Pacific Gas and Electric Company®

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October 14, 2005

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 for September 2005
Interim Measures Performance Monitoring Program
PG&E Topock Compressor Station, Needles, California

Dear Mr. Shopay:

Enclosed is the *Performance Monitoring Report for September 2005* for the Interim Measure Performance Monitoring Program at the PG&E Topock Compressor Station. This monitoring report documents the performance monitoring results for September 1 through 30, 2005, and has been prepared in conformance with DTSC's letter dated February 14, 2005.

Please contact me at (805) 546-5243 if you have any questions on the performance monitoring program.

Sincerely,

Julie Eakins for Yvonne Meeks

Enclosure

Performance Monitoring Report for September 2005

Interim Measures Performance Monitoring Program
PG&E Topock Compressor Station
Needles, California

Prepared for

California Department of Toxic Substances Control

on behalf of

Pacific Gas and Electric Company

October 14, 2005

CH2MHILL
155 Grand Avenue, Suite 1000
Oakland, California 94612

Performance Monitoring Report for September 2005

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PG&E Topock Compressor Station Needles, California

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October 14, 2005

This report was prepared under the supervision of a California Certified Engineering Geologist

Paul Bertucci, C.E.G. No. 1977
Project Hydrogeologist

Contents

Appendices

Acronyms and Abbreviations

Cr(T)	total chromium
Cr(VI)	hexavalent chromium
BLM	United States Bureau of Land Management
DTSC	Department of Toxic Substances Control
gpm	gallons per minute
IM	Interim Measure
IM-3	Interim Measure No. 3
PG&E	Pacific Gas and Electric Company
PMP	Performance Monitoring Program
µg/L	micrograms per liter (similar to parts per billion [ppb])
USBR	United States Bureau of Reclamation
WDR	Waste Discharge Requirements

1.0 Introduction

Pacific Gas and Electric Company (PG&E) is implementing an Interim Measure (IM) to address chromium concentrations in groundwater at the Topock Compressor Station near Needles, California. The IM consists of groundwater extraction for hydraulic control of the plume boundaries in the Colorado River floodplain and management of extracted groundwater. The groundwater extraction, treatment, and injection systems collectively are referred to as Interim Measure No. 3 (IM-3). Currently, the IM-3 facilities include a groundwater extraction system (two operational wells), conveyance piping, a groundwater treatment plant, and an injection well field for the discharge of the treated groundwater. Figure 1-1 shows the location of the IM-3 extraction, conveyance, treatment, and injection facilities.

In a letter dated February 14, 2005, the California Department of Toxic of Substances Control (DTSC) established the criteria for evaluating the performance of the IM. As defined by DTSC, the performance standard for this IM is to "establish and maintain a net landward hydraulic gradient, both horizontally and vertically, that ensures that hexavalent chromium [Cr(VI)] concentrations at or greater than 20 micrograms per liter [µg/L] in the floodplain are contained for removal and treatment" (Enclosure A, DTSC February 14, 2005 letter). The DTSC directive also defined the monitoring and reporting requirements for the IM. A draft *Performance Monitoring Plan for Interim Measures in the Floodplain Area* was submitted to DTSC on April 15, 2005 (herein referred to as the Performance Monitoring Plan). The site monitoring, data evaluation, reporting, and response actions required under the February 2005 DTSC directive are collectively referred to as the IM Performance Monitoring Program (PMP) for the floodplain area.

This monthly report has been prepared in compliance with DTSC's requirements and documents the monitoring activities and performance evaluation of the IM hydraulic containment system for the period from September 1 through 30, 2005. The next monthly report for the October 2005 period will be submitted with the quarterly report on November 30, 2005.

Figure 1-2 shows the locations of wells used for the IM extraction, performance monitoring, and hydraulic gradient calculation. The wells are defined as:

- **Floodplain Wells**: MW-22, MW-27 cluster (3), MW-28 cluster (2), MW-29, MW-30 cluster (2), MW-32 cluster (2), MW-33 cluster (4), MW-34 cluster (3), MW-36 cluster (6), MW-39 cluster (6), MW-42 cluster (3), and MW-43 cluster (3).
- **Intermediate Wells**: MW-12, MW-19, MW-20 cluster (3), MW-21, MW-26, MW-31 cluster (2), MW-35 cluster (2), TW-2S, TW-2D.
- **Interior Wells**: MW-10, MW-25.

The two currently operational extraction wells, TW-2S and TW-2D, are located on the MW-20 bench (Figure 1-2). In March 2005, an additional extraction well, designated PE-1, was installed on the floodplain approximately 450 feet east of extraction well TW-2D. On

July 29, 2005, PG&E submitted the *Final Design Plan – Conveyance Piping and Power Supply for Extraction Well PE-1* to DTSC. Construction of the conveyance piping and connection of PE-1 to the IM extraction system will be completed following approval of the final design plan by DTSC and the Bureau of Land Management (BLM). A fourth extraction well (TW-3D) is planned for installation on the MW-20 bench. On October 7, 2005, PG&E submitted the *Final Work Plan for Supplemental Extraction Well TW-3D, Interim Measures Groundwater Extraction System,* and on October 11, 2005 PG&E submitted the *Final Design Plan for Conveyance Piping and Power Supply for Extraction Well TW-3D*. Construction of TW-3D and associated conveyance piping will be completed following approval of the final design plans by DTSC and BLM.

The wells screened in the unconsolidated alluvial fan and fluvial deposits, which comprise the Alluvial Aquifer, have been separated into three depth intervals to present groundwater quality and groundwater level data. The depth intervals of the Alluvial Aquifer—designated upper, middle, and lower—are based on grouping the monitoring wells screened at common elevations and do not represent distinct hydrostratigraphic units or separate aquifer zones. The subdivision of the aquifer into three depth intervals is an appropriate construct for presenting and evaluating groundwater quality data in the floodplain. The three-interval concept is also useful for presenting and evaluating lateral gradients while minimizing effects of vertical gradients and observing the influence of pumping from partially-penetrating wells. It should be noted, however, that these divisions do not correspond to any lithostratigraphic layers within the aquifer. The floodplain aquifer is considered to be hydraulically undivided.

2.0 Extraction System Operations

Pumping data for the IM groundwater extraction system for the period September 1 through September 30, 2005 are summarized in Table 2-1.

During September 2005, the groundwater extraction system (TW-2D and TW-2S) operated under the pumping scenarios listed below.

- **September 1 through 3:** A DTSC-approved test to operate the treatment plant at the maximum design treatment capacity of 135 gallons per minute (gpm) was in progress. This test began on August 29. Wells TW-2D and TW-2S were operated at approximately 90 gpm and 45 gpm, respectively.
- **September 3 through 6:** Well TW-2D was operated at the target pump rate of 70 gpm. TW-2S was taken off-line.
- **September 6 through 9**: A DTSC-approved test to operate the treatment plant at the minimum design treatment capacity of 20 gpm was conducted. During the test, the treatment plant was operated at 20 gpm for 35 hours and then 30 gpm for another 36 hours. In order to achieve these low treatment rates, TW-2D was cycled on and off during this time and operated at the low end of the TW-2D pump's operating range of about 45 gpm.
- **September 9 through 15:** Well TW-2D was run at the target pump rate of 70 gpm.
- **September 15 through 30:** The pump rate from TW-2D was increased to its maximum pump rate of approximately 90 gpm.

An average pumping rate of approximately 76.6 gpm was maintained throughout September 2005, including these pumping scenarios and the extraction well downtime, described below. A total of 3,311,875 gallons of groundwater were extracted and treated during September 2005.

The extraction well system operated continuously during approximately 27 of the 30 days in September 2005 (91 percent of possible runtime). The majority of extraction well downtime occurred during the low-flow testing between September 6 and 9, and as a result of ferrous chloride stress testing between September 18 and 19. Periods of extraction well downtime are summarized below:

- **September 6 through 9:** Well TW-2D was shut-down periodically during testing of treatment plant operations at the design minimum treatment capacity of 20 gpm. The total down time for TW-2D was approximately 44 hours. During those times when it was pumping, well TW-2D was operated at about 45 gpm during September 6-9.
- **September 10:** TW-2D was shut down for less than 30 minutes while a clean-in-place maintenance for the reverse osmosis unit was completed.
- **September 12:** TW-2D was shut down for approximately 3 hours while plant maintenance was being completed.

- **September 17:** TW-2D was shut down for approximately 2 hours while correcting a failed pressure transducer on the micro-filter system.
- **September 18 and 19:** TW-2D was shut down for approximately 17 hours during a planned start-up test to assess the treatment plant response to a loss of ferrous chloride flow. This test resulted in water with detections of Cr(VI) downstream of the chromium reduction and iron oxidation process. The treated water receiving tank was isolated prior to the test to prevent potentially unsuitable water from being discharged into the injection wells. Initially, the partially-treated water was recycled for re-treatment; subsequently, the "off-spec" water was transferred to the MW-20 bench for offsite transportation and disposal as non-hazardous waste allowing re-start of extraction at well TW-2D. Approximately 20,000 gallons of "off-spec" water was generated during this event and shipped offsite for disposal.
- **September 23, 25, and 26:** Well TW-2D was shut down for short periods under 1 hour to switch to back-up power. Since September 26, the IM-3 facility has operated on back-up power until a transient voltage surge suppressor is replaced at the facility. A new voltage surge suppressor has been ordered and will be installed in October.

During September 2005, the treated groundwater from the IM system was discharged into injection well IW-2, in accordance with Waste Discharge Requirements (WDR) Order No. R7-2004-0103 issued by the Colorado River Basin Regional Water Quality Control Board. The concentrate (brine) from the treatment process was transported to the United States Filter Corporation facility in Los Angeles, California for additional treatment and disposal. No shipments of accumulated solids from the clarifier were taken off-site during this reporting period.

Daily extraction system inspections included general facility inspections, flow measurements, site security, and desert tortoise monitoring. Daily logs with documentation of inspections are maintained onsite.

During September 2005, groundwater from extraction well TW-2D was sampled at a collection point on the influent pipeline of the IM-3 treatment plant. Table 2-2 summarizes the analytical data from extraction well TW-2D from April through June 2005 and presents analytical results from the extraction system WDR sampling conducted during August and September 2005. Sampling of treatment plant influent (combined flow from extraction well system), effluent, and reverse osmosis concentration are reported separately in the IM-3 treatment plant monthly monitoring reports required by the WDRs.

3.0 Chromium Sampling Results

The groundwater monitoring wells in the floodplain area are currently sampled for Cr(VI), total chromium [Cr(T)], and field water quality parameters under quarterly, monthly, and biweekly schedules, in accordance with the approved groundwater monitoring plan and DTSC directives. On July 20, 2005, DTSC approved a modified sampling schedule for groundwater monitoring in the floodplain that specified monthly sampling of 12 selected monitoring wells, biweekly sampling of one well (MW-34-100), and quarterly sampling of the other monitoring wells in the PMP area. Table A-1 in Appendix A presents the groundwater sampling results for Cr(VI) and Cr(T), as well as groundwater elevation and selected field water quality parameters for monitoring wells in the floodplain area during September 2005 and the previous months. Table A-2 in Appendix A presents the groundwater sampling data for the other wells monitored in the PMP area during the evaluation period.

Figure 3-1 presents the Cr(VI) results distribution for September 2005 in plan view for the groundwater wells monitoring the upper, middle, and lower depth intervals of the Alluvial Aquifer in the floodplain area. Figure 3-1 also shows the approximate locations of the 20 μg/L and 50 μg/L Cr(VI) contour lines in groundwater within each depth interval. The California drinking water standard for Cr(T) is 50 μg/L.

The Cr(VI) sampling results from the September 2005 monthly sampling event are shown on Figure 3-2, a vertical cross-section extending east-west across the floodplain. Figure 3-3 presents the September 2005 Cr(VI) results for additional floodplain monitoring wells on a cross-section-oriented parallel to the Colorado River (see Figure 1-2 for locations of the cross-sections). For ongoing IM performance evaluation, Cr(VI) concentration trend graphs and hydrographs for key floodplain monitoring wells are presented in Appendix A, Figures A-1 (well MW-33-90), A-2 (MW-34-100), and A-3 (MW-36-100).

4.0 Hydraulic Gradient Results

During the reporting period, water levels were recorded at intervals of 30 minutes with pressure transducers in 48 wells and two river monitoring stations (I-3 and RRB). The data are typically continuous, with only short interruptions for sampling or maintenance. The location of the wells monitored are shown on Figure 1-2 and listed in Section 1.0.

The average and the minimum and maximum daily average groundwater and river elevations have been calculated from the pressure transducer data for the September reporting period (September 1 to September 30, 2005) and are summarized in Appendix B, Table B-1. Reported groundwater elevations (or hydraulic heads) are adjusted for temperature and for salinity differences between wells (i.e., adjusted to a common freshwater equivalent), as described in the Performance Monitoring Plan. Groundwater elevation hydrographs (for September 2005) for all wells with transducers are included in Appendix B. The elevation of the Colorado River measured at the RRB monitoring station (inlet at Bat Cave Wash, Figure 1-2) during September 2005 is also shown on the hydrographs.

The September 2005 hydraulic data and groundwater gradient maps for the upper, middle, and lower depth intervals are shown on Figures 4-1, 4-2, and 4-3, respectively. The groundwater elevations for all depth intervals of the Alluvial Aquifer indicate strongly landward hydraulic gradients underlying the floodplain. To the west of the TW-2D pumping area, the hydraulic gradient in the upper depth interval is easterly and consistent with the regional gradient outside of the floodplain area. The landward gradients measured during September 2005 were slightly greater than in August 2005. The average monthly groundwater elevations are also presented and contoured in cross-section on Figure 4-4 (cross-section location shown on Figure 1-2).

Table 4-1 summarizes the estimated and actual dam discharges and river elevations since April 2004. The actual Davis Dam September 2005 average discharge of (12,335) cubic feet per second was slightly less than the United States Bureau of Reclamation (USBR) projected discharge for the September reporting period (12,400 cubic feet per second). During September 2005, the standpipe that houses the transducer at I-3 gage station was severely damaged possibly by a log or other debris being swept into it by the current; as a result, river level data from the I-3 transducer were unusable from September 1 to September 30. Accordingly, the actual Colorado River elevation at I-3 (monthly average) was unavailable to compare to the calculated using the multiple regression method with USBR projections for the September reporting period. On October 3, 2005, the I-3 transducer installation was repaired and data collection resumed for river elevation monitoring.

Gradients were measured between the three designated well pairs (MW-20-130/MW-34-80, MW-20-130/MW-42-65, and MW-31-135/MW-33-150) during September 2005. As shown in Table 4-2, the average gradients in the three well pairs were landward at magnitudes that were between 2.7 and 1.5 times greater than the target value of 0.0010 feet per foot (0.0027, 0.0027, and 0.0015, respectively). These gradients were slightly greater than the average gradients measured in August 2005.

5.0 Status of Operation and Monitoring

Reporting of the IM extraction and monitoring activities will continue as described in the Performance Monitoring Plan. The next status report will be a combined monthly and quarterly performance monitoring report submitted on November 30, 2005 and will cover activities from August 1 through October 31, 2005. Pumping from extraction well TW-2D is planned to continue through the month of October 2005 at the maximum pump capacity of approximately 90 gpm, as directed by DTSC. Extracted groundwater from well TW-2D will continue to be treated at the IM-3 treatment plant.

In compliance with a September 16, 2005 DTSC directive, a *Final Work Plan for Supplemental Extraction Well TW-3D* was submitted to DTSC and BLM on October 7, 2005. A *Final Design Plan for Conveyance Piping and Power Supply for Extraction Well TW-3D* was submitted DTSC and BLM on October 11, 2005. Pending DTSC and BLM approval, well installation activities for extraction well TW-3D are scheduled to commence on October 20, 2005. Piping construction and commissioning of the new extraction well will be completed following well installation.

Consultation with DTSC and the federal agencies for construction of conveyance piping and connection of extraction well PE-1 to the IM-3 system is continuing. It is currently anticipated that agency approvals for piping construction and commissioning of PE-1 would be obtained by the end of November 2005. Construction of the conveyance piping and connection of PE-1 to the IM extraction system will commence following approval of the final design plan by DTSC and BLM.

Based on October 6 USBR projections, it is anticipated that the Colorado River level at the I-3 gage location in October 2005 will stay relatively the same as levels in September 2005. Future adjustments in pumping rates from the IM extraction system will be proposed based on expected river levels, observed groundwater gradients, potential system modifications, and other relevant factors

Tables

TABLE 2-1
Pumping Rate and Extracted Volume for IM System through September 2005
Interim Measures Performance Monitoring
PG&E Topock Compressor Station

Extraction Well	September 2005 Period[b]		Project To Date[d]
	Average Pumping Rate (gpm)	Volume Pumped (gal)	Cumulative Volume Pumped (gal)
TW-2S[a]	44.3[c]	151,704	893,517
TW-2D	73.2	3,160,171[e]	40,561,069
Total	76.6	3,311,875	41,454,586
Volume Pumped from the MW-20 Well Cluster			1,527,724
Total Volume Pumped (gal)			42,982,310
Total Volume Pumped (ac-ft)			131.9

gal: gallons
gpm: gallons per minute

[a] Extraction well TW-2S was operated with well TW-2D during August 29-September 3, 2005 as part of an IM No. 3 plant performance test at a design maximum treatment rate of 135 gpm.

[b] Pumping results during the monthly period from September 1, 2005 at 12:01 am through September 30, 2005 at 11:59 pm.

[c] The "Average Pumping Rate" for TW-2S is based on operating between September 1 and 3, 2005.

[d] Interim Measure groundwater extraction at the Topock site was initiated in March 2004.

[e] The total flow for TW-2D does not include flow data that was not recorded during September, 2005 when the data historian system was offline. The offline time was estimated to be 105 minutes. The influent flow during these times was estimated to be about 5,460 gallons while pumping at about 52 gpm.

TABLE 2-2
Analytical Results for Extraction Wells, April 2005 through September 2005
Interim Measures Performance Monitoring
PG&E Topock Compressor Station

Well ID	Sample Date	Unfiltered Total Chromium mg/L	Dissolved Total Chromium mg/L	Hexavalent Chromium mg/L	Total Dissolved Solids mg/L
TW-02D	06-Apr-05	---	5.70 ^ [1]	5.44	6140
TW-02D	19-Apr-05	---	5.77 ^ [1]	5.47	6580
TW-02D	05-May-05	---	5.49 ^	---	6470
TW-02D	15-Jun-05	---	4.86	4.57	6420
SC-100B	08-Aug-05	4.06	---	4.27	5980 J
SC-100B	11-Aug-05	4.83	---	4.21 J	6060
SC-100B	16-Aug-05	4.75	---	4.22	6170
SC-100B	18-Aug-05	3.96	---	3.88	5950
SC-100B	07-Sep-05	4.71	---	3.93	6090

Notes:

[1] Samples field filtered. All other dissolved total chromium is lab filtered.

^ Groundwater samples from IM extraction wells are analyzed by certified laboratory for operational monitoring purpose. Analytical data is reviewed for quality control but does not undergo full data validation; results flagged ^.

The analytical results after August 1, 2005 were obtained from a sample point (SC-100B) on the influent conveyance system at the IM3 treatment system.

mg/L = concentration in milligrams per liter (mg/L)
FD = field duplicate sample
J = concentration or reporting limit estimated by laboratory or data validation.
(---) = data not collected.

TABLE 4-1

Predicted and Actual Monthly Average Davis Dam Discharge and Colorado River Elevation at I-3

Interim Measures Performance Monitoring

PG&E Topock Compressor Station

Month	Davis Dam Release			Colorado River Elevation at I-3		
	Projected (cfs)	Actual (cfs)	Difference (cfs)	Predicted (ft AMSL)	Actual (ft AMSL)	Difference (feet)
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
August 2004	12,100	12,000	-100	454.5	454.9	0.4
September 2004	11,200	10,979	-221	454.2	454.6	0.4
October 2004	8,600	7,538	-1,062	453.2	453.5	0.3
November 2004	9,500	8,075	-1,425	453.6	453.4	-0.2
December 2004	6,200	8,090	1,890	452.4	453.3	0.9
January 2005	8,800	4,900	-3,900	453.4	452.4	-1.0
February 2005	8,000	4,820	-3,180	453.1	452.6	-0.5
March 2005	15,600	7,110	-8,490	455.8	452.9	-2.9
April 2005	16,700	16,306	-394	455.9	456.0	0.1
May 2005	16,700	15,579	-1,121	456.2	456.1	-0.1
June 2005	14,600	15,223	623	455.8	456.1	0.3
July 2005	15,400	15,612	212	456.0	456.0	0.0
August 2005	11,700	11,544	-156	454.6	454.8	0.2
September 2005	12,400	12,335	-65	454.6	NA	NA
October 2005	12,300	--	--	454.5	--	--

NOTES:

NA = I-3 transducer data unavailable for month of September due to damage by debris.

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 for April 2004 through July 2004 are from April 2004, and the remainder were from the beginning of each respective month.

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

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

TABLE 4-2
Average Hydraulic Gradients Measured at Well Pairs, September 2005
Interim Measures Performance Monitoring
PG&E Topock Compressor Station

Well Pair	Mean Landward Hydraulic Gradient (feet/foot)	Measurement Dates 2005
Northern Gradient Pair		
MW-31-135 / MW-33-150	0.0015	September-1 through September-30
Central Gradient Pair		
MW-20-130 / MW-34-80	0.0027	September-1 through September-30
Southern Gradient Pair		
MW-20-130 / MW-42-65	0.0027	September-1 through September-30

Notes:

Refer to Figure 1-2 for location of well pairs

For IM pumping, the target landward gradient for the selected well pairs is 0.001 feet/foot

Figures

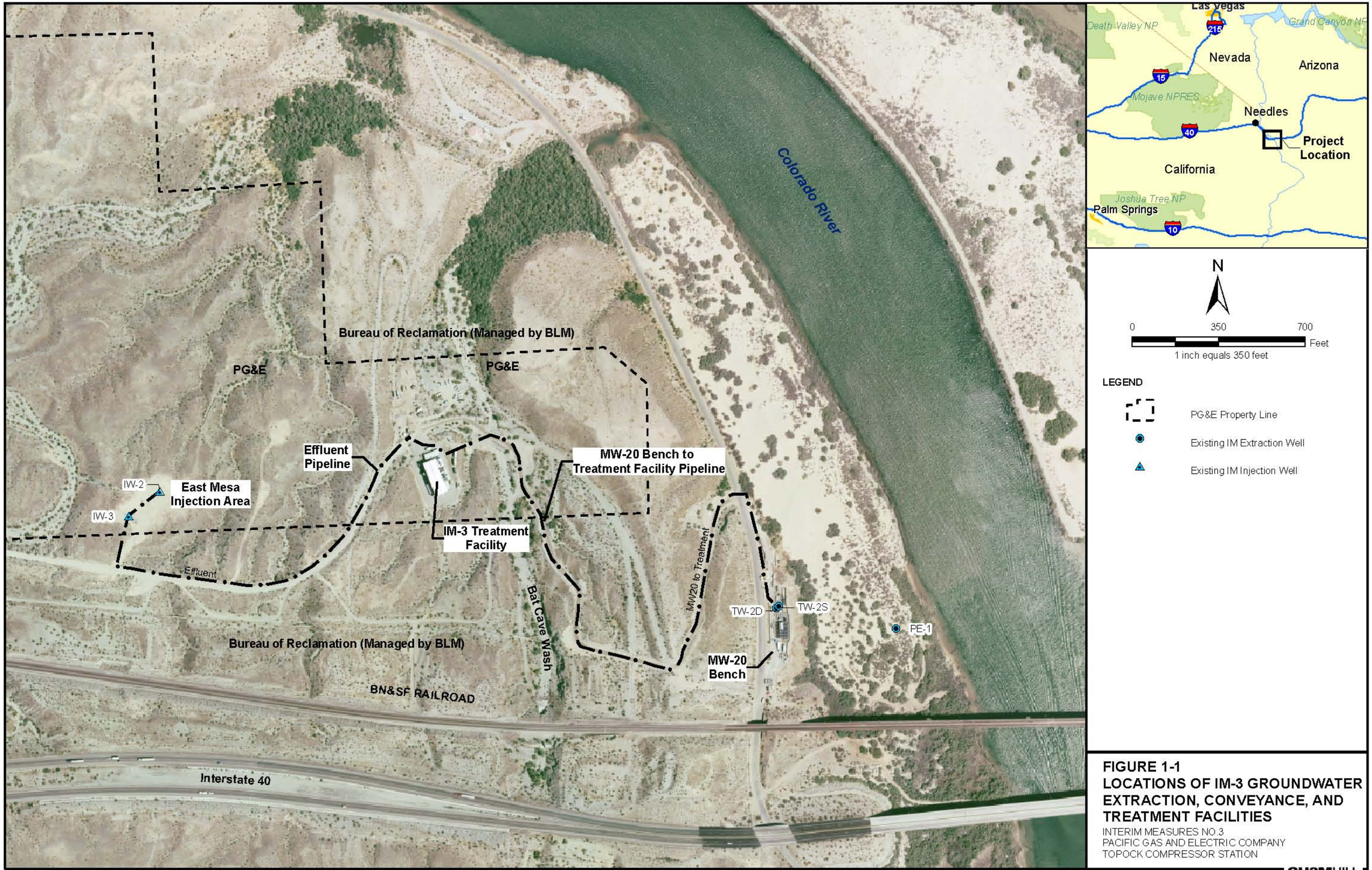

FIGURE 1-1
LOCATIONS OF IM-3 GROUNDWATER EXTRACTION, CONVEYANCE, AND TREATMENT FACILITIES
INTERIM MEASURES NO.3
PACIFIC GAS AND ELECTRIC COMPANY
TOPOCK COMPRESSOR STATION

CH2MHILL

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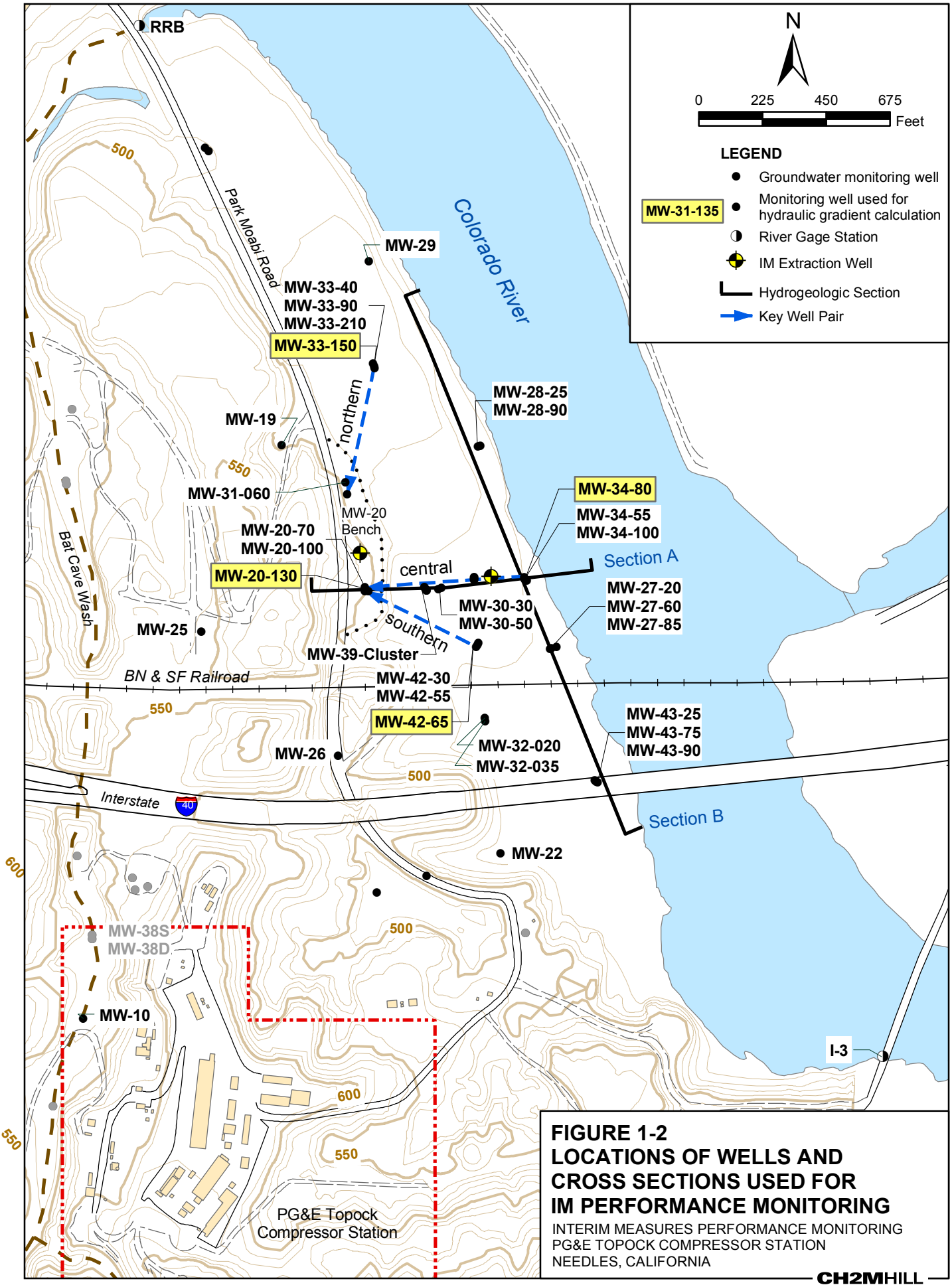

FIGURE 1-2
LOCATIONS OF WELLS AND CROSS SECTIONS USED FOR IM PERFORMANCE MONITORING
INTERIM MEASURES PERFORMANCE MONITORING
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

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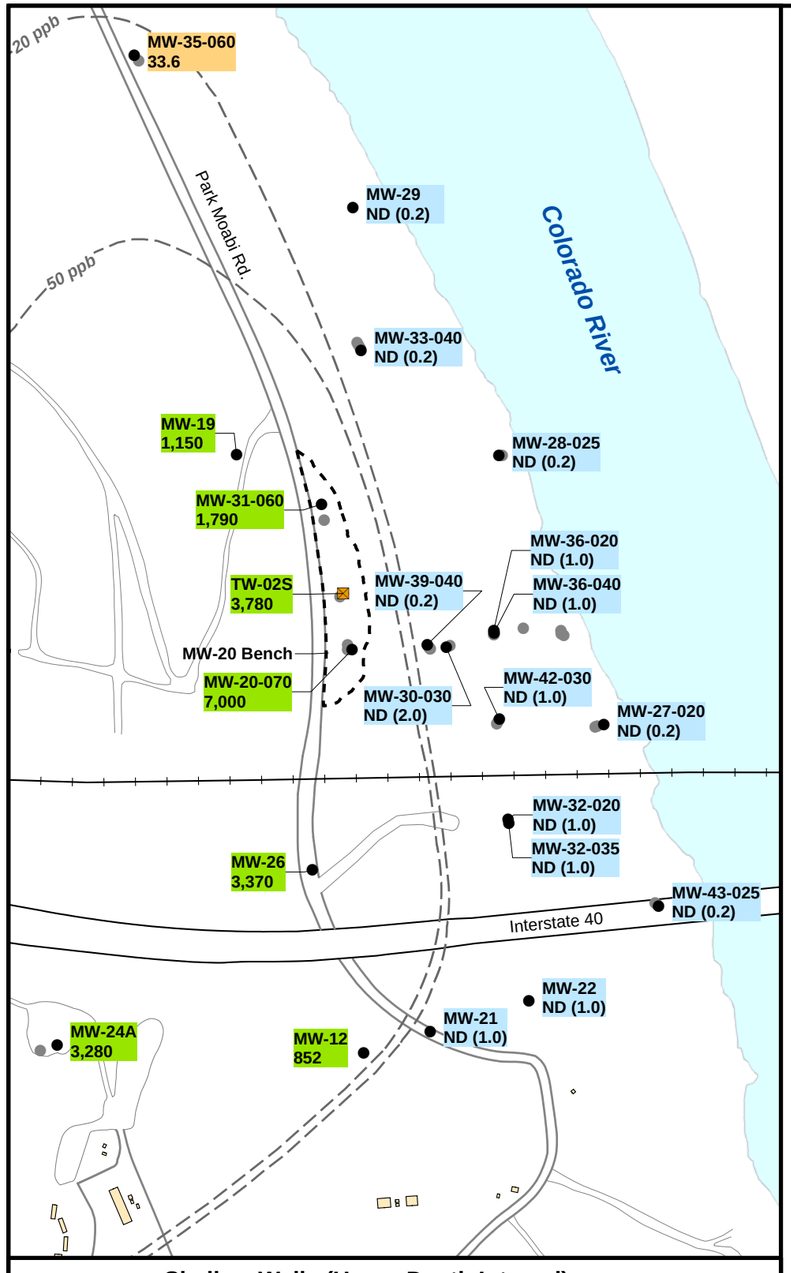
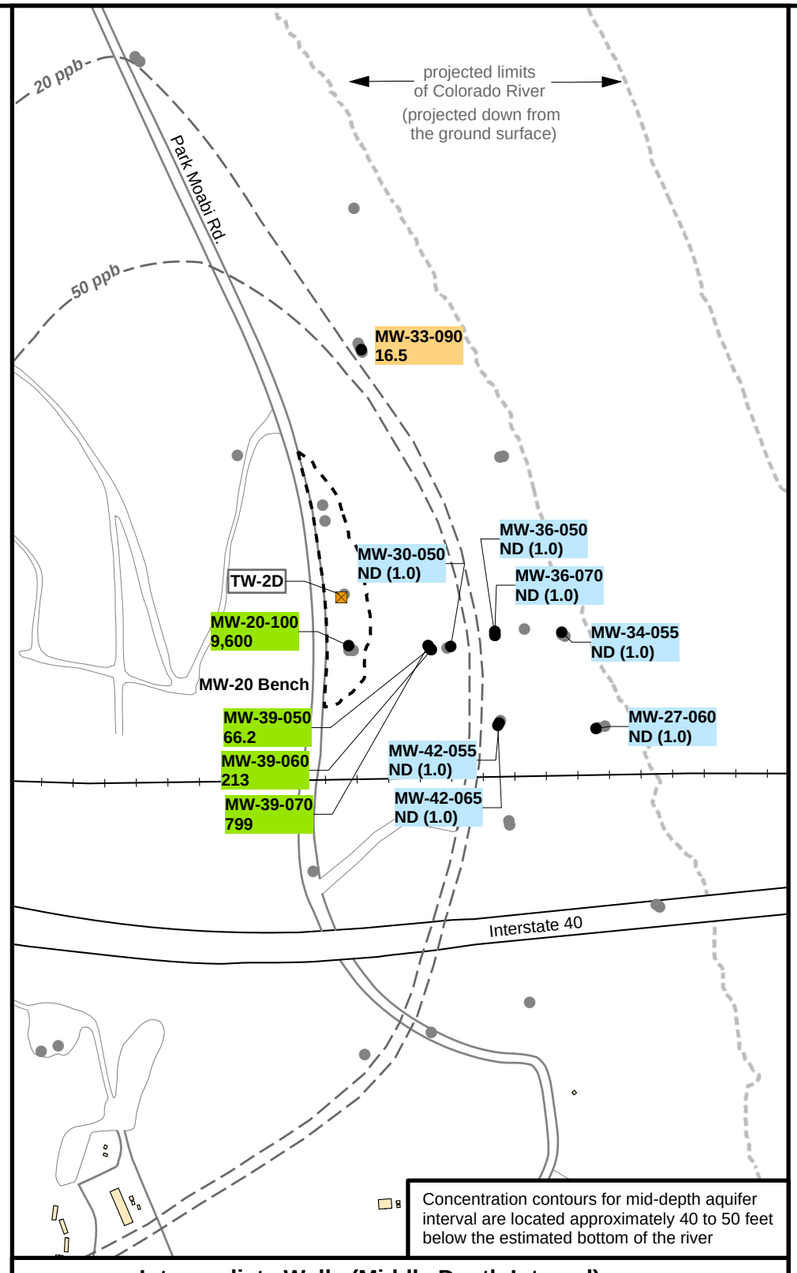
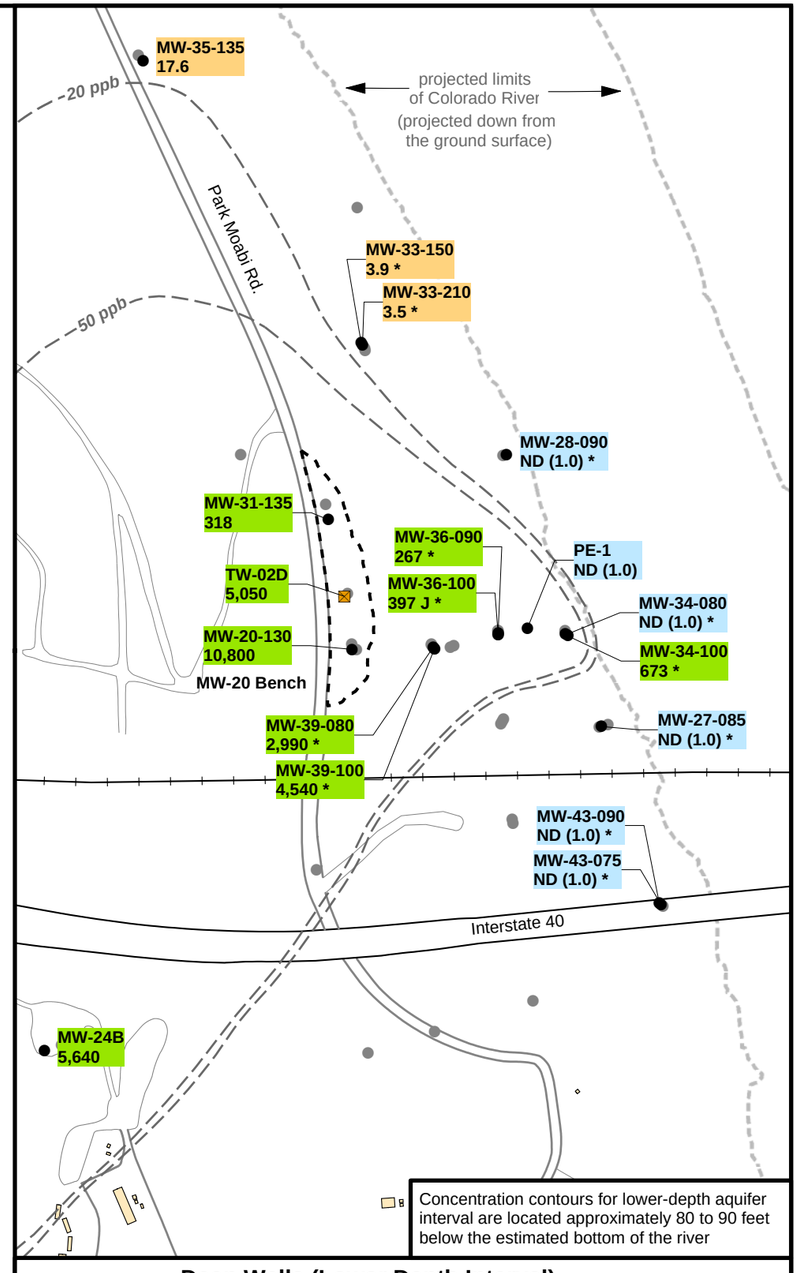


Shallow Wells (Upper Depth Interval)



Intermediate Wells (Middle Depth Interval)



Deep Wells (Lower Depth Interval)

ND (1) Not detected at listed reporting limit (ppb)

41 Less than 50 ppb

3,810 Greater than 50 ppb

— · 50 — · Inferred Cr(VI) concentration contour

Notes:
Results marked * are from September 2005 all others are from March, May, June, or July sampling events.

See tables A-1 and A-2 for data and dates of sampling.

Hexavalent Chromium Concentrations in Groundwater September 2005 Monthly Sampling Event

Concentrations in micrograms per liter (µg/L) equivalent to parts per billon (ppb)
ND = not detected at listed reporting limit.

N

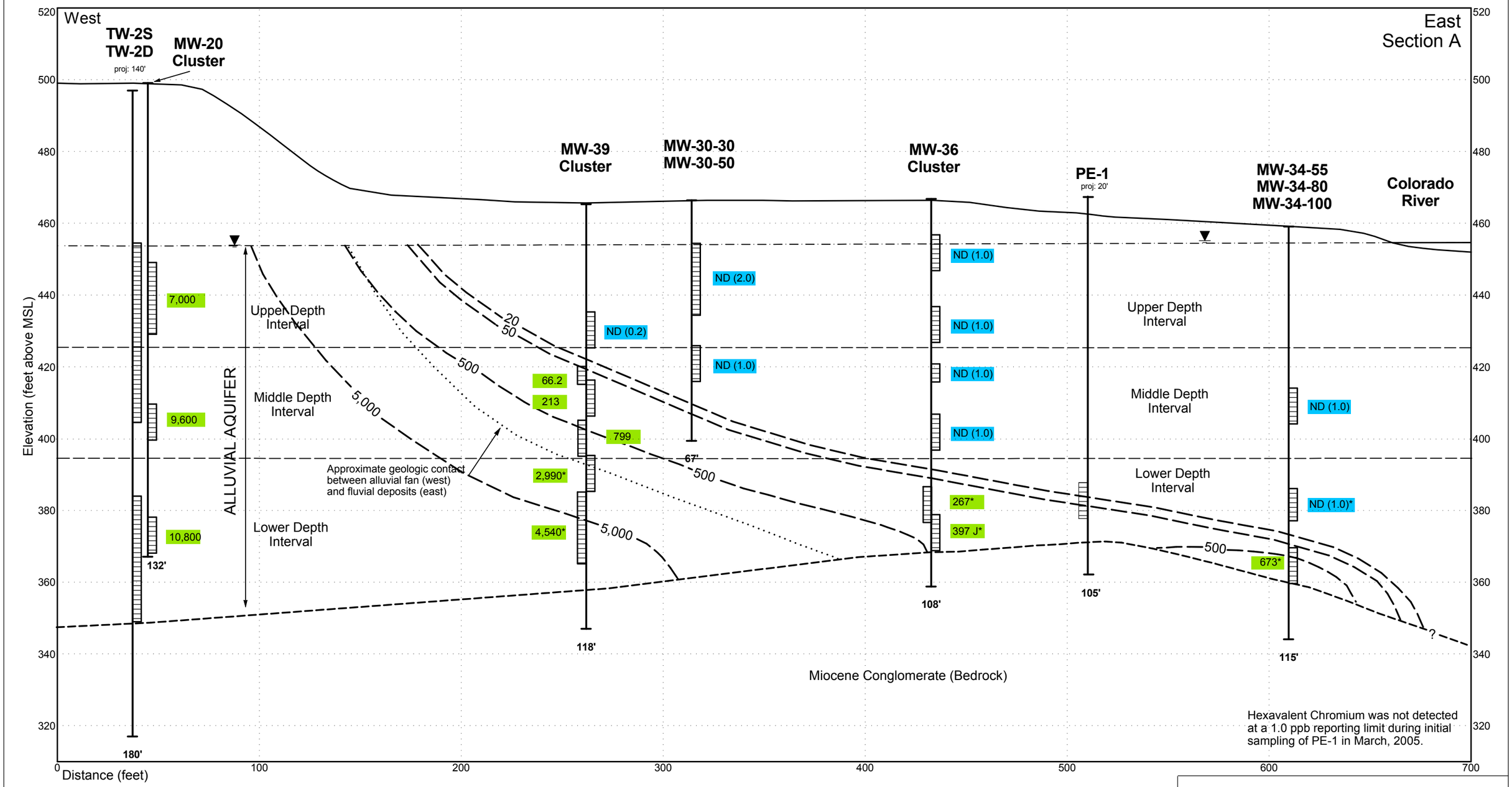
0 400 800 Feet

1 inch equals 400 feet

FIGURE 3-1
CR(VI) CONCENTRATIONS IN ALLUVIAL AQUIFER, SEPTEMBER 2005

INTERIM MEASURES PERFORMANCE MONITORING
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

CH2MHILL



water level

well screen

3,420

boring depth (feet) 103

50

Inferred Hexavalent Chromium concentration contour

Hexavalent Chromium concentration in micrograms per liter (ug/L) equivalent to parts per billion (ppb)

ND (1)	Not detected at listed reporting limit (ppb)
42	Less than 50 ppb
3,810	Greater than 50 ppb

Notes:
Results marked * are from September 2005 sampling events.
All other results are from May, June, and July 2005 sampling events;
See Tables A-1 and A-2 for data and dates of sampling.

FIGURE 3-2
CR(VI) CONCENTRATIONS
FLOODPLAIN CROSS-SECTION A
SEPTEMBER 2005

INTERIM MEASURES PERFORMANCE MONITORING
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

CH2MHILL

\\ZINFANDEL\PROJ\PACIFICGASELECTRICCO\TOPOCKPROGRAM\GINT\INPUT\GINT_WORK_FILE_TYPES\GDW\X-SECTIONS\PMR\10-2005-PMR\FIG3-2_CR6_X-SEC_A.GDW;

North

South
Section B

MW-33 wells
projected 200' onto line of section

MW-33-40
MW-33-90
MW-33-150
MW-33-210

Cross-Section Parallel to the Colorado River

BN & SF
Railroad

I-40
Bridge

MW-28-25
MW-28-90
projected: 40'

MW-34-55
MW-34-80
MW-34-100

MW-27-20
MW-27-60
MW-27-85

MW-43-25
MW-43-75
MW-43-90

water table (average 454' MSL)

Upper Depth Interval

Middle Depth Interval

Lower Depth Interval

ALLUVIAL AQUIFER

Oldest Alluvium (Toa)

ND (0.2)
16.5
3.9*
3.5*
ND (0.2)
ND (1.0)*
ND (0.2)
ND (1.0)
ND (1.0)*
ND (0.2)
ND (1.0)
ND (1.0)*
ND (0.2)
ND (1.0)*
ND (1.0)*

20
50
500
673*

Approximate geologic contact
between alluvial fan
and fluvial deposits

237'
148'
116'
107'
97'

Miocene Conglomerate (Bedrock)

Elevation (feet above MSL)

560 540 520 500 480 460 440 420 400 380 360 340 320 300 280 260 240

-200 0 200 400 600 800 1,000 1,200 1,400 1,600 1,800

Distance (feet)

water level
well screen
3,810
boring depth (feet) 103'

50
Inferred Hexavalent Chromium concentration contour

Hexavalent Chromium concentration in micrograms per liter (ug/L) equivalent to parts per billion (ppb)

ND (1)	Not detected at listed reporting limit (ppb)
42	Less than 50 ppb
3,810	Greater than 50 ppb

Notes:
Results marked * are from September 2005 sampling events.
All other results are from May, June, or July 2005 sampling events;
See Tables A-1 and A-2 for data and dates of sampling.

FIGURE 3-3
CR(VI) CONCENTRATIONS
FLOODPLAIN CROSS-SECTION B
SEPTEMBER 2005

INTERIM MEASURES PERFORMANCE MONITORING
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

CH2MHILL

\\ZINFANDEL\PROJ\PACIFICGASELECTRICCO\TOPOCKPROGRAM\GINT\INPUT\GINT_WORK_FILE_TYPES\GDW\X-SECTIONS\PMR\10-2005-PMR\FIG3-3_CR6_X-SEC_B.GDW;

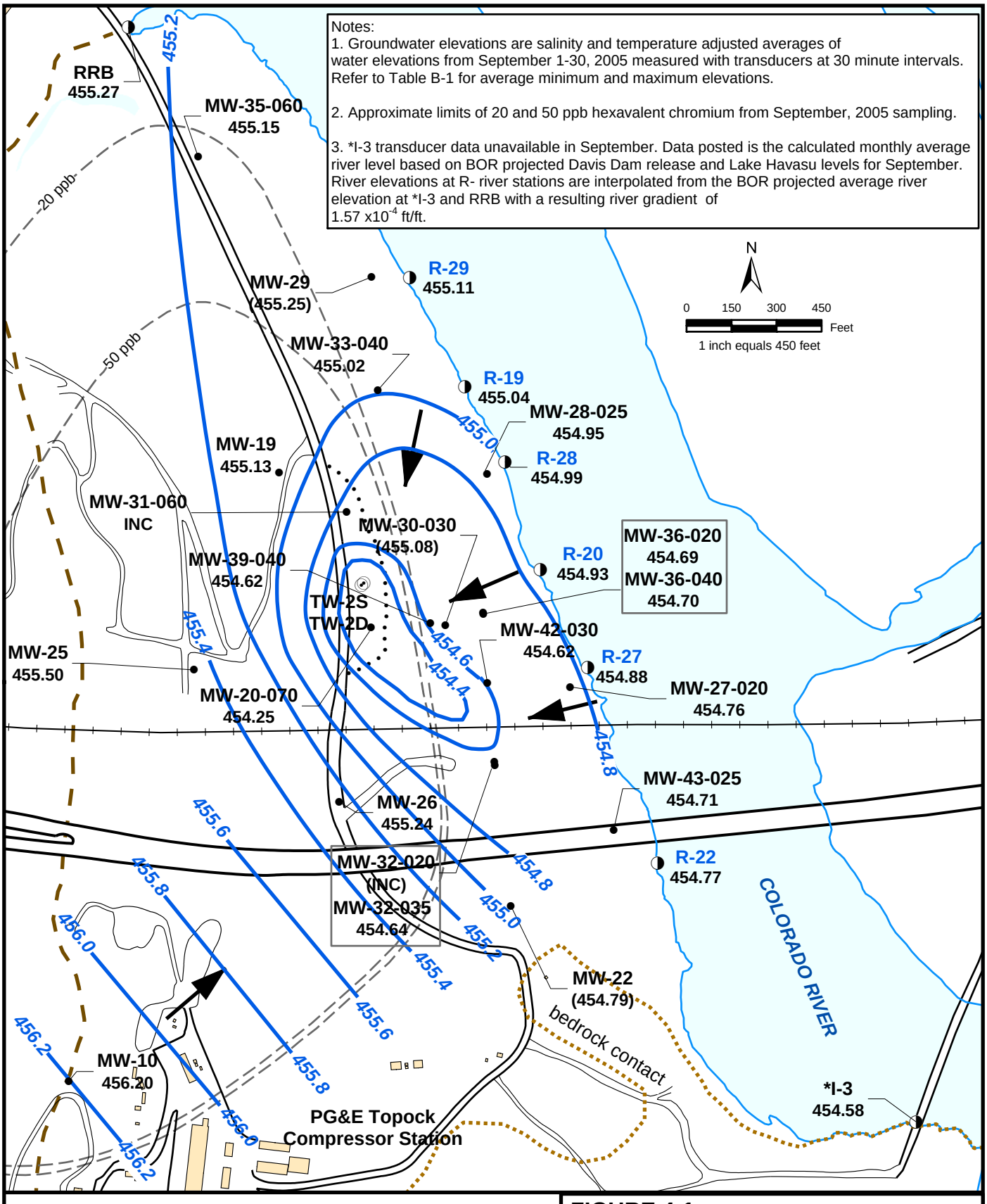


FIGURE 4-1
AVERAGE GROUNDWATER SHALLOW WELLS AND RIVER ELEVATIONS SEPTEMBER 2005

INTERIM MEASURES PERFORMANCE MONITORING
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

CH2MHILL

\\ZINFANDEL\PROJ\PACIFICGASELECTRICCO\TOPOCKPROGRAM\GIS\MXD\2005\GW\IM_AVERAGE_GROUNDWATER_UA_SEPT1_30_05.MXD

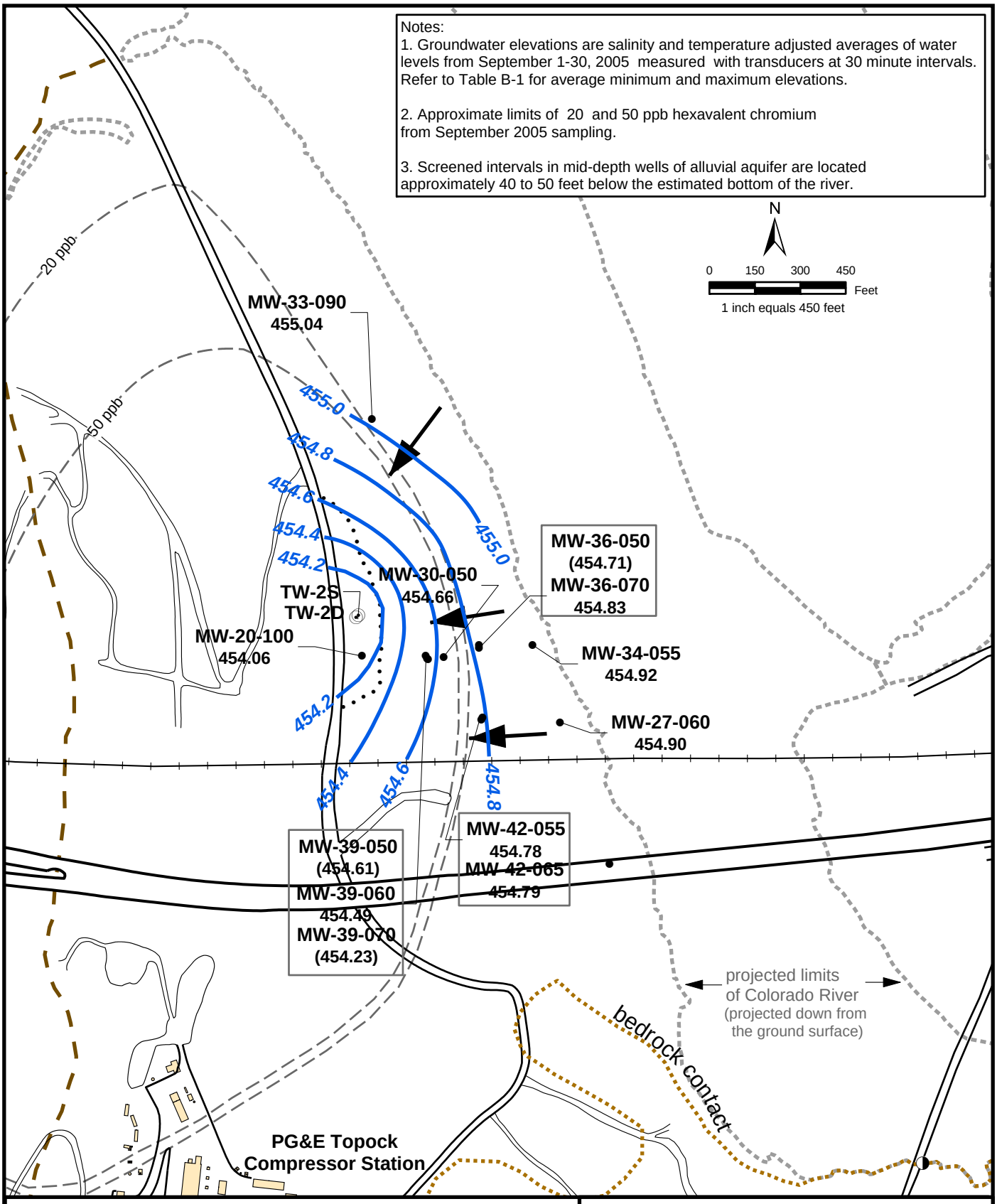


FIGURE 4-2
AVERAGE GROUNDWATER ELEVATIONS MID-DEPTH WELLS SEPTEMBER 2005

INTERIM MEASURES PERFORMANCE MONITORING
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

CH2MHILL

SFO \\ZINFANDEL\PROJ\PACIFICGASELECTRICCO\TOPOCKPROGRAM\GIS\MXD\2005\GW\IM_AVERAGE_GROUNDWATER_MA_SEPT1_30_05.MXD
IM_AVERAGE_GROUNDWATER_MA_SEPT1_30_05.PDF

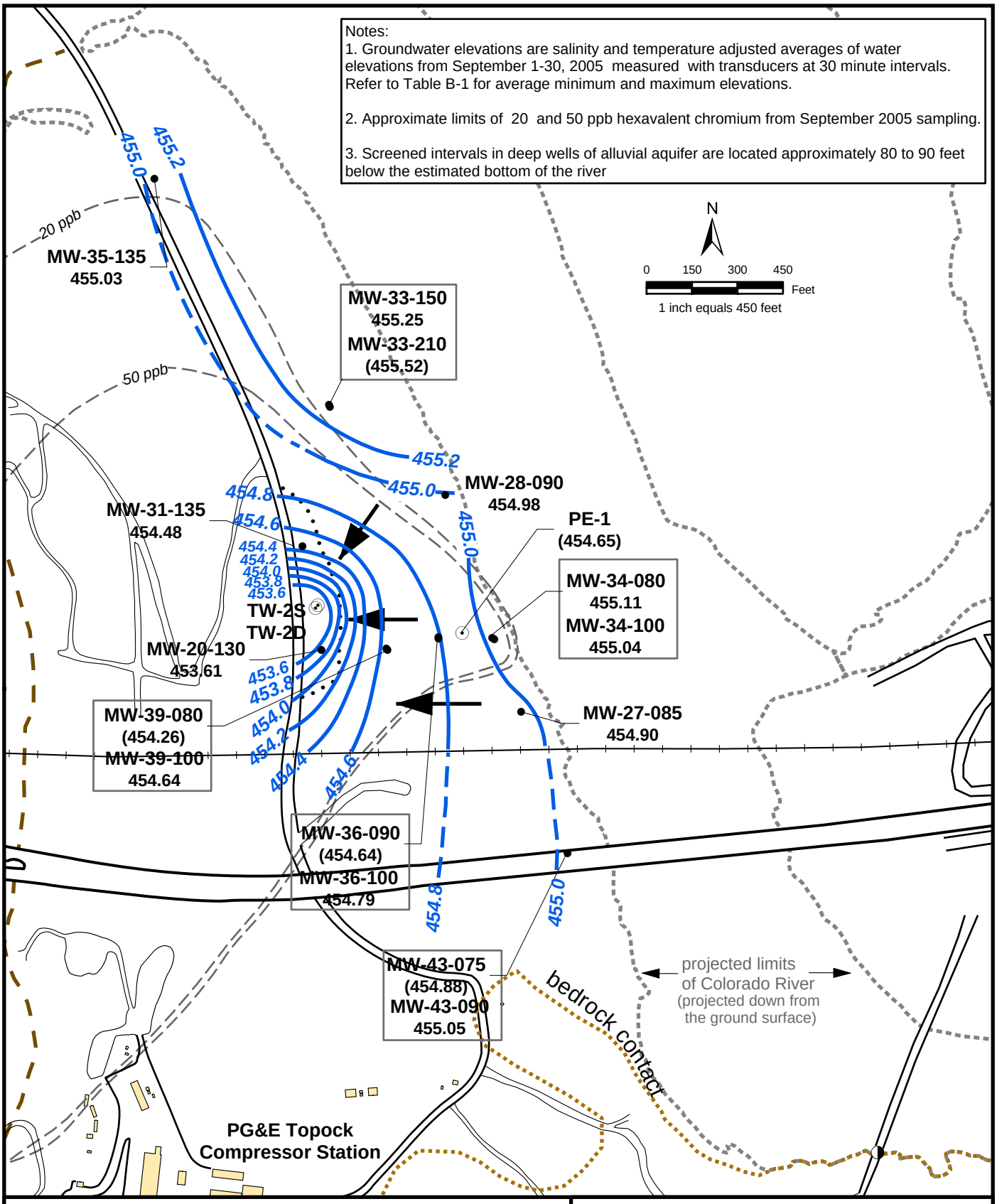
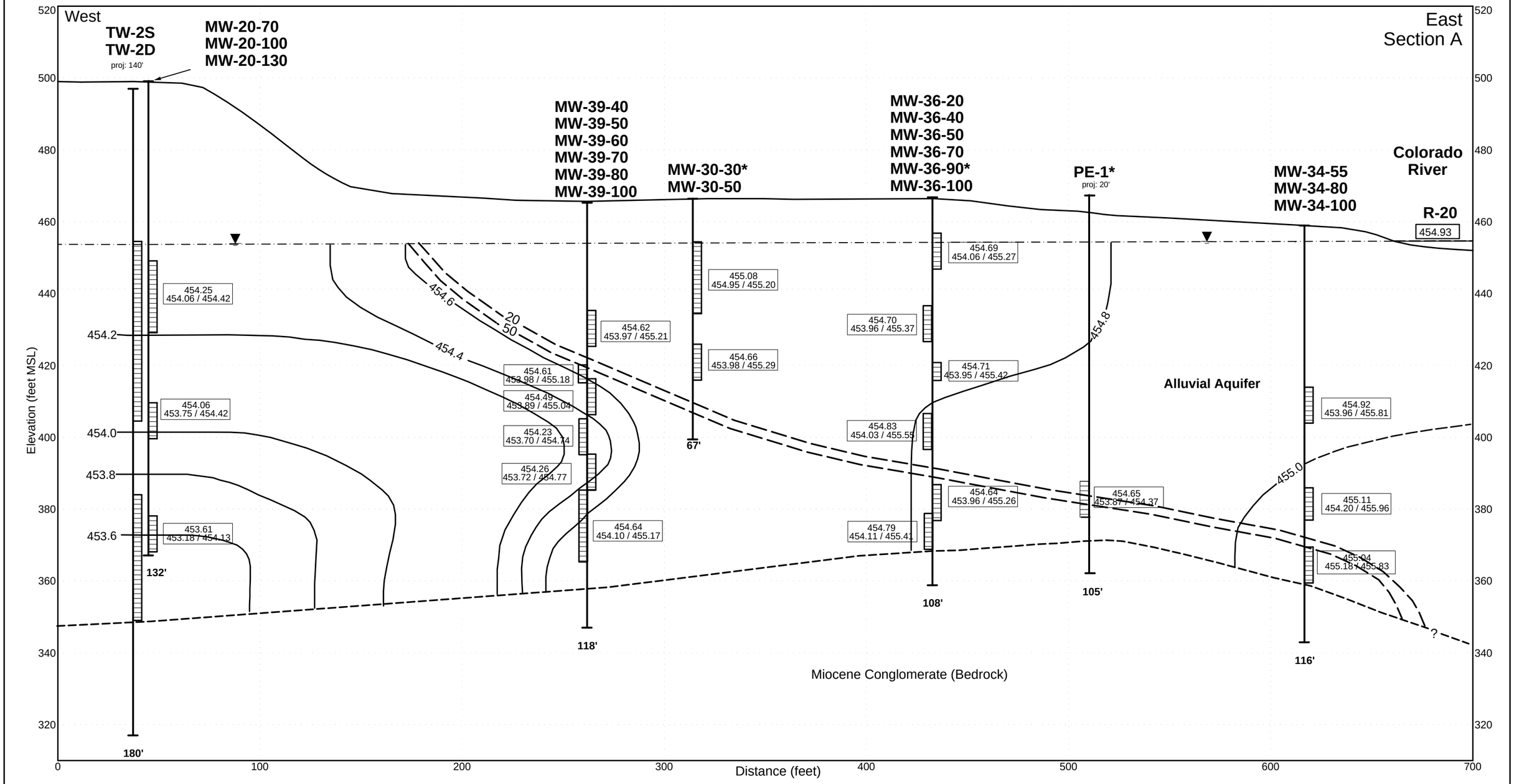


FIGURE 4-3
AVERAGE GROUNDWATER ELEVATIONS DEEP WELLS SEPTEMBER 2005

INTERIM MEASURES PERFORMANCE MONITORING
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

CH2MHILL

SFO \\ZINFANDEL\PROJ\PACIFICGASELECTRICCO\TOPOCKPROGRAM\GIS\MXD\2005\GW\IM_AVERAGE_GROUNDWATER_LA_SEPT1_30_05.MXD



Notes:
Results show average groundwater elevations for September 1-30, 2005 measured with transducers at 30 minute intervals.
Groundwater elevations adjusted for salinity and temperature.

*Wells MW-30-30, MW-36-90, and PE-1, excluded from contouring.

River elevation (R-20) is the calculated monthly average river level based on BOR projected Davis Dam release and Lake Havasu levels for September. I-3 data unvailable in September 2005.
Data subject to review.

Legend:

MW-30-50
Inferred water table
well screen
453.66
453.40/453.94
103 boring depth (feet)

20
Inferred hexavalent chromium contour (ppb) September 2005

Monthly average groundwater head (ft MSL)
Daily Minimum / Maximum average groundwater head (ft MSL)

453.5
Groundwater head contour

453.5
Inferred groundwater head contour

FIGURE 4-4
AVERAGE GROUNDWATER ELEVATIONS
FLOODPLAIN CROSS-SECTION A
SEPTEMBER 2005

INTERIM MEASURES PERFORMANCE MONITORING
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

CH2MHILL

Appendix A
Chromium Sampling Results for Monitoring Wells in Floodplain Area

TABLE A-1
Groundwater Sampling Results for Floodplain Monitoring Wells, April 2005 through September 2005
Interim Measures Performance Monitoring
PG&E Topock Compressor Station

	Sample Date	Hexavalent Chromium µg/L	Dissolved Total Chromium µg/L	Selected Field Parameters			Groundwater and River Elevations at Sampling Time	
				ORP mV	Dissolved Oxygen mg/L	Specific Conductance µS/cm	Groundwater Elevation salinity-adjusted feet MSL	River Elevation Downstream I-3 Station
Shallow Wells								
MW-27-020	04-Apr-05	ND (0.2)	ND (1.0)	-194	0.0	2,580	454.7	453.6
	04-May-05	ND (0.2)	ND (1.0)	-176	0.4	1,280	456.1	455.7
	18-Jul-05	ND (0.2)	ND (1.0) FF	-190	1.1	1,040	456.4	456.3
MW-28-025	04-Apr-05	ND (0.2)	ND (1.0)	-108	0.1	1,590	454.9	454.2
	03-May-05	ND (0.2)	ND (1.0)	-59	0.4	1,280	456.4	456.2
	15-Jun-05	ND (0.2)	ND (1.0)	-54	2.7	1,460	456.2	455.8
	13-Jul-05	ND (0.2)	ND (1.0) FF	19	4.9	1,690	456.6	456.4
MW-29	06-Apr-05	ND (1.0)	ND (1.0)	-128	2.0	22,700	454.5	455.4
	05-May-05	ND (0.2)	ND (1.0)	-142	0.1	---	455.9	456.1
	15-Jun-05	ND (0.2)	ND (1.0)	-108	3.1	6,580	456.1	456.0
MW-30-030	06-Apr-05	ND (2.0)	ND (1.0)	-143	0.3	38,000	454.4	455.1
	09-May-05	ND (2.0)	ND (1.0)	-131	0.3	47,700	455.4	455.2
MW-32-020	04-Apr-05	ND (1.0)	ND (1.0)	-178	0.0	26,000	453.9	453.7
	09-May-05	ND (1.0)	ND (1.0)	-121	0.2	20,600	455.4	454.9
	17-Jun-05	ND (1.0)	ND (1.0)	-188	2.4	15,500	455.6	455.2
MW-32-035	04-Apr-05	ND (1.0)	ND (1.0)	-197	0.1	9,800	454.2	453.7
	09-May-05	ND (1.0)	ND (1.0)	-164	0.2	13,600	455.5	455.0
	17-Jun-05	ND (1.0)	ND (1.0)	-202	2.3	12,800	455.7	455.3
MW-33-040	04-Apr-05	ND (0.2)	ND (1.0)	-160	0.7	9,900	454.4	453.9
	05-May-05	ND (0.2)	ND (1.0)	-90	0.6	5,760	455.8	455.6
	17-Jun-05	ND (0.2)	ND (1.0)	-94	5.4	5,460	456.0	456.0
MW-36-020	05-Apr-05	ND (1.0)	ND (1.0)	-92	5.3	20,000	---	453.8
	03-May-05	ND (1.0)	ND (1.0)	-180	3.5	10,200	456.0	456.2
MW-36-040	05-Apr-05	ND (1.0)	ND (1.0)	-162	5.3	11,200	---	453.9
	05-May-05	ND (1.0)	ND (1.0)	-180	2.7	10,300	455.5	455.4
MW-39-040	05-Apr-05	ND (1.0)	ND (1.0)	-179	5.4	6,200	---	454.3
	05-May-05	ND (0.2)	ND (1.0)	-179	1.8	6,070	455.7	456.1
	16-Jun-05	ND (0.2)	ND (1.0)	-202	2.1	9,600	456.0	455.5
MW-43-025	20-Jun-05	ND (0.2)	ND (1.0)	-174	1.9	1,800	456.3	455.8
Middle-Depth Wells								
MW-27-060	05-Apr-05	ND (1.0)	ND (1.0)	-157	0.1	16,700	454.3	453.8
	12-Apr-05	ND (1.0)	ND (1.0)	-146	0.2	13,800	456.6	456.6
	19-Apr-05	ND (1.0)	ND (1.0)	---	---	---	456.3	456.1
	26-Apr-05	ND (1.0)	ND (1.0)	-111	7.0	22,100	456.6	456.1
	04-May-05	ND (1.0)	ND (1.0)	-114	0.4	14,400	456.2	455.9
	18-Jul-05	ND (1.0)	1.80 FF	-125	2.6	13,500	456.8	456.6
MW-30-050	06-Apr-05	18.5	15.5	-252	0.5	14,000	454.8	455.2
	06-Apr-05 FD	17.1 J	13.0	FD	FD	FD	FD	FD
	09-May-05	ND (1.0)	ND (1.0)	-100	0.3	14,200	455.4	455.4
	09-May-05 FD	ND (1.0)	ND (1.0)	FD	FD	FD	FD	FD

Refer to table footnotes for data qualifier explanation.

TABLE A-1
Groundwater Sampling Results for Floodplain Monitoring Wells, April 2005 through September 2005
Interim Measures Performance Monitoring
PG&E Topock Compressor Station

	Sample Date	Hexavalent Chromium µg/L	Dissolved Total Chromium µg/L	Selected Field Parameters			Groundwater and River Elevations at Sampling Time	
				ORP mV	Dissolved Oxygen mg/L	Specific Conductance µS/cm	Groundwater Elevation salinity-adjusted feet MSL	River Elevation Downstream I-3 Station
Middle-Depth Wells								
MW-33-090	04-Apr-05	21.3	17.2	-98	0.3	13,300	454.4	453.9
	19-Apr-05	20.3	17.9	---	4.0	8,830	455.5	455.1
	19-Apr-05 FD	20.0	18.2	FD	FD	FD	FD	FD
	05-May-05	17.4	16.8	-244	0.3	8,250	455.7	455.3
	18-May-05	15.5	16.3	-141	1.6	---	455.8	454.9
	01-Jun-05	17.8	14.0	-53	0.4	12,000	456.3	456.1
	01-Jun-05 FD	16.0	12.7	FD	FD	FD	FD	FD
	16-Jun-05	15.0	14.2	-209	2.1	9,500	455.9	455.2
	16-Jun-05 FD	15.7 J	13.4	FD	FD	FD	FD	FD
	20-Jul-05	16.1	17.3 FF	-23	0.6	8,440	456.5	456.0
	20-Jul-05 FD	16.5	17.3 FF	FD	FD	FD	FD	FD
MW-34-055	05-Apr-05	ND (1.0)	ND (1.0)	-110	0.7	12,400	454.1	453.8
	05-May-05	ND (1.0)	ND (1.0)	-99	0.1	8,860	455.5	455.0
	15-Jul-05	ND (1.0)	ND (1.3) FF	-77	3.6	9,180	457.1	456.9
MW-36-050	05-Apr-05	ND (1.0)	ND (1.0)	-129	5.6	9,320	---	453.9
	05-May-05	ND (1.0)	ND (1.0)	-137	2.1	9,330	455.5	455.2
MW-36-070	05-Apr-05	ND (1.0)	ND (1.0)	-48	5.6	9,990	---	453.8
	03-May-05	ND (1.0)	ND (1.0)	-103	0.0	12,300	455.9	455.8
MW-39-050	06-Apr-05	282 J	237	81	4.4	12,400	454.8	455.6
	03-May-05	206	204	56	0.0	14,300	454.2	455.1
	16-Jun-05	66.2	55.4	-44	2.0	15,200	456.0	454.8
MW-39-060	06-Apr-05	914	1080	84	4.3	12,600	---	455.3
	06-Apr-05 FD	914	907	FD	FD	FD	FD	FD
	05-May-05	450	455	43	2.0	14,600	455.4	455.8
	05-May-05 FD	460	509	FD	FD	FD	FD	FD
	16-Jun-05	213	198	19	1.9	17,600	456.1	454.9
MW-39-070	05-Apr-05	2280	2080	61	5.8	11,500	---	454.3
	05-May-05	1320	1270	98	1.9	12,500	455.2	456.3
	16-Jun-05	799	576	22	1.8	16,000	456.1	455.2
Deep Wells								
MW-27-085	05-Apr-05	ND (1.0)	ND (1.0)	-134	2.0	19,700	454.5	453.9
	12-Apr-05	ND (1.0)	ND (1.0)	-134	0.1	16,900	456.6	456.4
	19-Apr-05	ND (1.0)	ND (1.0)	---	---	---	456.5	456.3
	26-Apr-05	ND (1.0)	ND (1.0)	-138	5.7	18,100	456.1	455.8
	04-May-05	ND (1.0)	ND (1.0)	-128	0.4	18,500	456.5	456.2
	19-May-05	ND (1.0)	ND (1.0)	-131	1.0	19,600	456.5	456.2
	02-Jun-05	ND (1.0)	ND (1.0)	-100	0.9	19,500	456.2	455.5
	19-Jul-05	ND (1.0)	3.00 FF	-106	0.9	19,100	457.0	457.3
	16-Aug-05	ND (1.0)	ND (2.6) FF	-156	1.3	13,700	455.5	455.8
	08-Sep-05	ND (1.0)	ND (1.0) FF	-158	1.7	20,500	455.3	M
MW-28-090	04-Apr-05	ND (1.0)	ND (1.0)	-172	0.4	12,600	454.4	454.2
	20-Apr-05	ND (1.0)	ND (1.0)	-93	3.9	9,990	456.4	456.5

Refer to table footnotes for data qualifier explanation.

TABLE A-1
Groundwater Sampling Results for Floodplain Monitoring Wells, April 2005 through September 2005
Interim Measures Performance Monitoring
PG&E Topock Compressor Station

	Sample Date	Hexavalent Chromium µg/L	Dissolved Total Chromium µg/L	Selected Field Parameters			Groundwater and River Elevations at Sampling Time	
				ORP mV	Dissolved Oxygen mg/L	Specific Conductance µS/cm	Groundwater Elevation salinity-adjusted feet MSL	River Elevation Downstream I-3 Station
Deep Wells								
MW-28-090	03-May-05	ND (1.0)	ND (1.0)	-208	0.4	10,600	456.1	455.6
	19-May-05	ND (1.0)	ND (1.0)	-147	0.8	9,110	456.4	456.5
	02-Jun-05	ND (1.0)	ND (1.0)	-141	1.0	---	456.2	456.0
	15-Jun-05	ND (1.0)	ND (1.0)	-205	2.5	9,410	455.8	455.4
	01-Jul-05	ND (1.0)	ND (1.0)	-174	1.8	12,700	456.4	456.1
	13-Jul-05	ND (1.0)	ND (1.0) FF	-142	4.3	8,850	456.3	456.0
	18-Aug-05	ND (1.0)	1.10 FF	-178	1.1	9,740	455.9	455.9
	09-Sep-05	ND (1.0)	ND (1.0) FF	-190	1.7	8,190	455.6	M
MW-33-150	17-Jun-05	3.10 J	6.40	-172	3.0	18,300	456.3	456.0
	20-Jul-05	5.20	5.60 FF	-59	0.7	16,100	456.5	456.6
	17-Aug-05	4.00	6.10 FF	-72	1.3	17,000	455.6	455.3
	09-Sep-05	3.90	2.80 FF	-108	1.7	17,000	455.7	M
MW-33-210	16-Jun-05	5.10 J	1.70 J	-216	2.0	22,400	456.2	454.9
	20-Jul-05	5.60	6.70 FF	-40	0.8	19,200	456.7	456.9
	17-Aug-05	2.50	8.00 FF	-88	1.2	19,900	456.0	455.5
	06-Sep-05	3.50	2.90 FF	-109	1.7	22,600	455.7	M
MW-34-080	05-Apr-05	ND (1.0)	ND (1.0)	-207	0.0	17,200	454.2	454.0
	12-Apr-05	ND (1.0)	ND (1.0)	-86	0.1	14,200	455.9	455.6
	19-Apr-05	ND (1.0)	ND (1.0)	4	5.1	13,800	456.1	455.5
	26-Apr-05	ND (1.0)	ND (1.0)	-94	3.5	13,700	455.7	455.0
	04-May-05	ND (1.0)	ND (1.0)	-241	0.3	15,900	455.9	455.0
	18-May-05	ND (1.0)	ND (1.0)	-138	1.3	16,000	456.3	455.7
	01-Jun-05	ND (1.0)	ND (1.0)	-117	0.4	17,800	456.2	455.4
	30-Jun-05	ND (1.0)	ND (1.0)	-61	1.6	18,300	456.0	454.6
	14-Jul-05	ND (1.0)	2.00 FF	-104	1.2	17,900	456.9	455.9
	15-Aug-05	ND (1.0)	2.40 FF	-137	1.5	14,600	455.4	454.7
	07-Sep-05	ND (1.0)	ND (1.0) FF	-148	1.5	17,100	455.9	M
MW-34-100	05-Apr-05	452	488	-115	0.3	20,000	454.6	454.3
	05-Apr-05 FD	455	454	FD	FD	FD	FD	FD
	12-Apr-05	482	502	-61	0.2	15,500	456.4	456.0
	12-Apr-05 FD	499	562	FD	FD	FD	FD	FD
	19-Apr-05	473	599	8	6.0	16,200	456.2	455.8
	26-Apr-05	476	573	-45	4.1	21,000	456.1	455.4
	26-Apr-05 FD	480	602	FD	FD	FD	FD	FD
	04-May-05	491	530	-98	0.6	18,700	455.7	454.8
	10-May-05	513	492	21	3.0	15,800	456.8	456.7
	10-May-05 FD	501	552	FD	FD	FD	FD	FD
	18-May-05	524	564	50	3.0	19,000	456.4	456.1
	25-May-05	559	478	-93	1.2	18,700	456.6	456.1
	01-Jun-05	527	609	-59	0.4	20,000	456.0	455.1
	08-Jun-05	552	583	-15	2.3	20,300	456.7	456.3
	21-Jun-05	560	477	-26	1.9	20,500	456.3	455.4
	21-Jun-05 FD	578	480	FD	FD	FD	FD	FD

Refer to table footnotes for data qualifier explanation.

TABLE A-1
Groundwater Sampling Results for Floodplain Monitoring Wells, April 2005 through September 2005
Interim Measures Performance Monitoring
PG&E Topock Compressor Station

	Sample Date	Hexavalent Chromium µg/L	Dissolved Total Chromium µg/L	Selected Field Parameters			Groundwater and River Elevations at Sampling Time	
				ORP mV	Dissolved Oxygen mg/L	Specific Conductance µS/cm	Groundwater Elevation salinity-adjusted feet MSL	River Elevation Downstream I-3 Station
Deep Wells								
MW-34-100	07-Jul-05	583	639	-88	3.8	18,800	456.5	455.7
	14-Jul-05	617	701 FF	-26	1.9	20,200	456.9	456.6
	27-Jul-05	597	504 FF	-2	1.1	17,800	456.1	456.5
	10-Aug-05	574	589 FF	-83	1.4	19,700	455.7	455.5
	10-Aug-05 FD	571	597 FF	FD	FD	FD	FD	FD
	15-Aug-05	633	660 FF	-17	1.2	16,600	455.3	455.0
	31-Aug-05	649	693 FF	-42	1.9	16,900	455.7	455.4
	31-Aug-05 FD	658	604 FF	FD	FD	FD	FD	FD
	07-Sep-05	673	868 FF	-60	1.5	19,500	455.5	M
	20-Sep-05	675	891 FF	-28	2.0	14,000	455.9	M
MW-36-090	05-Apr-05	1040	946	64	5.3	15,100	---	453.8
	03-May-05	705	623	55	0.0	17,600	455.5	455.5
	25-Jul-05	344	343 FF	129	1.1	18,400	455.8	455.7
	17-Aug-05	346	336 FF	152	1.3	16,600	455.3	455.7
	08-Sep-05	267	301 FF	49	1.6	17,500	455.3	M
MW-36-100	04-Apr-05	1110	981	-20	0.1	19,600	454.1	453.9
	20-Apr-05	825	844	2	3.1	17,500	455.9	456.4
	03-May-05	705	679	4	0.4	18,700	455.4	455.1
	18-May-05	617	796 J	12	1.5	34,800	455.3	454.7
	18-May-05 FD	620	624 J	FD	FD	FD	FD	FD
	02-Jun-05	518	441	23	2.5	18,800	456.0	455.8
	19-Jul-05	398	635 FF	17	1.0	17,700	456.4	456.6
	15-Aug-05	391	410 FF	-15	1.6	16,800	455.2	454.6
	15-Aug-05 FD	390	392 FF	FD	FD	FD	FD	FD
	08-Sep-05	396 J	380 FF	21	1.7	18,300	455.4	M
	08-Sep-05 FD	397	454 FF	FD	FD	FD	FD	FD
MW-39-080	06-Apr-05	4820	4570	88	4.7	13,800	---	455.5
	03-May-05	3430	3510	106	0.4	14,900	454.8	455.0
	16-Jun-05	2220	1930	52	2.0	16,800	456.2	454.6
	25-Jul-05	2060	1990 FF	169	1.2	17,400	455.6	456.1
	17-Aug-05	2370	2460 FF	164	1.3	15,600	454.9	455.8
	06-Sep-05	2990	4880 FF	149	2.0	17,700	454.8	M
MW-39-100	06-Apr-05	8220	8230	54	1.5	---	454.5	455.0
	09-May-05	7980	8490	159	1.8	20,400	455.5	455.7
	09-May-05 FD	7720	8250	FD	FD	FD	FD	FD
	17-Jun-05	6980	6030	14	2.8	19,200	455.0	455.6
	19-Jul-05	5500	5490 FF	80	1.3	18,400	456.2	457.0
	19-Jul-05 FD	5450	5450 FF	FD	FD	FD	FD	FD
	17-Aug-05	4230	4050 FF	170	1.5	18,600	455.3	455.9
	06-Sep-05	4540	6480 FF	134	2.2	21,000	455.1	M
MW-43-075	20-Jun-05	ND (1.0)	ND (1.0)	-165	1.8	18,100	456.8	456.0
	26-Jul-05	ND (1.0)	ND (1.0) FF	-160	1.1	15,600	456.0	455.5
	16-Aug-05	ND (1.0)	5.40 FF	-168	1.3	13,800	455.6	455.5

Refer to table footnotes for data qualifier explanation.

TABLE A-1
Groundwater Sampling Results for Floodplain Monitoring Wells, April 2005 through September 2005
Interim Measures Performance Monitoring
PG&E Topock Compressor Station

	Sample Date	Hexavalent Chromium µg/L	Dissolved Total Chromium µg/L	Selected Field Parameters			Groundwater and River Elevations at Sampling Time	
				ORP mV	Dissolved Oxygen mg/L	Specific Conductance µS/cm	Groundwater Elevation salinity-adjusted feet MSL	River Elevation Downstream I-3 Station
Deep Wells								
MW-43-075	08-Sep-05	ND (1.0)	ND (1.0) FF	-176	1.7	16,400	455.0	M
MW-43-090	20-Jun-05	ND (1.0)	ND (1.0)	-140	1.8	26,200	457.3	456.4
	20-Jun-05 FD	ND (1.0)	ND (1.0)	FD	FD	FD	FD	FD
	26-Jul-05	ND (2.0)	ND (1.6) FF	-129	2.1	23,800	456.9	456.0
	16-Aug-05	ND (2.0)	ND (5.2) FF	-136	1.3	19,400	455.7	455.3
	08-Sep-05	ND (1.0)	ND (1.0) FF	-152	1.7	23,100	455.3	M

NOTES:

ND = not detected at listed reporting limit (RL)
FD = field duplicate
J = concentration or RL estimated by laboratory or data validation
T = data from the downhole transducers to fill groundwater elevation data gaps at some locations
MSL = mean sea level
(---) = data not collected, available, or field instrumentation malfunctioned
µg/L= micrograms per liter
mV = oxidation-reduction potential (ORP)
µS/cm = microSiemens per centimeter
M = I-3 Transducer damaged

FF = Beginning in July 2005, samples analyzed for total chromium by EPA Method 6010B or 6020 were filtered and preserved in the field after sample collection, as per DTSC's June 28, 2005 letter.

The RLs for certain hexavalent chromium results from Method 7199 analyses have been elevated above the standard RL of 0.2 µg/L due to required sample dilution to accommodate matrix interferences.

Groundwater and river elevations in feet above mean sea level (MSL) rounded to 0.1 foot. River elevations from presssure transducer record at I-3.

Refer to table footnotes for data qualifier explanation.

TABLE A-2
Groundwater Sampling Results for Other Monitoring Wells in PMP Area, April 2005 through September 2005
Interim Measures Performance Monitoring
PG&E Topock Compressor Station

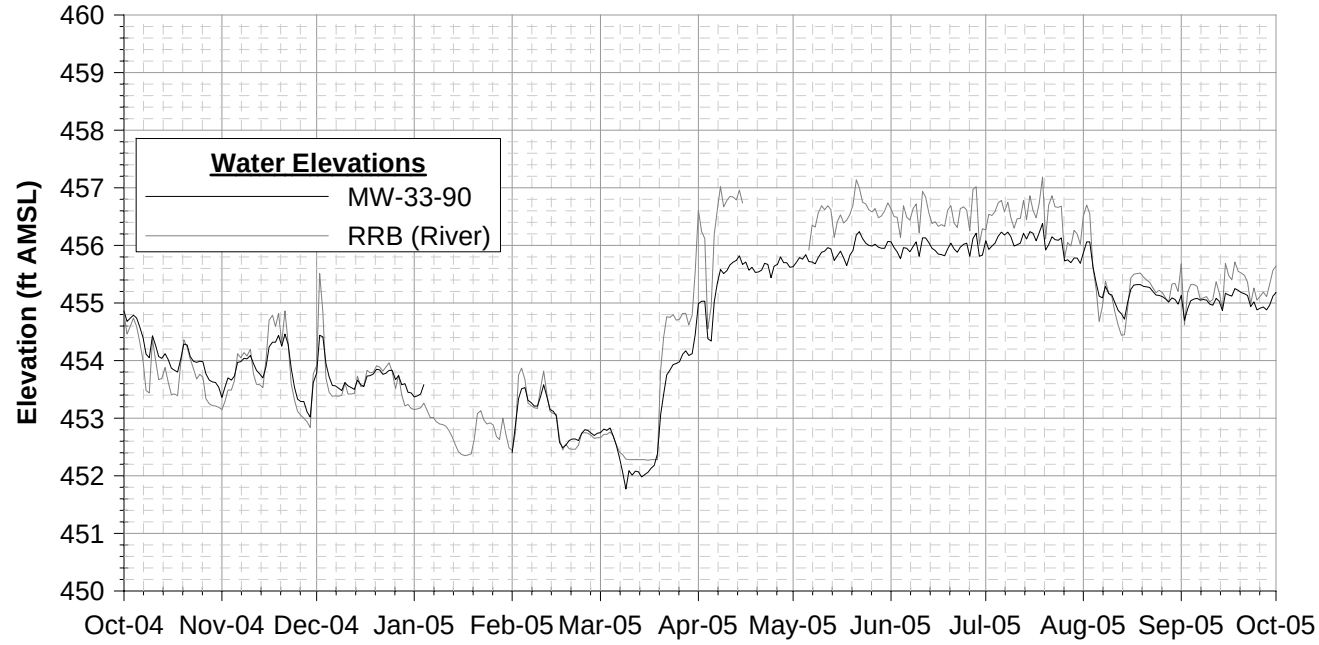
Well ID	Sample Date	Hexavalent Chromium µg/L	Dissolved Total Chromium µg/L	Selected Field Parameters		
				ORP mV	Dissolved Oxygen mg/L	Specific Conductance µS/cm
Shallow Wells						
MW-12	06-Apr-05	810	871	56.0	6.34	---
	06-Apr-05 FD	810	868	FD	FD	FD
	13-Jun-05	852	835	60.0	6.97	4060
	16-Sep-05	698	618 FF	-37	6.58	3290
MW-19	14-Jun-05	1150	1140	65.0	6.80	2170
MW-20-070	07-Apr-05	8740	9020	92.0	6.63	---
	15-Jun-05	6680	6450	152	6.85	3160
	15-Jun-05 FD	7000	7080	FD	FD	FD
MW-21	14-Jun-05	ND (1.0)	ND (1.0)	81.0	6.80	12000
MW-22	17-Jun-05	ND (1.0)	ND (1.0)	-57	3.23	33700
MW-24A	16-Jun-05	3280	2640	52.0	2.70	3470
MW-26	13-Jun-05	3370	3140	119	9.16	3820
MW-31-060	07-Apr-05	1910	2030	102	5.25	---
	13-Jun-05	1790	1810	122	8.00	3060
MW-35-060	13-Jun-05	33.6	34.1	-8.0	2.47	---
TW-02S	16-Jun-05	3780	4180	129	7.90	4140
Middle-Depth Wells						
MW-20-100	15-Jun-05	9600	10100	136	3.44	3870
Deep Wells						
MW-20-130	07-Apr-05	8980	8870	99.0	4.89	11000
	15-Jun-05	10800	10300	145	4.66	10600
MW-24B	16-Jun-05	5640	5660	-4.0	2.20	13100
MW-31-135	13-Jun-05	318	344	42.0	4.46	14600
	13-Jun-05 FD	318	338	FD	FD	FD
MW-35-135	13-Jun-05	17.6	17.6	-138	1.75	15000
TW-02D	05-May-05	---	5490	---	---	---
	15-Jun-05	5050	4780	147	4.96	9400

NOTES:

Analytical results are validated.
ND = not detected at listed reporting limit (RL)
FD = field duplicate
J = concentration or RL estimated by laboratory or data validation
(---) = data not collected, available, or field instrumentation malfunctioned
µg/L= micrograms per liter
mg/L = milligrams per liter
mV = oxidation-reduction potential (ORP)
µS/cm = microSiemens per centimeter

PMP = Interim Measure Performance Monitoring Program

FF = Beginning in July 2005, samples analyzed for total chromium by EPA Method 6010B or 6020 were filtered and preserved in the field after sample collection, as per DTSC's June 28, 2005 letter.



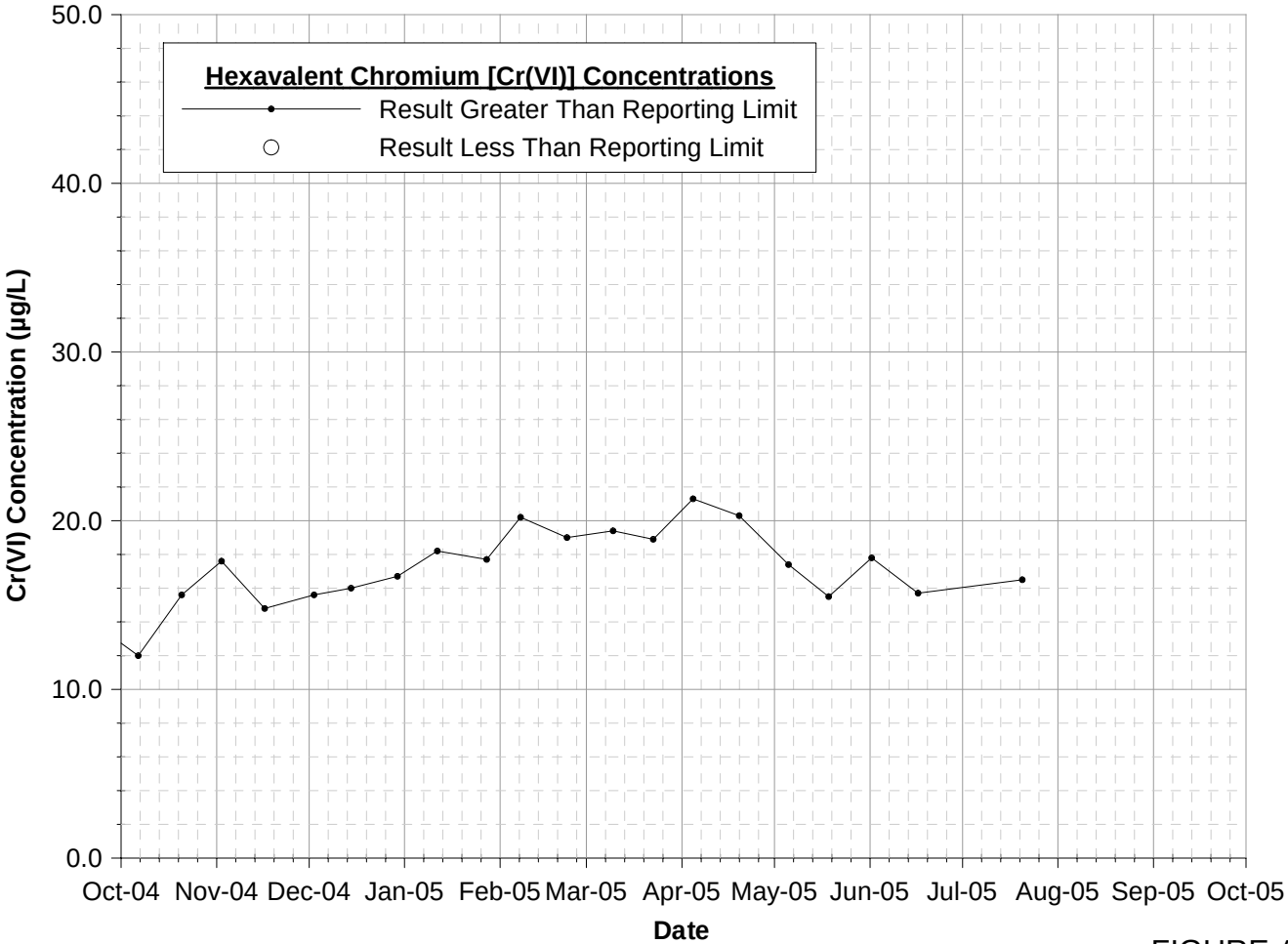


FIGURE A-1
MW-33-90 CR(VI) CONCENTRATION &
HYDROGRAPH - THROUGH 07/20/05
INTERIM MEASURES PERFORMANCE MONITORING
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

Notes
1. Chromium results in micrograms per liter (µg/L), equivalent to parts per billion (ppb).
2. Data subject to review.
3. I-3 data unavailable for September 2005 due to river damage. River elevation from transducer at RRB presented.

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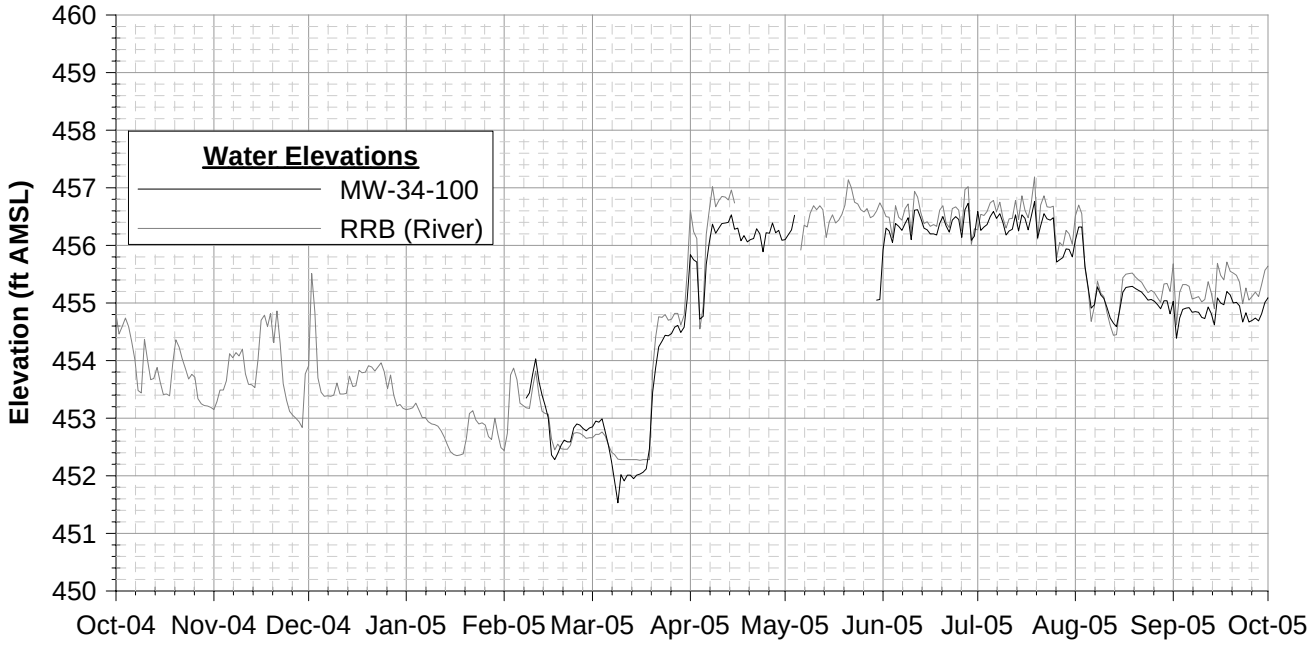

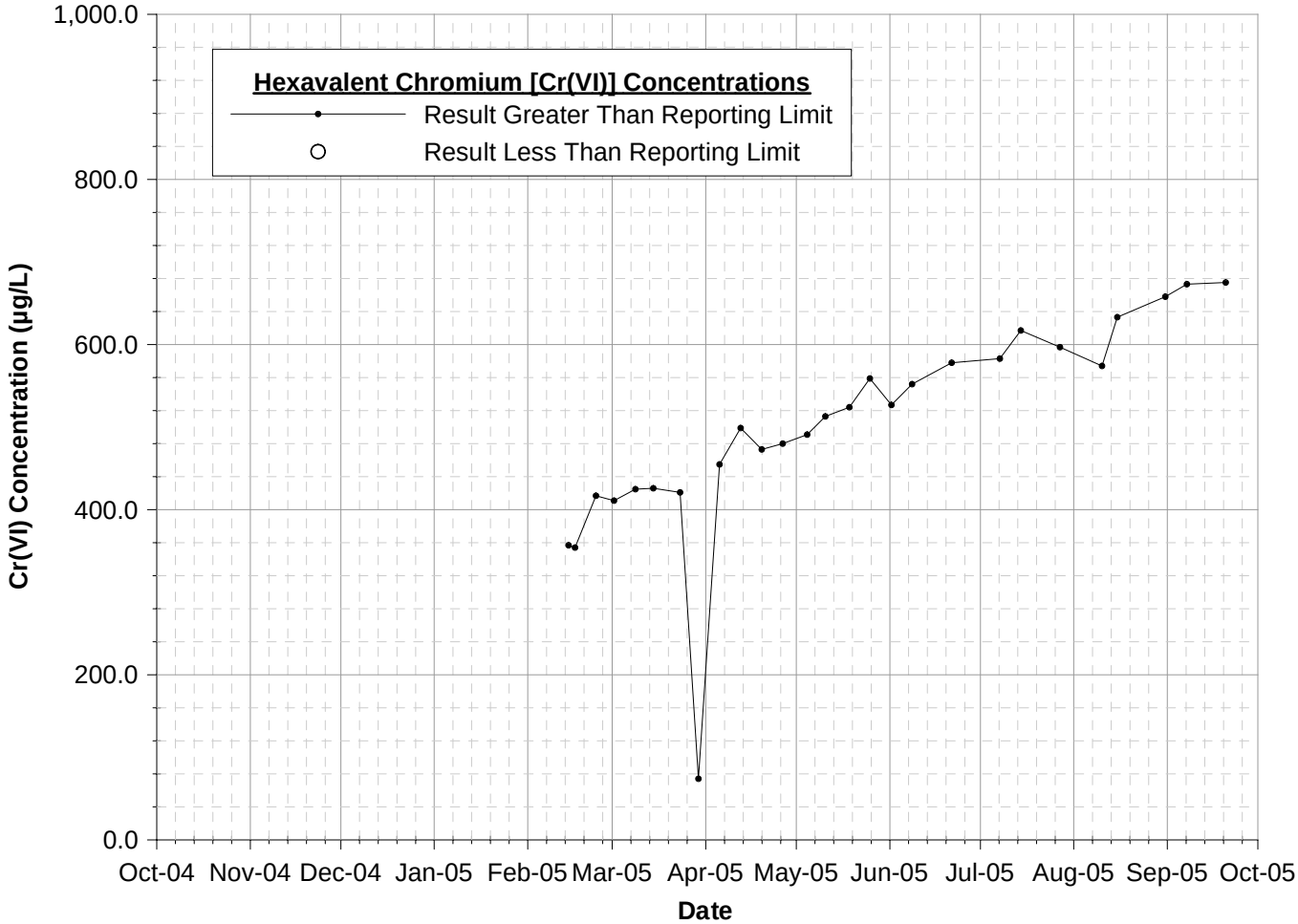

FIGURE A-2
MW-34-100 CR(VI) CONCENTRATION &
HYDROGRAPH - THROUGH 09/20/05
INTERIM MEASURES PERFORMANCE MONITORING
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

Notes
1. Chromium results in micrograms per liter (µg/L), equivalent to parts per billion (ppb).
2. No groundwater elevation data available during May 2005 due to transducer malfunction.
3. Data subject to review.
4. I-3 data unavailable for September 2005 due to river damage. River elevation from transducer at RRB presented.

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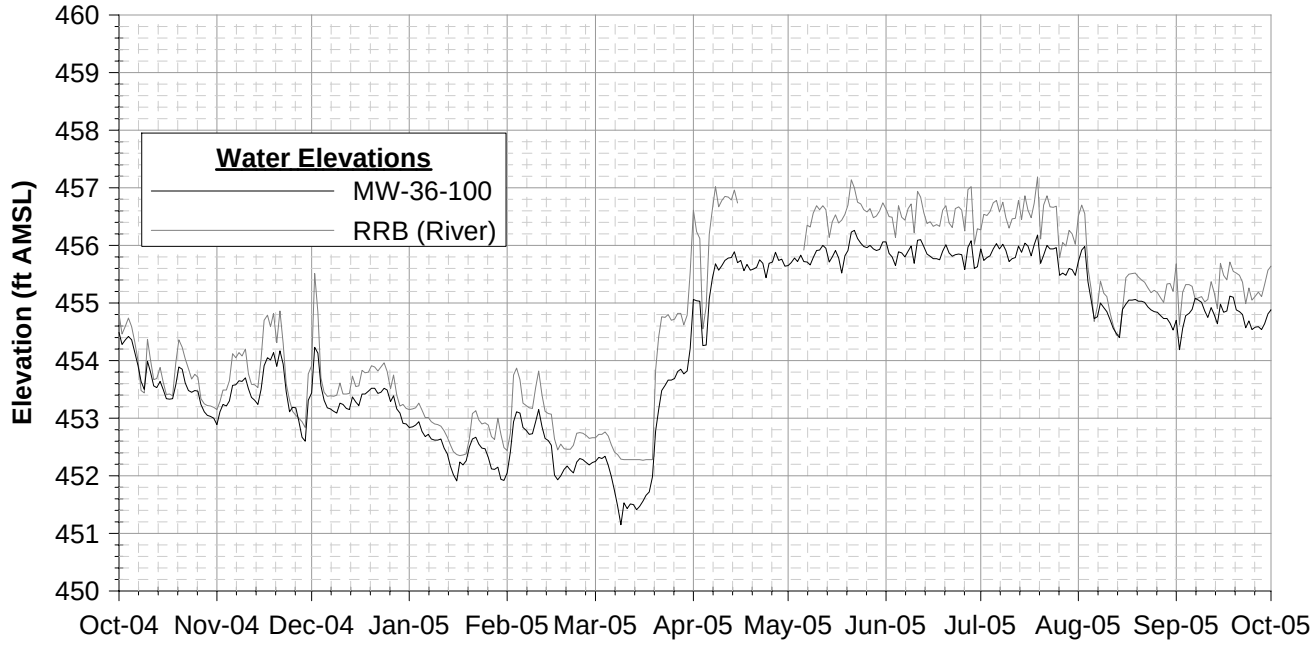

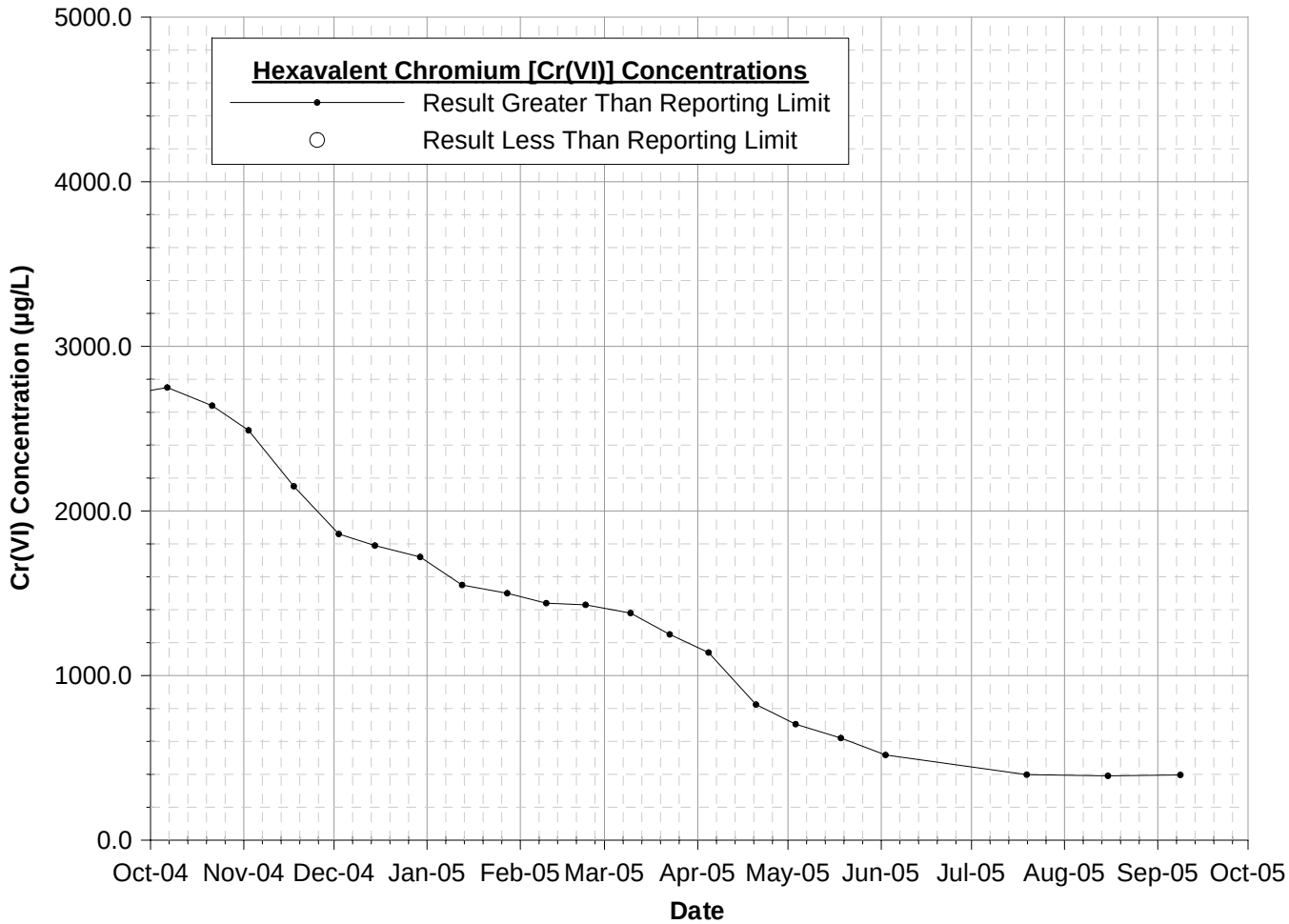

FIGURE A-3
MW-36-100 CR(VI) CONCENTRATION &
HYDROGRAPH - THROUGH 09/08/05
INTERIM MEASURES PERFORMANCE MONITORING
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

Notes
1. Chromium results in micrograms per liter (µg/L), equivalent to parts per billion (ppb).
2. Data subject to review.
3. I-3 data unavailable for September 2005 due to river damage. River elevation from transducer at RRB presented.

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Appendix B
Hydraulic Monitoring Data for Reporting Period

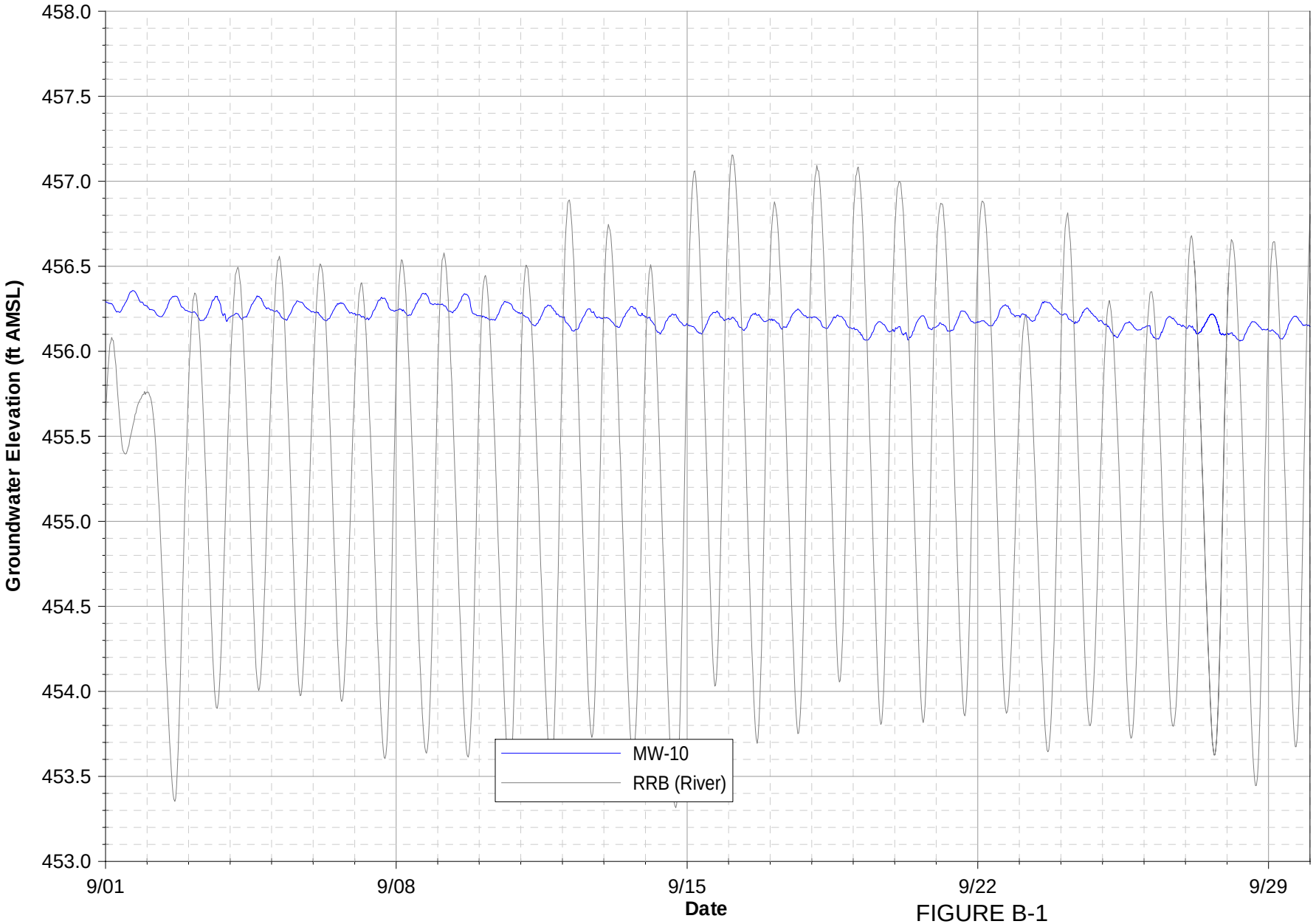
TABLE B-1

Monthly Average, Minimum, and Maximum Groundwater Elevations, September 2005
Interim Measures Performance Monitoring
PG&E Topock Compressor Station

Well	Average (ft AMSL)	Minimum (ft AMSL)	Maximum (ft AMSL)	Aquifer Depth
I-3	INC	INC	INC	River Station
RRB	455.27	453.79	456.64	River Station
MW-10	456.20	456.14	456.26	Upper
MW-19	455.13	455.00	455.22	Upper
MW-20-070	454.25	454.06	454.42	Upper
MW-20-100	454.06	453.75	454.42	Upper
MW-20-130	453.61	453.18	454.13	Upper
MW-22	454.79	454.70	454.85	Upper
MW-25	455.50	455.46	455.54	Upper
MW-26	455.24	455.19	455.31	Upper
MW-27-020	454.76	454.39	455.09	Upper
MW-27-060	454.90	454.12	455.61	Upper
MW-27-085	454.90	454.12	455.61	Upper
MW-28-025	454.95	454.32	455.52	Upper
MW-28-090	454.98	454.04	455.86	Upper
MW-29	455.25	455.19	455.29	Upper
MW-30-030	455.08	454.95	455.20	Upper
MW-30-050	454.66	453.98	455.29	Upper
MW-31-060	INC	INC	INC	Upper
MW-31-135	454.48	454.11	454.86	Upper
MW-32-020	INC	INC	INC	Upper
MW-32-035	454.64	454.21	455.02	Upper
MW-33-040	455.02	454.56	455.42	Middle
MW-33-090	455.04	454.52	455.51	Middle
MW-33-150	455.25	454.74	455.74	Middle
MW-33-210	455.52	455.10	455.92	Middle
MW-34-055	454.92	453.96	455.81	Middle
MW-34-080	455.11	454.20	455.96	Middle
MW-34-100	455.04	454.18	455.83	Middle
MW-35-060	455.15	454.75	455.51	Middle
MW-35-135	455.03	454.78	455.26	Middle
MW-36-020	454.69	454.06	455.27	Middle
MW-36-040	454.70	453.96	455.37	Middle
MW-36-050	454.71	453.95	455.42	Middle
MW-36-070	454.83	454.03	455.55	Lower
MW-36-090	454.64	453.96	455.26	Lower
MW-36-100	454.79	454.11	455.41	Lower
MW-39-040	454.62	453.97	455.21	Lower
MW-39-050	454.61	453.98	455.18	Lower
MW-39-060	454.49	453.89	455.04	Lower
MW-39-070	454.23	453.70	454.74	Lower
MW-39-080	454.26	453.72	454.77	Lower
MW-39-100	454.64	454.10	455.17	Lower
MW-42-030	454.62	454.13	455.06	Lower
MW-42-055	454.78	454.25	455.25	Lower
MW-42-065	454.79	454.26	455.26	Lower
MW-43-025	454.71	453.95	455.42	Lower
MW-43-075	454.88	454.06	455.64	Lower
MW-43-090	455.05	454.23	455.81	Lower
PE-01	454.65	453.87	455.37	Lower

Notes:

INC = Incomplete or not available for reporting period



Note: Data subject to review. I-3 data unavailable. RRB used as a substitute for river elevation.

FIGURE B-1
MW-10 HYDROGRAPH
INTERIM MEASURES PERFORMANCE MONITORING
PG & E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

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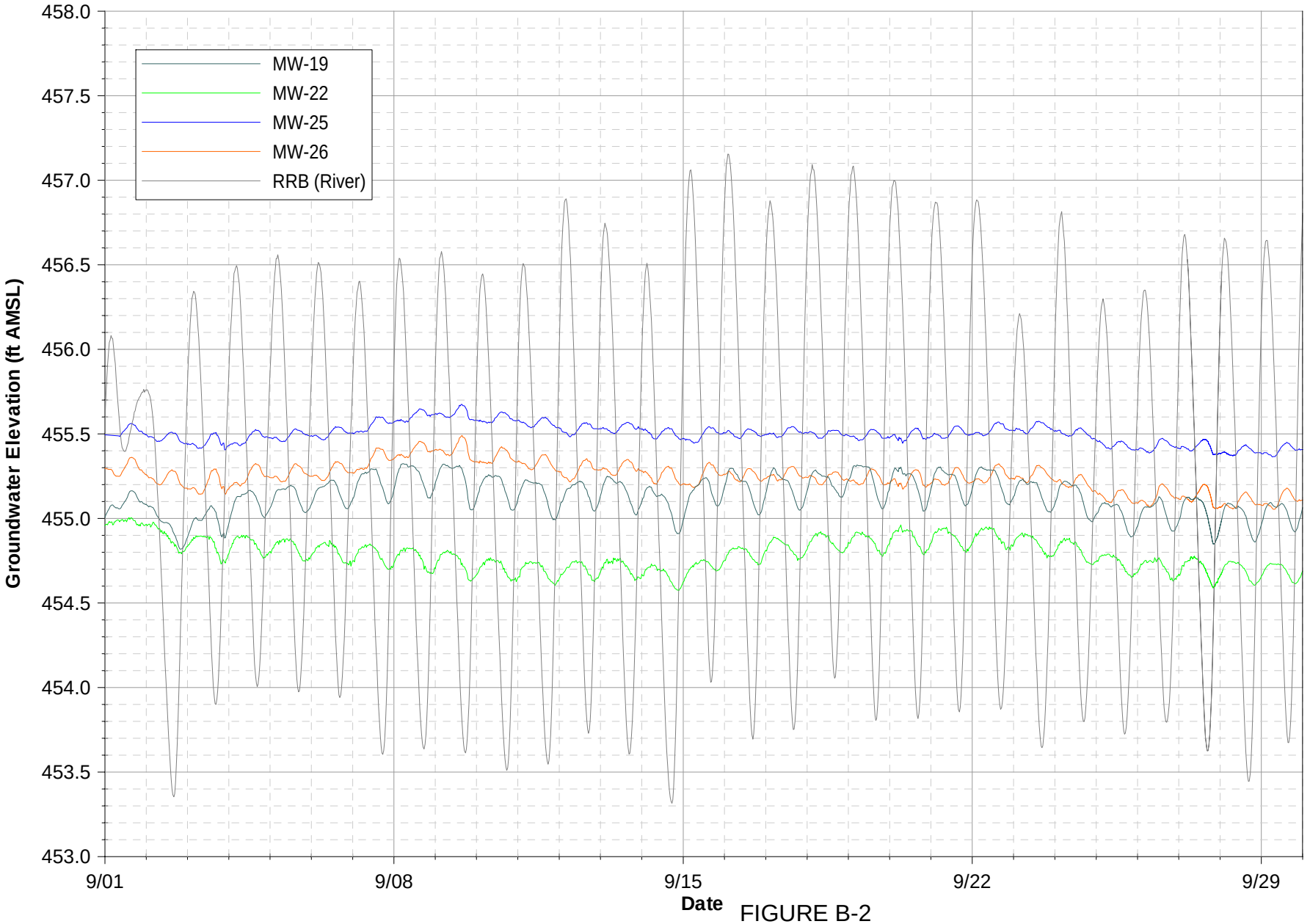

Note: Data subject to review. I-3 data unavailable. RRB used as a substitute for river elevation.

FIGURE B-2

MW-19, MW-22, MW-25, AND MW-26 HYDROGRAPHS

INTERIM MEASURES PERFORMANCE MONITORING
PG & E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

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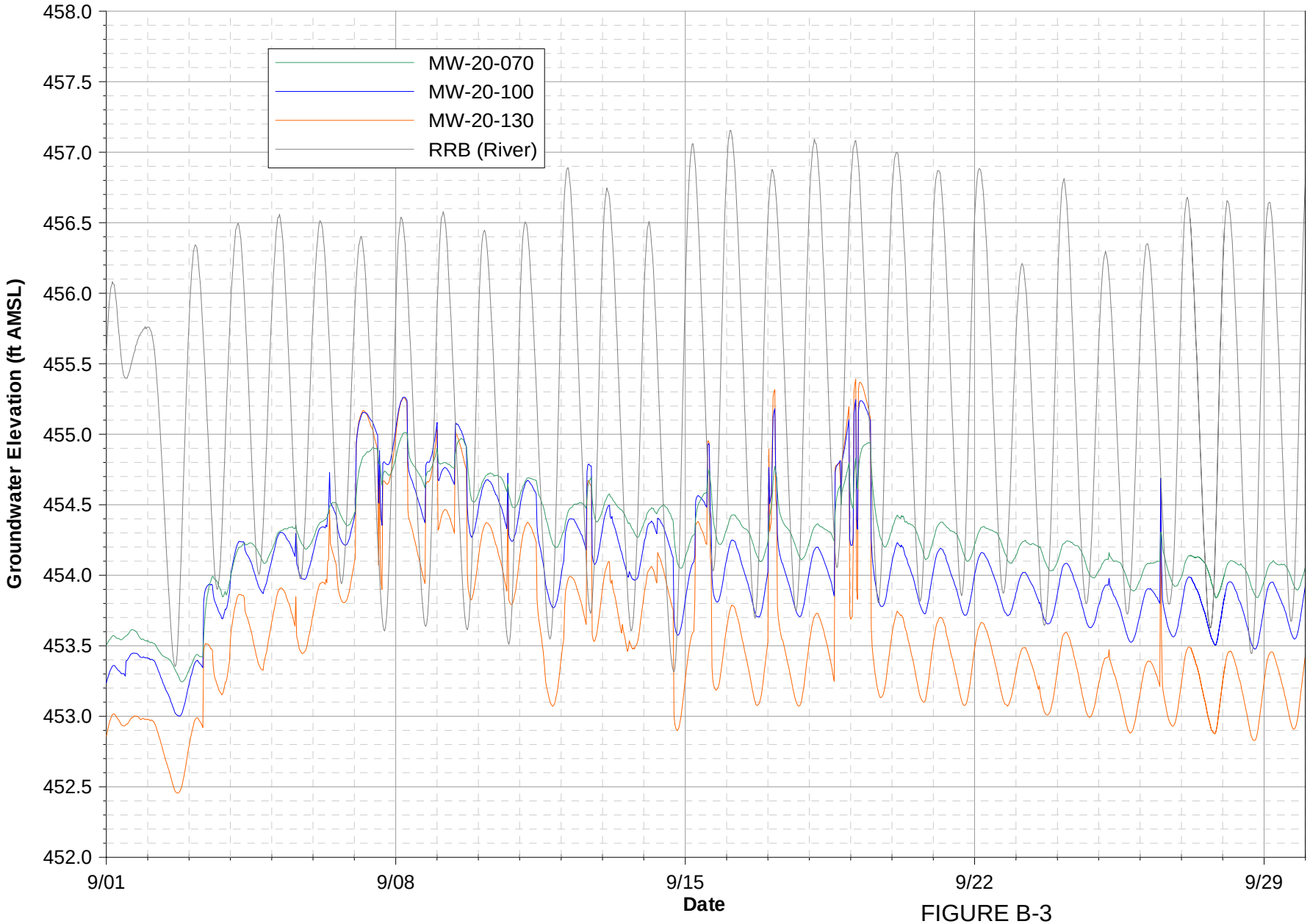

FIGURE B-3
MW-20 CLUSTER HYDROGRAPHS
INTERIM MEASURES PERFORMANCE MONITORING
PG & E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

Note: Data subject to review. I-3 data unavailable. RRB used as a substitute for river elevation.

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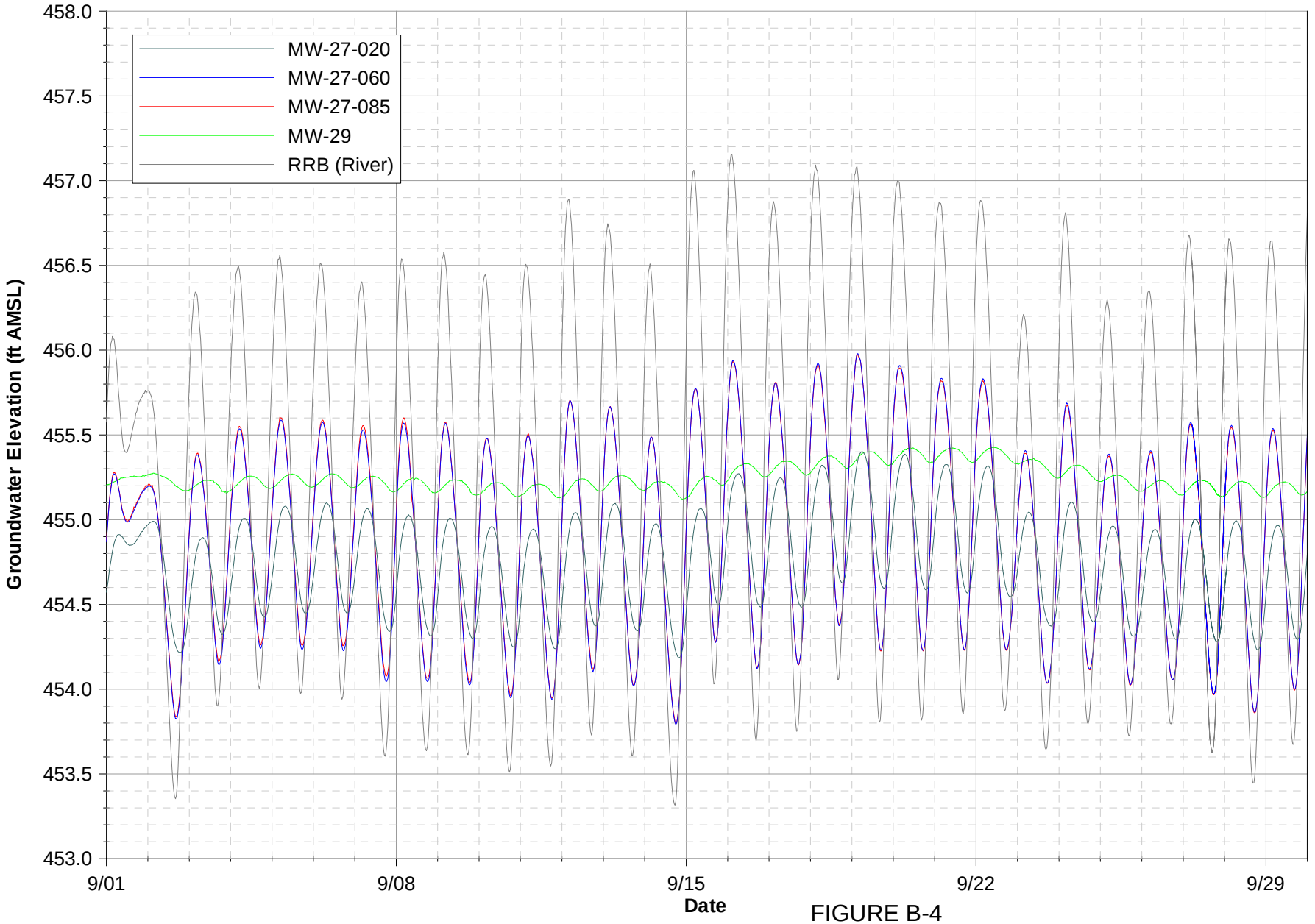

Note: Data subject to review. I-3 data unavailable. RRB used as a substitute for river elevation.

FIGURE B-4
MW-27 CLUSTER AND MW-29 HYDROGRAPHS
INTERIM MEASURES PERFORMANCE MONITORING
PG & E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

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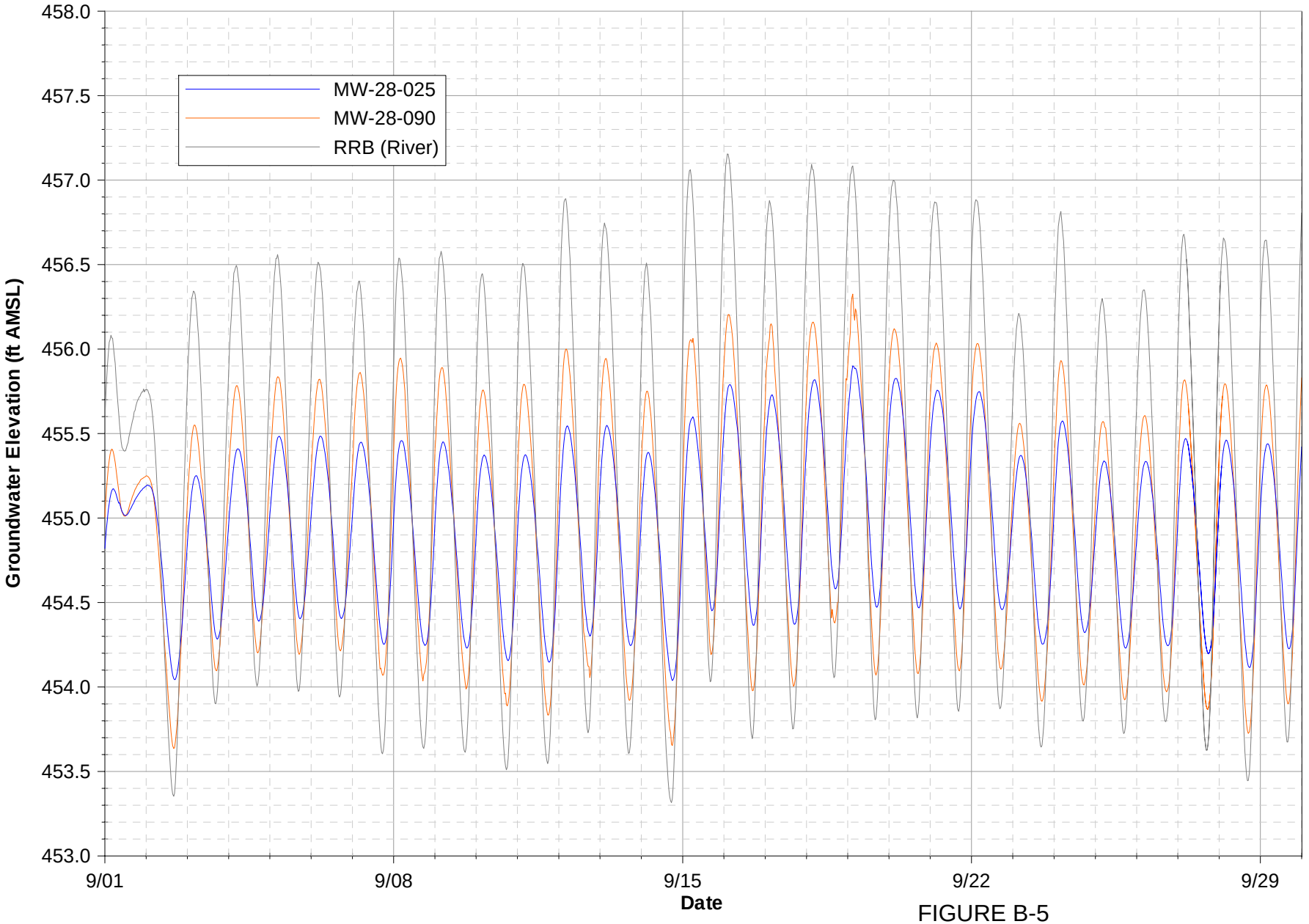

FIGURE B-5
MW-28 WELL HYDROGRAPHS
INTERIM MEASURES PERFORMANCE MONITORING
PG & E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

Note: Data subject to review. I-3 data unavailable. RRB used as a substitute for river elevation.

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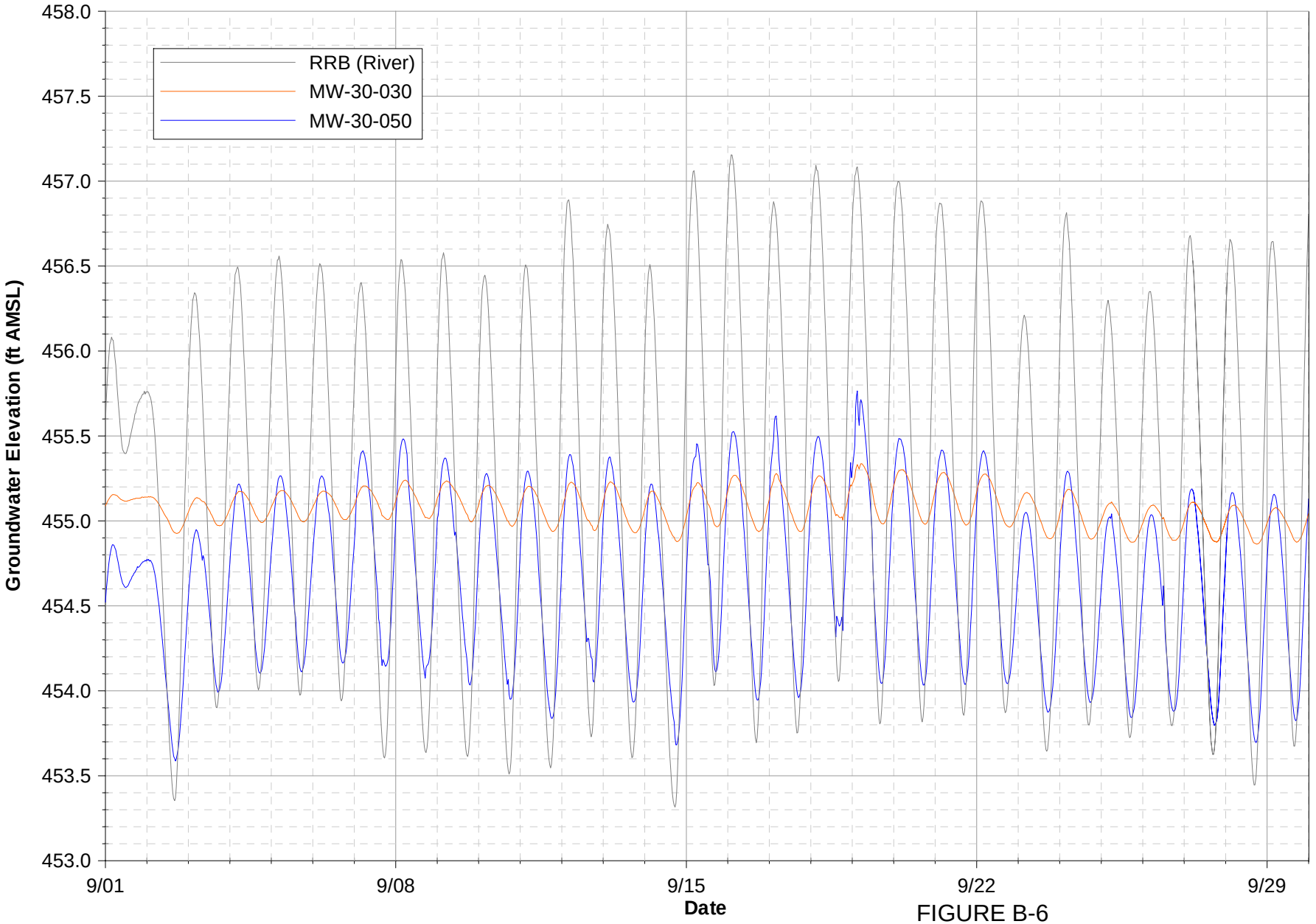

Note: Data subject to review. I-3 data unavailable. RRB used as a substitute for river elevation.

FIGURE B-6
MW-30 WELL HYDROGRAPHS
INTERIM MEASURES PERFORMANCE MONITORING
PG & E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

CH2MHILL

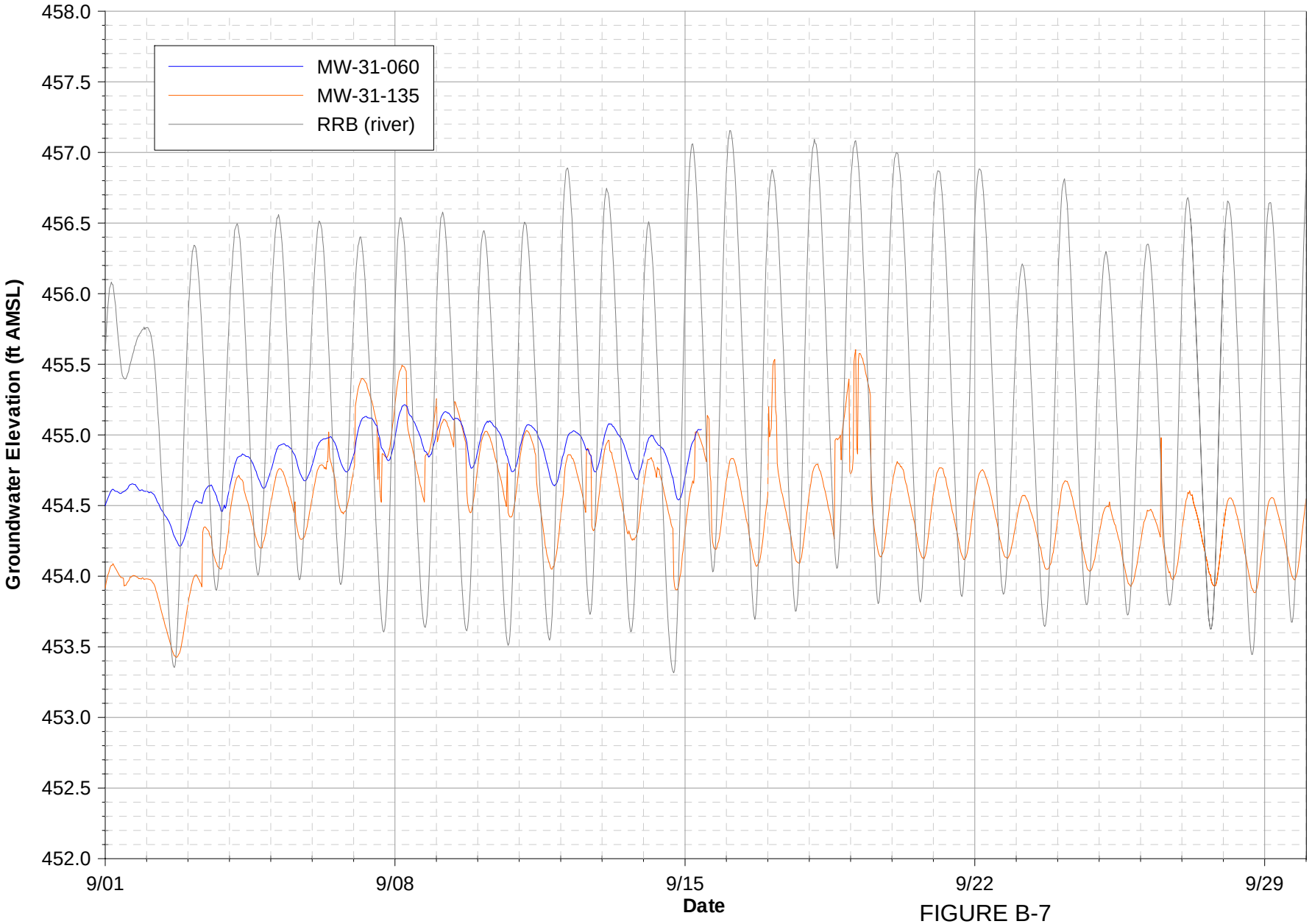

FIGURE B-7
MW-31 WELL HYDROGRAPHS
INTERIM MEASURES PERFORMANCE MONITORING
PG & E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

Note: Data subject to review. I-3 data unavailable. RRB used as a substitute for river elevation.
Transducer in MW-31-60 failed mid-month.

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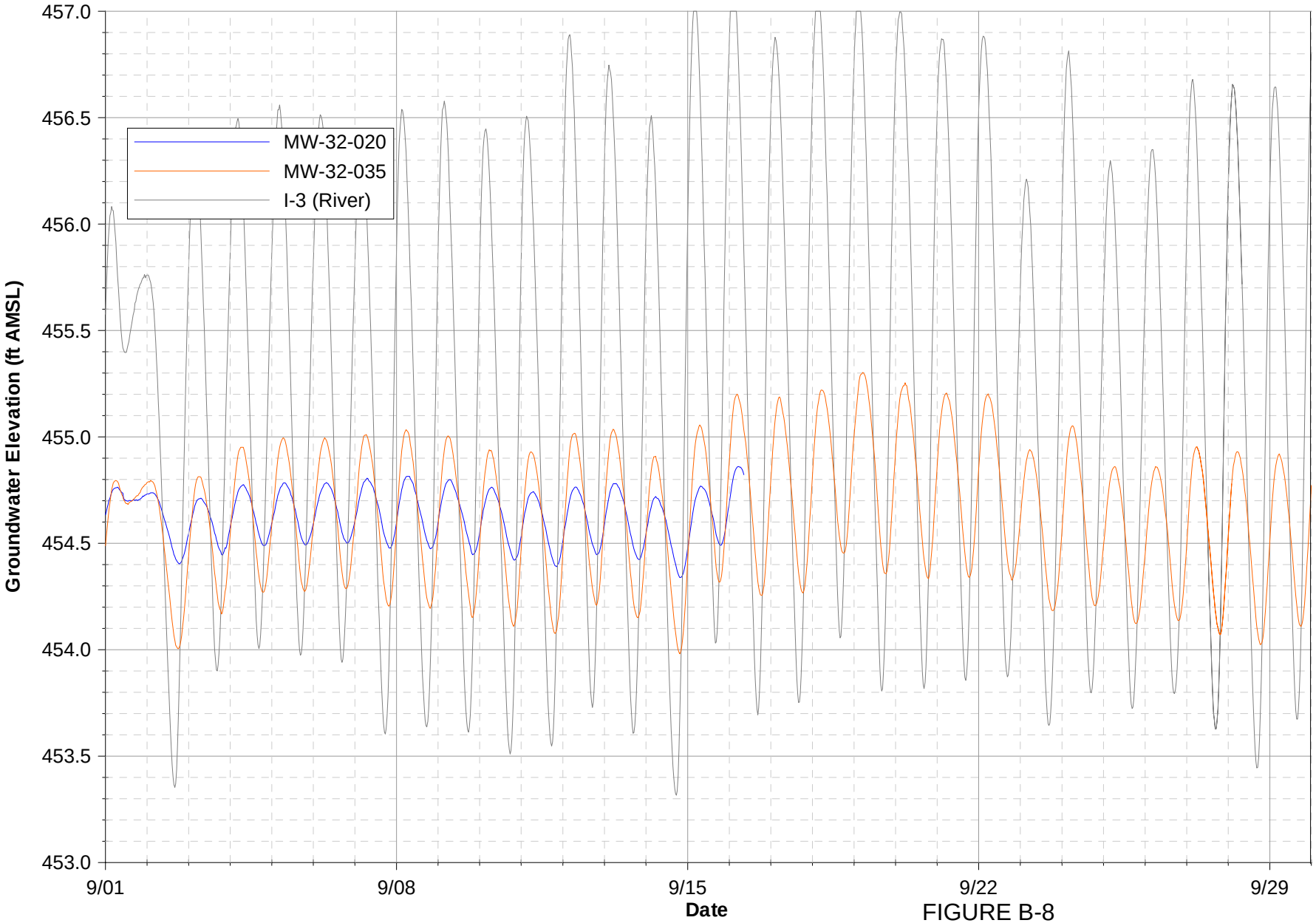
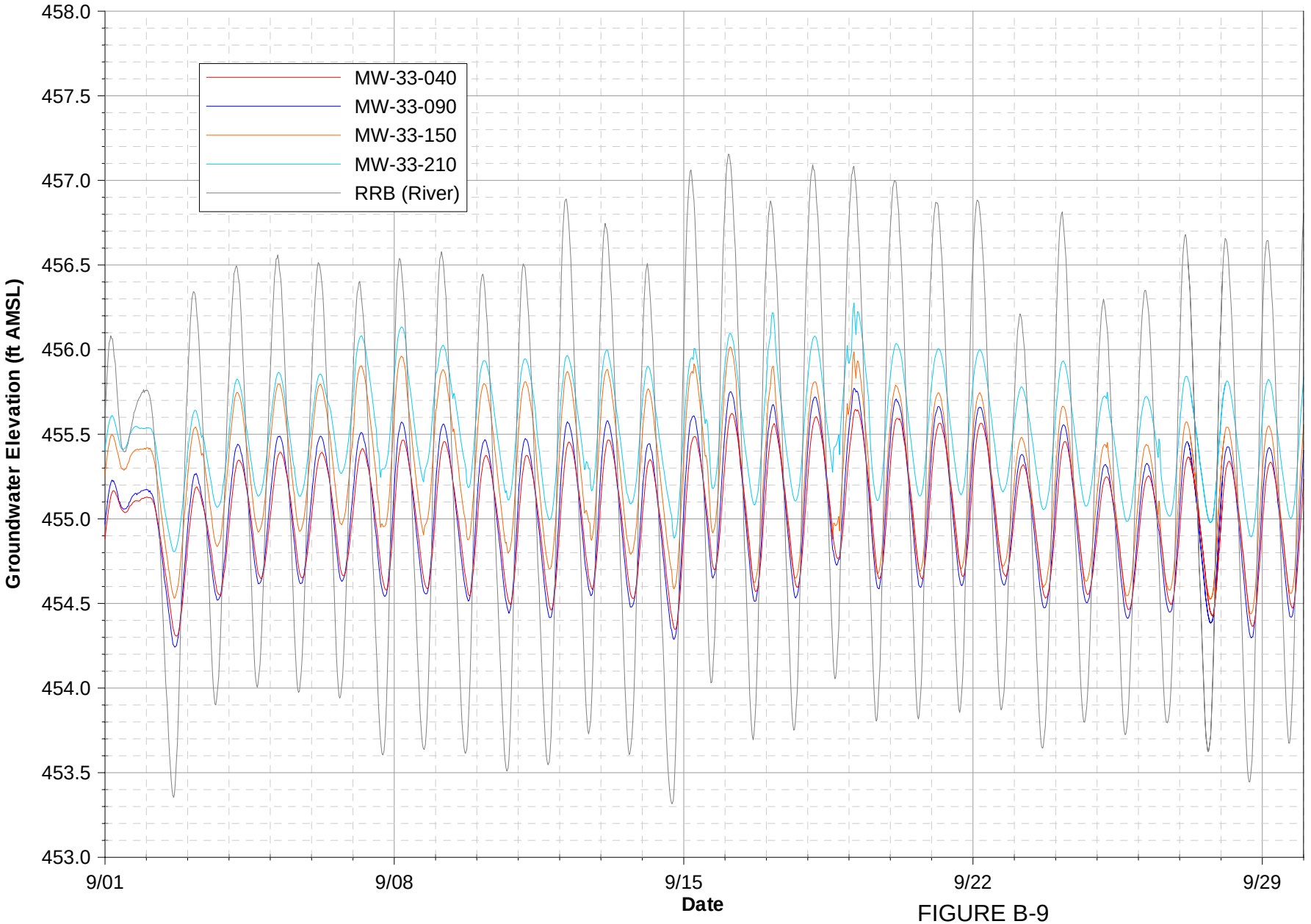


FIGURE B-8
MW-32 WELL HYDROGRAPHS
INTERIM MEASURES PERFORMANCE MONITORING
PG & E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

Note: Data subject to review. I-3 data unavailable. RRB used as a substitute for river elevation.
Transducer in MW-32-020 failed midmonth.

CH2MHILL



Note: Data subject to review. I-3 transducer data unavailble for September. RRB used as substitute river elevation.

FIGURE B-9
MW-33 CLUSTER HYDROGRAPHS
INTERIM MEASURES PERFORMANCE MONITORING
PG & E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

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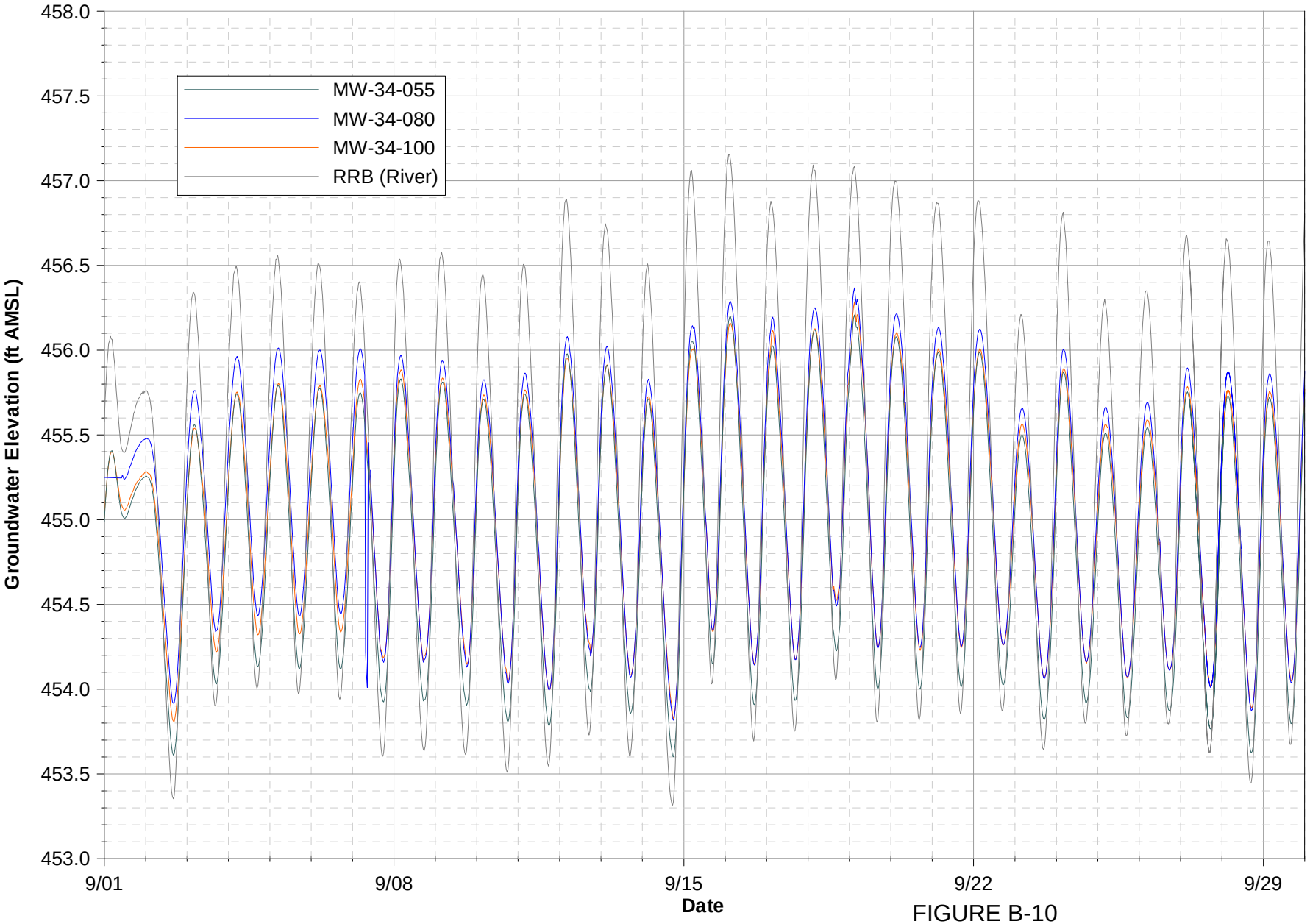

FIGURE B-10
MW-34 CLUSTER HYDROGRAPHS
INTERIM MEASURES PERFORMANCE MONITORING
PG & E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

Note: Data subject to review. I-3 transducer data unavailble for reporting period. RRB posted as a substitute river elevation..

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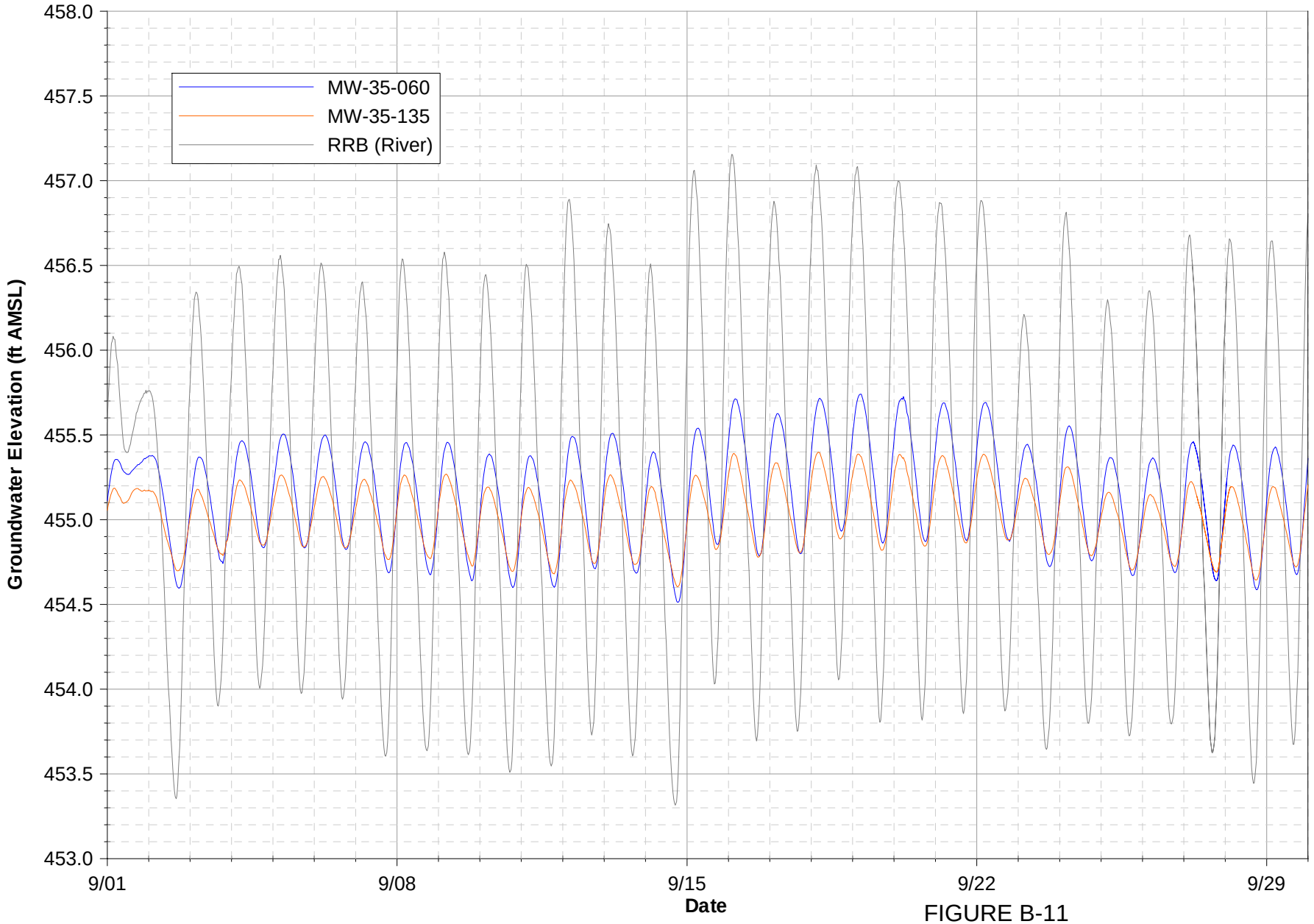

FIGURE B-11
MW-35 WELL HYDROGRAPHS
INTERIM MEASURES PERFORMANCE MONITORING
PG & E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

Note: Data subject to review. I-3 transducer data unavailable in September. RRB data posted as substitute river elevation.

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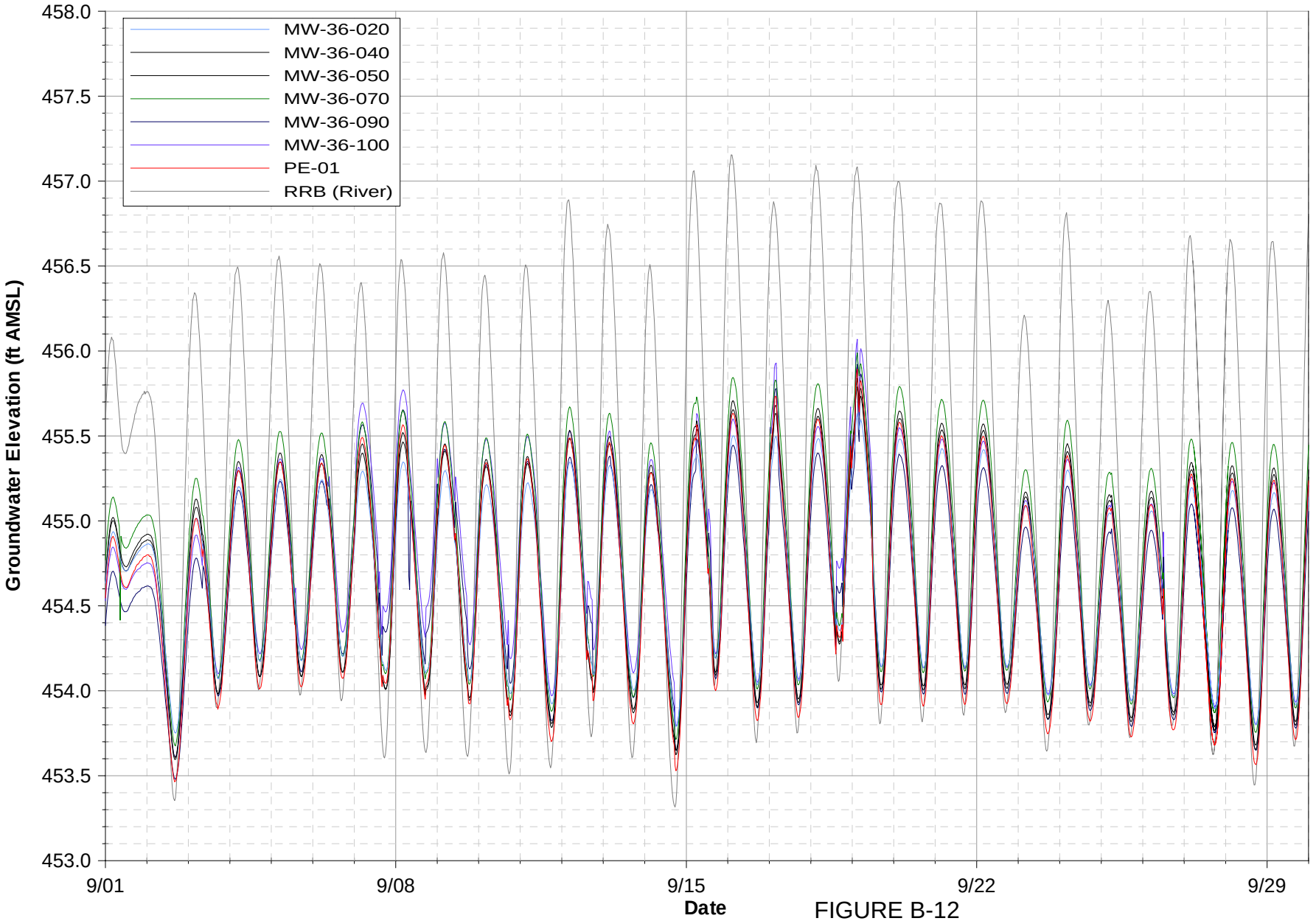
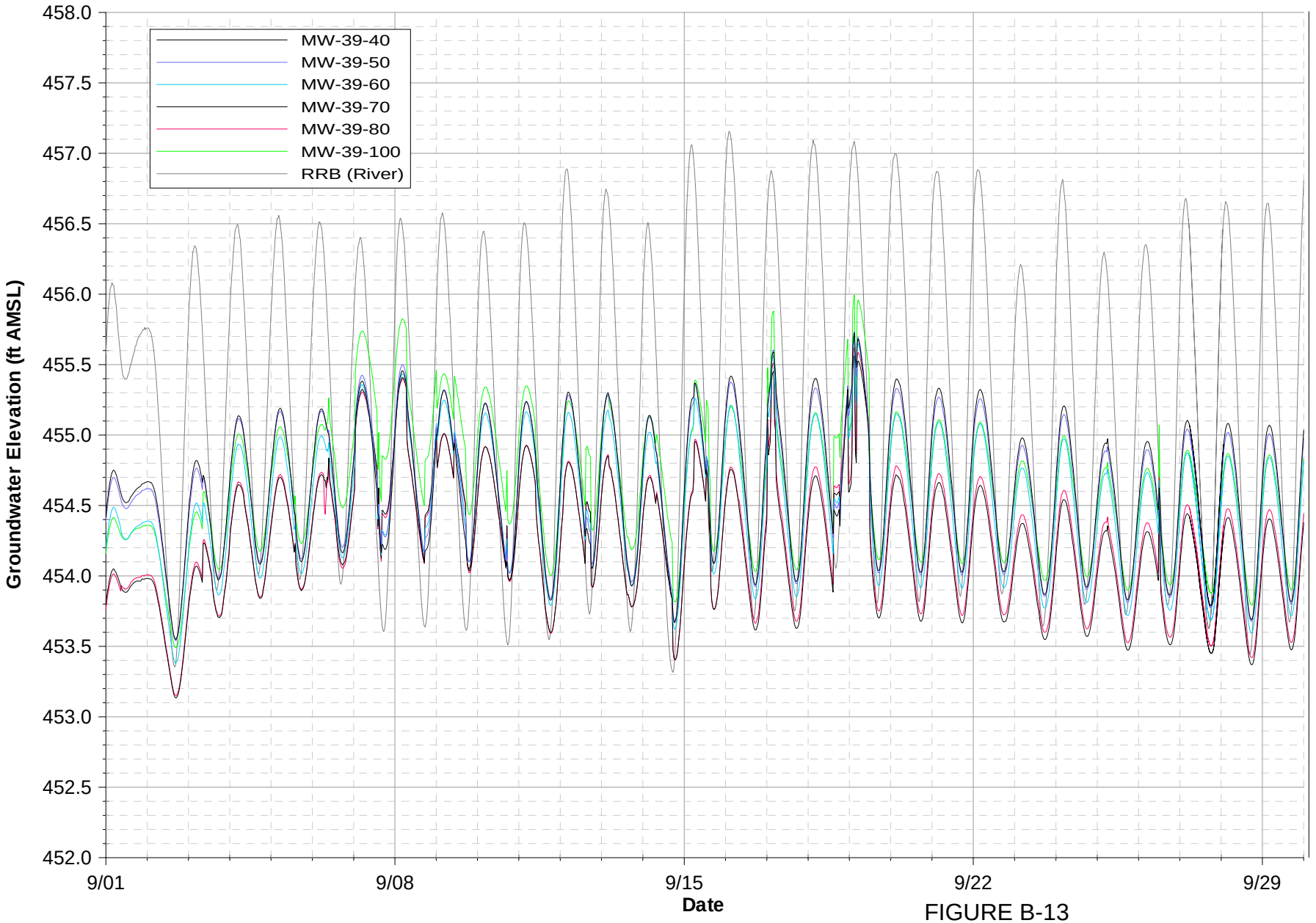


FIGURE B-12
MW-36 CLUSTER AND PE-01 HYDROGRAPHS
INTERIM MEASURES PERFORMANCE MONITORING
PG & E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

Note: Data subject to review. I-3 transducer data unavailable in September. RRB data posted as substitute river elevation.

CH2MHILL



Note: Data subject to review. I-3 transducer data unavailable in September. RRB data posted as substitute river elevation.

FIGURE B-13
MW-39 CLUSTER HYDROGRAPHS
INTERIM MEASURES PERFORMANCE MONITORING
PG & E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

CH2MHILL

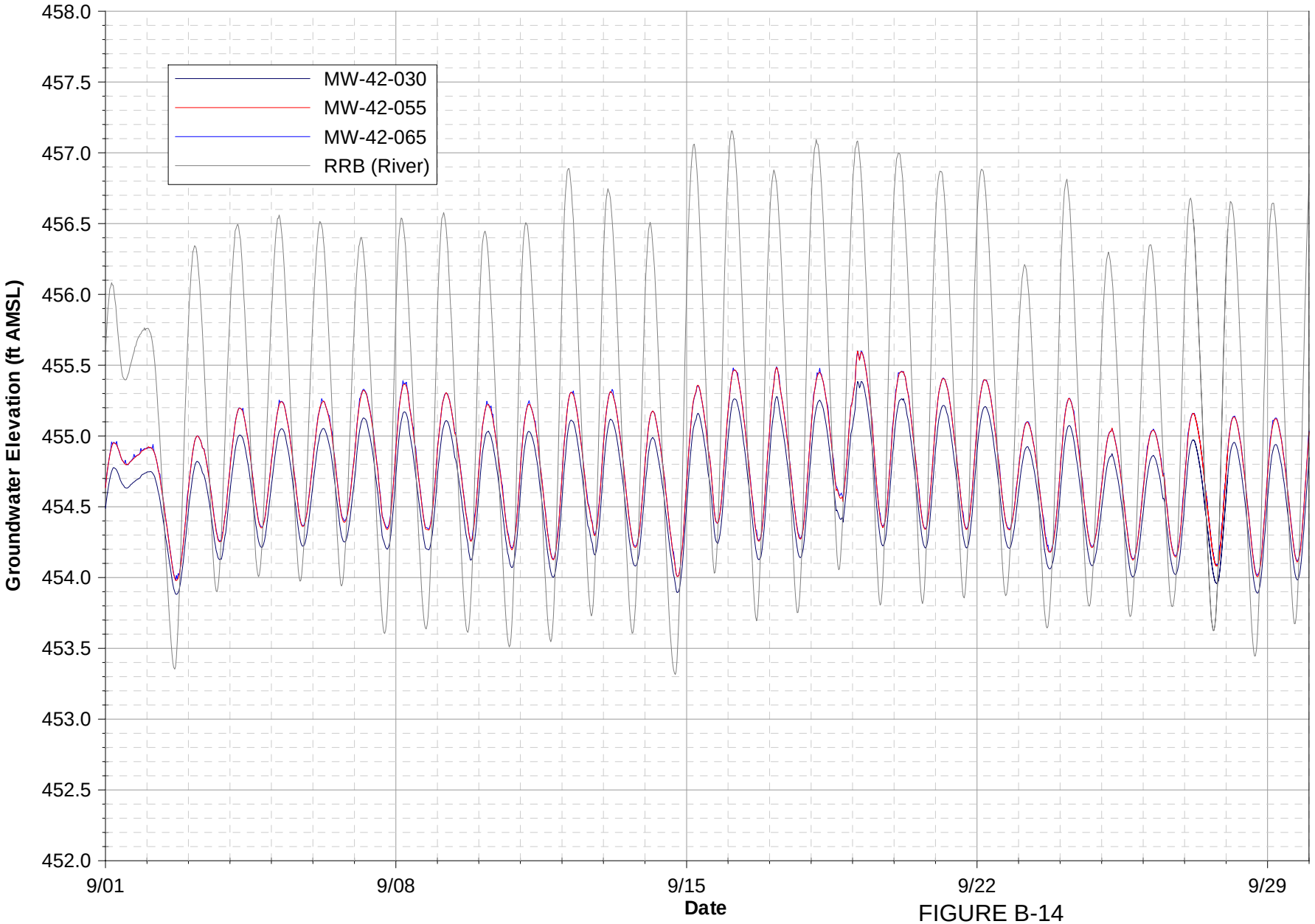
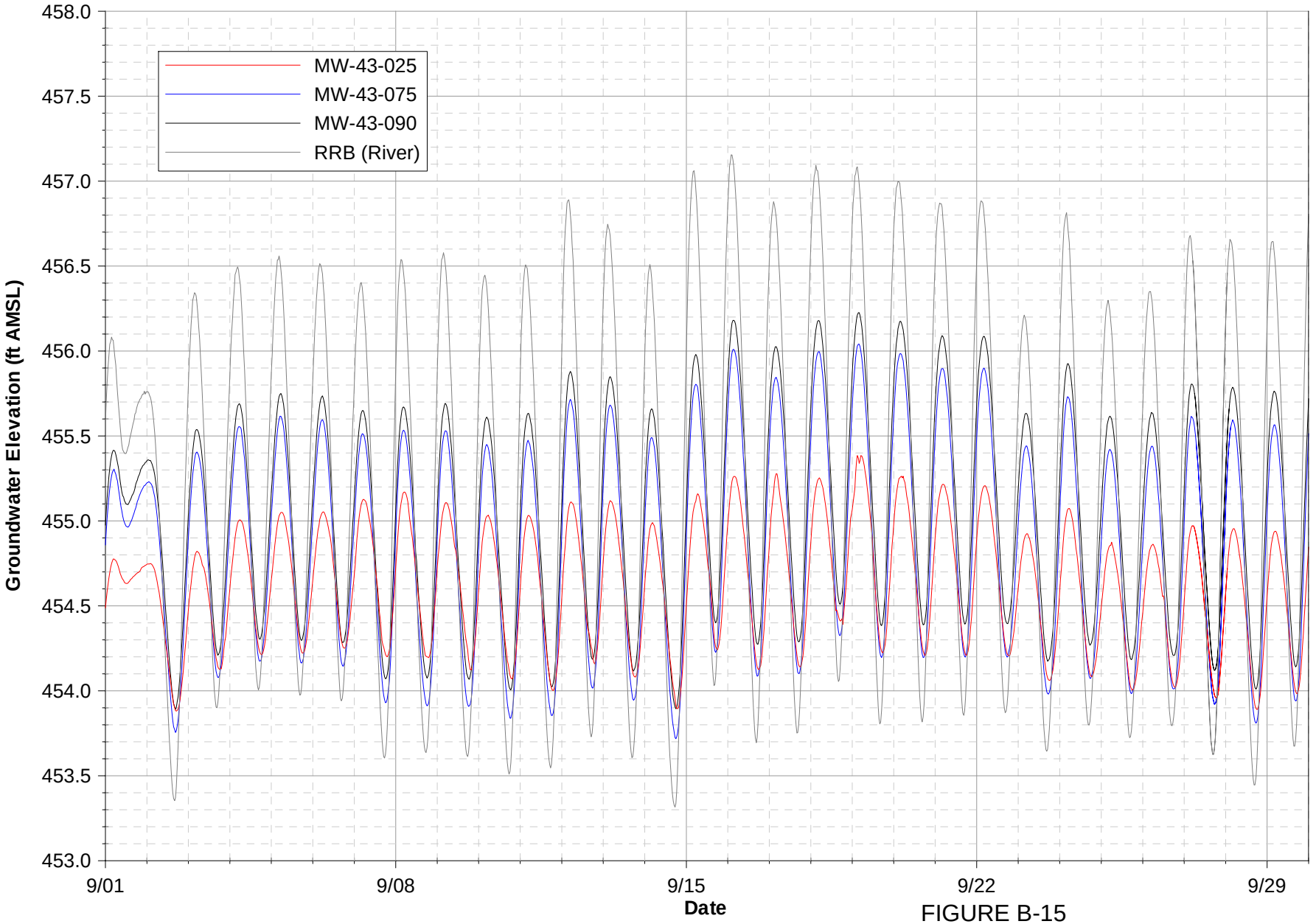


FIGURE B-14
MW-42 CLUSTER HYDROGRAPHS
INTERIM MEASURES PERFORMANCE MONITORING
PG & E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

Note: Data subject to review. I-3 transducer data unavailable in September. RRB data posted as substitute river elevation.

CH2MHILL



Note: Data subject to review. I-3 transducer data unavailable in September. RRB data posted as substitute river elevation.

FIGURE B-15
MW-43 CLUSTER HYDROGRAPHS
INTERIM MEASURES PERFORMANCE MONITORING
PG & E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

CH2MHILL