

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action  
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name: Bass Plating Company  
Facility Address: 82 Old Windsor Road, Bloomfield, CT 06002  
Facility EPA ID #: CTD001145671

1. Has all available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been considered in this EI determination?

If yes - check here and continue with #2 below.

If no - re-evaluate existing data, or

if data are not available, skip to #8 and enter "IN" (more information needed) status code.

**BACKGROUND**

**Definition of Environmental Indicators (for the RCRA Corrective Action)**

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

**Definition of "Migration of Contaminated Groundwater Under Control" EI**

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

**Relationship of EI to Final Remedies**

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

**Duration / Applicability of EI Determinations**

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

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2. Is groundwater known or reasonably suspected to be “contaminated”<sup>1</sup> above appropriately protective “levels” (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

If yes - continue after identifying key contaminants, citing appropriate “levels,” and referencing supporting documentation.

If no - skip to #8 and enter “YE” status code, after citing appropriate “levels,” and referencing supporting documentation to demonstrate that groundwater is not “contaminated.”

If unknown - skip to #8 and enter “IN” status code.

Rationale and Reference(s): The groundwater at shallow depth (10-20 feet), particularly at the far northeast corner of the property, produces cadmium and nickel at applicable levels exceeding MCLs and cadmium and zinc at appropriate levels exceeding the Surface Water Protection Criteria of the Connecticut Remediation Standard Regulations. The groundwater further below (at depths of 35 to 42 feet) at the north-central and northeast corner of the property produces trichloroethene and tetrachloroethene at levels that exceed applicable MCLs.

The groundwater and soils at shallow depth do not produce VOCs (see Table 1 – Appendix IX Site Characterization Soil Data). The source of VOCs is unknown. The lower limit of VOC contamination is 42 feet. Wells deeper than 42 feet do not contain either VOCs or metals. The source of metals produced at shallow depth (10-20 feet) is the former surface impoundment. The metals are most prevalent at the northeast corner of the property. The groundwater at depths of 35-42 feet does not produce metals, but only VOCs. Hence, the metals have migrated laterally toward the northeast but not vertically downward.

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Additional References:

Consulting Environmental Engineers, Inc., Ground Water Monitoring Report; May 1989

Duva, Diane W., DEP: WEED: GWC; Connecticut Department of Environmental Protection, Site Remediation and Closure Division, Waste Management Bureau; Memorandum to GWM File, Comprehensive Monitoring Evaluation (CME) Inspection Summary: Bass Plating Company; Bloomfield, CT [EPA ID No. CTD 001164607]; February 28, 1992.

Sound Environmental Solutions; Pumping Test Results and Groundwater Remedial Action Workplan, Bass Plating Company, Bloomfield, Connecticut; November 1996.

Sound Environmental Solutions; Pilot Well Installation and Pumping Test Report, Bass Plating Company, Bloomfield, Connecticut; June 1998.

Sound Environmental Solutions; 2001 Annual Summary Report, RCRA Groundwater Monitoring Program, Bass Plating Company, Bloomfield, Connecticut; February 2002.

Footnotes:

<sup>1</sup>“Contamination” and “contaminated” describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate “levels” (appropriate for the protection of the groundwater resource and its beneficial uses).

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3. Has the **m**igration of contaminated groundwater **s**tabilized (such that contaminated groundwater is expected to remain within “existing area of contaminated groundwater”<sup>2</sup> as defined by the monitoring locations designated at the time of this determination)?

- X** If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the “existing area of groundwater contamination”<sup>2</sup>.
- If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the “existing area of groundwater contamination”<sup>2</sup>) - skip to #8 and enter “NO” status code, after providing an explanation.
- If unknown - skip to #8 and enter “IN” status code.

Rationale and Reference(s): The migration of contaminated groundwater has stabilized (such that contaminated groundwater is expected to remain within “the existing area of contaminated groundwater”, in an area delineated both vertically and horizontally, and is defined by designated monitoring locations proximate to the outer perimeter of “contamination”.

Bass Plating Company commenced with its hydraulic containment of the “contamination” on July 29, 2002. The hydraulic containment consists of a pump-and-treat system of 4 wells pumping continuously and in combination to control the flow of groundwater beyond the property boundary. Further downgradient beyond the north-central and northeast property boundary, low levels of metals are present, but at levels below applicable promulgated standards and appropriate criteria.

**Additional References:**

Sound Environmental Solutions; Pumping Test Results and Groundwater Remedial Action Workplan, Bass Plating Company, Bloomfield, Connecticut; November 1996.

Sound Environmental Solutions; Pilot Well Installation and Pumping Test Report, Bass Plating Company, Bloomfield, Connecticut; June 1998.

Groundwater Elevation Contour Map, August 27, 2002, Bass Plating Company, Bloomfield, Connecticut.

Various Groundwater Level Elevation Hydrographs – July 29 – Present

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<sup>2</sup> “existing area of contaminated groundwater” is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of “contamination” that can and will be sampled/tested in the future to physically verify that all “contaminated” groundwater remains within this area, and that the further migration of “contaminated” groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.



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5. Is the discharge of “contaminated” groundwater into surface water likely to be “insignificant” (i.e., the maximum concentration<sup>3</sup> of each contaminant discharging into surface water is less than 10 times their appropriate groundwater “level,” and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

\_\_\_\_\_ If yes - skip to #7 (and enter “YE” status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration<sup>3</sup> of key contaminants discharged above their groundwater “level,” the value of the appropriate “level(s),” and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

\_\_\_\_\_ If no - (the discharge of “contaminated” groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration<sup>3</sup> of each contaminant discharged above its groundwater “level,” the value of the appropriate “level(s),” and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations<sup>3</sup> greater than 100 times their appropriate groundwater “levels,” the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

\_\_\_\_\_ If unknown - enter “IN” status code in #8.

Rationale and Reference(s): \_\_\_\_\_  
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<sup>3</sup> As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

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6. Can the **discharge** of “contaminated” groundwater into surface water be shown to be “**currently acceptable**” (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented<sup>4</sup>)?

\_\_\_\_\_ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site’s surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment,<sup>5</sup> appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment “levels,” as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

\_\_\_\_\_ If no - (the discharge of “contaminated” groundwater can not be shown to be “**currently acceptable**”) - skip to #8 and enter “NO” status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

\_\_\_\_\_ If unknown - skip to 8 and enter “IN” status code.

Rationale and Reference(s): \_\_\_\_\_  
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<sup>4</sup> Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

<sup>5</sup> The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.



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8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

**YE** - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the Bass Plating Company facility, EPA ID # CTD 001145671, located at 82 Old Windsor Road, Bloomfield, Connecticut 06002. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

**NO** - Unacceptable migration of contaminated groundwater is observed or expected.

**IN** - More information is needed to make a determination.

Completed by

(signature)

(print)

(title)

*Juan A. Perez*  
JUAN A. PEREZ  
Environmental Scientist

Date

*9/27/2002*

Supervisor

(signature)

(print)

(title)

*Matthew R. Hoagland*  
Matthew R. Hoagland  
Section Chief

Date

*9/30/02*

(EPA Region or State)

*Reg. I*

Locations where References may be found:

Attached: \_\_\_\_\_

Additional References: Connecticut Department of Environmental Protection File Room  
79 Elm Street  
Hartford, Connecticut 06106 \_\_\_\_\_

Contact telephone and e-mail numbers

(name) \_\_\_\_\_

(phone #) \_\_\_\_\_

(e-mail) \_\_\_\_\_

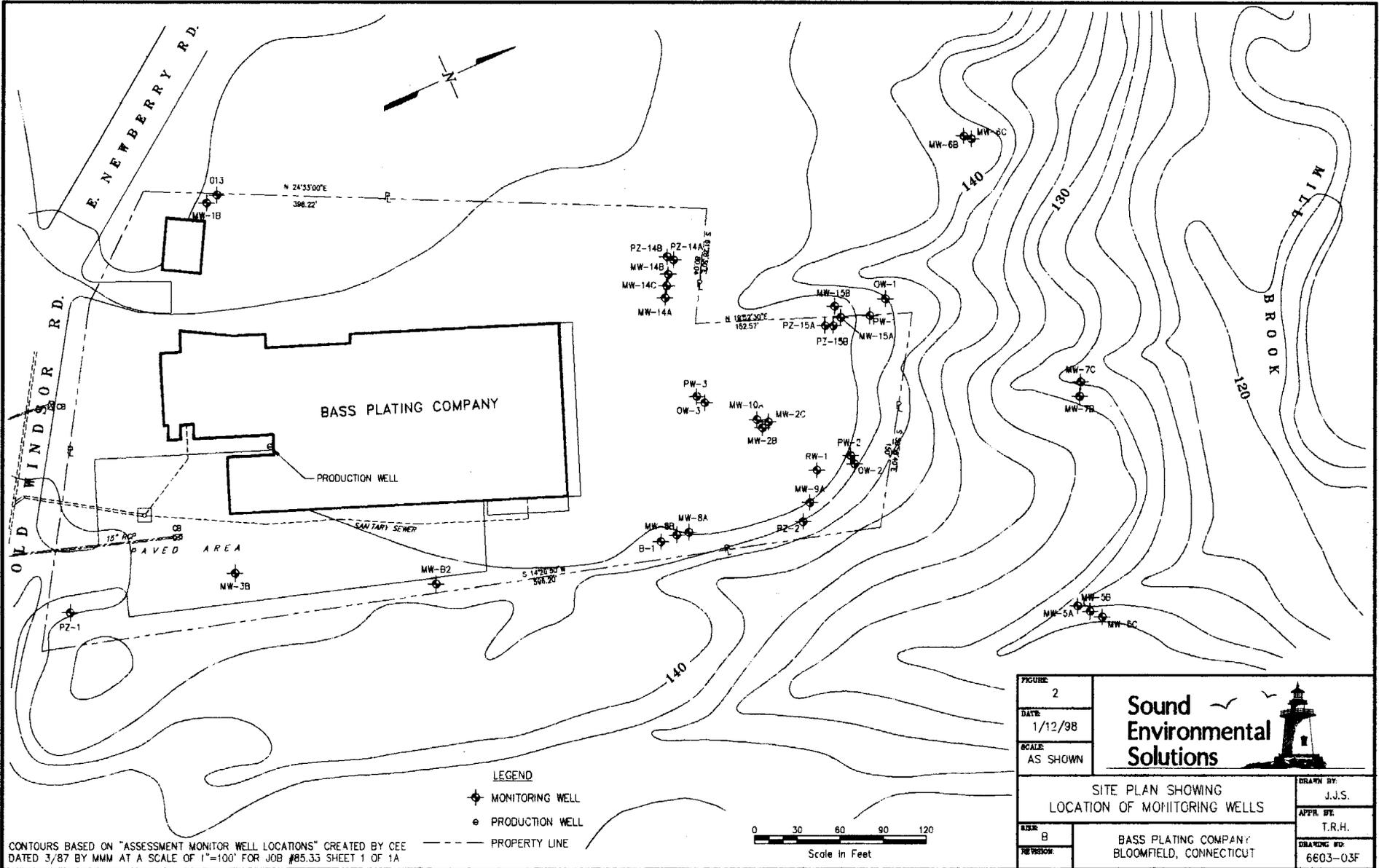


FIGURE	2
DATE	1/12/98
SCALE	AS SHOWN

**Sound Environmental Solutions**

SITE PLAN SHOWING LOCATION OF MONITORING WELLS		DRAWN BY: J.J.S.
		APPR. BY: T.R.H.
USER: B	BASS PLATING COMPANY BLOOMFIELD, CONNECTICUT	
REVISION:	DRAWING NO: 6603-03F	

**013**

COMP./CONSTIT.	MAR.	SEPT.
Zinc	-	52
Cyanide (Total)	18	100

**MW-14B**

COMP./CONSTIT.	MAR.
Chloroform (THM)	2.1
1,2-dichlorobenzene	1.6
methylene chloride	1.3
tetrachloroethene	0.81
1,1,1-trichloroethane	0.2
trichloroethene	0.2
Cyanide (Total)	140

**MW-10A**

COMP./CONSTIT.	MAR.
Cadmium	190
Nickel	350
Zinc	350

**MW-6B**

COMP./CONSTIT.	MAR.
Chloroform	4.4
1,2-dichlorobenzene	170
1,3-dichlorobenzene	8.3
1,4-dichlorobenzene	1.3
methylene chloride	0.60
tetrachloroethene	0.71
Trichloroethane	12
Cyanide (Total)	43

**MW-14A**

COMP./CONSTIT.	MAR.	SEPT.
Cadmium	-	8.5
Zinc	-	64
Cyanide (Total)	20	-

**MW-1B**

COMP./CONSTIT.	MAR.
1,2-dichlorobenzene	0.82
methylene chloride	0.86
tetrachloroethene	4.6
1,1,1-trichloroethane	5.2
Zinc	18
Cyanide (Total)	37

**MW-15B**

COMP./CONSTIT.	MAR.	SEPT.
Chloroform	8.6	-
1,2-dichlorobenzene	1.2	-
1,1-dichloroethene	0.84	-
methylene chloride	0.89	-
Tetrachloroethene	1.5	-
1,1,1-trichloroethane	3.0	-
Cadmium	-	21
Zinc	-	65
Cyanide (Total)	410	330

**MW-7B**

COMP./CONSTIT.	MAR.
Trichloroethene	0.50
Nickel	56
Cyanide (Total)	13

**MW-5B**

COMP./CONSTIT.	MAR.
Nickel	33

**MW-9A**

COMP./CONSTIT.	MAR.	SEPT.
Cadmium	1,100	800
Nickel	570	580
Zinc	440	970

**MW-8B**

COMP./CONSTIT.	MAR.
trichloroethene	1.1
Cadmium	220
Cyanide (Total)	21

**MW-8A**

COMP./CONSTIT.	MAR.
Cadmium	220
Nickel	1,900
Zinc	17

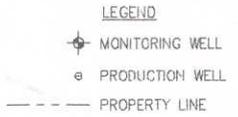
**MW-5A**

COMP./CONSTIT.	MAR.
Nickel	380

**MW-3B**

COMP./CONSTIT.	MAR.
Chloroform	5.4
Tetrachloroethene	0.70
Trichloroethene	45
Cyanide (Total)	50

- NOTES:**
1. CONCENTRATIONS EXCEEDING APPLICABLE LIMITS SHOWN IN RED.
  2. ALL CONCENTRATIONS IN MICROGRAMS PER LITER ( $\mu\text{g/L}$ , OR PARTS PER BILLION).
  3. ALL METAL CONCENTRATIONS ARE DISSOLVED.
  4. DASH INDICATES NO ANALYSIS OR COMPOUND/CONSTITUENT WAS ANALYZED FOR BUT NOT DETECTED.



**FIGURE:** 6

**DATE:** 1/25/02

**SCALE:** AS SHOWN

**Sound Environmental Solutions**

VOLATILE ORGANIC COMPOUNDS AND DISSOLVED INORGANIC CONSTITUENTS IN GROUNDWATER IN 2001

**BASS PLATING COMPANY BLOOMFIELD, CONNECTICUT**

**DRAWN BY:** J.J.S.

**APPR. BY:** T.R.H.

**DRAWING NO.:** 6603-06M

9-9-02 B:42:45 am EST  
6603-06M.dwg

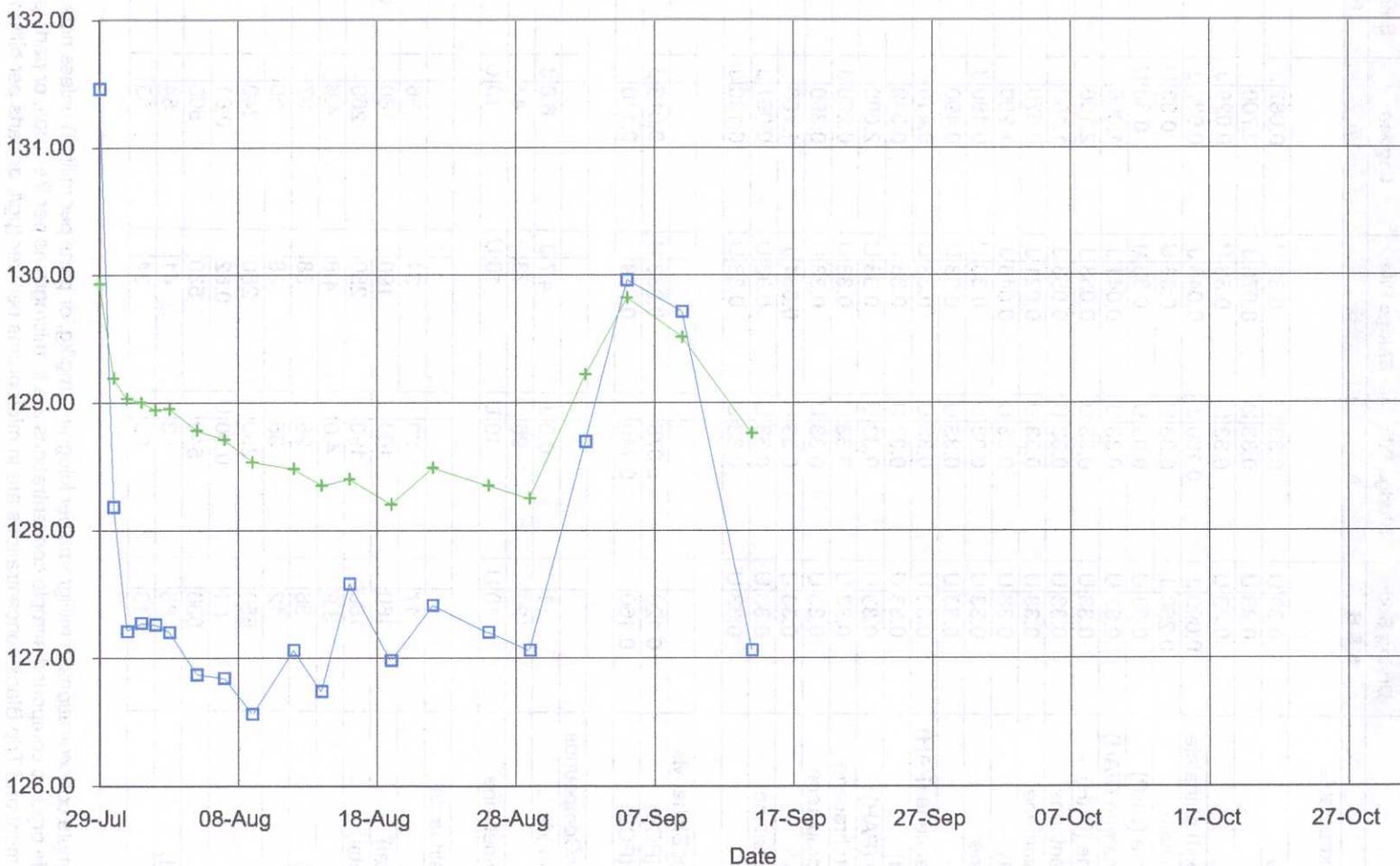
TABLE 1  
SUMMARY OF DETECTED COMPOUNDS AND CONSTITUENTS  
APPENDIX IX SITE CHARACTERIZATION SOIL DATA  
JULY 8 - 9, 1998

	Drying Beds	Sludge Pile	Sludge Pile	Lagoon	Equipment	Trip
	A & B	A	B	Area	Blank	Blank
<b>Base Neutral Extractable Compounds</b>						
Acenaphthene	0.33 U	0.33 U	0.33 U	0.087 J	1 U	
Fluoranthene	0.33 U	0.33 U	0.078 J	2.700	10 U	
Naphthalene	0.33 U	0.33 U	0.33 U	0.029 J	10 U	
bis (2-ethylhexyl) phthalate	0.090 J	0.160 J	0.048 J	0.087 J	2.6 J	
di-n-butyl phthalate	0.250 J	0.33 U	0.33 U	0.33 U	1.7 J	
diethyl phthalate (DEP)	0.33 U	0.33 U	0.33 U	0.33 U	0.87 J	
benzo(a)anthracene (PAH)	0.33 U	0.33 U	0.041 J	1.000	10 U	
benzo(a)pyrene (PAH)	0.33 U	0.33 U	0.058 J	2.100	10 U	
benzo(b)fluoranthene	0.33 U	0.33 U	0.053 J	1.100	10 U	
benzo(k)fluoranthene	0.33 U	0.33 U	0.021 J	0.870	10 U	
chrysene (PAH)	0.33 U	0.33 U	0.048 J	1.200	10 U	
Acenaphthylene	0.33 U	0.33 U	0.33 U	0.180 J	10 U	
Anthracene	0.33 U	0.33 U	0.33 U	0.490	10 U	
benzo(g,h,i)perylene (PAH)	0.33 U	0.33 U	0.33 U	0.410	10 U	
fluorene (PAH)	0.33 U	0.33 U	0.33 U	0.340	10 U	
phenanthrene (PAH)	0.33 U	0.33 U	0.33 U	2.000	10 U	
dibenzo(a,h)anthracene	0.33 U	0.33 U	0.33 U	0.200 J	10 U	
indeno(1,2,3-cd)pyrene	0.33 U	0.33 U	0.33 U	0.390	10 U	
pyrene (PAH)	0.33 U	0.33 U	0.054 J	1.700	10 U	
2-methylnaphthalene	0.33 U	0.33 U	0.33 U	0.061 J	10 U	
Dibenzofuran	0.33 U	0.33 U	0.33 U	0.130 J	10 U	
<b>Poly-Chlorinated Biphenyls</b>						
Aroclor-1248 (PCB)	0.120	0.075	0.033 U	0.016 J	1.0 U	
Aroclor-1254 (PCB)	0.160	0.140	0.069	0.110	1.0 U	
<b>Volatile Organic Compounds</b>						
methylene chloride	11	6.0 J	4.7 J	6.0 J	3.1 J	3.1 J
Acetone	120	96	23	43	23	22
trichlorofluoromethane	10 U	10 U	10 U	10 U	2.2 J	2.2 J
<b>Inorganic Constituents</b>						
Barium (total)	17	20	34	36	0.50 U	
Cadmium (total)	160	160	190	160	0.0050 U	
Chromium (total)	180	190	250	260	0.040 U	
Cobalt (total)	3.9	4.0	4.8	4.6	0.050 U	
Copper (total)	36	26	38	37	0.020 U	
Lead (total)	12	35	48	50	0.015 U	
Nickel (total)	550	250	260	240	0.030 U	
Silver (total)	1.1	0.60 U	0.62	0.61	0.012 U	
Zinc (total)	830	540	530	500	0.30	
Cyanide (total)	88	63	41	54	0.010 U	
Sulfide (total)	13	65	34	53	10 U	

Notes: \* All sample concentrations in milligrams per kilogram (mg/kg, or parts per million) unless noted otherwise. Volatile organic compound sample concentrations are in micrograms per liter (µg/l, or parts per billion). Equipment and Trip Blank concentrations are in micrograms per liter (µg/l, or parts per billion). Equipment Blank inorganic constituent concentrations are in milligrams per liter (mg/l, or parts per million). U - Indicates element was analyzed for but not detected. The number shown is the detection limit. J - Indicates an estimated value; result is less than the specified detection limit.

Hydrograph of Wells RW-1 and WP-1

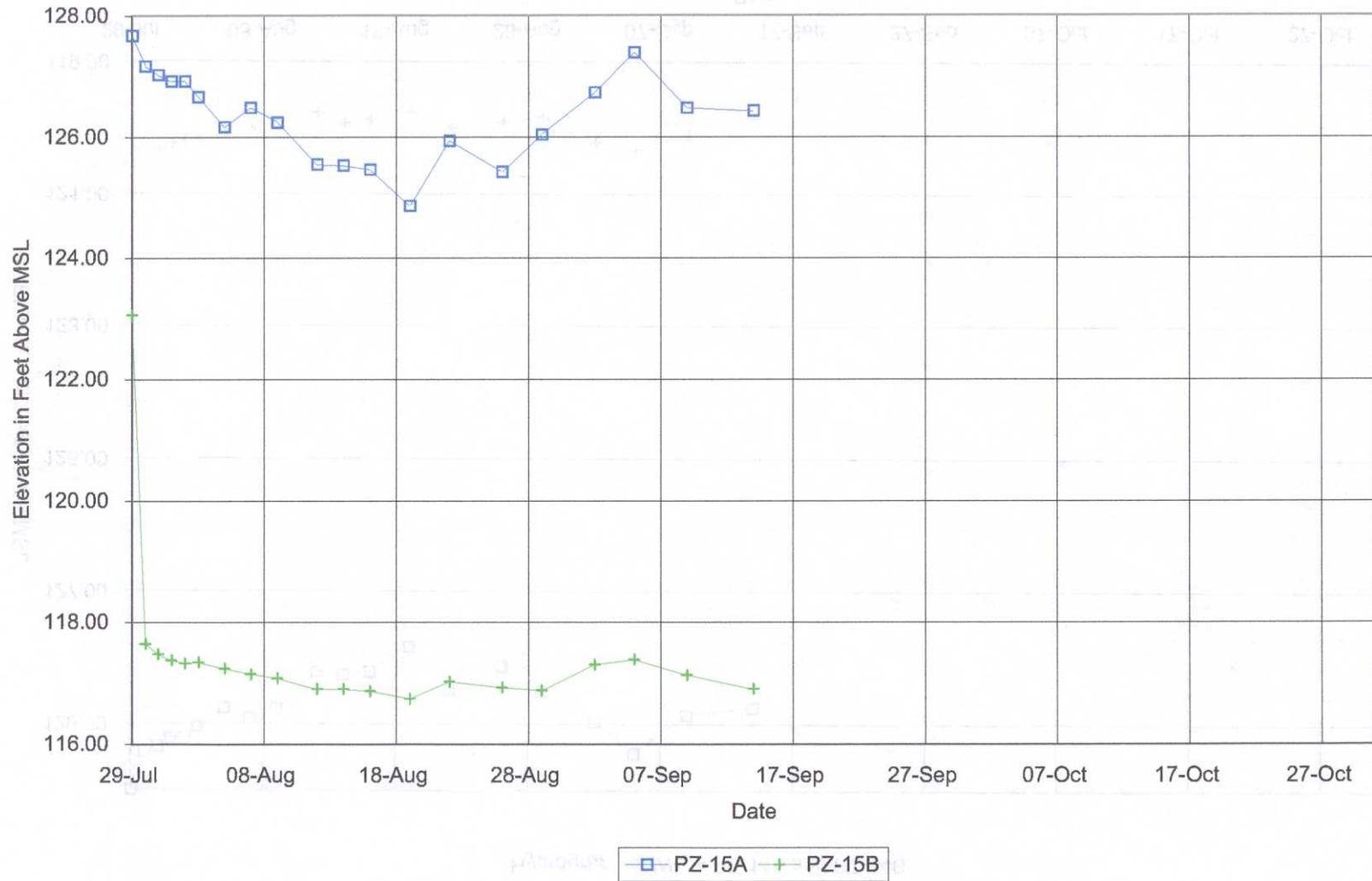
Elevation in Feet Above MSL



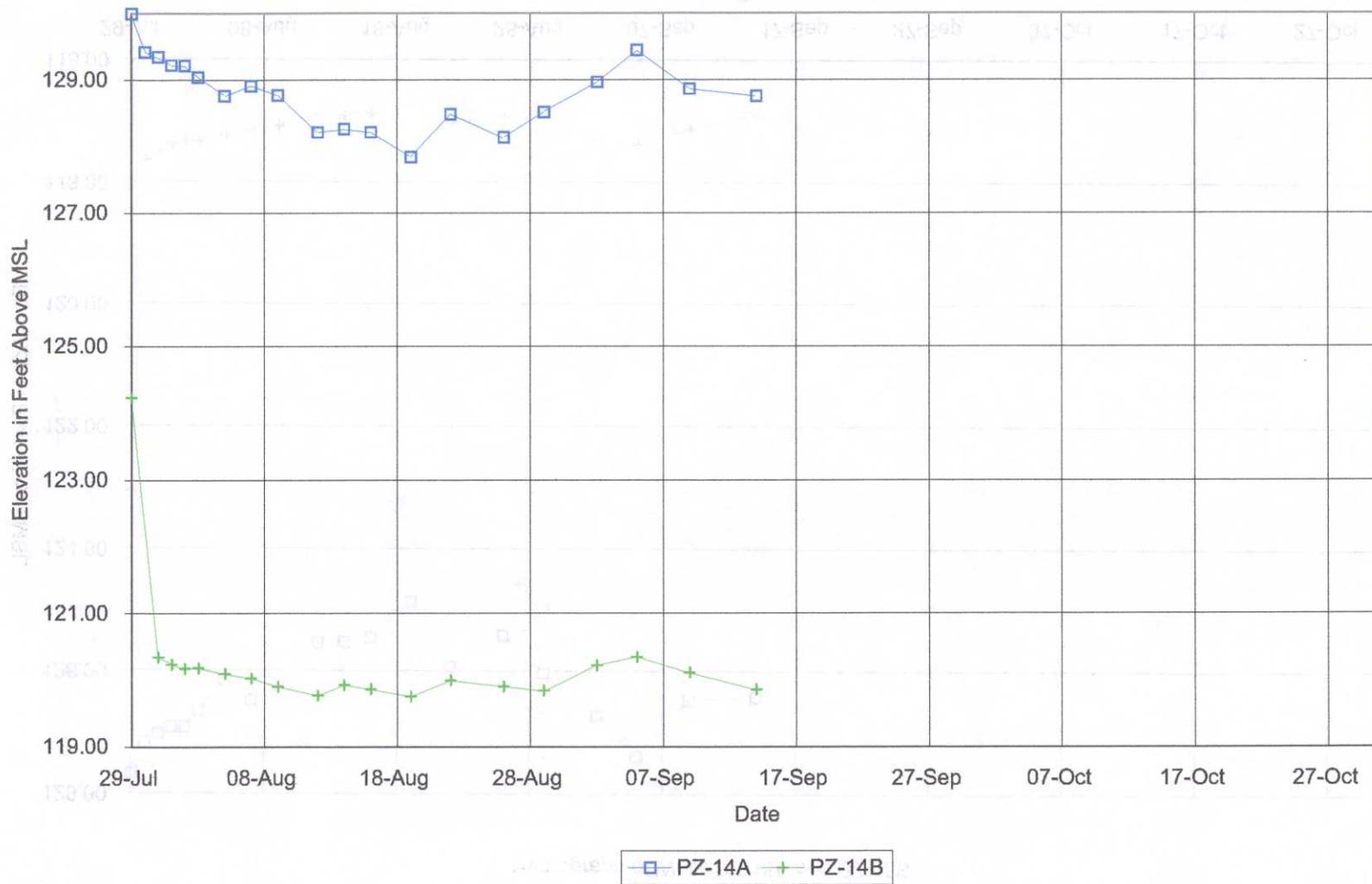
—□— RW-1 —+— WP-1

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 THE UNIVERSITY OF TEXAS AT ARLINGTON  
 WATER RESOURCES CENTER  
 1017 - 01108

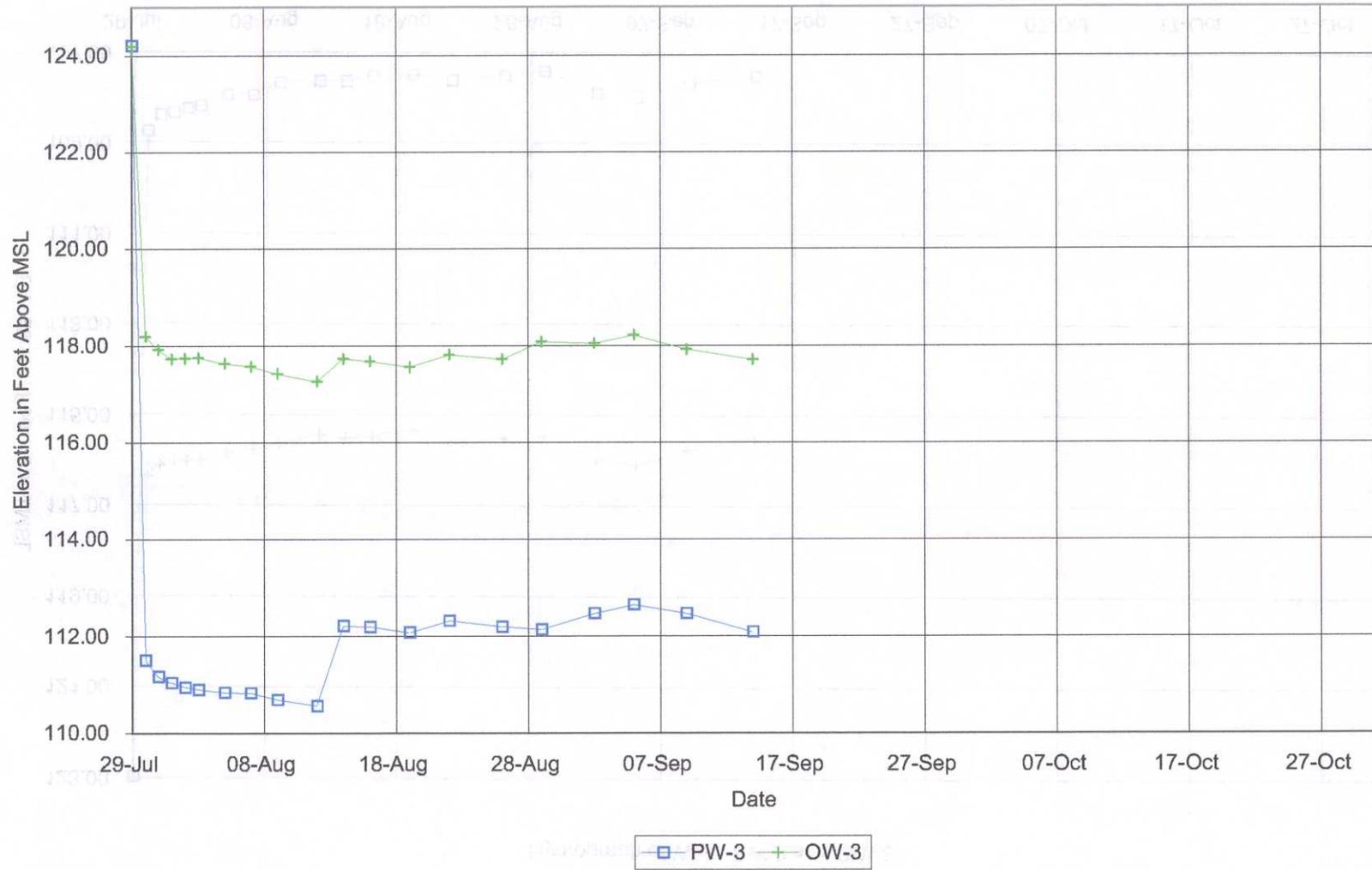
Hydrograph of Wells PZ-15A and PZ-15B



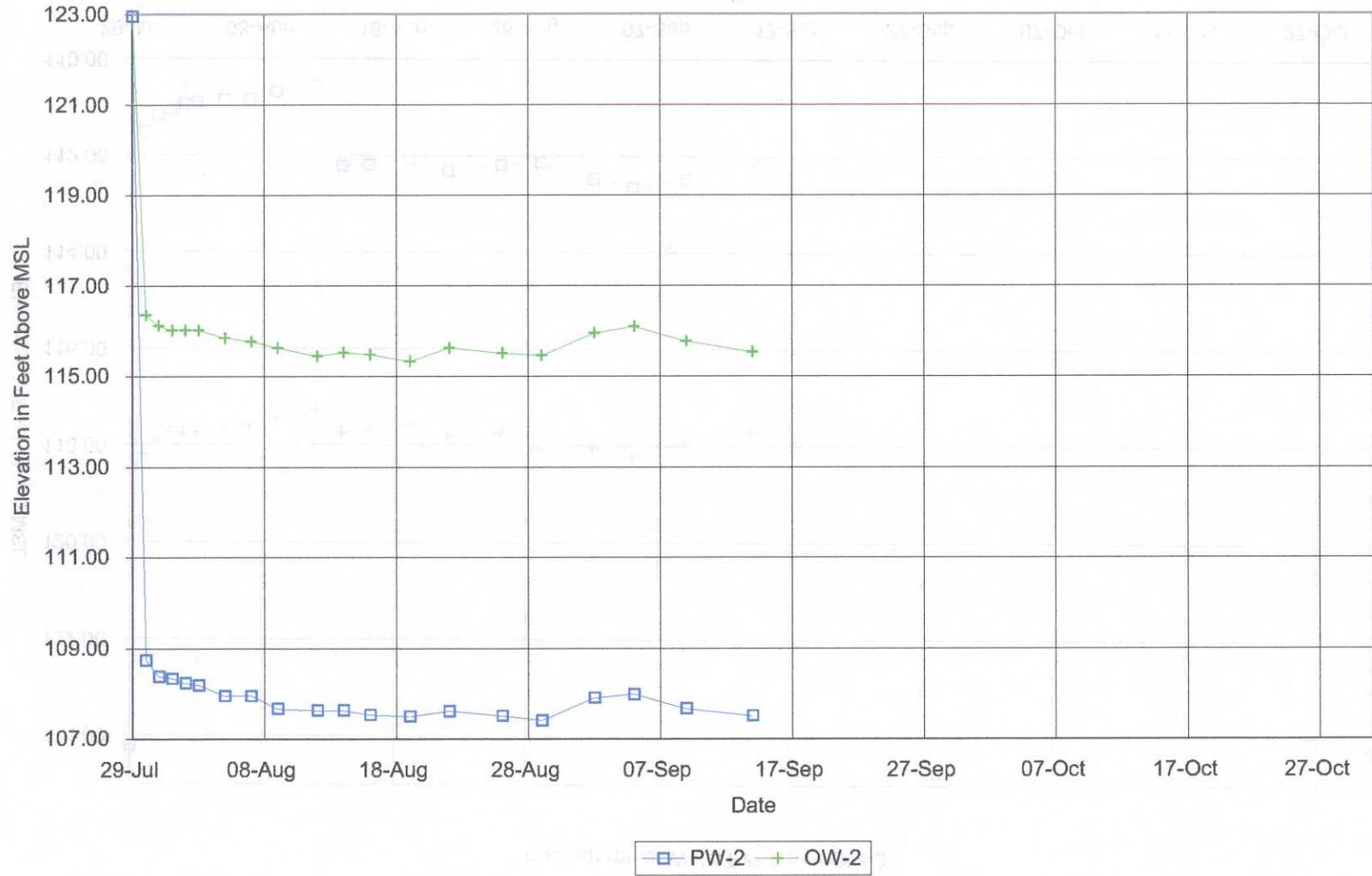
Hydrograph of Wells PZ-14A and PZ-14B



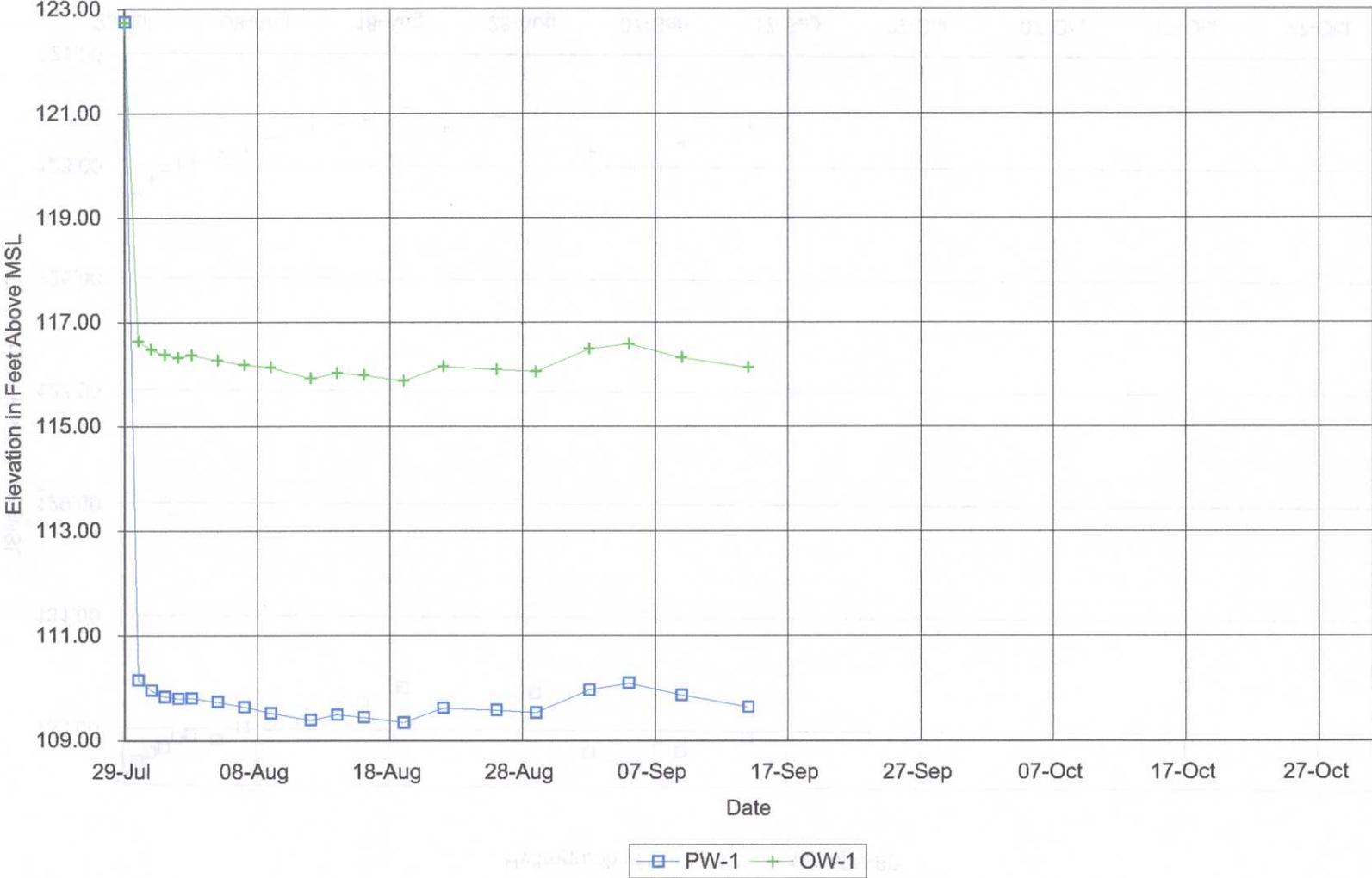
Hydrograph of Wells PW-3 and OW-3



Hydrograph of Wells PW-2 and OW-2



Hydrograph of Wells PW-1 and OW-1



Hydrograph of Wells MW-8A and MW-8B

