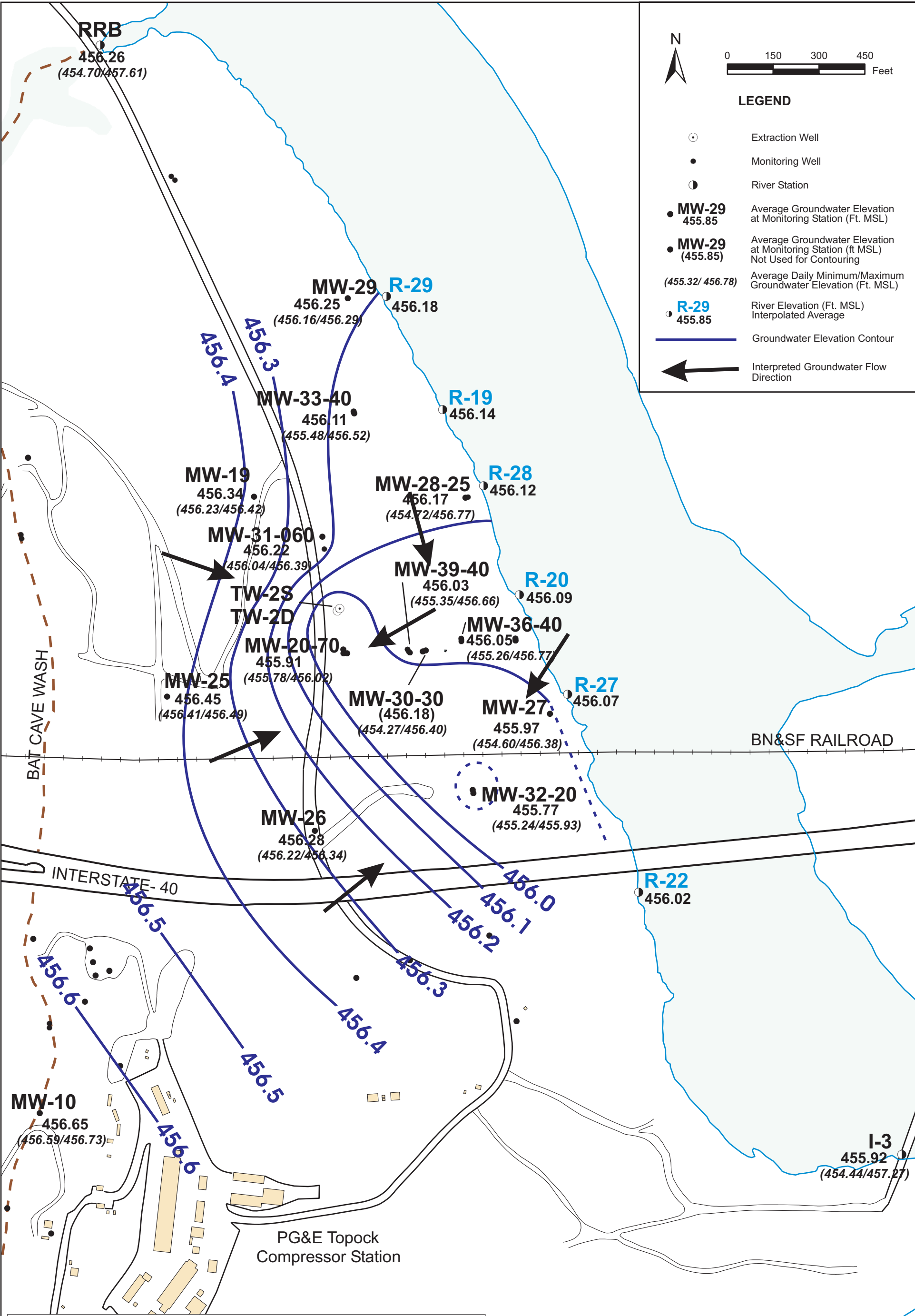
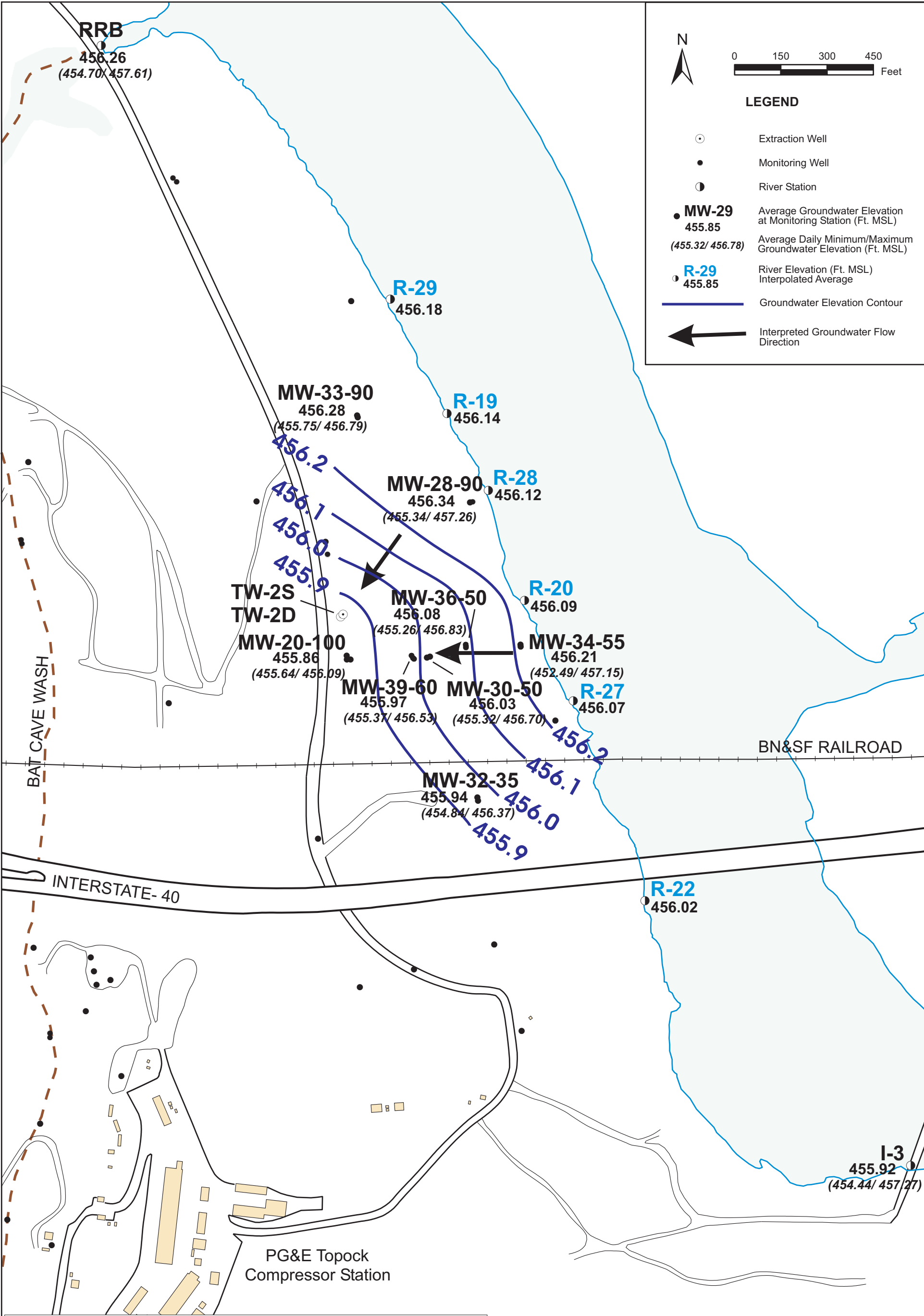


Figure 2
Average Groundwater (Upper UA) and River Elevations, July 1-31, 2004

INTERIM MEASURES FIELD PROGRAM
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA



Notes:

Groundwater elevations shown represent those from the Middle Unconsolidated Aquifer (UA) wells only.

Groundwater elevations are averages of water levels from July 1- 31, 2004 measured with transducers at 30 minute intervals. Groundwater elevations are salinity and temperature adjusted.

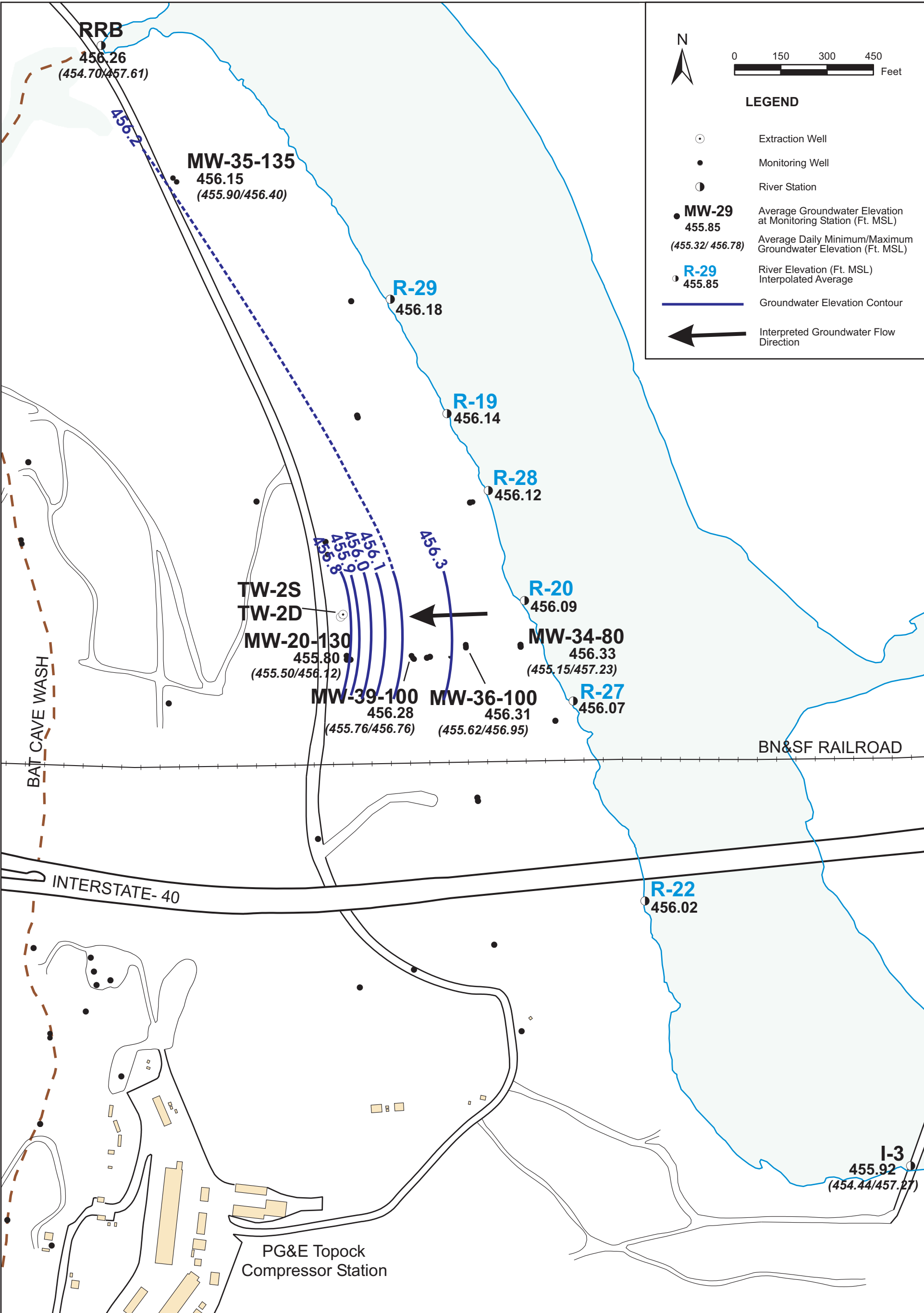
River elevations at R- river stations are interpolated from the average river elevations at I-3 and RRB using a river gradient of 7.7E-5 ft/ft.

Inferred gradients and flow directions are based upon available data; new wells, additional data, and further calibration may change interpretations.

River elevations are shown, but not used in contouring groundwater elevations for the Middle UA.

Figure 3
Average Groundwater (Middle UA) and River Elevations, July 1-31, 2004

INTERIM MEASURES FIELD PROGRAM
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA



N

0150300450

Feet

LEGEND

○

Extraction Well

●

Monitoring Well

●

River Station

●

MW-29

455.85

(455.32/ 456.78)

Average Groundwater Elevation at Monitoring Station (Ft. MSL)

Average Daily Minimum/Maximum Groundwater Elevation (Ft. MSL)

●

R-29

455.85

River Elevation (Ft. MSL) Interpolated Average

Groundwater Elevation Contour

Interpreted Groundwater Flow Direction

Notes:

Groundwater elevations shown represent those from the Lower Unconsolidated Aquifer (UA) wells only.

Groundwater elevations are averages of water levels from July 1- 31,2004 measured with transducers at 30 minute intervals. Groundwater elevations are salinity and temperature adjusted.

River elevations at R- river stations are interpolated from the average river elevations at I-3 and RRB using a river gradient of 7.7E-5 ft/ft.

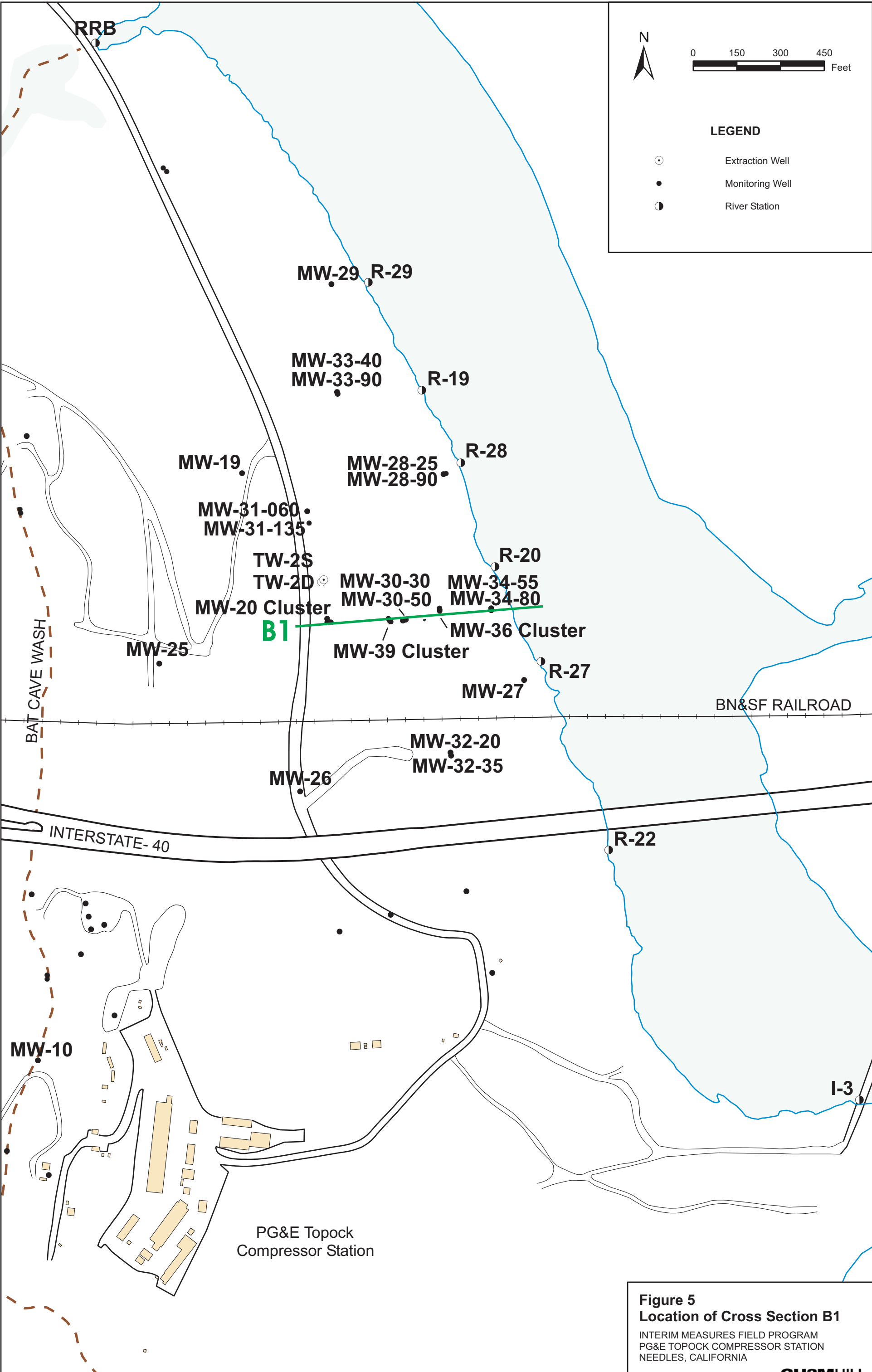
Inferred gradients and flow directions are based upon available data; new wells, additional data, and further calibration may change interpretations.

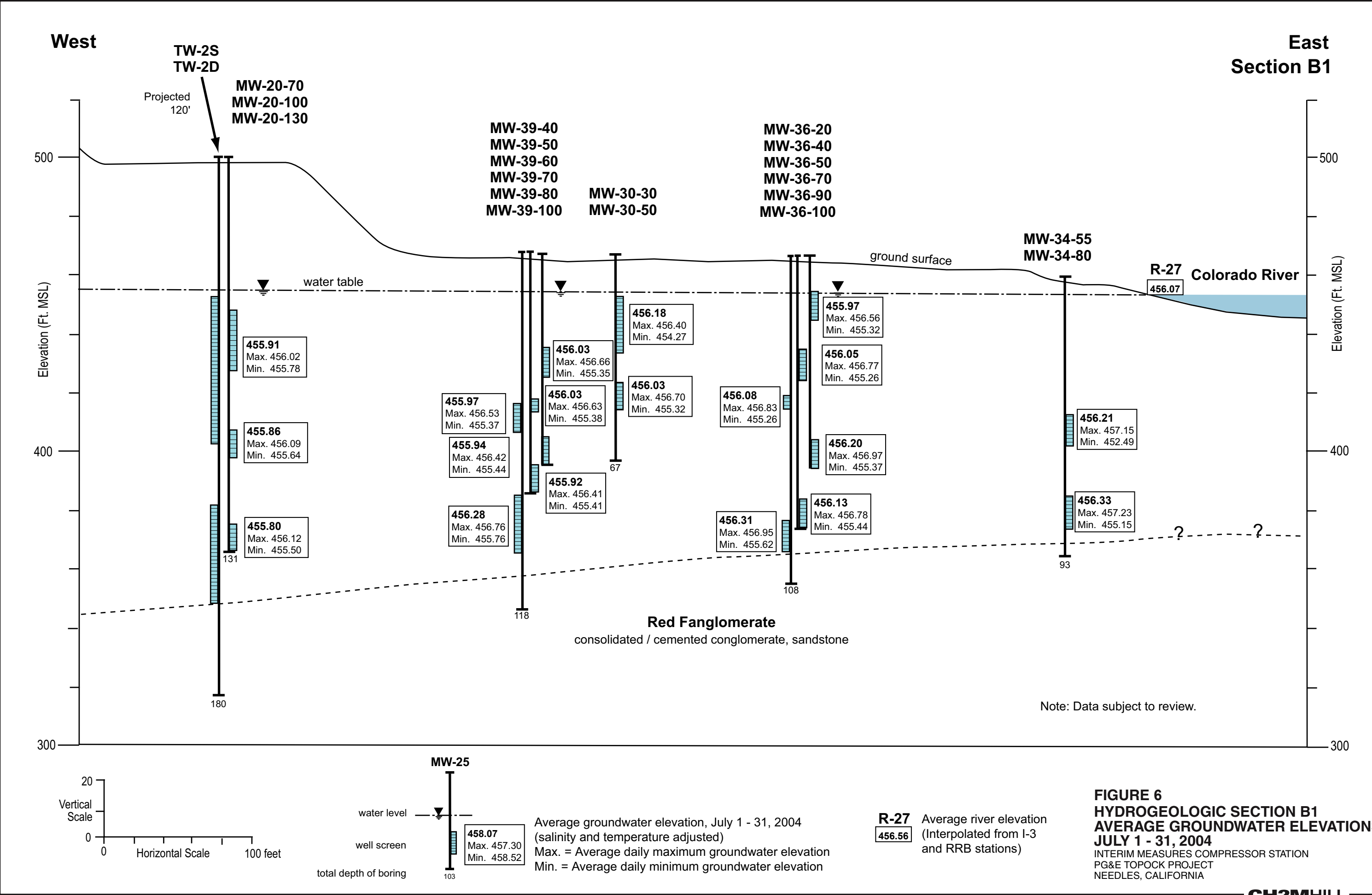
River elevations are shown, but not used in contouring groundwater elevations for the Lower UA.

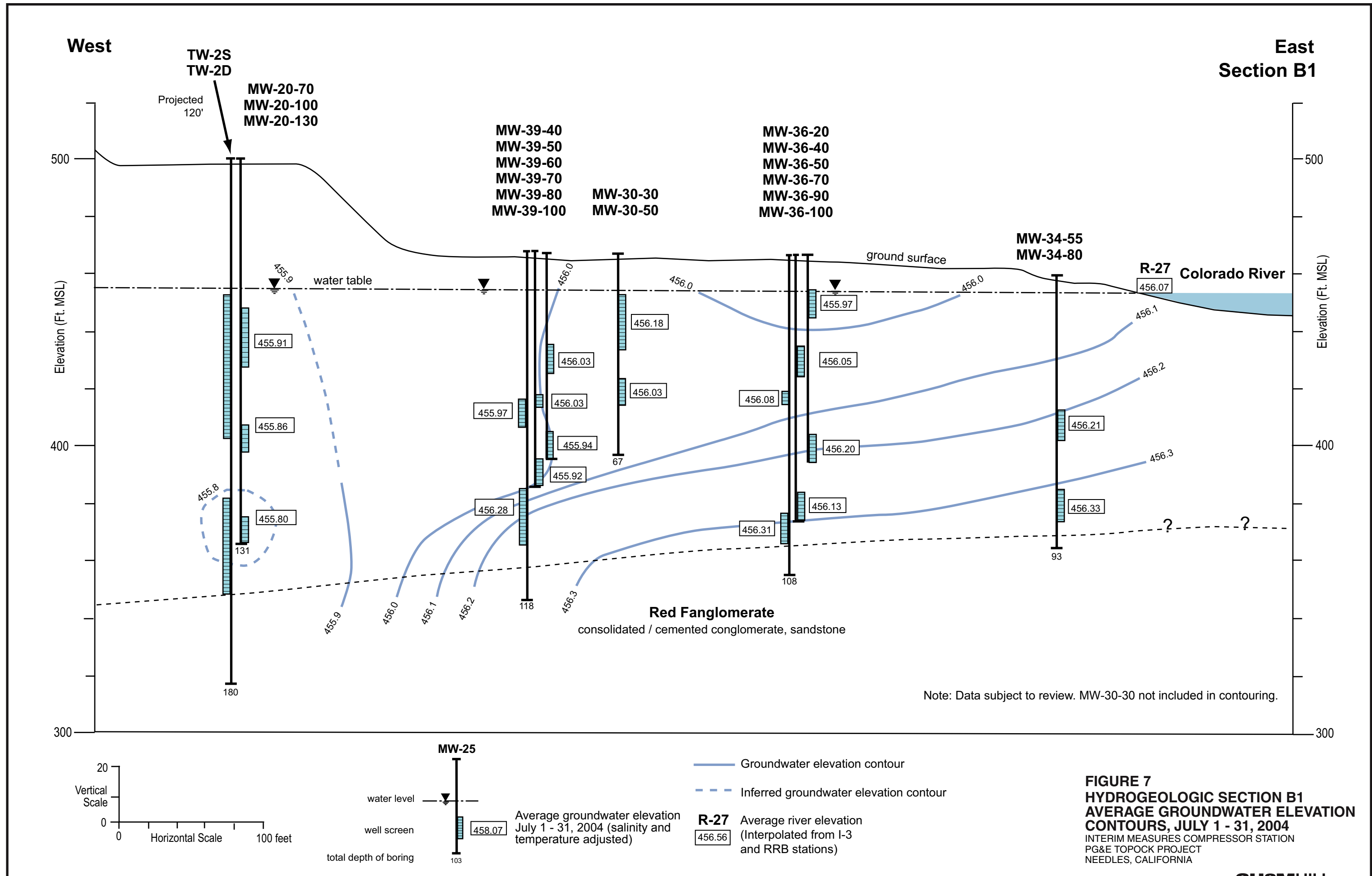
Figure 4
Average Groundwater (Lower UA) and River Elevations, July 1-31, 2004
INTERIM MEASURES FIELD PROGRAM
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

SFO \\CABERNET\PROJ\PACIFICGASELECTRIC\TOPOCKPROGRAM\GIS\MXD\IM_HYDRAULIC_GRADIENT.MXD

CH2MHILL

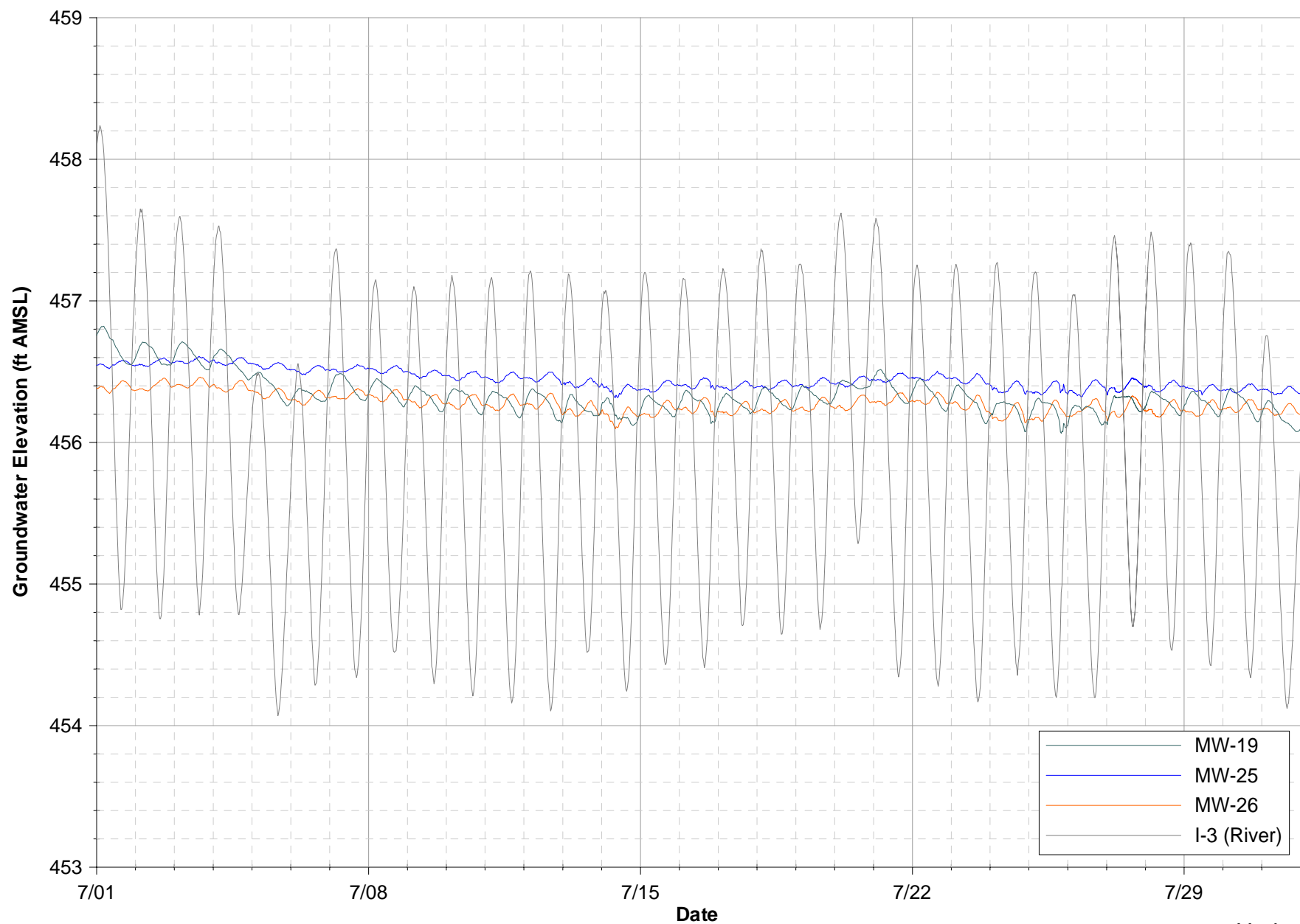






Attachment 1

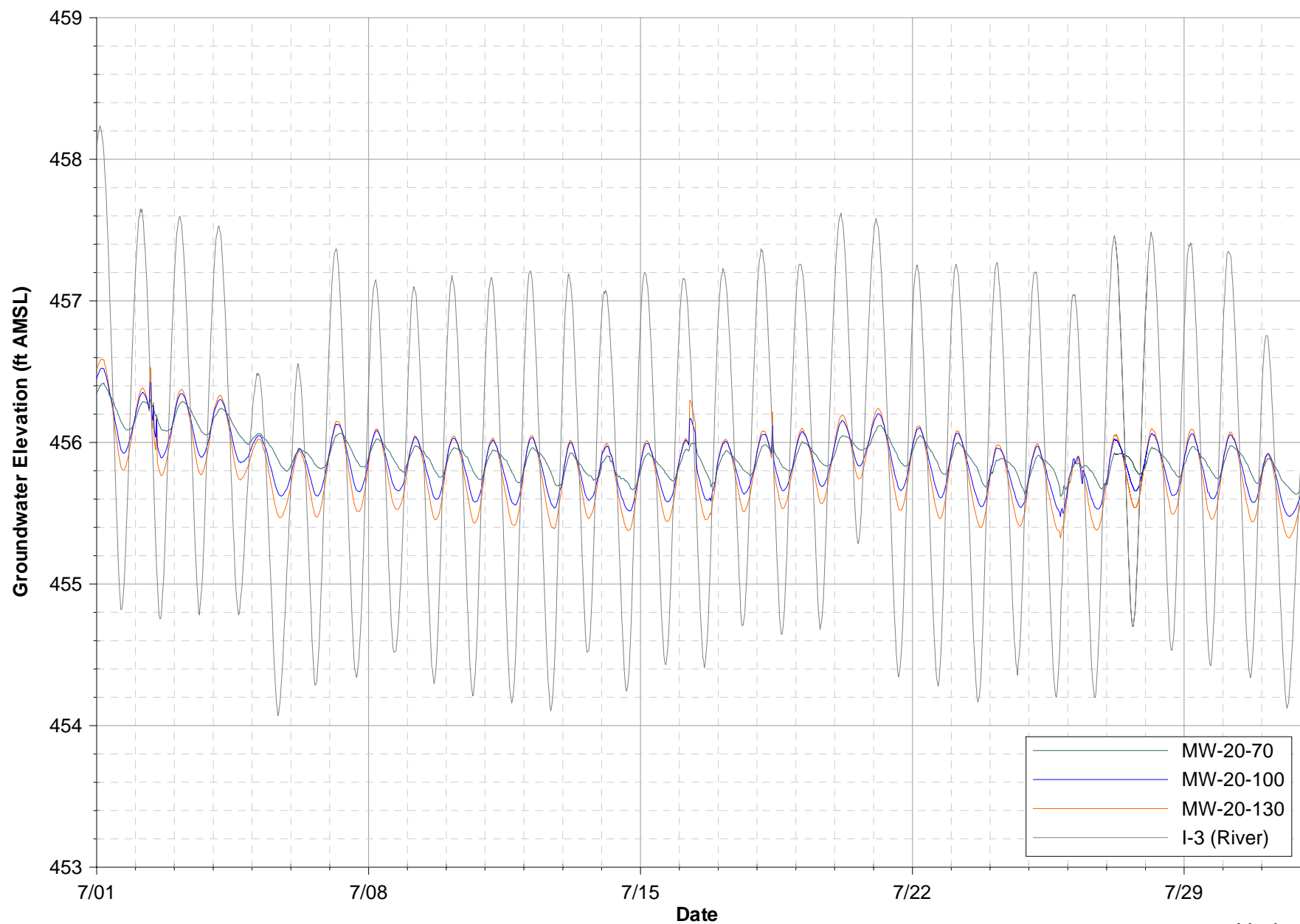
Hydrographs



Note: Data subject to review.

Hydrograph
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

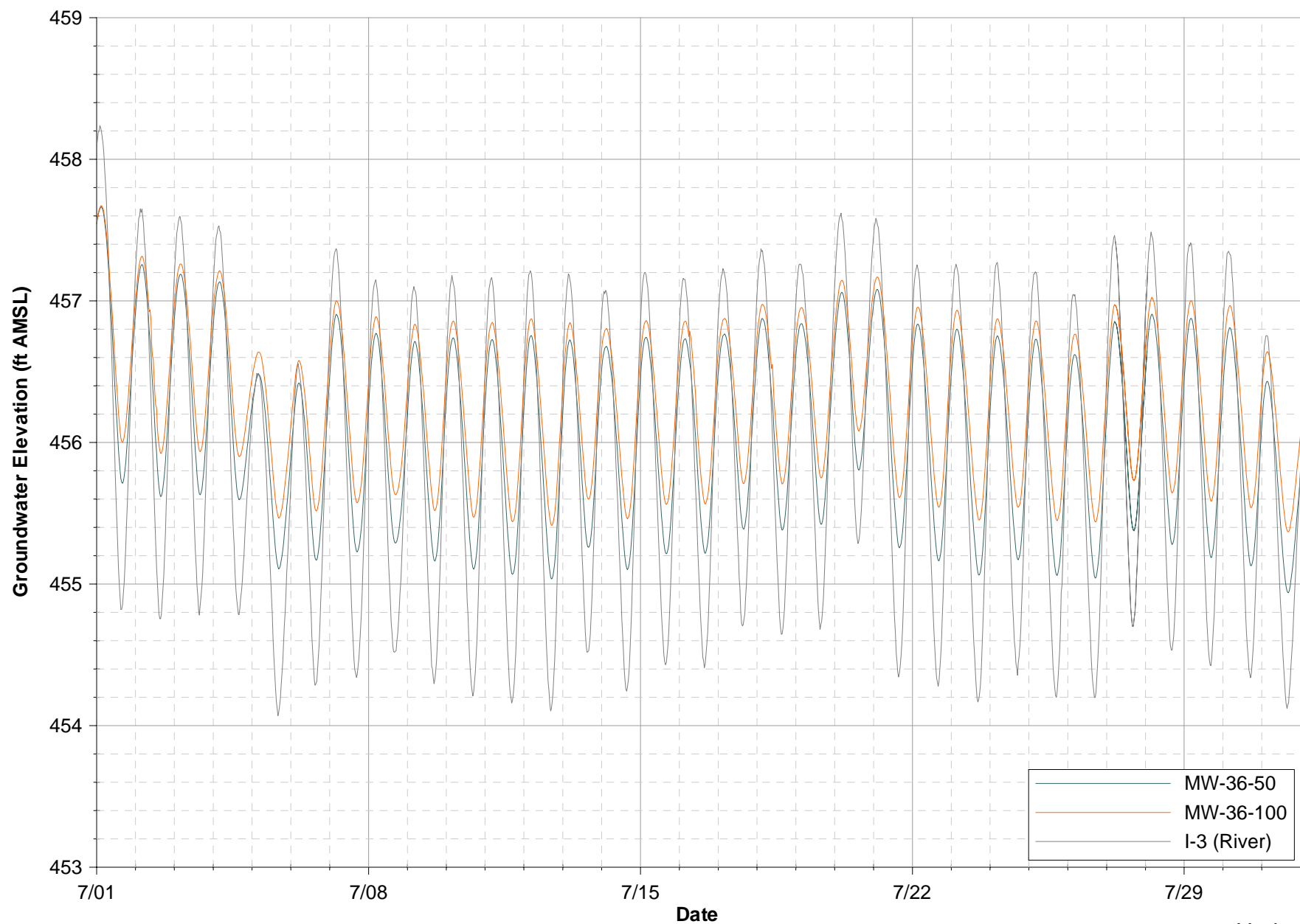
CH2MHILL



Note: Data subject to review.

Hydrograph
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

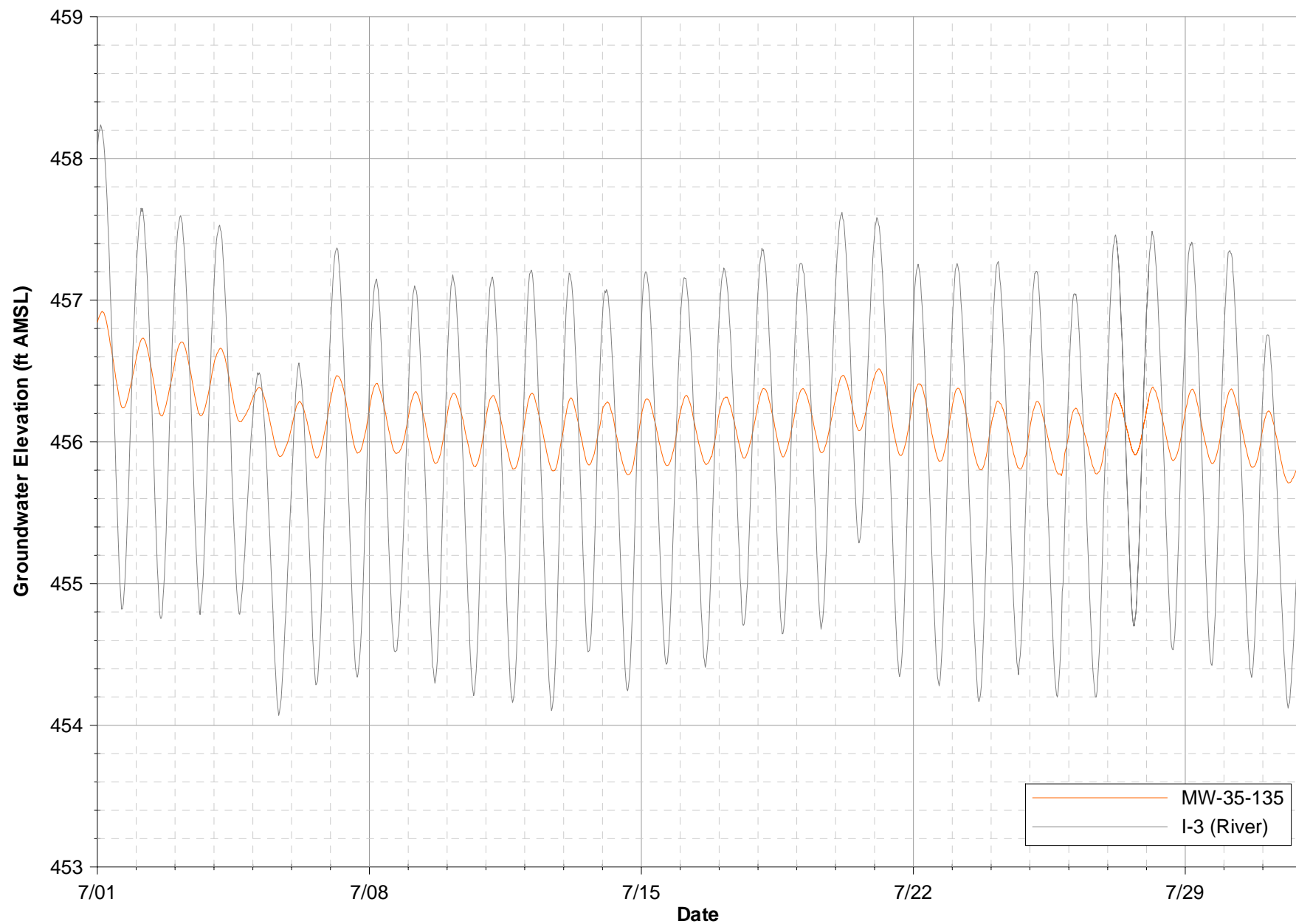
CH2MHILL



Note: Data subject to review.

Hydrograph
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

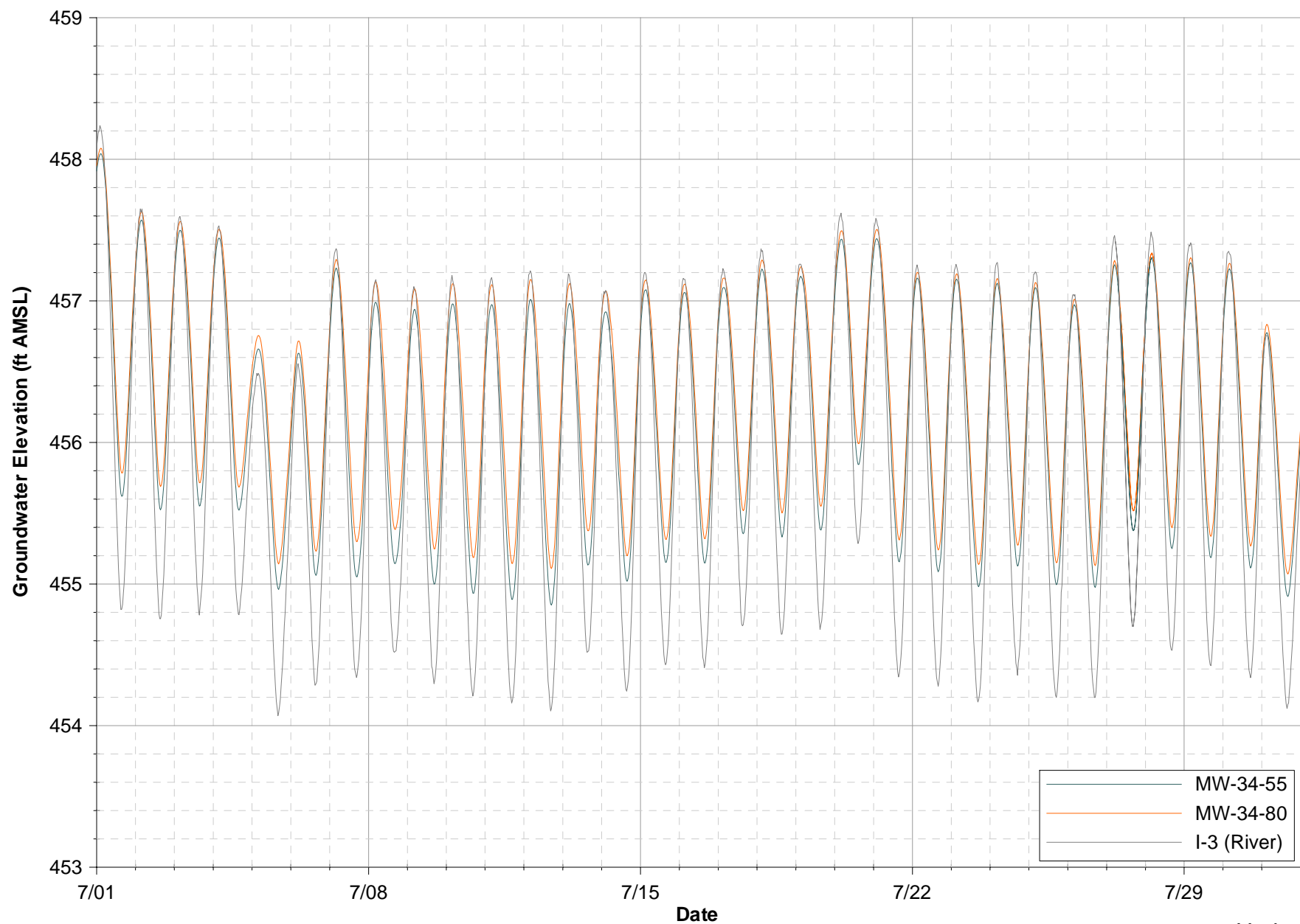
CH2MHILL



Note: Data subject to review.

Hydrograph
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

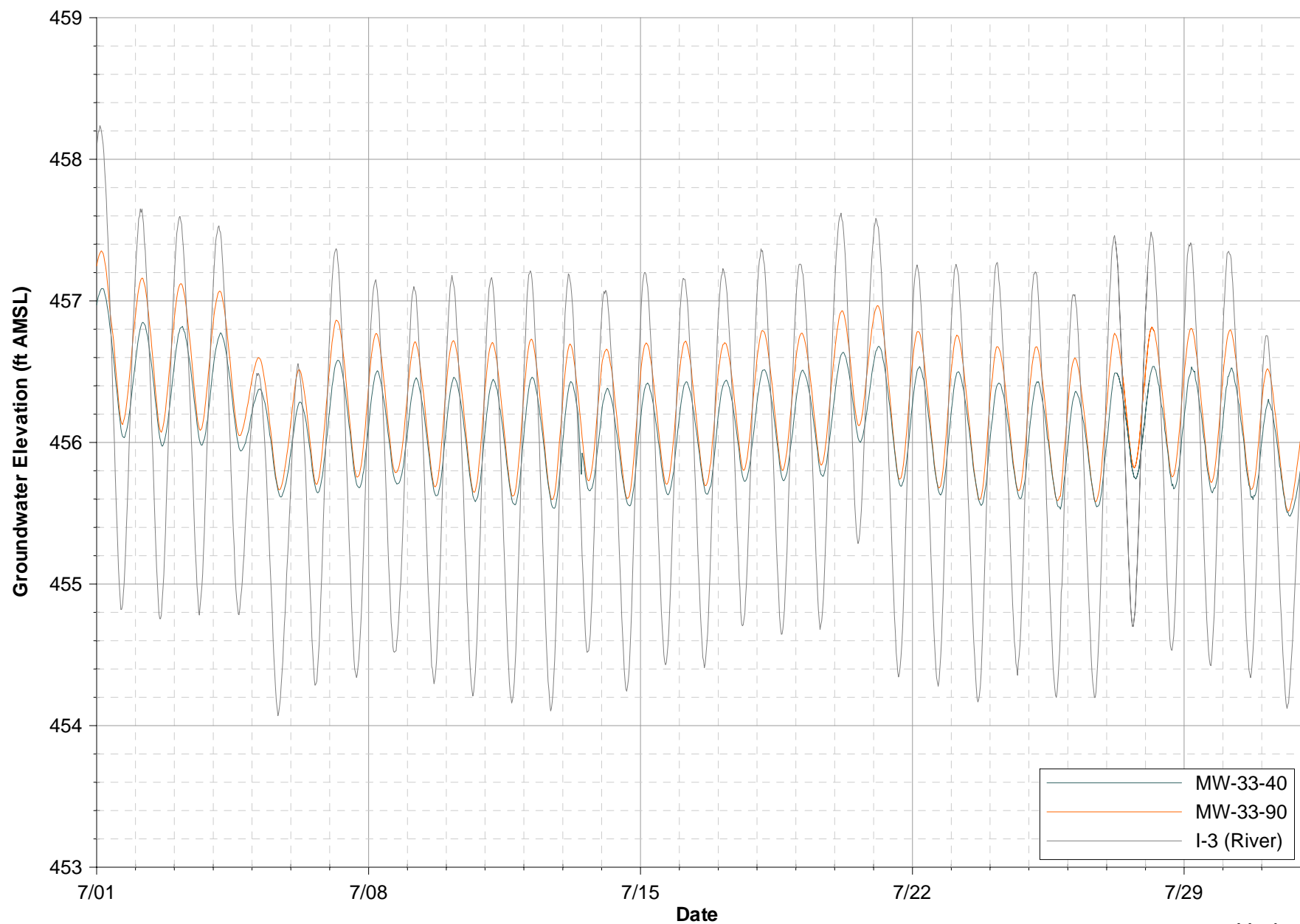
CH2MHILL



Note: Data subject to review.

Hydrograph
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

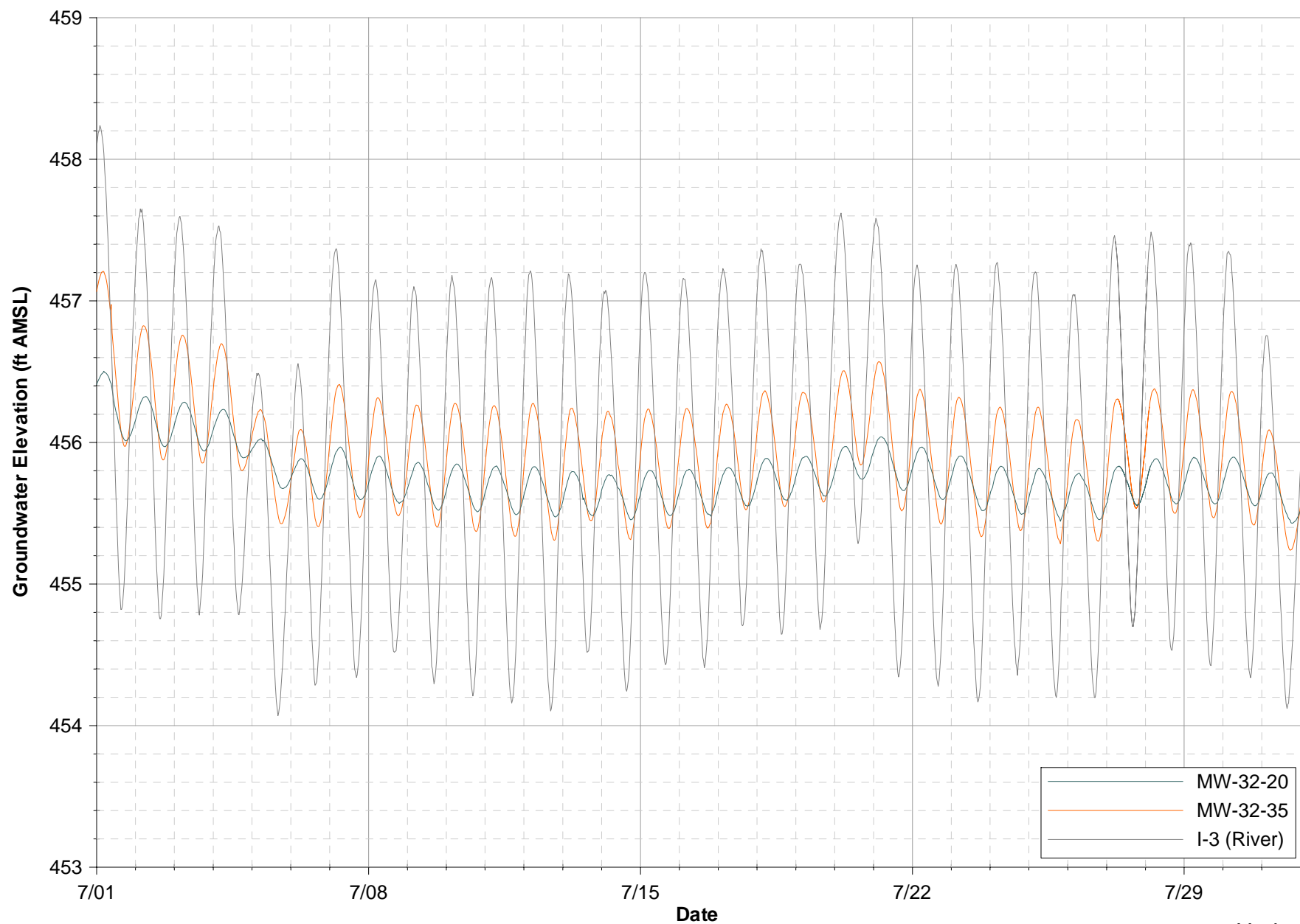
CH2MHILL



Note: Data subject to review.

Hydrograph
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

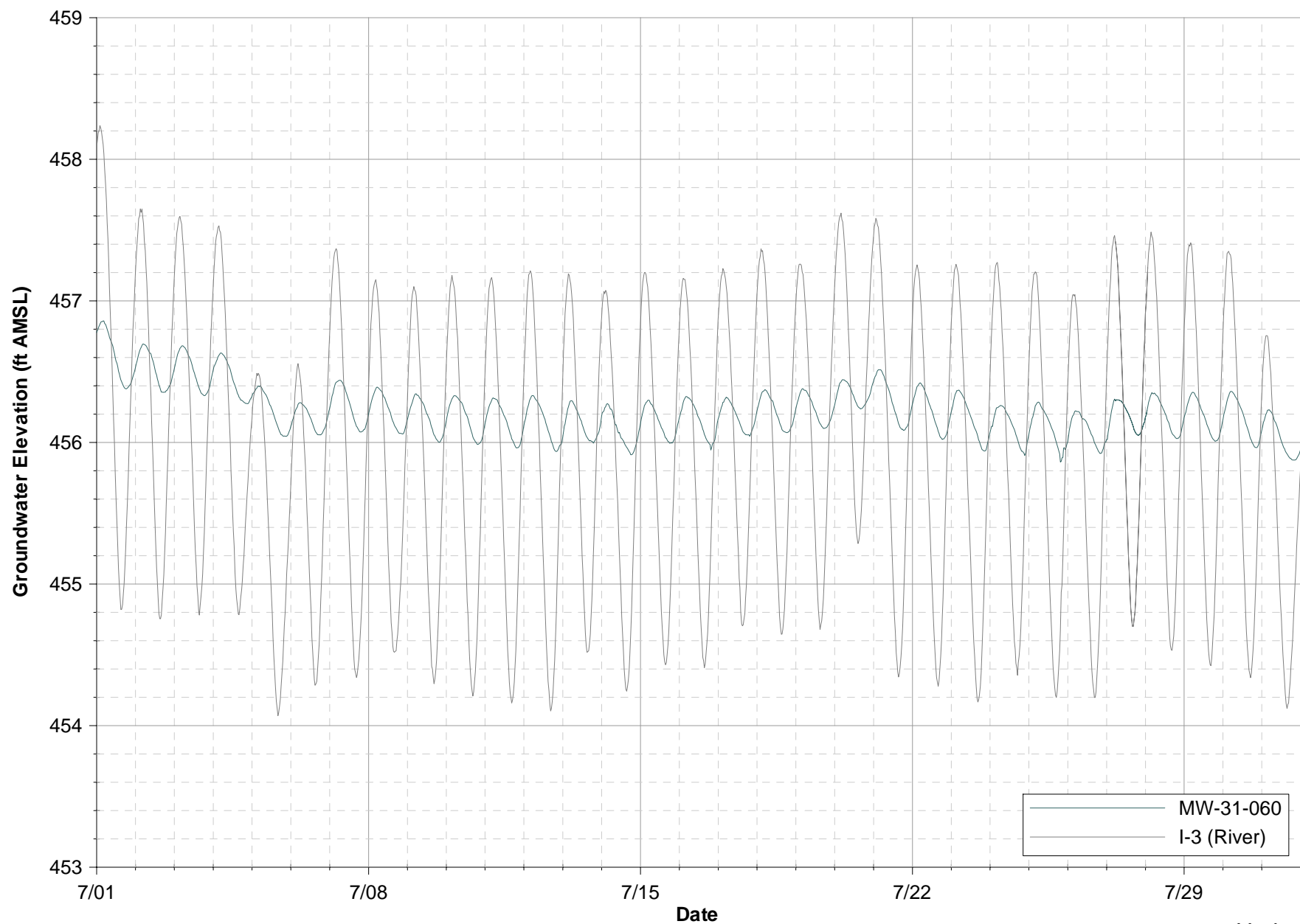
CH2MHILL



Note: Data subject to review.

Hydrograph
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

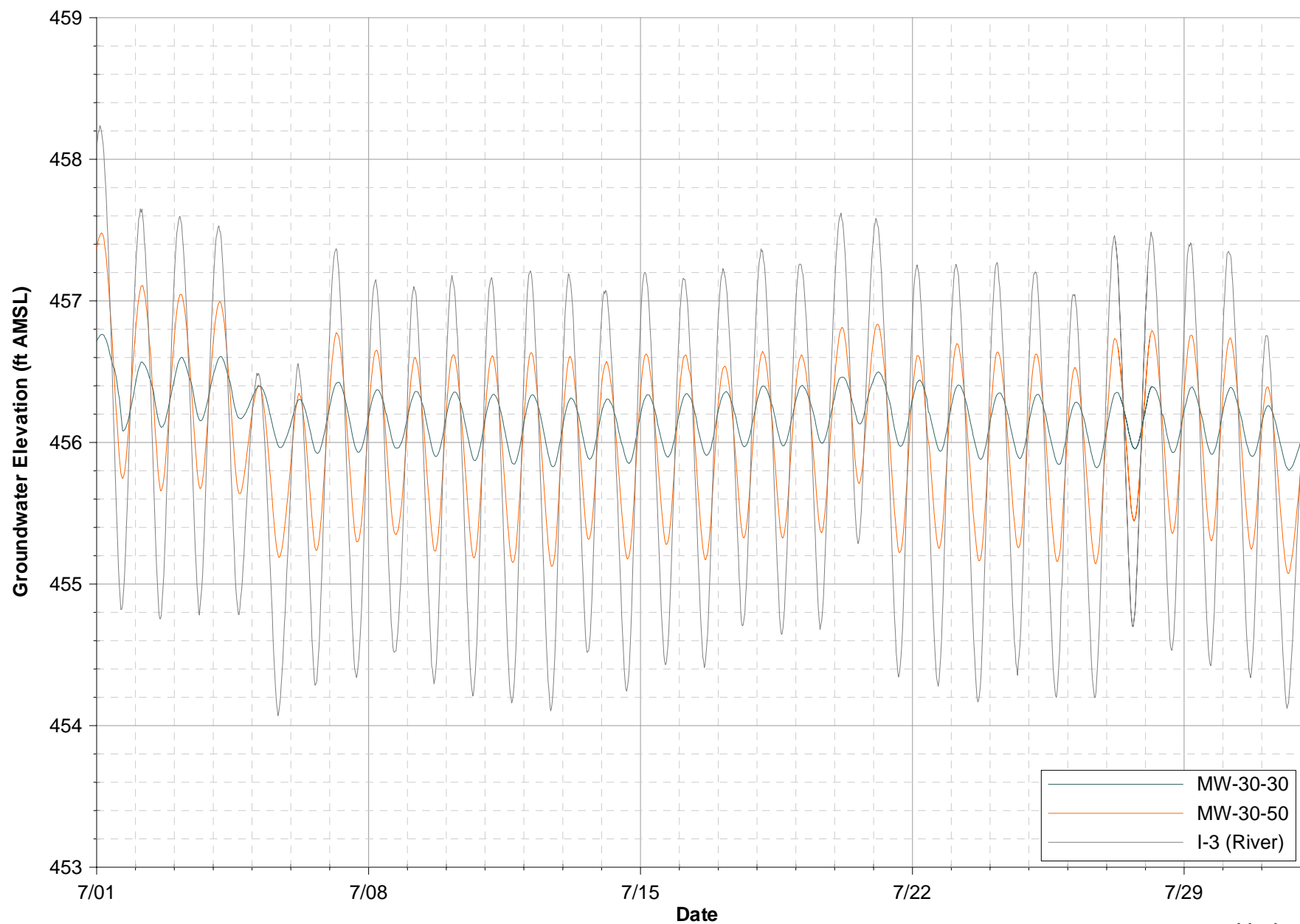
CH2MHILL



Note: Data subject to review.

Hydrograph
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

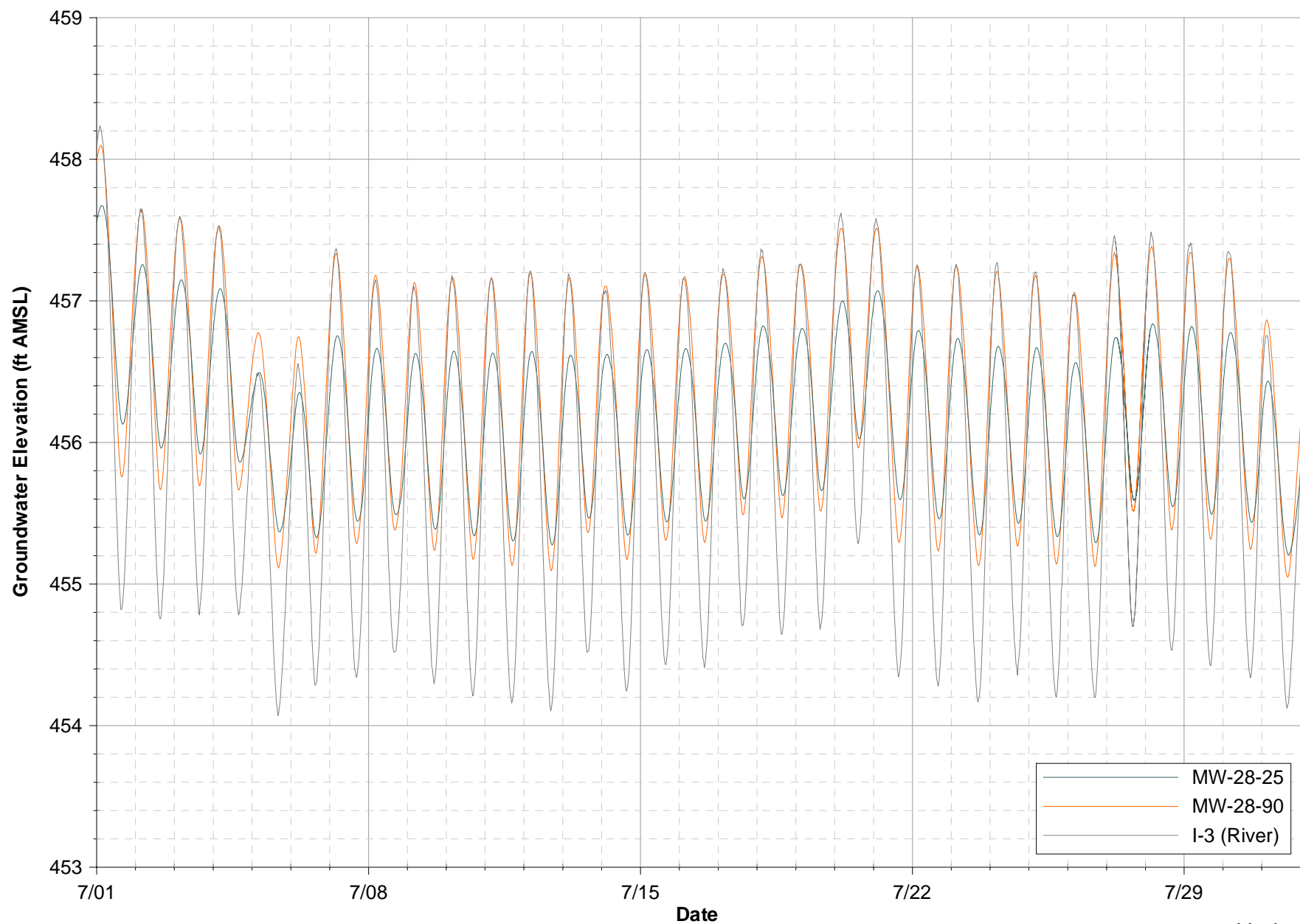
CH2MHILL



Note: Data subject to review.

Hydrograph
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

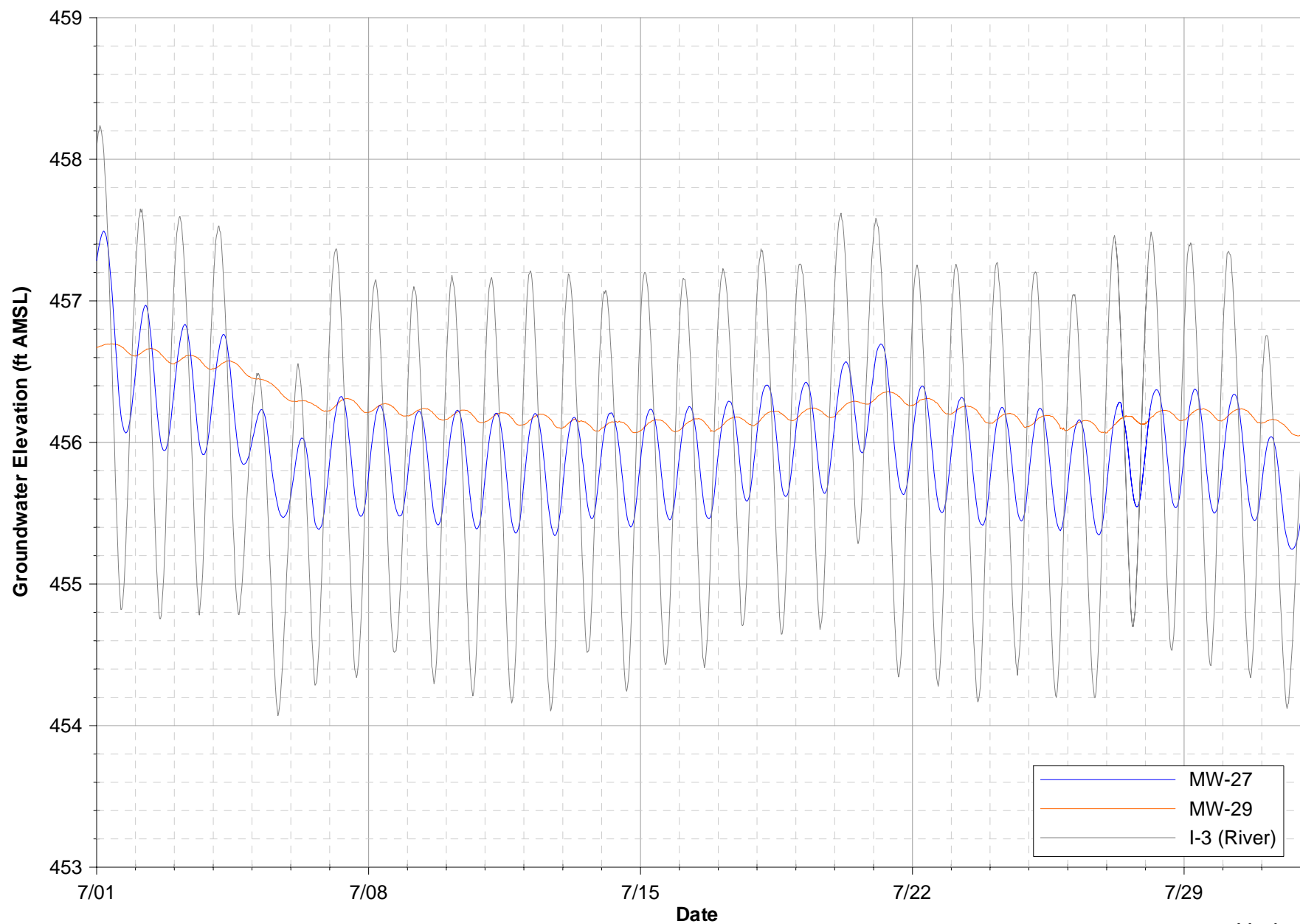
CH2MHILL



Note: Data subject to review.

Hydrograph
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

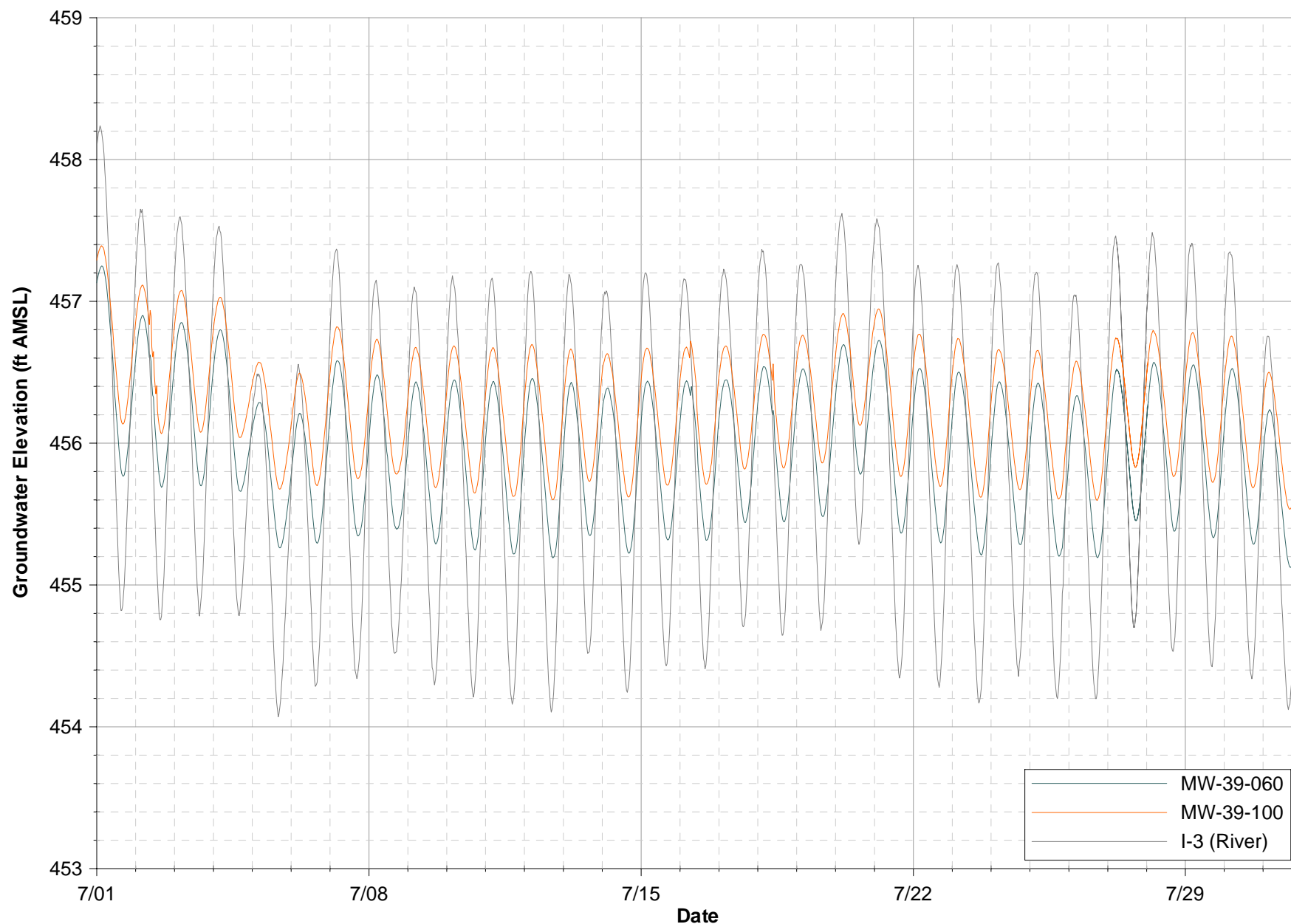
CH2MHILL



Note: Data subject to review.

Hydrograph
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

CH2MHILL



Note: Data subject to review.

Hydrograph
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

CH2MHILL