

Five-Year Review Report

1567667 - R8 SDMS

Fourth Five-Year Review Report for the Idaho Pole Company Site

Bozeman,

Gallatin County, Montana

September, 2015



PREPARED BY:

U.S. Environmental Protection Agency
Region 8
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A handwritten signature in blue ink, appearing to read "M. Hestmark", is written over a horizontal line.

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A handwritten date "9/30/15" in blue ink is written over a horizontal line.

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Fourth Five-Year Review Report – 2015

Idaho Pole Company Site

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List of Acronyms

ARAR	Applicable or Relevant and Appropriate Requirements
BFEG	Barkfill Extraction Gallery
BFIG	Barkfill Injection Gallery
bgs	Below ground surface
BNSF	Burlington Northern Santa Fe
CBN	Custom Blended Nutrients
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CGWA	Controlled Groundwater Area
CL	Confidence Level
COC	Contaminant of Concern
COV	Coefficient of Variance
DEQ	Montana Department of Environmental Quality
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Difference
FS	Feasibility Study
ft ² /d	Square feet per day
ft MSL	Feet above mean sea level
GAC	Granular activated carbon
GIS	Geographic Information System
gpd/ft	Gallons per day per foot
gpm	Gallons per minute
GPRA	Government Performance and Results Act
GWTS	Groundwater treatment system
HASP	Health and Safety Plan
I-90	Interstate 90
IC	Institutional Control
IPC	Idaho Pole Company
IRIS	Integrated Risk Information System
LTU	Land treatment unit
MBMG	Montana Bureau of Mines and Geology
MCL	Maximum Contaminant Level
MDT	Montana Department of Transportation
mg/kg	Milligrams per kilogram
NAPL	Non-aqueous phase liquid
NCP	National Contingency Plan
NPL	National Priorities List
NWE	NorthWestern Energy
O&M	Operation and Maintenance
OU	Operable Unit
PAHs	Polynuclear aromatic hydrocarbons
PCP	Pentachlorophenol
PPEG	Pressure Plant Extraction Gallery
PPIG	Pressure Plant Injection gallery
ppb	Parts per billion
ppm	Parts per million
ppt	Parts per trillion

P&T	Pump and treat
PRG	Preliminary Remediation Goal
PRP	Potentially Responsible Party
QA/QC	Quality Assurance/Quality Control
RA	Remedial Action
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RfD	Reference dose
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RP	Responsible Party
RSE	Remediation System Evaluation
TCDD	2,3,7,8-tetrachlorophenol dibenzo-p-dioxin
TCDD-TEQ	Sum of toxicity equivalents for individual polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs), expressed as concentration of 2,3,7,8-tetrachlorophenol dibenzo-p-dioxin (TCDD)
TEF	toxicity equivalence factor
TEH	Total extractable hydrocarbon
TEQ	toxicity equivalence
TPH	Total petroleum hydrocarbons
µg/L	Micrograms per liter
UAO	Unilateral Administrative Order
WQB	Water Quality Bulletin

Executive Summary

This is the fourth five-year review of the remedial actions implemented at the Idaho Pole Company (IPC) site located in Bozeman, Montana. The IPC site (the "Site"), which is associated with a previous wood treating facility, is located near the northern limits of Bozeman, Montana. One Operable Unit (OU01) was established for the Site that included both soil and groundwater components. Issues identified in the previous five-year review pertaining to long-term protectiveness have been addressed. Other protectiveness issues identified after the last five year review are being addressed, as explained below.

The soil remedy for the Site has been completed. Soils have been treated to the cleanup standards established in the Record of Decision and have been placed as back fill in the excavated areas above historic groundwater elevations and capped with 12 inches of clean soil to prevent direct contact. Treated soils were also left in place on the Site above levels that allow for unlimited use and unrestricted exposure. Therefore, permanent land use restrictions for certain portions of the facility property have been filed. The intent of the land use restrictions is to ensure the permanent preservation and maintenance of remedial structures, including the treated soils area, that are required to minimize potential for human exposure to contaminated soil and to protect the integrity of the remedy. The effectiveness of the Institutional Controls as well as the integrity of the cover on top of the treated soils are evaluated as part of this review.

This five-year review focuses on the groundwater and soil components of the remedy. The soil component includes treated soils that have been placed back in the excavated areas above historic high groundwater elevations and capped with 12 inches of clean soil as well as Institutional Controls that have been placed on the property. The groundwater component includes an operating pump and treat (P&T) system to address pentachlorophenol (PCP) concentrations in groundwater as well as residual source material remaining in the bark-fill area of the Site. Contaminated groundwater is extracted and treated on the south side of I-90 in the barkfill and pressure plant areas. In addition, in-situ treatment of dissolved contaminants in the groundwater plume (downgradient of these extraction wells) is remediated by re-injection of treated groundwater. Review of groundwater data indicate that the P&T system in combination with source removal has reduced the amount of contaminant in the groundwater. A Controlled Groundwater Area (CGWA) designation is in place that restricts use of groundwater within the CGWA for any purpose, except as provided in the remedial action or as otherwise authorized by EPA and DEQ.

Additional investigations that have occurred since the previous five year review have identified residual isolated pockets of non-aqueous phase liquid (NAPL) in the vadose zone that continue to impact groundwater. Pilot testing for potential residual source area remediation will commenced in 2015, with the long-term goal of cleaning up these isolated pockets of NAPL, which, if successful, would eliminate—the need for P&T operation.

In addition, it has been determined that, while the 1992 Record of Decision (ROD) established a groundwater cleanup level for 2,3,7,8-TCDD (Dioxin), no groundwater samples have been analyzed for dioxin since the ROD was issued in order to make a determination of protectiveness.

A protectiveness determination of the OU01 remedy cannot be made until further information is obtained. While dioxin was identified as a contaminant of concern for groundwater, no dioxin groundwater samples have been taken since the Record of Decision was issued, and sampling is necessary. Recently discovered residual NAPL groundwater sources need to be addressed. Although Institutional Controls are in place, including a deed restriction on the property and a

CGWA that restricts potable use of the groundwater, residual source material continues to impact groundwater. It is expected that the groundwater dioxin sampling and residual source area remediation actions will take approximately three years to complete, at which time a protectiveness determination can be made.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Idaho Pole Company		
EPA ID: MTD006232276		
Region: 8	State: MT	City/County: Bozeman/Gallatin
SITE STATUS		
NPL Status: Final		
Multiple OUs? No	Has the site achieved construction completion? Yes	
REVIEW STATUS		
Lead agency: EPA		
Author name (Federal or State Project Manager): Robert Greenwald/Jennifer Abrahams		
Author affiliation: Tetra Tech		
Review period: 10/01/2014 – 9/30/2015		
Date of site inspection: 11/5/2014		
Type of review: Statutory		
Review number: 4		
Triggering action date: 9/20/2010		
Due date (five years after triggering action date): 9/20/2015		

Five-Year Review Summary Form (continued)

Issues/Recommendations

OU(s) without Issues/Recommendations Identified in the Five-Year Review:

None

Issues and Recommendations Identified in the Five-Year Review:

OU(s): OU01	Issue Category: Remedy Performance			
	Issue: Potential residual source material in the area of the BFEG.			
	Recommendation: Perform pilot testing to remediate residual source material.			
Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
No	Yes	IPC	EPA, DEQ	2018

OU(s): OU01	Issue Category: Remedy Performance			
	Issue: Dioxin analysis of groundwater			
	Recommendation: Sample shallow aquifer for dioxin analysis			
Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
No	Yes	IPC	EPA, DEQ	2018

Protectiveness Statement(s)

<i>Operable Unit:</i> OU01	<i>Protectiveness Determination:</i> Protectiveness Deferred	<i>Addendum Due Date (if applicable):</i> 9/30/2018
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Protectiveness Statement:

A protectiveness determination of the OU01 remedy cannot be made until further information is obtained. While dioxin was identified as a contaminant of concern for groundwater, no dioxin groundwater samples have been taken since the Record of Decision was issued, and sampling is necessary. Recently discovered residual NAPL groundwater sources need to be addressed. Although institutional controls are in place, including a deed restriction on the property and a CGWA that restricts potable use of the groundwater, residual source material continues to impact groundwater. It is expected that the groundwater dioxin sampling and residual source area remediation actions will take approximately three years to complete, at which time a protectiveness determination will be made.

Sitewide Protectiveness Statement (if applicable)

For sites that have achieved construction completion, enter a sitewide protectiveness determination and statement.

<i>Protectiveness Determination:</i> Protectiveness Deferred	<i>Addendum Due Date (if applicable):</i> 9/30/2018
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Protectiveness Statement:

A protectiveness determination of the OU01 remedy cannot be made until further information is obtained. While dioxin was identified as a contaminant of concern for groundwater, no dioxin groundwater samples have been taken since the Record of Decision was issued, and sampling is necessary. Recently discovered residual NAPL groundwater sources need to be addressed. Although institutional controls are in place, including a deed restriction on the property and a CGWA that restricts potable use of the groundwater, residual source material continues to impact groundwater. It is expected that the groundwater dioxin sampling and residual source area remediation actions will take approximately three years to complete, at which time a protectiveness determination will be made.

Idaho Pole Company Site

Fourth Five-Year Review Report

I. Introduction

This report documents EPA's fourth five-year review of the remedial actions implemented at the Idaho Pole Company (IPC) Site located in Bozeman, Montana. The purpose of this five-year review is to determine whether the remedy at a site remains protective of human health and the environment. The methods, findings, and conclusions of this review are documented in this Five-Year Review report. In addition, this Five-Year Review report identifies remedy issues, if any, and recommends means to address them.

This review is required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) §121 and the National Contingency Plan (NCP), 40 Code of Federal Regulations (CFR) part 300. Section 121 of CERCLA states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

EPA interpreted this requirement further in the NCP; 40 CFR §300.430(f)(4)(ii) states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

The lead agency for this five-year review is EPA Region 8, and the five-year review report was prepared by Tetra Tech under contract to Montana DEQ (DEQ). The Site visit for the five-year review was conducted on November 5, 2014.

This review is required by statute because hazardous substances, pollutants, or contaminants have been left on Site above levels that allow for unlimited use and unrestricted exposure. The triggering action for this fourth five-year review is the date of the previous (third) five-year review (September 2010).

II. Site Chronology

Table 1: Chronology of Site Events

Date	Event
1978	Initial discovery of the problem
06/10/1986	National Priorities List (NPL) listing
09/28/1992	Record of Decision (ROD) signature
08/26/1993	Unilateral Administrative Order
09/08/1993	Remedial Design Start, Soils Component
09/08/1993	Remedial Design Start, Groundwater Component
06/29/1995	Remedial Design Completion, Soils Component
07/17/1995	Soils Remedy Start
05/21/1996	Explanation of Significant Differences
08/22/1996	Remedial Design Completion, Groundwater Component
08/23/1996	Groundwater Remedy Start
02/1997	Operation of groundwater treatment system began
03/26/1998	Construction Completion for the Soil and Groundwater Remedy
11/27/1998	Explanation of Significant Differences
03/03/1999	Additional Remedial Design Start
06/08/1999	Additional Remedial Design Completion
10/21/1999	Additional Remedial Action Completed (Site remediation ongoing)
09/30/2000	First Five-Year Review
11/30/2001	Controlled Groundwater Use Area established
09/2002	Land Treatment Unit (LTU) decommissioned
03/04/2003	Remedial Action Completion (Soils Component)
09/30/2005	Second Five-Year Review
11/17/2009	Approval to shut off Pressure Plant Extraction Gallery (PPEG) component of groundwater extraction
02/11/2010	Remediation System Evaluation Report
03/24/2010	Approval to modify groundwater monitoring
03/26/2010	Modification to performance monitoring for groundwater remedy
09/09/2010	Notice of Institutional Controls placed on property where treated soils are located and on the CGWA
9/20/2010	Third Five-Year Review
03/2011	Soil Management Plan

III. Background

Location

The Site is associated with a previous wood treating facility located near the northern limits of Bozeman, Montana and occupies approximately 65 acres in the east half of Section 6 and the west half of Section 5, Township 2S, Range 6E of Gallatin County. Figure 1 illustrates key map features in the vicinity of the Site. The Site is bounded to the south by railroad tracks and to the north by Rocky Creek (which appears to represent the down-gradient limit of historical groundwater impacts). The Site is bisected by Interstate 90 (I-90).

Wood treating infrastructure was historically located south of I-90, though soil and groundwater have been contaminated both north and south of I-90. All former wood-treating infrastructure was dismantled in 1999. Contaminated groundwater flows to the northeast towards Rocky Creek. Rocky Creek, which is located north of I-90, also receives water from Mill Creek (located south of I-90) through a culvert that runs below I-90 in the eastern portion of the Site. Further downstream (northwest of the Site) Rocky Creek combines with Bozeman Creek (which is located west of the Site) to form the East Gallatin River.

Current and Future Land Use Near the Site

In carrying out Superfund response actions, EPA typically considers the reasonably anticipated future land use of a site in the remedy selection process.¹

As illustrated on Figure 1, buildings currently on the former wood treating property south of I-90 include the treatment building associated with the groundwater treatment system, a yard office building, and an office building owned by IPC (not currently occupied). Property north of I-90 that is part of the Site or near the Site includes residences, pasture, and a power substation operated by NorthWestern Energy, which was constructed in the 1970s. As illustrated on Figure 1, some of the property north of I-90 is owned by IPC including the "Pasture Area" and two previous residences where groundwater wells were historically contaminated.

Figure 2 illustrates zoning in the vicinity of the Site based on information obtained from on-line Geographic Information Systems (GIS) maintained by the City of Bozeman and Gallatin County. Zoning considerations include the following:

- The existing zoning for the portion of the Site south of I-90 is manufacturing (the City of Bozeman GIS further defines the zoning as "manufacturing and industrial"). Based on discussions with the city officials, the planned future land use for the portion of the Site south of I-90 is industrial.
- North of I-90, the "Pasture Area" owned by IPC and the adjacent substation owned by

¹ See EPA's 1995 Directive, "Land Use in the CERCLA Remedy Selection Process" (OSWER 9355.7-04).

NorthWestern Energy are zoned as manufacturing (the City of Bozeman GIS further defines the zoning as “light manufacturing”).

- The remaining land between I-90 and Rocky Creek in the immediate vicinity of the Site is zoned for residential use. Groundwater is routinely sampled at some existing residences in this area as part of the groundwater remedy.

A *Notice of Institutional Controls* was filed with Gallatin County by IPC on September 9, 2010 that restricts the use of the Site to mitigate the risk posed to the public health, safety, and welfare and the environment. The institutional controls (ICs) restrict the present and future use of the Site, including: 1) restrictions on new construction and excavation in designated portions of the Site where treated soils were placed; and 2) restrictions on the use of groundwater and excavation within the Controlled Groundwater Area (CGWA). The ICs are discussed in more detail in subsequent sections of this review.

Figures 1 and 2 indicate the location of the future Story Mill Park, which is located near the downgradient portion of the IPC groundwater plume. According to Craig Woolard (Director of Public Works, City of Bozeman) the land for this park was purchased by the Trust for Public Land; the Trust is in the process of selling the land to the City of Bozeman. The northern half of the park is intended to be used for active recreation, included playing fields and some equipment. The southern half of the park is intended to be a reconstructed wetland that will have some walking trails. The park will receive storm water overflow from Bozeman Creek during high flow events; a goal of the wetlands will be to improve the surface water quality (specifically nitrate concentration) of the East Gallatin River via nutrient reduction.

Brief History of Facility Operations

This former wood treating facility began operations in 1945 using creosote as a preservative. Creosote was replaced with pentachlorophenol (PCP) in carrier oil in 1952. The interstate highway dividing the property was constructed between 1967 and 1969, while wood treating operations were ongoing. There were ditches present during Site operations (illustrated on Figure 3), such as along L Street, along Cedar Street, and near the substation. These ditches ultimately discharged north of I-90. An oily discharge was noted by DEQ in ditches near the Site and near Rocky Creek in 1978. The facility was closed in 1997. EPA’s Record of Decision (ROD) also indicated that surface soil in the Pasture Area north of I-90 was contaminated by shallow groundwater transporting wood-treating fluid upward to the ground surface during high water table years. The *Remedial Investigation Report* (MSE, Inc., March 1992) provides a more extensive discussion of Site history and potential sources of contamination.



Facility operations circa 1968

Hydrogeologic Setting

The composition of the subsurface at the Site is relatively complex. According to the ROD, there are several delineated stratigraphic intervals at the Site, including a surficial clay horizon, an intermediate silt horizon at 25 feet below ground surface (bgs), a silty clay horizon at 35 feet bgs, and another silty clay horizon at 50 feet bgs. Intervening aquifers are composed of transmissive sands and gravels, through which groundwater can travel horizontally. The ROD states that the horizons are of variable thickness and permeability, and are generally continuous (but probably not continuous over the entire Site). Most of the monitoring locations consist of clustered wells screened at different depth intervals to address the presence of different horizons. Most clustered wells are classified as “A” (shallower), “B” (intermediate) or “C” (deeper).

The Remedial Investigation (RI) concluded that there was some hydraulic connection between these different intervals based on hydraulic testing results. Groundwater contamination has been detected in all three intervals, further suggesting that the silty clay layers are not continuous and/or are not sufficiently tight to prevent vertical contaminant migration.

Groundwater elevation at the Site is generally within 12 feet of ground surface. During periods with high recharge, water levels reportedly reach ground surface. Potentiometric surface maps in recent reports have been developed using water level measurements at shallow wells, and these maps illustrate that groundwater consistently flows to the northeast throughout the year. A water level map for the Site (produced by Hydrometrics, Inc.) for March 2014 is included in Attachment 5. Water levels are typically highest in the spring, but the general groundwater flow pattern is

similar throughout the year. There has not been detailed evaluation regarding where groundwater flow direction is upward and where it is downward².

The *Remediation System Evaluation (RSE)* (GeoTrans/Tetra Tech, February 2010) indicated that previous pump testing conducted at one of the wells in the BFEG indicated a transmissivity of approximately 23,000 gallons per day per foot (gpd/ft) which translates to 3,075 square feet per day (ft²/d). Assuming sands and gravels comprise an approximate thickness of approximately 20 ft, the associated hydraulic conductivity of the sands and gravels would be approximately 150 ft/d. The RSE report provided the following calculation of groundwater velocity, using approximate values of 0.011 for hydraulic gradient (based on water level maps) and 0.2 for porosity (estimate for sand):

$$V = ki/n = 150 \text{ ft/d} * 0.011 / 0.2 = 8.25 \text{ ft/d} * 365 \text{ d/yr} = \sim 3000 \text{ ft/yr}$$

This is an extremely fast groundwater velocity. The distance from the source of contaminants to the approximate historical plume extent (i.e., Rocky Creek north of I-90) is less than 2000 ft. Thus, groundwater travel time from the source areas to Rocky Creek is expected to be less than one year (though contaminant transport is expected to be slower due to retardation).

Site Contaminants

The contaminants of concern (COCs) at the Site are PCP, polynuclear aromatic hydrocarbons (PAHs), polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (dioxins and furans). The PCP was historically dissolved in a carrier fuel; PAHs are typically associated with fuels and can be used as indicator constituents for the carrier fuel. The primary groundwater COC treated by the remedy is PCP, with sporadic detections of PAHs that appear to be limited to the source area of the plume. Plots illustrating the 2014 extent of PCP in groundwater, for “A” wells (shallower) and “B” wells (deeper) are included in Attachment 5.

Initial Response and Enforcement History

In 1978, the Montana Department of Fish, Wildlife and Parks notified the DEQ of a suspected release of oily wood treating fluid from the facility. DEQ found evidence of a release in ditches near the facility and near Rocky Creek. Consequently, DEQ issued a compliance order on September 29, 1978, notifying IPC of statutory violations and directing the company to stop uncontrolled releases and to clean up spilled treating fluid. To slow or eliminate movement of the oily wood treating fluid through ground and surface water and into private wells, IPC installed and operated an interceptor drain with a sump and an interceptor trench adjacent to I-90. Absorbent pads were used in the culverts and ditches to intercept and collect oily wood treating

² Most water level maps and tables in Site documents only provide water level measurements in the shallowest interval. Water levels measured in September 2014 were measured at all intervals, but were measured in different wells on different days as part of water quality sampling activities. To adequately assess vertical head differences, water levels should be measured over as short a time as possible, as close in time as possible at adjacent wells, and prior to all groundwater sampling activities.

fluid. Culverts under I-90 were dammed to prevent runoff of contaminated surface water to Rocky Creek.

In 1984, IPC conducted a remedial investigation without DEQ or EPA oversight to identify the sources and extent of contamination at the Site. IPC drilled monitoring wells to collect groundwater samples and also collected soil and surface water samples. DEQ and EPA concluded that IPC's remedial investigation was not sufficient to identify contaminant sources and to characterize the nature and extent of contamination.

EPA proposed the Site for the National Priorities List in 1984, and the listing was final in 1986, making the Site eligible for federal funds for enforcement, investigation and remediation. EPA issued general notice letters and information requests to the potentially responsible parties (PRPs) in February 1988. The PRPs were IPC and Burlington Northern Santa Fe Railway Company (BNSF). The PRPs responded with general information about their activities at the Site: IPC described treatment plant operations and BNSF outlined historic railroad and roundhouse activities. In June 1988, EPA issued special notice letters to IPC and BNSF to initiate Remedial Investigation and Feasibility Study (RI/FS) negotiations between the PRPs, EPA, and DEQ. Issuance of the special notice letters triggered a 60-day moratorium during which EPA would take no action to proceed with the RI/FS. Both PRPs responded with good faith offers to conduct the RI/FS and the moratorium was extended an additional 30 days. IPC prepared a draft RI/FS Work Plan and offered comments on EPA's draft Administrative Order on Consent. BNSF assumed a secondary role in the negotiations. Negotiations ended unsuccessfully in January 1989. In March 1989, DEQ requested and received the lead agency role for a Fund-financed RI/FS for the Site. DEQ assumed the lead agency role through a cooperative agreement with EPA and began the RI/FS following the EPA approved Work Plan and EPA guidance.

EPA's selected remedy for the Site was documented in a ROD dated September 28, 1992. EPA then initiated negotiations with the PRPs for implementation of the remedy, including Remedial Design (RD) and Remedial Action (RA). These subsequent negotiations were unsuccessful and EPA issued a Unilateral Administrative Order (UAO) on August 26, 1993, requiring that the PRPs implement the RD/RA process. EPA became the lead oversight Agency for the PRP lead RD/RA at that time.

IV. Remedial Actions

Remedy Objectives and Cleanup Levels

The ROD, which was signed in 1992, established one Operable Unit (OU) that included both soil and groundwater remediation. The ROD did not expressly identify "Remedial Action Objectives," but those objectives can be discerned from the text. For instance, the "Cleanup Levels" section of the ROD indicates the following:

The purpose of this response action is to control risks posed by direct contact, ingestion and inhalation of soils and groundwater and to minimize migration of contaminants to ground and surface water and air³. Concentrations of contaminants in sediments, soils and groundwater remaining after Site cleanup will correspond to lifetime cancer risks within the acceptable range of 1×10^{-4} to 1×10^{-6} . The cleanup levels for compounds having noncarcinogenic effects will result in a collective health hazard index below 1.0. Since no federal or state chemical specific applicable or relevant and appropriate requirements (ARARs) exist for soil or sediments, soil cleanup levels were determined through site specific risk analysis. Groundwater cleanup levels were established at the final Maximum Contaminant Level (MCL) for pentachlorophenol, benzo(a)pyrene and 2, 3, 7, 8 - TCDD(dioxin) and at proposed MCLs for other carcinogenic PAHs.⁴

Cleanup Levels

Table 13 of the ROD set forth Site cleanup levels for soil and groundwater, which are presented in Table 2, below. “B2 PAHs” refer to PAHs that are probable carcinogens, and “Total D PAHs” refer to PAHs that are not classifiable with respect to cancer impacts.

Table 2: Cleanup Levels from Table 13 of the ROD

	Constituent	Cleanup Level	Basis
Soil and Sediments (mg/kg)	PCP	48	Risk
	Total B2 PAHs	15	Risk
	Total D PAHs	145	Hazard quotient
	TCDD TE*	0.001	Risk
Groundwater (µg/L)	PCP	1.0	MCL
	B2 PAHs:		MCL
	Benzo(a)pyrene	0.2	Proposed MCL
	Benz(a)anthracene	0.1	Proposed MCL
	Benzo(b)fluoranthene	0.2	Proposed MCL
	Benzo(k)fluoranthene	0.2	Proposed MCL
	Chrysene	0.2	Proposed MCL
	Dibenz(a,h)anthracene	0.3	Proposed MCL
	Indeno(1,2,3-CD)pyrene	0.4	Proposed MCL
	D PAHs	146	Hazard quotient
	2,3,7,8-TCDD (Dioxin)	3.0×10^{-5}	MCL

mg/kg = milligrams per kilogram; µg/L = micrograms per liter

**refers to sum of toxicity equivalents for individual polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs), expressed as concentration of 2,3,7,8-tetrachlorophenol dibenzo-p-dioxin (TCDD)*

³ Evaluated with respect to inhalation of air entrained soil particles as part of the soil remedy.

⁴ EPA guidance says the 5 year review should include a review of any changes in ARAR standards, and a review of potentially changed standards was done, and updated Montana MCLs are discussed on page 39-40, or thereabouts.

Summary of Remedy Selected in the 1992 ROD

The selected remedy included components for soil and groundwater treatment, plus ICs, as described below:

- Soil components of the remedy selected in the ROD included:
 - Excavation and surface land biological treatment of approximately 19,000 cubic yards of contaminated soils from: 1) the pasture area north of I-90; 2) the area between Cedar Street and I-90; and 3) the former roundhouse area (the location of the former roundhouse is illustrated on Figure 3)
 - Hot water and steam flushing of soils underlying the pole plant facility and I-90 in order to recover hazardous substances
 - Separation and disposal of oily wood treating fluid extracted from soils
 - Closure of onsite treatment units in compliance with Resource Conservation and Recovery Act (RCRA) Subtitle C
- Groundwater components of the remedy selected in the ROD included:
 - Groundwater cleanup using groundwater extraction wells, biological treatment, and return of treated water to the aquifer to enhance in-situ biological degradation and to control potential migration of contaminants (groundwater cleanup was estimated to take 10 to 15 years)
 - Treatment of contaminated residential wells exceeding MCLs or risk based concentrations, at the point of distribution, in addition to institutional controls preventing new access to contaminated groundwater
 - Continued residential and groundwater monitoring
- ICs identified in the “Institutional Controls” section of the ROD included:
 - Fencing and posting of areas where active remediation is occurring to prevent unauthorized access to contaminated media or to remedial action areas⁵
 - Prevention of domestic or commercial water well drilling in the contaminated groundwater plume area to prevent additional receptors of contaminated groundwater or an expansion of the plume (dewatering was not explicitly addressed in the ROD but all water use and development is prohibited, unless

⁵ Fences that restrict access to the Site are often included in the term Institutional Controls. Because fences are physical barriers instead of administrative or legal measures, EPA does not consider them to be ICs. Guidance issued by EPA after the issuance of the ROD has specified that fences are considered engineering controls and not ICs.

authorized by EPA and DEQ, based on the CGWA that was ultimately implemented)

- Land use and deed restrictions for the closed land treatment units to preserve the integrity of the closed land treatment units

ESDs (1996 and 1998)

There have been two Explanation of Significant Difference (ESD) documents amending the remedy selected in the 1992 ROD:

- An ESD in 1996 included the following elements:
 - Removed the hot water and steam flushing component of the soil remedy
 - Clarified the areas of soil contamination to be excavated
 - Clarified how the land treatment unit (LTU) for soils would be dismantled (eliminating the need for the RCRA cap specified in the ROD)
 - Described how treated soils would be disposed of on-Site (including the isolation of any such soils containing dioxins/furans above ROD cleanup levels from groundwater and from direct contact)
 - Changed the groundwater treatment process from biological treatment to granular activated carbon (GAC)
 - Indicated that a first phase of the groundwater remedy would include the extraction and treatment of groundwater on the south side of I-90 in the barkfill and pressure plant areas, plus in-situ treatment of the dissolved plume (i.e., downgradient of these extraction wells) by injection of treated groundwater...a second phase would include modifications as necessary to achieve ROD goals, based on results of the first phase
 - Identified that ambient temperature water would be used for flushing the area beneath I-90, rather than hot water or steam

A second ESD was issued in 1998 after active wood treating operations were terminated in 1997, allowing areas that had previously been considered inaccessible for soil remediation to now be remediated. This ESD specified that contaminated soils from all such areas be excavated and treated.

Remedy Implementation and Status – Soil and Sediments

The Idaho Pole Co. began the soil excavation portion of the cleanup in 1995. The company dug

up soils and constructed a land treatment unit. Contaminated soils were excavated from six areas at the site: the Pressure Plant Area, beneath Cedar Street, the Barkfill Area, the Roundhouse Area, the Cedar Street Ditch and the Pasture Area. In the summer of 1999, the company demolished and disposed of structures, and excavated additional contaminated soil from underneath the demolished structures. Approximately 24,000 cubic yards of contaminated soil were excavated and placed in the LTU for treatment. Normal LTU operations continued through October 2000 and then ceased, when the ROD performance standards for PCP and PAHs were determined to have been met. Two pits were then excavated on-site and the treated soil, along with the filter sand from the LTU, was placed in each of the pits and covered with 12 inches of clean fill to prevent direct contact.



Aerial photo of the Site during the early stages of soil excavation

The LTU was dismantled in 2002 once treated soils met the cleanup standards for PCP and PAHs established in the ROD. Treated soil with PAH and PCP concentrations below the soil cleanup standards identified in the ROD were placed back on-site in specific disposal areas. However, these soils also contain dioxin above the soil cleanup standards identified in the ROD; dioxin is expected to adhere tightly to soil particles and not readily migrate or leach into groundwater or surface water. The treated soil was placed above historic high groundwater levels and was covered with 12 to 18 inches of clean soil to prevent direct human contact with treated soils. The “Treated Soils Areas” are illustrated on Figure 4. All the construction requirements for treatment of the soils at this site have been met as described in the Remedial Action Completion Report dated December 23, 2002 and the second five-year review (September 2005).

A *Notice of Institutional Controls* was recorded in Gallatin County September 9, 2010 and includes the following restrictions:

- Construction (other than surface paving, landscaping curbs, light standards, traffic signs and greenways) is prohibited in the Treated Soil Areas, except as authorized by EPA and DEQ or provided in the Remedial Action;

- Excavation deeper than 12-inches is prohibited in the Treated Soil Areas, except as provided in the Remedial Action;
- Excavation within the CGWA is prohibited without EPA and DEQ authorization; and
- Groundwater use or development within the CGWA (which presumably includes dewatering) is prohibited, except as provided in the Remedial Action or authorized by EPA and DEQ.

A Soil Management Plan was approved by EPA and DEQ in March, 2011. In the event that soils within the Treated Soils Area (depicted on Figure 4) must be disturbed at or below 12 inches, approval must be obtained from the EPA and the DEQ, and the approved Soil Management Plan must be followed. Within the CGWA, no excavation shall be allowed where that excavation reaches saturated soil or groundwater, except where requirements of CERCLA, as amended, 42 U.S.C. §9601, et seq.; CERCLA, as amended. Title 75, Chapter 10, Part 7 MCA, including Section 75-10-727 MCA, and Title 85, Chapter 2, Part 5 MCA, including Sections 85-2-506 and 508, MCA; and the Occupational Safety and Health Administration, including Title 29 of the Code of Federal Regulations Part 1910.120 et seq. are met. Authorization for those activities must also be obtained from the EPA and DEQ, and the activities must comply with the Soil Management Plan.

This soil remedy is considered complete although residual source material has been identified in the bark-fill area that continues to impact groundwater. The status of the treated soils area is considered within each five-year review.

Remedy Implementation and Status – Groundwater

“Phase 1” of the groundwater remedy began in February 1997. Pursuant to the 1996 ESD, “Phase 1” extracted and treated groundwater on the south side of I-90 in the barkfill and pressure plant areas. It also provided in-situ treatment of dissolved contaminants in the groundwater plume (downgradient of these extraction wells) by re-injection of treated groundwater. More specifically, Phase 1 of the groundwater treatment operations consisted of two lines of extraction wells and two lines of injection wells, all located on the south side (i.e., the upgradient side) of I-90 (see Figure 1 for locations):

- The southernmost line of five extraction wells, referred to as the “pressure plant extraction gallery” (PPEG), is located just downgradient of the pressure plant associated with previous wood treating operations. The “pressure plant injection gallery” (PPIG) was installed just south (i.e., upgradient) of the PPEG.
- The northernmost line of five extraction wells, referred to as the “barkfill extraction gallery” (BFEG), is located closer to I-90. The “barkfill injection gallery” (BFIG) was installed just north (i.e., downgradient) of the BFEG.

Treated water was re-injected into the aquifer to promote flushing and in-situ bioremediation of

contaminants. The 1996 ESD indicated that a second phase of the groundwater remedy would include modifications of this remedy as necessary to achieve ROD goals, based on results of the first phase.

“Phase 2” began in late 2009 and early 2010, when a series of modifications to the groundwater remedy were implemented based on the results of “Phase 1.” These modifications resulted from discussions during the 2007 long-term monitoring optimization Site visit, the 2009 RSE Site visit and subsequent optimization recommendations in the *Groundwater Monitoring Optimization Report* (GSI Environmental, May 2009) and the RSE report. The recommended modifications included discontinuation of extraction from the PPEG, increased extraction at the BFEG⁶, and changes to the groundwater monitoring and performance monitoring programs. The modifications were described more fully in the following letters:

- Approval letter regarding *Request for Shutdown of Pressure Plant Extraction Wells* (EPA Region 8 and DEQ), November 17, 2009
- Approval letter regarding *Request for Modifications to Groundwater Monitoring* (EPA Region 8 and DEQ), March 24, 2010
- Letter regarding *Performance Monitoring Requirements for the Groundwater Extraction/Injection System Modifications* (EPA Region 8 and DEQ), March 26, 2010

The system has operated with extraction from only the BFEG during the last five years. Recent comprehensive sampling results will be used to assess the effectiveness of this change in operations. Figure 5 illustrates locations of monitoring wells at the Site.

An additional component of the groundwater remedy is an oil recovery interceptor trench located on the north side (i.e., the downgradient side) of I-90. Oily material has historically seeped into this trench, depending on groundwater elevations, with removal via absorbent pads that are disposed of in drums. This oily material is likely diesel, or similar oil, that was used as carrier oil during facility operations and likely comes from contaminated soils beneath and/or north of the I-90 (which could not be excavated during the soil remedy). It is unclear if this oily material represents a continuing source of dissolved PCP contamination in groundwater. It is possible that the reinjection of treated water upgradient of this trench augments the collection of the oily material within the trench. The occurrence and volume of oil has diminished significantly in recent years with only five absorbent pads collected from the trench in the second half of 2014. The oil recovery interceptor trench will be closed in 2015 due to diminishing returns.

The third five-year review (September 2010) noted some ambiguity about the specific area where groundwater cleanup levels are to be achieved. In several places the ROD appears to state that the objective is to attain cleanup goals in an “attainment area” north of I-90, rather than over the

⁶ As detailed in the “Data Review” section, the increased extraction at the BFEG was not fully realized until mid-2014 when extraction pumps with higher horsepower were implemented.

entire Site, but “attainment area” is not clearly defined. Examples of such statements, extracted from the ROD text, include the following:

- “Reduction of contaminant levels in groundwater within the attainment area to cleanup levels identified in Table 13; the attainment area is the contaminated groundwater aquifer bounded by Rocky Creek, Bozeman Creek and I-90” (from “Performance Standards” section of ROD).
- “For groundwater, compliance with remediation levels must be achieved throughout the contaminated groundwater plume, located downgradient of I-90, extending to Rocky Creek” (from the “Points of Compliance” section of the ROD).

It is not clear whether the ROD attempted to differentiate cleanup objectives for groundwater north of I-90 versus south of I-90. The two subsequent ESDs do not provide any further clarification of this issue. EPA guidance indicates that cleanup levels generally should be met throughout the groundwater plume.

Remedy Implementation and Status – Institutional Controls (ICs)

The status of ICs implemented for this remedy is considered within each five-year review, and is summarized below.

ICs Related to Soils

IPC filed a *Notice of Institutional Controls* with the Gallatin County Clerk and Recorder on September 9, 2010, certifying completion of the soil component of the remedy and establishing permanent land use restrictions for certain portions of the facility property (see Attachment 8). The *Notice of Institutional Controls* is recorded with the County to ensure that the current owners are bound to the restrictions, and it also includes a notice clause such that all future successors or assignees to any portion of the property will likewise be aware of the restrictions and bound to the restrictions.

The intent of the land use restrictions (ICs) is to ensure the permanent preservation and maintenance of remedial structures, including the Treated Soil Area cover, that are required to minimize potential for human exposure to contaminated soil and to protect the integrity of the remedy. The ICs restrict construction and excavation within the Treated Soil Area. In the event that soils within the Treated Soils Area (depicted on Figure 4) will be disturbed at or below 12 inches, the ICs require approval from the EPA and the DEQ and require compliance with the Soil Management Plan (approved by EPA and DEQ March, 2011).

The ICs also identify that no excavation shall be allowed within the CGWA where that excavation reaches saturated soil or groundwater, unless authorization is obtained from the EPA and DEQ and the work must comply with the Soil Management Plan.

Since the Soil Management Plan was approved by the Agencies in 2011, there have been four instances where the plan was activated. Three of these instances are briefly discussed below; a

fourth, which pertains to NWE activities to replace the existing natural gas distribution through the northern edge of the CGWA, included PCP sampling at 11 temporary wells and is discussed in Section VI.

Montana Department of Transportation – Construction Dewatering Associated with Seismic Retrofit of I-90 “L” Street Bridge Footings

The Montana Department of Transportation (MDT) contacted the Agencies in 2012 about a contract it was about to issue for seismic retrofit of the I-90 bridge footings. While the proposed work was outside the western boundary of the CGWA, several weeks of dewatering were anticipated which had the potential to draw the plume westward. MDT conducted a drawdown analysis for 55 gallons per minute which showed minimal influence on nearby monitoring wells. The Agencies allowed the work to proceed since the nearby monitoring wells historically had detections of PCP below the cleanup standard. The seismic retrofit was successfully completed in 2013 with no impacts to the groundwater plume.

Northwestern Energy (NWE) Installation of Seven Concrete Footings at the East Gallatin Auto Substation

NWE requested approval from the Agencies in 2014 for the installation of seven concrete footing structures at the East Gallatin Auto Substation. Installation of these concrete structures was determined to be necessary to maintain system efficiency and satisfy increasing electrical demand in the area.

Prior to developing a soils and groundwater management plan, NWE excavated test pits to the depth of the proposed footing and collected soil and groundwater samples. While the soil results were below laboratory detection, groundwater results for PCP were above cleanup levels which required a groundwater management plan.

The alternate footing structure design for the seven foundations were NWE’s standard two and one half foot diameter auger foundation (caisson foundation) drilled to a depth of nine feet below ground surface. After drilling to the specified depth, reinforcing steel was placed in the excavation. Concrete was then pumped by a pump truck equipped with a tremie pipe which was used to place concrete below the water table.

Since there was the potential for groundwater to be displaced to the surrounding area when the volume of concrete reached the top of the caisson during footing construction, temporary berms were constructed to ensure that any displaced groundwater was retained within the current footprint of the substation during concrete placement. Water was collected in these berms and allowed to percolate back into the subsurface.

NWE Installation of a 45 Foot Utility Pole and approximately 150 feet of Buried Electrical Cable and Conduit near the East Gallatin Auto Substation

During the weekend of September 6, 2014, NWE was alerted to a problem with an electrical circuit at the East Gallatin Auto Substation. The cause was determined to be the failure of an

underground get away cable. Soil and groundwater samples taken previously to support the concrete footing installed at the substation were used as the basis for determining what mitigation measures were required for the utility pole and buried cable installation. NWE provided calculations showing that the amount of water displaced by installing the utility pole would be less than the volume of annular space between the pole and excavation walls and no additional measures were required by the Agencies. Because of the large number of buried features near the substation, excavation of the first 30 feet for the buried cable and conduit was done by hydroexcavation and spoils were collected using a hydrovac. A holding pit was constructed on NWE property to allow for disposal of the spoils and percolation of water back into the alluvial aquifer. The pit was covered back up upon completion of the construction. The remaining 120 lineal feet was excavated by open trench excavation and no dewatering was necessary.

ICs Related to Groundwater

A CGWA designation was issued by the Montana Division of Natural Resources (Decision 41H-114172) in 2001 pursuant to Section 85-2-506 and 508, Montana Code Annotated as amended. The Gallatin City-County Board of Health was the petitioner for the CGWA designation. This CGWA restricts use of groundwater within the CGWA for any purpose, except as provided in the RA or as otherwise authorized by EPA and DEQ. The CGWA process allows for a description of the restrictions, and the restriction provided reads as follows: “No new wells within CGWA except for remedial action activities. Complete restriction of groundwater use within the area except for remedial activities.” The CGWA does not distinguish between shallow and deeper groundwater. The extent of the CGWA is included in the Notice of Institutional Controls (Attachment 8).

The CGWA incorporates all the IPC property to the south of I-90 and establishes a buffer zone around the plume. The buffer zone was determined using model simulations to determine how far away a supply well must be from the 1 microgram per liter ($\mu\text{g/L}$) PCP contour to avoid capturing or otherwise altering the plume of contaminated groundwater. The RSE report noted that the current CGWA would prohibit use of wells that have substantially lower extraction rates than 500 gallons per minute (gpm), including additional or replacement supply wells for some local residences that might have an average extraction rate of under 10 gpm. In light of this, the CGWA restriction may be over-protective under certain circumstances. Amendments to the CGWA to allow additional wells could potentially be considered if it can be shown that the placement and extraction rates of such wells will not draw from or alter the direction or extent of the plume of contaminated groundwater subject to the CGWA.

The third five-year review (September 2010) also noted that the CGWA may be overly restrictive by including all of the IPC property south of I-90. All of IPC property south of I-90 (41.40 acres) was originally included within the CGWA boundary as an additional step to protect groundwater under the Site because the LTU and retention pond were in use for remediation of contaminated soil on Site. Although the groundwater beneath the LTU was monitored and historically was “non-detect” for PCP, it was determined that the entire property south of I-90 should be included as a protective measure. As indicated in letters from the Gallatin City-County Board of Health (July 3, 2012) included in Attachment 2, EPA proposed shrinking the CGWA extent in 2011, but the Board of Health as the petitioner of the CGWA designation did not concur due to their

concerns regarding carrier oils, and no further actions have occurred in that regard. The Petitioner, the Gallatin City Board of Health requested characterization of the nature and extent of carrier oil in the subsurface at and downgradient of the Site before the Board will agree with reducing the extent of the CGWA.

It was noted during the third five-year review (September 2010) that the down-gradient extent of the CGWA may not fully account for the potential for water impacted with dissolved phase PCP to be transported in the groundwater for some distance parallel to Rocky Creek before it discharges to Rocky Creek. Additional groundwater characterization around Rocky Creek and downgradient of the CGWA boundary was conducted in the subsequent five years to better understand the potential for significant transport of impacted groundwater in the downgradient portion of the plume beyond the CGWA. These data are discussed in more detail in the “Data Review” section of this five-year review.

Estimated Annual Operations and Maintenance (O&M) Costs

At the time of the Site visit for the third five-year review, the Site team estimated the overall system costs for O&M on the order of \$195,000 per year using the following approximate costs for specific activities (Table 3).

Table 3: Annual System Operations/O&M Costs

Item Description	Approximate Annual Cost
Routine Project Management	\$ 24,000
O&M Labor	\$ 50,000
Electricity	\$ 12,000
Supplies, well maintenance subcontractor, and parts	\$ 25,000
Groundwater monitoring	\$ 9,000
Reporting	\$30,000
Analytical costs	\$40,000
Waste Disposal	\$ 5,000
Total Estimated Annual Cost	\$195,000

The Site team indicated during the five-year review Site visit in November 2014 that the recent annual costs are generally similar to those estimated in the previous five-year review (Table 3).

V. Progress Since the Last Five-Year Review

This is the fourth five-year review conducted for the Site. This section presents the conclusions of the previous five-year review (September 2010) and summarizes progress addressing recommendations from that review.

Protectiveness Statement from the Previous (Third) Five-Year Review

The protectiveness statement from the third five-year review (September 2010) “summary form” stated the following:

The five-year review of the remedial actions for OU01 at the Idaho Pole Company Site has resulted in the determination that the remedial actions are protective of human health and the environment in the short term. The Site needs proprietary ICs, further plume delineation, and a monitoring plan update before the Site is determined to be protective of human health and the environment in the long term.

Section X (Protectiveness Statements) from the third five-year review added the following:

The remedy at the soils component of OU01 currently protects human health and the environment because soils have been treated to ROD standards and placed back on Site with a protective cover of clean soil placed over these treated soils. However, in order for the remedy to be protective in the long-term, proprietary institutional controls need to be implemented and the preliminary remediation goals in soil for dioxin need to be finalized.

The remedy at the groundwater component OU01 is also currently protective of human health and the environment. The groundwater treatment system has relatively low influent concentrations, and the groundwater cleanup levels are achieved in the treatment system effluent. Groundwater concentrations of PCP have declined over time, presumably due to remedial actions to date (source removal, P&T, and potential in-situ biodegradation). However, the RSE concluded that there may be a continuing source of dissolved PCP, causing the persistence of PCP impacts north of I-90. Higher concentrations of PCP were also detected at some deeper screened monitoring wells that were specially sampled in Fall 2009 to provide information for this five-year review (i.e., those wells were not sampled regularly prior to Fall 2009). Modifications to the extraction galleries and monitoring well network were implemented and six deeper-screened monitoring wells (9-B, 16-B, 24-B, 26-B, 27-B and GM-5) are now being monitored semi-annually. The Sampling and Analysis Plan will also be revised to determine an appropriate statistical test for determining when this portion of the Site is considered clean. A long-term protectiveness determination will be evaluated as part of the next five-year review.

Because the remedial actions at the soils and groundwater components of OU01 are protective in the short-term, the Site is protective of human health and the environment in the short-term.

Status of Recommendations from the Previous (Third) Five-Year Review

Section IX (Recommendations) from the third five-year review included three recommendations, which are listed in Table 4 along with a summary of actions taken.

Table 4: Actions Taken Since the Last Five-Year Review

Recommendation from Previous Review	Party Responsible	Status/Action Taken Since Previous Review	Milestone Date	Still an Issue?
Evaluate potential for reducing some portions of the CGWA	EPA, DEQ, IPC, Gallatin County Board of Health	EPA Region 8 proposed potential reductions in the CGWA extent in 2011, Gallatin City-County Board of Health did not concur, and no further efforts to reduce the CGWA extent have been made.	Completed 7/3/12	No ⁽¹⁾
Update the Groundwater Conceptual Model	IPC, EPA, DEQ	Significant investigation of the source area and semiannual sampling of downgradient monitoring wells in the “B” interval has occurred.	Partially completed, remainder to be completed by 9/30/2017	Yes ⁽²⁾
File the proprietary IC with Gallatin County Clerk and Recorder and provide a copy to the Agencies	IPC	Notice of ICs filed with Gallatin County on September 9, 2010, and the related Soil Management Plan was completed in March 2011.	Completed, 9/9/10	No

(1) *The potential reduction in CGWA extent was not raised as an ongoing issue in the current five-year review. However, the Board of Health's objection to the request in 2011 pertained to their concerns regarding the potential extent of hydrocarbons (carrier oil) in the subsurface, and the Board of Health continues to express those concerns.*

(2) *The recent characterization confirmed remaining source material south of the BFEG, and confirmed declining PCP concentration trends in the downgradient monitoring wells in the B interval. A remaining issue is the potential presence of residual source material north of the BFEG, including the area between the BFEG and I-90.*

More details regarding the status of the conceptual model refinement are provided in the “Data Review” section of this five-year review.

VI. Five-Year Review Process

This fourth five-year review for the Site has been conducted in compliance with EPA's *Comprehensive Five-Year Review Guidance* dated June 2001 (EPA, 2001). This review was performed primarily by (or with the assistance of) the following team members:

- Roger Hoogerheide, Remedial Project Manager, EPA
- Lisa DeWitt, Project Officer, DEQ
- Rob Greenwald, Hydrogeologist, Tetra Tech (contractor to DEQ)
- Jennifer Abrahams, Hydrogeologist, Tetra Tech (contractor to DEQ)
- Les Lonning, contractor representing IPC
- Rebecca Fabich, Treatment Plant Manager (contractor to IPC)
- Heidi Kaiser, Geologist, Hydrometrics, Inc. (contractor to IPC)
- David Smith, Manager Environmental Remediation, BNSF
- Alan Stine, Olympus Technical Services (contractor to BNSF)

The review process included a Site inspection, interviews with relevant parties, and a review of the applicable Site records and data. These items are discussed in more detail below.

Administrative Components

EPA Region 8 is the lead agency for this five-year review. The Five-Year Review report was primarily prepared by Tetra Tech under contract to DEQ. A Site visit for the five-year review was conducted on November 5, 2014.

Site Inspection

Individuals that participated in the Site visit on November 5, 2014 are listed on Table 5. A completed Site inspection checklist is provided in Attachment 1. On the basis of this inspection EPA concluded that the Site is well maintained. No issues were raised with respect to Site operations. The condition of the groundwater treatment system components and monitoring wells, availability of documents such as the O&M Manual and As-Built Drawings, Site security, and other aspects of the Site are detailed on the five-year review checklist.

Table 5: Individuals Present for Site Visit

Name	Affiliation
Lisa DeWitt	DEQ
Roger Hoogerheide	EPA Region 8
Rob Greenwald	Tetra Tech
Jennifer Abrahams	Tetra Tech.
Rebecca Fabich	Contractor to IPC (Plant Manager)
Heidi Kaiser	Hydrometrics
Dave Smith	BNSF
Alan Stine	Olympus Technical Services

The water treatment plant is located inside a metal building that is kept locked when the operator is not at the Site. The water treatment plant is located inside a fenced, lockable enclosure. The interceptor trench located north of I-90 is also located inside a fenced, lockable enclosure. No damage to any of the fences or the water treatment plant building was noted during the inspection. All monitoring wells are capped and locked and no damage was noted.

The Treated Soils Area is not fenced but is capped and revegetated. There were no visible signs of erosion. There was no evidence of trespassing at the IPC Site south of I-90 although the Site operator provided anecdotal information that transient (homeless) people have been known to try and break into the offices and have occasionally camped on IPC property north of I-90.

Community Notification and Involvement (Including Interviews)

Public notices announcing the beginning of the fourth five-year review were published in the Bozeman Daily Chronicle on three dates: November 2, 2014; November 4, 2014; and November 7, 2014 (included in Attachment 4). Upon final concurrence, this report will be placed in the information repositories for the Site. Once this report is approved, a fact sheet will be distributed to the residences within one-mile of the Site discussing the findings of the five-year review and announcing the availability of the fourth Five-Year Review report at the information repositories. A public notice will also be published in the Bozeman Daily Chronicle announcing the completion of the Five Year Review and its findings. Site repositories are the Bozeman Public Library (220 East Lamme Street, Bozeman, Montana 59715) and the U.S. EPA Montana Office (Federal Building, Suite 3200, 10 West 15th Street, Helena, Montana 59626). The report will also be placed on EPA's website and a link to this website will be placed on Gallatin County Water District's website.

Interviews were primarily conducted by the following people:

- Jennifer Abrahams, Hydrogeologist, Tetra Tech
- Rob Greenwald, Hydrogeologist, Tetra Tech

The following individuals were interviewed and represent a mixture of people directly associated with the Site, nearby residents, and public officials:

- Heidi Kaiser, Consultant for IPC
- Alan Stine, Consultant for BNSF
- David Smith, Manager Environmental Remediation, BNSF
- Les Lonning, Consultant for McFarland Cascade Pole and Lumber Company (IPC)
- Rebecca Fabich, Treatment Plant Manager (contractor for IPC)
- Chris Mehl, Bozeman City Commissioner
- Mary Gail Sullivan, Manager Environmental Permitting and Compliance, NorthWestern Energy
- Ben Sorensen, Environmental Engineer, NorthWestern Energy
- Tim Roark, Environmental Health Director, Gallatin City – County Health Department
- Brit Fontenot, Director of Economic Development and Community Relations, City of Bozeman
- Gretchen Rupp, Gallatin City-County Board of Health
- Tammy Swinney, Manager, Gallatin Local Water Quality District
- Jake, Georgia, Tracey, Rhoda, Steve, and Ashley Kroon, Residents
- Craig Woolard, Director of Public Works, City of Bozeman

- Rick Hixson, City Engineer, City of Bozeman
- Mitch Overton, Parks & Recreation Director, City of Bozeman

Interview forms are included as Attachment 3, and information obtained during the interviews is briefly summarized below.

Heidi Kaiser and Alan Stine (Consultants for IPC and BNSF, respectively) said the Site remediation is going well. The Responsible Parties are actively trying to achieve treatment standards and are evaluating additional methods to remediate the residual impacts. They thought the Site activities have had minimal impacts on the surrounding community and have had a positive effect shrinking the plume. They are aware that the Health Department is concerned regarding the release of hydrocarbons at the Site and the potential for hydrocarbon migration to Rocky Creek.

David Smith (Manager Environmental Remediation, BNSF) said the remediation is progressing very well and it may be possible to turn off the P&T system in the future. He thought the progress of the Site remediation was largely due to the positive communication between the Responsible Parties and the regulators. The good working relationships have led to a successful project.

Les Lonning (Consultant for McFarland Cascade Pole and Lumber Company) said the project is progressing nicely and seems to be headed in the right direction to ultimately get the Site off the National Priorities List (NPL). The expansion of NorthWestern Energy's (NWE) existing substation has led to some community concerns. NWE contacted IPC asking for an agreement to develop/add to the substation. Additionally, NWE has installed some temporary wells to support the replacement of a natural gas transmission line. IPC would like to get the Site back into useful production; IPC is looking for alternatives to accelerate remediation of the residual groundwater impacts.

Rebecca Fabich (contractor for IPC) said that the Responsible Parties are proactive and have tried to accelerate the progress of remediation at the Site. This Site has minimal effect on the community. The neighbors on the north side of I-90 are happy there is no active manufacturing at the Site but are concerned that the Site will be sold and resume manufacturing. The neighbors are not concerned with contamination at the Site.

Chris Mehl (Bozeman City Commissioner) thought the Site is unused and under-utilized. With the exception of the nearby neighbors, the public are unaware of this Site. He said the public do not know or understand the extent of groundwater contamination at and downgradient of the Site and that the public do not trust the documentation of the extent of contamination at the Site, due to poor communication regarding contamination at other sites in/around Bozeman. He emphasized that the distrust is not due to any actions by the Responsible Parties or governmental agencies at the Site.

Mary Gail Sullivan and Ben Sorensen (Manager Environmental Permitting and Compliance and Environmental Engineer, respectively, for NorthWestern Energy) stated the cleanup activities have been effective, but there are residual sources that impact NWE operations at both the

existing substation location and the location of a replacement gas transmission line. NWE thinks that IPC should be responsible for completely delineating the contamination at the northern end of the groundwater plume. They said the surrounding community is upset due to consequences resulting from the CGWA. NWE needs to replace an 83-year old gas transmission line present in the CGWA. Normally, NWE would use the same right-of-way for the new transmission line, but the requirements associated with the CGWA have NWE looking for an alternative transmission line location. The local landowners, however, are not granting access to NWE for the alternate line location outside of the CGWA. NWE is concerned that NWE projects take longer, cost more, and are more difficult to implement due to the IPC contamination that resulted in the CGWA. NWE thinks that IPC should enter into a cost sharing arrangement with NWE that results in IPC paying the “extra” costs associated with work performed within the CGWA. Otherwise, the NWE customers are burdened with paying the extra costs.

Tim Roark (Environmental Health Director, Gallatin City-County Health Department) said the remediation at the Site has progressed well, but has recently stalled. Originally IPC bought the surrounding private properties, which limited the impacts to the community. Recently NWE has been working on their gas transmission line replacement which has rekindled local interest in the IPC site (due to the effects of the CGWA). He noted that neither NWE nor the local community have contacted the Health Department regarding the gas transmission line replacement. He suggested that presenting data collected to date (with an interpretation of the data) would help develop a better relationship (and trust) between the Board of Health and IPC. He indicated that the Board of Health has not received a response from either EPA or DEQ regarding July 3, 2012 letters identifying concerns about the hydrocarbons (carrier oil) released at the Site.

Brit Fontenot (Director of Economic Development and Community Relations, City of Bozeman) indicated that the Site has significant potential for redevelopment, as it is in an area designated for the heaviest manufacturing zoning. The Site needs infrastructure to support redevelopment, e.g., water and sewer pipes need to be extended to the Site. Since the Site is zoned industrial, the City thinks that redevelopment is a viable option that will not be deterred by the presence of contaminated groundwater. If IPC approached him and explained the current remediation status and what Site restrictions are required, he indicated he could perhaps help IPC sell the property.

Gretchen Rupp (Gallatin City-County Board of Health) is disappointed that this is the fourth decade of the Site remaining on the NPL and that remediation is not complete. She qualified this by saying that it is good that the soils remediation is complete. She believes the remedy has been effective for the soils, but the groundwater remediation of pentachlorophenol at the smear zone/vadose zone has not been very effective. She is dissatisfied with the characterization and remediation of hydrocarbons. The Board of Health wrote two letters in July 2012 expressing concern about the release of hydrocarbons at the Site and the lack of characterization or remediation of the hydrocarbons. She indicated that no response was received from DEQ, and the EPA merely stated that CERCLA does not address hydrocarbons. The Gallatin City-County Board of Health requested characterization of the nature and extent of carrier oil in the subsurface at and downgradient of the Site before the Board will concur with reducing the extent of the CGWA. This approval will not be provided until the hydrocarbons are addressed. She said hydrocarbons have not been analyzed in groundwater for the past 10 to 20 years. She suggested sampling/analyzing the groundwater for hydrocarbons one time, and presenting the information to

the Board of Health.

Tammy Swinney (Manager Gallatin Local Water Quality District) said it has taken a long time to get to this stage of the Site remediation. She is encouraged that IPC performed a pilot program this summer/fall to address residual pentachlorophenol contamination. She thinks the remedy has been effective for the soils, the ICs are effective, and the P&T system is effective remediating pentachlorophenol in groundwater. She feels that characterization and remediation of the carrier oil (hydrocarbons) has not been performed.

Jake, Georgia, Tracey, Rhoda, Steve, and Ashley Kroon (Residents) are not bothered by the Site activities, their concern is whether pentachlorophenol is present in their private well and whether the groundwater plume from the IPC site will have a negative impact on the value of their property. IPC's consultant sends the Kroons copies of the analytical results for the annual samples collected from their private well. The Kroons are concerned about the samples collected at their well in 1989 that were reported to have no pentachlorophenol detected, but with a reporting limit of 50 µg/L, which is 50 times greater than the MCL. The CGWA has impacted where NWE is considering to locate a replacement gas transmission line, which may be moved outside the CGWA. Eleven temporary monitoring wells were installed by NWE to assess impacts at potential locations for the replacement line; three of the wells are on the Kroon's property. In the spring of 2014, 0.9 µg/L pentachlorophenol was detected in one of the wells (not on their property). The Kroons have requested copies of the second set of analytical results from these wells. The Kroons are concerned about the NWE replacement of the gas transmission line, since NWE has an easement across the Kroons property. The Kroons are concerned that installing a new trench for the replacement line could create a future conduit for groundwater contamination. If the new gas line is installed in the same location as the current line, the new gas line will be installed under Rocky Creek; the Kroons are concerned that this may compromise the confining clay layer under the creek, which could result in mobilizing groundwater contamination. The Kroons also expressed concern regarding the creation of Story Mill Park and the impact the new park may have on the surface water hydrology.

Craig Woolard (Director of Public Works, City of Bozeman) thinks the Site remediation is going well. The Site is still undeveloped; he believes this is partly due to its status as a Superfund site and partly due to the need to extend utilities (water, sewer, power, etc.) to the Site. He is concerned that residual contamination at the Site may inhibit redevelopment. He described the City's plans for Story Mill Park (originally identified by Ashley Kroon). The land for this park, near the downgradient portion of the IPC groundwater plume, was purchased by the Trust for Public Land; the Trust is in the process of selling the land to the City of Bozeman. The northern half of the park is intended to be used for active recreation, including playing fields and some equipment. The southern half of the park is intended to be a reconstructed wetland that will have some walking trails. The park will receive storm water overflow from Bozeman Creek during high flow events; a goal of the wetlands will be to improve the surface water quality (specifically nitrate concentration) of the East Gallatin River via nutrient reduction. The City does not anticipate that the reconstruction of wetlands will substantively change the surface water hydrology or the groundwater flow in this area.

Rick Hixson (City Engineer, City of Bozeman) said the Site remediation process has been very

long-lived. It has taken a long time from when the problem was identified at the Site to obtaining resolution. This has resulted in a portion of town being off-limits from improvements and development. He sees the future of the Site including someone having a development proposal that triggers active involvement by the City. He stated that the lack of existing infrastructure at the Site has played a larger role impeding development at the Site than the stigma of being a Superfund Site.

Mitch Overton (Parks & Recreation Director, City of Bozeman) said the wood treating processes at the Site resulted in soil contamination, the chemicals in soil leached into groundwater, and that still needs to be monitored and remediated. The Site remediation activities, including monitoring, have had mostly positive effects on the community. He indicated that some individual residents at the downgradient edge of the plume have expressed concerns regarding the potential impact the groundwater contamination may have relative to the value of their property.

Several common themes were identified during the community interviews, including the following:

- Several individuals suggested a need for improved communication regarding the Site, though they also generally indicated that EPA and DEQ are very responsive when asked to provide information or updates, and several of the individuals interviewed were present at a briefing presented by EPA Region 8, DEQ, and IPC representatives in June 2014 (to the County Health Board and Water Quality Board) and indicated they were appreciative of that update.
- There is general recognition that the groundwater remedy continues to reduce the size of the pentachlorophenol plume, and there is potential that the groundwater extraction and treatment system may be turned off in the future, particularly if in-situ treatment of the source area (currently being evaluated) is successful.
- The ROD identified that as much as 300,000 gallons of carrier fluid may have spilled at the Site. Several City and County staff expressed concern that the potential extent of hydrocarbon impacts has not been characterized. This is discussed in more detail in the “Data Review” section.
- Several individuals suggested that the Site is appropriately located for future industrial or manufacturing, but additional infrastructure (water, electricity, sewer, etc.) near the Site will be required to support redevelopment at the Site. This is not specifically related to the remedy at the Site, but Site development is a concern of public officials that would encourage Site development, and is also a concern of nearby residents that generally prefer the Site not be developed for industrial use.
- The impact of the CGWA on NWE plans to replace a transmission line was noted by several individuals.

- Some residents are concerned that the redirection of surface water associated with Story Mill Park may impact the surface water hydrology and/or groundwater flow in the area that may result in degradation of surface water and/or groundwater.

Document Review

The following Site-specific documents⁷ were reviewed:

- *Proposed In-situ Enhanced Aerobic Degradation Pilot Study Work Plan Amendment – Barkfill Area Investigation* (Hydrometrics, Inc.), July 2014
- *Proposed In-Situ Enhanced Aerobic Degradation Pilot Study Work Plan* (Hydrometrics, Inc. and Olympus Technical Services, Inc.), May 2014
- *Temporary Monitoring Well Installation Data Summary Report* (Pioneer Technical Services, Inc.), April 2014
- *2013 Groundwater Assessment Report* (Hydrometrics, Inc.), March 2014
- *Final Temporary Monitoring Well Installation Work Plan* (NorthWestern Energy, January 2014)
- *Draft - 5A Investigation Interim Report Supplement - September 2013 Sampling Results* (Hydrometrics, Inc.), November 2013
- *Interim Report 5A Area Investigation* (Hydrometrics, Inc.), August 2013
- *Draft Investigation Workplan – Well 5-A Area* (Hydrometrics, Inc.), July 2013
- *2012 Groundwater Assessment Report* (Hydrometrics, Inc.), April 2013
- *Phase II Investigation Report, L Street Property* (Tetra Tech, October 2012)
- Letters from Gallatin City-County Board of Health Regarding Extent of the Controlled Groundwater Area, July 3, 2012
- *Soil Management Plan* (Hydrometrics, Inc.), March 2011
- *Third Five-Year Review* (EPA Region 8), September 20, 2010
- *Notice of Institutional Controls* (Idaho Pole Company), Filed with Gallatin County on September 9, 2010

⁷ Other more general documents not specifically associated with this Site are included in the “References” section of this five-year review.

- Letter regarding *Performance Monitoring Requirements for the Groundwater Extraction/Injection System Modifications* (EPA Region 8 and DEQ), March 26, 2010
- Approval letter regarding *Request for Modifications to Groundwater Monitoring* (EPA Region 8 and DEQ), March 24, 2010
- *Remediation System Evaluation* (GeoTrans/Tetra Tech), February 2010
- Approval letter regarding *Request for Shutdown of Pressure Plant Extraction Wells* (EPA Region 8 and DEQ), November 17, 2009
- *Groundwater Monitoring Network Optimization, Draft Final* (GSI Environmental), May 2009
- *Technical Assistance for Idaho Pole Site* (GeoTrans, Inc.), January 2009
- *Remedial Action Completion Report* (RETEC Group, Inc.), December 2002
- *Petition for Controlled Groundwater Area to the Department of Groundwater Resources and Conservation*, September 2000
- *Explanation of Significant Differences* (EPA Region 8), November 1998
- *Superfund Preliminary Site Close Out Report* (EPA Region 8), March 1998
- *Explanation of Significant Differences* (EPA Region 8), May 1996
- *Record of Decision* (Montana DEQ and EPA Region 8), September 1992
- *Remedial Investigation Report* (MSE, Inc.), March 1992

Other information that was provided by the Site team in the form of spreadsheet files, and various figures that were provided in PDF format, were also reviewed.

Data Review

Treatment Plant Influent and Effluent Concentrations

During the last five years there has been no extraction from the PPEG, such that all water has been extracted from the BFEG. The influent PCP concentration has declined from approximately 20 µg/L in 2009 and 2010 to less than 10 µg/L in 2013 and 2014. Data provided by the Site team indicate that the GAC units in the treatment plant effectively remove PCP such that effluent PCP concentrations are below detection (the detection limit is typically 0.5 µg/L and the treatment standard is 1 µg/L). It is noted that Site report tables often use “ND” to indicate a “non-detect” result, and future tables should indicate non-detects in a manner that indicates the detection limits explicitly such as “<0.5” or “0.5 U.”

Beginning in September 2014, only one carbon unit has been treating water. Prior to September 2014, the carbon units were set up with GAC-502 (PVC-2) as the lead vessel and GAC-501 (PV-1) as the lag vessel. Based on the low levels of influent PCP, IPC requested the use of only one vessel, PV-1 (the former lag vessel and the one with the newer carbon) in order to eliminate back-pressure and the need for back flushing until the carbon can be changed. EPA approved IPC's request via email on September 4, 2014. Analytical results collected since this change indicate the one GAC unit is adequately treating the recovered groundwater.

Extraction and Injection Rates

The letter regarding *Performance Monitoring Requirements for the Groundwater Extraction/Injection System Modifications* (EPA Region 8 and DEQ, March 26, 2010) stipulated that a target rate of 100 gpm at the BFEG be maintained as long as the PPEG is not operating, representing an increase from the BFEG extraction rate prior to the PPEG shutdown. The higher flow rate of 100 gpm was intended to improve the extent of capture at the BFEG to eliminate potential gaps in capture that were previously suspected. However, based on data in Site documents and an interview with the treatment plant operator, the total BFEG extraction rate was typically 55 gpm to 60 from late-2010 through mid-2014. The plant operator reported that the BFEG extraction pumps (BFEG-2 to BFEG-5) were upgraded from 0.75 horsepower to 1.5 horsepower in June 2014, allowing for the higher flow rates of approximately 105 gpm total in late 2014 with approximately 28% of the flow from well BE-2, 26% from BE-3, 27% from BE-4, and 18% from BE-5. The fact that extraction rates were well below the target rate of 100 gpm from late-2010 to mid-2014 suggests that there was similar potential for gaps in capture of groundwater contamination during that period as there was in the period prior to that.

There was also an extended shut-down period for the P&T system in the summer of 2014 due to treatment plant computer issues. The system was down briefly beginning August 5, 2014, and was then down entirely from August 8, 2014 to September 16, 2014 (approximately 5.5 weeks) until well BE-2 was re-started. Other extraction wells came back on-line over a subsequent three-week period: BE-3 (September 23), BE-4 (September 29), and BE-5 (October 6). New flow meters were also installed at these extraction wells prior to system start up in September 2014.

Under current operation, treated water is injected to both injection galleries (BFIG and PPIG). For instance, the *2013 Groundwater Assessment Report* (Hydrometrics, April 2014) indicated that in the first half of 2013 approximately 80% of treated water was injected at the BFIG and 20% was injected at the PPIG. However, data that indicate how these percentages vary over time were not provided. It was stated during the Site visit for the five-year review that the injection water flows into a trench at the injection gallery, and then flows from the trench into open casings at the top of each injection well, so the actual injection rate at any specific injection location cannot be controlled and is not measured.

Recent PCP Plume Distribution

Recent plume maps for PCP in groundwater (prepared by Hydrometrics for results from data collected in April 2014 and September 2014) are included in Attachment 5. Each figure presents

contours for a specific depth interval (“A” and “B”). The highest PCP concentrations are found in the “A” (shallowest) interval near the BFEG (south of I-90) such as 260 µg/L at P-4 in April 2014. Significant PCP concentrations (on the order of 100 µg/L) have historically been observed in the “A” interval at GM-4, which is just north of I-90, although data collected from GM-4 in 2014 indicated a concentrations of PCP ranging between 2.1 and 38 µg/L.

As part of NWE’s request to replace the existing natural gas distribution through the northern edge of the CGWA, additional PCP sampling was performed in 2014 at 11 temporary wells installed by NWE in March 2014 (locations indicated on Figure 5 as NWE-1 through NWE-11). The temporary wells were installed in accordance with a work plan required as part of the 2011 Soil Management Plan for any excavation in the CGWA where that excavation reaches saturated soil or groundwater. Some of the wells were very shallow (3 to 10 feet bgs) to investigate areas targeted for open excavations, and some were deeper (11 to 19 ft bgs) to address areas of planned directional drilling under Rocky Creek. These wells were sampled in April 2014, and all PCP results were “non-detect” with a detection level of 0.1 µg/L, except the sample from NWE-4 (screened 14 to 19 ft bgs) which had PCP of 0.9 µg/L, which is below the Site cleanup criteria of 1 µg/L. This well was resampled in late April 2014 and had a PCP concentration of 0.54 µg/L. Well NWE-4 and nearby well NWE-5 (also screened 14 to 19 ft bgs) were sampled in September 2014 as part of the Site monitoring activities, and both were “non-detect” with a detection level of 0.25 µg/L.

PCP Concentration Trends in “B” Interval near Plume Toe (Mann-Kendall Analysis)

The third five-year review (September, 2010) identified that IPC would sample wells 9-B, 16-B, 24-B, 26-B, 27-B and GM-5 for PCP semi-annually for five years to better characterize the core of the plume in the “B” interval, which extends further downgradient than the plume in the “A” interval. The purpose was to provide data that would help to determine the likelihood that significant plume impacts might extend downgradient of the existing monitoring network and perhaps beyond the extent of the CGWA. According to the third five-year review (September 2010), “a single well Mann Kendall statistical test of each well will be conducted during the next five-year review. If the statistical test demonstrates no trend or an increasing trend in groundwater contamination at 95% Confidence Level, the Agencies will consider sampling of groundwater downgradient of GM-8 and RES-8 from temporary or permanent wells, to determine if there is contaminated groundwater beyond the current CGWA boundary.”

Tetra Tech performed a Mann-Kendall statistical evaluation of the analytical results from the six wells listed above, for samples collected semiannually between 2009 and 2014. This is a non-parametric statistical procedure used for analyzing trends in data over time. Nonparametric methods require no assumptions regarding the underlying statistical distribution of the data. Accordingly, the Mann-Kendall test does not require a specific statistical distribution of the data and is not sensitive to the sampling interval over which the monitoring data are collected. The outcome of the procedure depends on the ranking of individual data points and not the overall magnitude of the data points. Therefore, the Mann-Kendall procedure can be used for data sets that include irregular sampling intervals, data below the detection limit, and trace or missing data.

The Mann-Kendall analysis is included in Attachment 7. The results of the Mann-Kendall analysis indicate that the PCP concentration trend at wells 9-B, 26-B, 27-B, and GM-5 is decreasing and the PCP concentration trend at wells 16-B and 24-B is probably decreasing.

Another significant data point near the toe of the plume is residential well RES-8, classified as a “B” interval well and located at the extreme downgradient end of the PCP plume. The PCP concentration at RES-8 was approximately 100 to 200 µg/L in the late 1990s, but declined to generally below 40 µg/L by 2003 and generally below 20 µg/L by 2005. Since 2008 the PCP concentration at RES-8 has generally been “non-detect” or detected below the standard of 1 µg/L, with infrequent detections of approximately 5 µg/L. This pattern further illustrates that PCP concentrations in the “B” interval near the plume toe have declined over time. The infrequent detections at RES-8 are consistent with a conceptual model that include sporadic pulses of PCP impacts leaving the source area and migrating downgradient.

The CGWA boundary extends approximately 600 feet to the north of RES-8. Previous groundwater impacts near RES-8 (100 to 200 µg/L in the late 1990s) likely migrated towards the CGWA boundary but may have attenuated prior to reaching the CGWA boundary, and otherwise would have flushed out of the system long ago given the fast groundwater velocity in this area. The very low PCP concentrations observed at RES-8 in recent years, coupled with declining PCP concentration trends at the other downgradient “B” interval monitoring wells evaluated with the Mann-Kendall technique, indicate there does not appear to be a significant PCP plume currently migrating downgradient of the existing monitoring network. The sporadic pulses up to approximately 5 µg/L at RES-8 in recent years are low enough that PCP concentrations would be expected to attenuate below cleanup levels prior to reaching the CGWA boundary.

PCP Concentration Trends in Remainder of Plume

As documented in the third five-year review (September 2010), PCP concentrations in groundwater have declined significantly over time throughout the plume. This is likely the result of remedial actions to date that have included source removal, P&T, and some degree of in-situ biodegradation. As part of this five-year review, plots of PCP concentration over time were prepared for selected wells near the source area (5-A and GM-4), mid-plume wells (GM-6, 9-A, 9-B, and 9-C), and wells near the plume toe (25-A and 25-B). These plots, which are included in Attachment 6, illustrate the declining PCP concentration over time throughout the plume. Annual reports include maps that compare interpreted PCP contours for different periods of time, and those maps also clearly illustrate reductions in PCP concentration over time.

There also appears to be some seasonality in the observed PCP concentrations. For instance, at GM-4 there is often a lower PCP concentration observed in the spring sampling event than in the fall sampling event. Examples include the following:

- 20 µg/L in April 2009 and 93 µg/L in September 2009
- 19 µg/L in April 2010 and 100 µg/L in September 2010
- 14 µg/L in April 2012 and 33 µg/L in September 2012
- 2.1 µg/L in April 2014 and 38 µg/L in September 2014

The exact cause of the PCP concentration fluctuations is not known, but it could be related to higher water levels in spring that could potentially mobilize source material from shallow depths, with migration in groundwater to the vicinity of GM-4 in the subsequent months. Another possibility is that capture provided by the BFEG is less effective when there is seasonally more water in the system, allowing for pulses of impacted groundwater to migrate downgradient from the source area.

Recent Efforts to Further Characterize the Source Area

Recent efforts to improve the characterization of the source area have included the following:

1. In July 2013, groundwater sampling in the source area was performed including BE-3 to BE-5, P-1, P-2, P-4, 5-A, GM-4 and GM-5. Previously the focus had been near well 5-A where the PCP concentrations of 1,000 µg/L or more were historically observed. However, in this event the highest PCP concentration was at P-4 (400 µg/L), whereas the PCP concentration at 5-A was only 31 µg/L. Also, the PCP concentration at P-2⁸, located north of the BFIG, was 53 µg/L. These locations and results are illustrated on Figure 6.
2. In September 2013, groundwater sampling in the source area was again performed, and this event also included BE-1 and depth-discrete sampling at extraction wells BE-2 and BE-4. Some of the sampling was performed while the P&T system was operating and some was conducted during a shut-down period. Again, the highest PCP concentration was at P-4 (2,000 µg/L), whereas the PCP concentration at 5-A was only 38 µg/L. Also, the PCP concentration at P-2, located north of the BFIG, ranged from 50 to 56 µg/L. These locations and results are illustrated on map form on Figure 7, and in cross-section form (illustrating the depths of the samples) on Figure 8.
3. In May 2014, per an approved work plan for a pilot test of enhanced in-situ bioremediation, three groundwater wells were installed for the planned tests (IW-1 to IW-3) and six borings were advanced (B-1 to B-6).
 - Visual and olfactory hydrocarbon impacts were evident in the bark fill chip layer, and NAPL was observed at B-6 from the soil core taken at 11 to 13 feet bgs, in sand and fine gravels just below a thick layer of bark fill where a hydrocarbon sheen and strong odor were noted.
 - Soil samples were analyzed for PCP at multiple depths at the three injection well location as well as at B-1, B-2, B-5, and B-6 (but not from B-3 and B-4 since only slight odor was observed at those locations). Some of these soil samples were also analyzed for total extractable hydrocarbons. Soil results from this event are illustrated on Figure 9. PCP in soil was detected above 10 milligrams per kilogram (mg/kg) at several of these locations, and one result (57 mg/kg at IW-1 from 7 feet

⁸ Note that the location of P-2 was incorrectly noted as south of the BFIG in most previous figures; this has recently been corrected on recent Site Figures (including Figures 5 to 8 of this five-year review) which correctly show P-2 north of the BFIG.

bgs) exceeded the Site cleanup standard of 48 mg/kg.

4. In April 2014 and June 2014, groundwater was sampled and analyzed for PCP at selected source area wells. Groundwater results from this event are illustrated in Figure 10. Several samples had PCP greater than 100 µg/L including 5-A, P-4, IW-1, IW-3, and EW-1 (an older on-site well). The groundwater results confirmed that there is an area south of the BFEG with relatively high PCP impacts to groundwater (as opposed to just one or two isolated hot-spots).
5. In August 2014 additional soil borings (B-7 to B-24) were advanced in the source area, and soil was sampled and analyzed for PCP. This included a number of locations between the BFEG and the BFIG (i.e., north of the BFEG). Figure 11 is a figure provided by Hydrometrics summarizing the results. The PCP results did not indicate extremely elevated soil concentrations for PCP, but some of the soil samples north of the BFEG had PCP concentrations that exceeded the soil cleanup standard of 48 mg/kg (such as 60 mg/kg at B-15 from 8 to 9 feet bgs, 52 mg/kg at B-18 at 12 feet bgs, and 130 mg/kg at B-22 at 8-10 feet bgs). Also in August, the computer that operates the Groundwater Treatment System quit working and a new system was installed. Groundwater was also sampled and analyzed for PCP at selected source area wells during the time that the computer, and hence the Groundwater Treatment System, was not operating. Several samples collected during this period had estimated PCP concentrations greater than 100 µg/L including P-4, IW-1, and BE-2; however, the results at GM-4 were below the MCL at 0.53 µg/L. The groundwater results again confirmed that there is an area south of the BFEG with relatively high PCP impacts to groundwater (as opposed to just one or two isolated hot-spots) but that operating the extraction wells at 100 gpm as recommended in the 2009 RSE Report may provide plume capture.

In summary, the additional characterization activities indicate that there are remaining impacts to groundwater south of the BFEG that are not limited to a hot-spot near 5-A, and there are remaining impacts to soil (particularly in barkfill) including some impacted soil north of the BFEG but also seems to indicate that operating the Groundwater Recovery System at 100 gpm may result in plume capture. Comprehensive sampling was recently conducted to analyze the effects of this increased pumping.

Potential for Widespread Impacts from Hydrocarbons (Carrier Oil)

The ROD identified that as much as 300,000 gallons of carrier fluid may have spilled at the Site. In interviews conducted for this five-year review, several City and County staff expressed concern that the extent of hydrocarbon impacts has not been well characterized. A review of data pertinent to this concern is provided below.

Soil samples collected from borings in the former barkfill area in 2014 identified a laterally discontinuous layer of barkfill. The depth to the barkfill ranged from 4 to 10.5 feet bgs, and the thickness of the barkfill ranged from 0.5 to 1.0 feet. Soil samples collected from the borings were analyzed for PCP and total extractable hydrocarbons; PCP and total extractable hydrocarbons

(TEH) were detected in saturated layers of the barkfill, present at 7 feet bgs and deeper. Barkfill was identified in 15 of the 24 borings drilled in the relatively small area (approximately 500 feet by 200 feet); five of the borings had non-aqueous phase liquid (NAPL) in the barkfill and five of the borings had a sheen identified in the barkfill. The PCP concentrations ranged from 3.2 mg/kg to 57 mg/kg (the ROD standard for PCP is 48 mg/kg) and the total extractable hydrocarbon concentrations ranged from not-detect to 7,200 mg/kg. The sporadic observation of NAPL and/or sheen combined with the significant variations in the hydrocarbon concentrations in the discontinuous barkfill indicate the hydrocarbons do not appear to be migrating.

Groundwater from eight Site wells is routinely sampled and analyzed for both PCP and PAHs; PAH analytical results can be used as an indicator for diesel fuel (or carrier oil) since PAHs are known components of diesel. A summary of the total PAHs and PCP concentrations detected in the source area (well 5-A and 15A) and wells further downgradient is provided in Table 6.

Table 6: PCP and PAH Concentrations in Groundwater (µg/L) at Locations Where PAHs were Analyzed, 2012 to 2014

Well	Date	Location	PCP (µg/L)	Total PAHs (µg/L)
5-A	Oct-2012	South of I-90 (former barkfill area)	1,000	91,590
	Sept-2013		38	29.2 and 34.9
	Sept-2014		270	26.2
15-A	Oct-2012	South of I-90 (near barkfill area)	1.2	6.1
	Sept-2013		0.84	4.1
	Sept-2014		0.91	2.3
22	Oct-2012	South of I-90	ND (<0.25)	3.07
	Sept-2013		ND (<0.25)	ND (<0.1)
	Sept-2014		0.91	0.3
23-A	Oct-2012	North of I-90	4.8	ND (<0.1)
	Sept-2013		2.7	ND (<0.1)
	Sept-2014		2.5	ND (<0.1)
23-B	Oct-2012	North of I-90	3.3	ND (<0.1)
	Sept-2013		2	ND (<0.1)
	Sept-2014		ND (<0.25)	ND (<0.1)
GM-4	Oct-2012	North of I-90	33	2.5
	Sept-2013		84	1.4
	Sept-2014		38	ND (<0.1)
GM-5	Oct-2012	North of I-90	4.6	16.8
	Sept-2013		6.8	7.6
	Sept-2014		0.54	ND (<0.1)
GM-6	Oct-2012	North of I-90	4.8	0.1
	Sept-2013		5.6	ND (<0.1)
	Sept-2014		0.57	ND (<0.1)

The high concentrations of PAHs detected in Site groundwater at well 5-A (within the former barkfill area) in 2012 indicates PAH concentrations likely associated with the presence of residual

carrier oils that were captured in BE-5. The range of PAH concentrations detected at well 5-A may be attributed to fluctuations in the water table; as the water elevation rises, more of the barkfill may become saturated, thus mobilizing dissolved-phase hydrocarbons. Targeting the extraction rate around BE-5 likely contributed to mobilizing some of this carrier oil. The concentrations of PAHs at locations north of I-90 are generally very low, indicating that widespread hydrocarbon impacts, including potential for discharge of hydrocarbons to Rocky Creek, is not likely. In addition, discontinuing extraction at the pressure plant extraction gallery and increasing extraction at the Barkfill Extraction Gallery is having a significant impact on the dissolved phase of the PCP-contaminated plume north of I-90. It is possible that better communication of these results to community stakeholders including the Board of Health might alleviate concerns regarding hydrocarbon impacts. Alternatively, adding a one-time evaluation of total petroleum hydrocarbons (TPH) in the diesel range at a more widespread set of monitoring locations (including wells in the downgradient portions of the plume and adjacent to Rocky Creek), in conjunction with a routine monitoring event, could potentially provide additional data to address those concerns.

Finally, EPA Region 8 indicated during the Site visit for this five-year review that sampling was performed at a residence (RES-2) after the third five-year review, because an oil sheen was previously reported in a metal tank from which a cow drinks. It was stated during the Site visit that results of the sampling indicated no impacts or concerns at that location.

Remedy Duration versus ROD Estimate

The 1992 ROD estimated that the time needed to achieve groundwater remediation levels was from 10 to 15 years. The groundwater remedy has been operating since 1996. While the groundwater remedy is progressing and the treatment system is functioning as designed, remediation levels have not been achieved within the time period estimated in the 1992 ROD. Using cleanup data collected since the remedy was initiated, the Agencies intend to estimate a new, more accurate time frame in which remediation levels may be achieved but this is not considered an issue pertaining to protectiveness of the remedy as part of the five-year review because the CGWA and the deed restriction prohibit the use of the groundwater and established restrictions on excavation.

A change in the estimated duration of achieving groundwater remediation cleanup levels, and a clarification of the groundwater area to be treated (discussed in the section called “Remedy Implementation and Status – Groundwater” in this five-year review) are considered minor and non-significant changes to the remedy, inasmuch as these changes will not have a significant impact on the scope, performance or cost of the remedy. However, non-significant or minor changes should be recorded in the post-ROD Site file and documented for public review.

Considerations Regarding Conceptual Model and Source Area Remediation Efforts

A residual PCP source remains at the Site, impacting wells adjacent to the BFEG (5-A and P-4), immediately downgradient of the BFIG (P-2), and immediately north of I-90 (GM-4, GM-5 and GM-6). A summary of recent PCP concentrations at these monitoring wells is provided in Table

7 and the results from investigations conducted in 2013 and 2014 show the extent of residual contamination that remains in the source area (Figures 6 to 11).

TABLE 7. PCP Concentrations in Groundwater (µg/L) at Selected Wells, 2012 to 2014

	Upgradient of BFEG		Just Downgradient of BFIG	North of I-90 (Downgradient from Source Area)		
Sample Date	5-A	P-4	P-2	GM-4	GM-5	GM-6
Apr-12	1,000			14	5.8	3.2
Sep-12	1,000			33	4.6	4.8
Apr-13	120 ⁹			75	16	3.4
Jul-13	31	400	53	96	7	
Sep-13	38	2,000	56	84	6.8	5.6
Apr-14	110	260	3.7	2.1*	<0.25	2.0
Aug-14		2300	31	0.53		
Sep-14	580	310	39	38	0.5	0.6

* Sampled again in Jun-14 and Dec-14 with a value of 8 µg/L and 18 µg/L, respectively

As discussed earlier, it appears that wells 5A and P-4 are in close proximity to residual source material which likely occurs upgradient of the BFEG in multiple (but isolated) pockets. It is also possible that the monitoring wells north of I-90 (GM-4, GM-5, and GM-6) are not in the immediate vicinity of residual source material and are impacted by contaminated groundwater migrating from areas of residual source material that are located further to the south. At P-2, which is located between the BFIG and I-90, it is not entirely clear if the elevated PCP concentrations are due to residual impacts to soils located between the BFEG and I-90, due to transport of impacted groundwater from residual source material south of the BFEG that is not effectively captured by the BFEG, or a combination of both.

Although there are PCP concentrations of 1,000 µg/L or more detected at several locations in the source area south of the BFEG, and concentrations between 100 µg/L and 1,000 µg/L were also detected at IW-1, IW-3, and EW-1 (see Figure 10), the PCP concentrations at the extraction wells in the BFEG are relatively low, often less than 10 µg/L and rarely more than 30 µg/L at individual extraction wells. This could be explained by the fact that the extraction wells have long screens from approximately 10 to 30 ft bgs, such that under pumping conditions deeper groundwater could dilute shallower groundwater that has higher PCP concentrations (extraction pumps have historically been placed at the bottom of the screen, which could further exacerbate the issue if that interval is also the most permeable). However, the low concentrations of PCP at the extraction wells also suggests a likelihood that the residual groundwater contamination is “spotty”

⁹ The decrease in concentrations corresponds with an increase in the amount of water extracted from extraction well BE-5 near well 5-A.

or “discontinuous” rather than a large continuous plume, otherwise the extraction wells would likely have higher PCP concentrations. When the pumps were replaced in the extraction wells in June 2014 the pumps were also raised to about 20 feet below ground surface at each extraction well (BE-2 thru BE-5), which corresponds approximately to the middle of the well screen (or just slightly above the middle).

The presence of residual PCP source material south of the BFEG, as well as between the BFEG and the BFIG, continues to extend operation of the current groundwater extraction and treatment system. During the five-year review Site visit on November 5, 2014 several conceptual remedial approaches were discussed as potential alternatives to long-term P&T. These approaches included the following:

- Source Removal (Excavation). This can be an effective method to remediate PCP, especially if the source is relatively shallow. The impacted barkfill layer appears to be between 4 and 11 feet bgs, which is relatively shallow; at many sites excavation to those depths might be feasible. However, excavation is eliminated from consideration at this Site because the impacted barkfill is within the area where LTU soils containing dioxin were placed on-site as part of previous remedial activity. Disposal of dioxin-impacted soils is land-banned in the United States (and requires incineration if excavated) if it has not been treated below 10 ppb TCDD. Sampling performed on soil that was off-loaded from the LTU for on-site disposal indicated less than 10 ppb TCDD. However, some soils that were sampled during the RI and placed in the LTU exceeded 10 ppb TCDD, and it is possible that some pockets of soil exceeding 10 ppb TCDD are present in the soil disposal areas. Therefore, excavating areas where treated soils were disposed is not a preferred option. Also, there is likely residual source material in the immediate vicinity of the operating extraction and injection system, and it is unlikely that the current P&T system could be operated during some of the source area remediation efforts under this approach (which is an issue for DEQ unless it is demonstrated that no negative impacts would occur further downgradient as a result).
- Soil Blending. This can be an effective method to oxidize PCP, using agents such as peroxide or persulfate to destroy the PCP. A Site contractor indicated that soil blending to 11 feet bgs would be difficult. Also, there is likely residual source material in the immediate vicinity of the operating extraction and injection system, and it is unlikely that the current P&T system could be operated during some of the source area remediation efforts under this approach (which is an issue for DEQ unless it is demonstrated that no negative impacts would occur further downgradient as a result).
- Enhancing In-Situ Biodegradation. This can be an effective method to either aerobically or anaerobically degrade dissolved-phase PCP. The Site team originally envisioned addition of relatively low levels of oxygen to promote biodegradation, which is currently limited by anaerobic conditions. Anaerobic in site biodegradation is also being considered. The results of this evaluation will be assessed in the next Five-Year Review.

- *In-Situ Chemical Oxidation (ISCO)*. This can be an effective method to destroy PCP at some sites. However, at this Site the oxidant demand required by the organic-rich barkfill is so substantial that ISCO is not likely a cost-effective compared to enhanced in-situ bioremediation.
- *In-situ thermal treatment*. This would be prohibitively expensive to implement.

The bioremediation approach suggested by the Site team appears to be the most implementable and cost-effective approach to attempt to reduce source area concentrations. Each of the other possible technologies has site-specific limitations, as described above. It is possible that enhanced bioremediation could reduce source area PCP concentrations in groundwater such that some concentrations in groundwater remain above cleanup levels, but at low enough concentrations that P&T can be discontinued based on natural attenuation of the downgradient areas. In the summer of 2015, a pilot test was initiated in which the current nutrient blend was replaced with ETEC's Custom Blended Nutrients (CBN), with the intent of creating aerobic or nitrate-reducing conditions throughout the target saturated zone. Samples will also be collected monthly for the analysis of PCP, diesel-range organics, and hydrocarbon-degrading bacteria plate counts. At the end of 40 to 50 days of system operation with CBN, an evaluation will be made regarding the loading rates, and additional injections may continue. The PCP concentration values that would allow discontinuation of the P&T system on a trial basis are "to be determined" once the efficacy of any future treatment technology has been implemented and monitored for a period of time.

This five-year review notes the following considerations regarding any planned pilot testing of any in-situ bioremediation system and potential full-scale implementation:

- The protectiveness of the current system is maintained by the P&T system, and continued operation of the P&T system during pilot testing and subsequent source area remediation efforts is a priority until groundwater concentrations in the source area are determined to be sufficiently low that P&T is no longer needed to maintain plume capture.
- The pilot test would be improved by addition of one or more monitoring wells between each injection well and corresponding BFEG extraction well, due to the long screens at the extraction wells. The potential dilution from other water captured by the extraction wells makes the use of the extraction wells for monitoring the pilot test less favorable.
- Assuming the planned pilot testing determines that one of the delivery mechanisms is viable, a full-scale system could be implemented upgradient of the BFEG as an initial phase of source area remediation. The goal would be to reduce PCP concentrations in groundwater upgradient of the BFEG to levels low enough that P&T can be discontinued (even if those concentrations are above cleanup criteria).

- Once source area PCP concentrations have been lowered such that P&T can be discontinued, an assessment can be made regarding the potential need for additional source area remediation north of the BFEG, based on the PCP concentrations at locations north of the BFEG (such as P-2 and GM-4) observed at that time. Currently, it is difficult to assess if the PCP concentrations in groundwater at P-2 are due to source material south of the BFEG, north of the BFEG or both. Thus, additional source area remediation north of the BFEG may be contingent on the observations subsequent to aggressive source area remediation efforts implemented south of the BFEG. The effects of the source area remediation south of the BFEG should be monitored for a minimum of two years after P&T discontinuation is approved, to account for both the effectiveness of the remediation the potential seasonal fluctuations in PCP concentrations (discussed in “Data Analysis – PCP Concentration Trends in Remainder of Plume”).

As noted above, the PCP concentration values that would allow discontinuation of the P&T system on a trial basis, after the first phase of source area remediation is implemented, are “to be determined.”

The third five-year review identified a conceptual difficulty in establishing if there is remaining source material beneath I-90, since there was a possibility that continued PCP impacts in groundwater north of I-90 could be due to incomplete capture of the source area south of the BFEG. The termination of extraction at the PPEG in 2010 was intended to be coupled with increased extraction at the BFEG to improve capture at the BFEG and hopefully resolve this issue. Unfortunately, the pumping rate increase at the BFEG was not fully realized until mid 2014. Thus, it is still not possible at this time to establish the significance of potential remaining source material beneath I-90. It still remains possible (and perhaps likely) that addressing the residual source material south of the BFEG will eliminate the vast majority of the groundwater impacts north of I-90.

VII. Technical Assessment

The following responses to questions support the determination that the remedy at the Idaho Pole Company Site is currently functioning as designed and is expected to remain protective of human health and the environment.

Question A: Is the remedy functioning as intended by the decision documents?

The answer to Question A is “yes” for the soils remedy of OU01. In the previous five-year review (September 2010) this was answered “no” for soils because finalization of ICs had been identified as an outstanding issue. That issue was addressed when the Notice of Institutional Controls was filed with Gallatin County on September 9, 2010. The soil remedy is considered complete.

The answer to Question A is “yes” for the groundwater remedy. The groundwater treatment system has relatively low influent concentrations, and the groundwater cleanup levels are

achieved in the treatment system effluent. Groundwater concentrations of PCP have declined significantly over time, presumably due to remedial actions to date (source removal, P&T, and potential in-situ biodegradation). Concentrations of PCP that are well above groundwater cleanup ($> 100 \mu\text{g/L}$) standards remain south of I-90 within the Bark Filled Source Area. Protectiveness is provided by a combination of residential well sampling north of I-90 and ICs that restrict use of groundwater within the CGWA. Sampling results will alert the Agencies if there is any significant increase in groundwater contamination, and institutional controls should limit the drilling of new wells into contaminated groundwater and use of contaminated groundwater. How long the groundwater remedy must continue remains uncertain, but the groundwater remedy is progressing and is functioning as intended. Using cleanup data collected since the remedy was initiated, the Agencies intend to estimate a new, more accurate time frame in which remediation levels may be achieved but this is not considered an issue pertaining to protectiveness of the remedy as part of the five-year review because of the presence of the CGWA and the deed restriction currently prohibiting use of the groundwater. Implementing more aggressive source area remediation efforts (currently being considered) could potentially eliminate the need for continued P&T operation prior to the next five-year review.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of remedy selection still valid?

The answer to Question B is “yes” for the remedy as a whole, because the answer is “yes” for both the soil and groundwater components of the remedy. Although some changes have occurred to specific standards or toxicity factors, the remedy approach remains valid when those changes are considered. Details with respect to soil, and then with respect to groundwater, are provided below.

The answer to Question B is “yes” for the soil remedy. The ROD’s risk-based cleanup level for soil at the Site was based on a site-specific risk assessment and the Agency’s anticipation that future use at the Site will not be residential. An enforceable proprietary IC has been placed on the deed to protect areas where treated soil has been disposed of with remaining contamination above levels that allow for unlimited use and unrestricted exposure. While the areas where treated soils have been left in place are not fenced, there is a vegetative cap on this area which was determined to be in good shape during the Site inspection. In addition, the Agencies approved a Soil Management Plan in 2011 which requires submittal of a workplan for review and approval prior to any excavation in the Treated Soils Area and excavations that encounter saturated soils and/or groundwater in the CGWA.

The ROD cleanup level for dioxin in soil was 1000 parts per trillion (ppt) TCDD-TEQ, and treated soils (including some with dioxin concentrations higher than 1000 ppt TCDD-TEQ) were placed back on Site¹⁰. EPA’s dioxin reassessment has been developed and undergone review for many years, with the participation of scientific experts in EPA and other federal agencies, as well as scientific experts in the private sector and academia. The Agency followed current guidelines

¹⁰ The ROD’s risk-based cleanup level of dioxin in soil at the Site, expressed as equivalent concentration of TCDD (TCDD-TEQ), is 0.001 mg/kg (ppm), is equivalent to 1 ppb or 1000 ppt.

and incorporated the latest data and physiological/biochemical research into the reassessment. On February 17, 2012, EPA released the final human health non-cancer dioxin reassessment, publishing an oral non-cancer toxicity value, or reference dose (RfD), of 7×10^{-10} mg/kg-day for 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) in EPA's Integrated Risk Information System (IRIS). The dioxin cancer reassessment will follow thereafter. The dioxin RfD was approved for immediate use at Superfund sites to ensure protection of human health. A revised dioxin Preliminary Remediation Goal (PRG) of 727 ppt has been calculated using the 2012 RfD, 2005 World Health Organization (WHO) toxicity equivalence factors (TEFs) and incorporating the new commercial/industrial default exposure assumptions released by the EPA in February 2014 (*Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors, OSWER Directive 9200.1-120, February 6, 2014*). In the areas where treated soils were placed, soil concentrations beneath the cap exceed the ROD soil dioxin cleanup level of 1,000 ppt TEQ but the remedy is still protective because ICs have been put into place to prevent direct contact with dioxin-contaminated soil in those areas. In other areas that were originally evaluated for excavation, there does not appear to be a justification for any additional excavation based on the revised TCDD-TEQ PRG of 727 ppt, which is only slightly lower than the 1992 ROD risk-based TCDD-TEQ of 1,000 ppt. The potential health risks that would be created by additional excavations at the Site (i.e., outside the Treated Soils Areas that are already capped) to address the revised TCDD-TEQ of 727 ppt would outweigh the potential benefit of removing soils impacted with TCDD-TEQ values greater than 727 ppt that conceptually would not have been addressed by the previous remedial actions.

Tetra Tech reviewed the Site TEQ values for dioxin data presented in the *Remedial Investigation Report* (MSE Inc., 1992) by calculating the associated TEQ values for these samples using the 1998 WHO TEFs and also using the 2005 WHO TEFs, to evaluate impacts the new TEFs had on the value of the total TEQ. Site TEQ values calculated using the 2005 TEFs are slightly lower than the TEQ values for the same data calculated using the 1998 TEFs. The release of the EPA's final non-cancer dioxin reassessment and new commercial/industrial default exposure assumptions therefore do not appear to change the effectiveness or protectiveness of the Site soil remedy; the consolidation of treated soil covered with clean material, with a proprietary IC filed with the deed, remains protective.

The answer to Question B is "yes" for the ongoing groundwater remedy. This fourth five-year review includes an evaluation of the most current Montana DEQ-7 numeric water quality criteria for Site COCs versus ROD cleanup levels. The Montana Water Quality Act requires that human health standards for carcinogens be the more restrictive of either of the following: (1) the risk-based level of one in one hundred thousand [1×10^{-5}] for all carcinogens (except arsenic) or, (2) the MCL. Concentrations of contaminants in sediment, soils and groundwater remaining on Site after cleanup is complete and correspond to a lifetime cancer risk between 10^{-4} and 10^{-6} according to the 1992 ROD. Table 8 compares the ROD cleanup levels for groundwater to the 2012 and 2008 Montana DEQ-7 criteria, as well as the 2004 Montana WQB-7 Standards. The 2012 DEQ-7 Criteria remain the same as the 2008 DEQ-7 Criteria for Site contaminants of concern, as indicated in Table 8.

Table 8: Comparison of Groundwater Cleanup Criteria in ROD, 2012 and 2008 Montana DEQ-7 Criteria, and 2004 Montana WQB-7 Criteria

Constituent	ROD Cleanup Level (µg/L)	ROD Cleanup Level Basis	2012 DEQ-7 Criteria (µg/L)	2008 DEQ-7 Criteria (µg/L)	2004 WQB-7 Criteria (µg/L)
PCP	1.0	MCL	1.0	1.0	1.0
B2 PAHs:					
Benzo(a)pyrene	0.2	MCL	0.05	0.05	0.048
Benz(a)anthracene	0.1	Proposed MCL	0.5	0.5	0.48
Benzo(b)fluoranthene	0.2	Proposed MCL	0.5	0.5	0.48
Benzo(k)fluoranthene	0.2	Proposed MCL	5.0	5.0	4.79
Chrysene	0.2	Proposed MCL	50.0	50.0	48.0
Dibenz(a,h)anthracene	0.3	Proposed MCL	0.05	0.05	0.048
Indeno(1,2,3-CD)pyrene	0.4	Proposed MCL	0.5	0.5	0.044
Total D PAHs	146	Hazard quotient			
Naphthalene			100	100	100
Fluorene			1100	1100	280
Phenanthrene			-	-	-
Anthracene			2100	2100	2100
Fluoranthene			130	130	280
Pyrene			830	830	960
Benzo(g,h,i)perylene			-	-	-
2,3,7,8-TCDD (Dioxin)	3.0×10^{-5}	MCL	2.0×10^{-6}	2.0×10^{-6}	2.0×10^{-6}

A brief summary of comparisons of the ROD groundwater cleanup levels to the Montana standards is provided below:

- The second five-year review recommended that Montana's WQB-7 Groundwater Standards (2004) be reviewed. The "December 2007 Update – Idaho Pole Company Superfund Site" stated that EPA and DEQ had addressed this issue and concluded that "protectiveness of the remedy has been deemed appropriate."
- As summarized in the third five-year review, none of the 2008 DEQ-7 criteria for Site COCs in groundwater were lower than the previous 2004 WQB-7 values, with the exception of fluoranthene and pyrene. Thus, the previous conclusion by EPA and DEQ that the "protectiveness of the remedy has been deemed appropriate" based on the comparison of the ROD criteria to the 2004 WQB-7 criteria still generally applied, except for pyrene and fluoranthene. The DEQ-7 criterion for pyrene (830 µg/L) was well above the ROD criterion of 146 µg/L, so meeting the ROD criterion will be more protective. The DEQ-7 criterion for fluoranthene (130 µg/L) was only slightly lower than the ROD cleanup level of 146 µg/L for Total D PAHs, and this difference did not appear to be significant with respect to the current management or protectiveness of the groundwater remedy.
- The 2012 DEQ-7 Criteria remain the same as the 2008 DEQ-7 Criteria for Site

contaminants of concern; therefore the conclusions regarding the 2008 DEQ-7 criteria also apply for 2012 DEQ-7 criteria.

- Although the DEQ-7 criteria for Benzo(a)pyrene and Dibenzo(a,h)anthracene are 0.05 µg/L, the DEQ-7 required reporting limit for those parameters is slightly higher (0.06 µg/L for Benzo(a)pyrene and 0.1 µg/L for Dibenzo(a,h)anthracene). The reporting limit is 0.1 µg/L for PAHs in Site sampling, which is below the ROD criterion for these two parameters. These two PAHs have DEQ-7 criteria that are slightly lower than the ROD cleanup criteria. The DEQ-7 criteria are based on an excess cancer risk of 1×10^{-5} , and the ROD criterion for each of these two parameters is less than one order of magnitude higher than the DEQ-7 standard. Therefore the ROD criterion for each of these two parameters is still within the acceptable cancer range (1×10^{-4} to 1×10^{-6}) noted in the “cleanup levels” section of the ROD.
- The DEQ-7 criterion for dioxin in groundwater is also slightly lower than the ROD criteria for dioxin in groundwater. While a cleanup standard for dioxin was established in the 1992 ROD, dioxin has not been detected in groundwater at this Site prior to the implementation of the remedy and has not been sampled in groundwater during the course of the remedy.
- The Agencies have set out a consistent cleanup goal of 1 µg/L in the ROD for the predominant COC in groundwater at the Site, PCP. This goal also meets the MCL, the Montana WQB-7 standards from 2004, and the Montana DEQ-7 standards from 2008 and 2012.

It is also noted that EPA (February 2010) released an external review draft for the development of a relative potency factor approach for PAH mixtures (EPA/635/R-08/12A). This draft, in particular includes toxicity equivalency factors for many more common PAHs. At the time of this fourth five-year review preparation (January 2015), the February 2010 document remains in draft form. If finalized, this approach could change estimated risk associated with exposure to PAHs. However, EPA has not made any final decisions at this time. If finalized, the development of a relative potency factor approach for PAH mixtures will be evaluated during the next five-year review.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

The answer to Question C is “yes” for the soil and groundwater portions of the remedy. Additional investigations since the third five year review have identified isolated pockets of non-aqueous phase liquid (NAPL) in the vadose zone that continue to be a source for the groundwater contamination. These isolated pockets of NAPL require the continuation of an active P&T system to maintain plume capture. Pilot testing for potential residual source area remediation commenced in the summer of 2015, with the long-term goal of cleaning up these isolated pockets of NAPL, thus eliminating the need for P&T operation if the residual source area remediation efforts are successful. The intent is to address the residual source areas prior to the fifth Five Year Review in order to make a determination of protectiveness should the P&T system be discontinued.

Some of the interviews conducted for this five-year review indicated concerns held by those individuals, but those concerns do not call into question the protectiveness of the remedy. Gallatin City-County Board of Health has concerns regarding hydrocarbon impacts, but the review of PAH data in groundwater performed as part of this five-year review does not appear to indicate significant hydrocarbon impacts beyond the source area. The Kroon family expressed concern that future plans for Story Mill Park could impact local hydrology and cause impacted groundwater to “back up” under Rocky Creek towards their property; however during the five-year review visit it was explained to them that the topographic high located north of Rocky Creek in that area will naturally cause groundwater flow towards Rocky Creek from the north, preventing flow of impacted water towards their property. NWE indicated they had concerns that their work locating pipe beneath Rocky Creek could disturb a confining clay in that area; however, PCP concentrations are extremely low in that area and are expected to continue to decline over time. Thus, these concerns are all noted so they can be considered again in the next five-year review, but none of them call into question the protectiveness of the remedy.

VIII. Issues

The following issues are identified on Table 9:

- 1) Potential residual source material in the area of the BFEG.
- 2) Dioxin analysis of groundwater.

Recently discovered residual NAPL groundwater sources need to be addressed. Dioxin was identified as a contaminant of concern for groundwater, but no dioxin groundwater samples have been taken since the Record of Decision was issued, and sampling is necessary.

IX. Recommendations and Follow-up Actions

Recommendations and follow-up actions are listed in Table 9.

Table 9: Recommendations and Follow-up Actions

Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
Potential residual source material in the area of the BFEG	Perform pilot testing to remediate residual source material	IPC	EPA, DEQ	9/30/18	No	Yes
Dioxin analysis of groundwater	Sample shallow aquifer for dioxin analysis	IPC	EPA, DEQ	9/30/17	No	Yes

X. Protectiveness Statement(s)

A protectiveness determination of the OU01 remedy cannot be made until further information is obtained. While dioxin was identified as a contaminant of concern for groundwater, no dioxin groundwater samples have been taken since the Record of Decision was issued, and sampling is necessary. Recently discovered residual NAPL groundwater sources need to be addressed. Although institutional controls are in place, including a deed restriction on the property and a CGWA that restricts potable use of the groundwater, residual source material continues to impact groundwater. It is expected that the groundwater dioxin sampling and residual source area remediation actions will take approximately three years to complete, at which time a protectiveness determination will be made.

XI. Next Review

Because contamination has been left on Site above levels that allow for unlimited use and unrestricted exposure, this Site requires ongoing five-year reviews. The next review will be conducted five years after the completion date of this Five-Year Review report

XII. References

Site-Specific Documents

Site-specific documents that were reviewed for this five-year review are listed in Section VI under "Document Review" and those documents are not repeated here.

General Documents not Specific to this Site

General documents that were referred to but do not pertain specifically to this Site are listed below.

City of Bozeman GIS Department (<http://www.bozeman.net/bozeman/GIS/Default.aspx>).

EPA, May 1995. Land Use in the CERCLA Remedy Selection Process (OSWER 9355.7-04).

EPA, July 1999. *A Guide for Preparing Superfund proposed Plans, Records of Decision or Other Remedy Selection Decision Documents* (EPA EPA540-R-98-031).

EPA, June 2001. *Comprehensive Five-Year Review Guidance* (EPA 540-R-01-007).

EPA, December 2009. *Public Review Draft: Draft Recommended Interim Preliminary Remediation Goals for Dioxin in Soil at CERCLA and RCRA Sites* (OSWER 9200.3-56).

EPA, February 2010. Development of a Relative Potency Factor Approach for Polycyclic

Aromatic Hydrocarbon (PAH) Mixtures (EPA/635/R-08/012A).

EPA, February 2012. *EPA's Reanalysis of Key Issues Related to Dioxin Toxicity and Response to NAS Comments, Volume 1* (EPA/600/R-10/-38F).

EPA, February 2014. *Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors* (OSWER 9200.1-120).

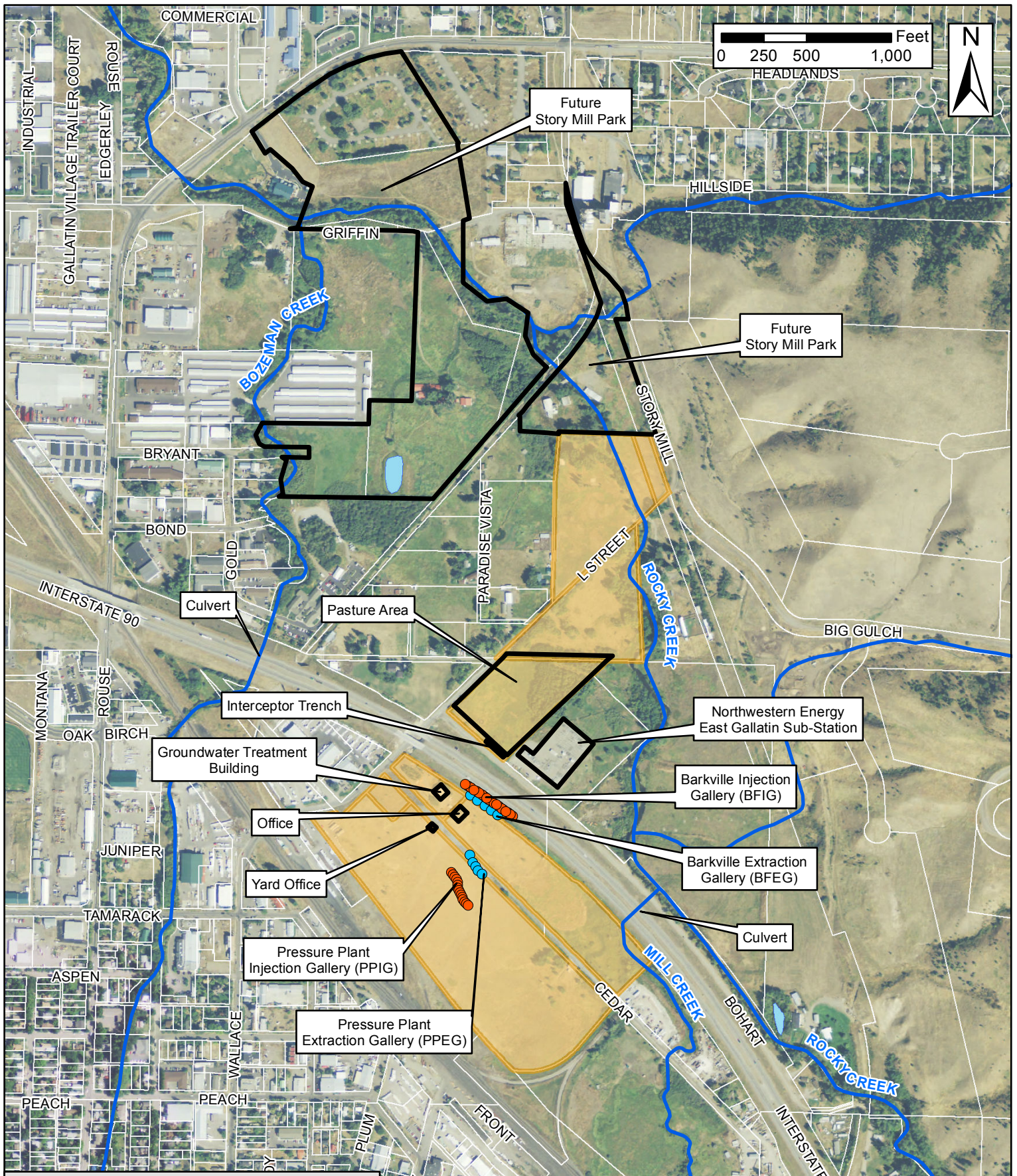
Gallatin County GIS Interactive Mapping (<http://webapps.gallatin.mt.gov/mappers/>).

Montana Department of Environmental Quality, January 2004. *Circular WQB-7, Montana Numeric Water Quality Standards*.

Montana Department of Environmental Quality, February 2008. *Circular DEQ-7, Montana Numeric Water Quality Standards*.

Montana Department of Environmental Quality, October 2012. *Circular DEQ-7, Montana Numeric Water Quality Standards*.

Figures



Background Image Source: Montana.gov, Nov 2014

Legend

- Idaho Pole Company Parcels (Source: NRIS-Gallatin County Cadastral, Jan 2015)
- Existing Parcels (Source: NRIS-Gallatin County Cadastral, Jan 2015)
- Injection Wells (Source: Figure 3, 5-A Area Investigation Workplan, Draft July 2013)
- Extraction Wells (Source: Figure 3, 5-A Area Investigation Workplan, Draft July 2013)

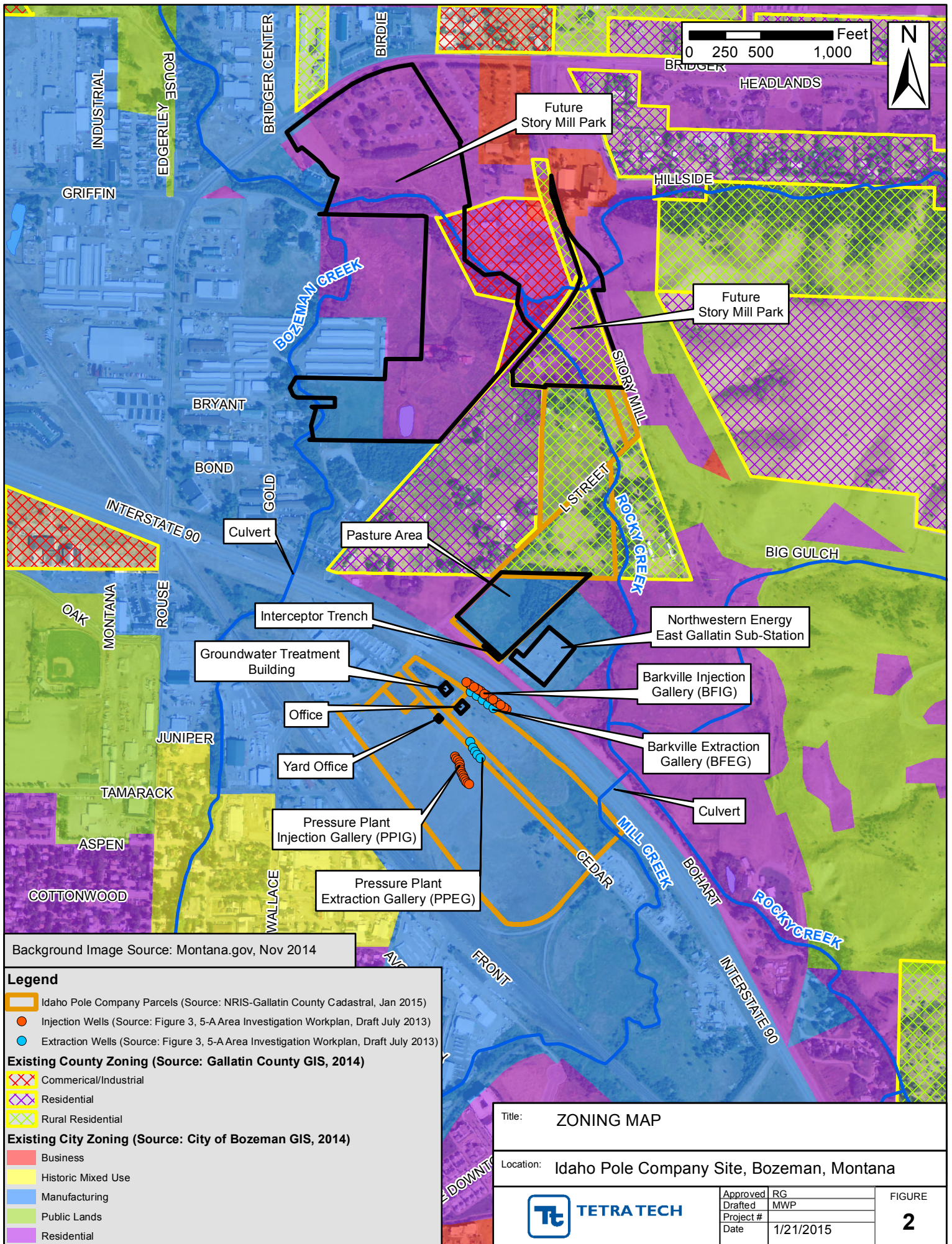
Title: KEY MAP FEATURES IN SITE VICINITY

Location: Idaho Pole Company Site, Bozeman, Montana



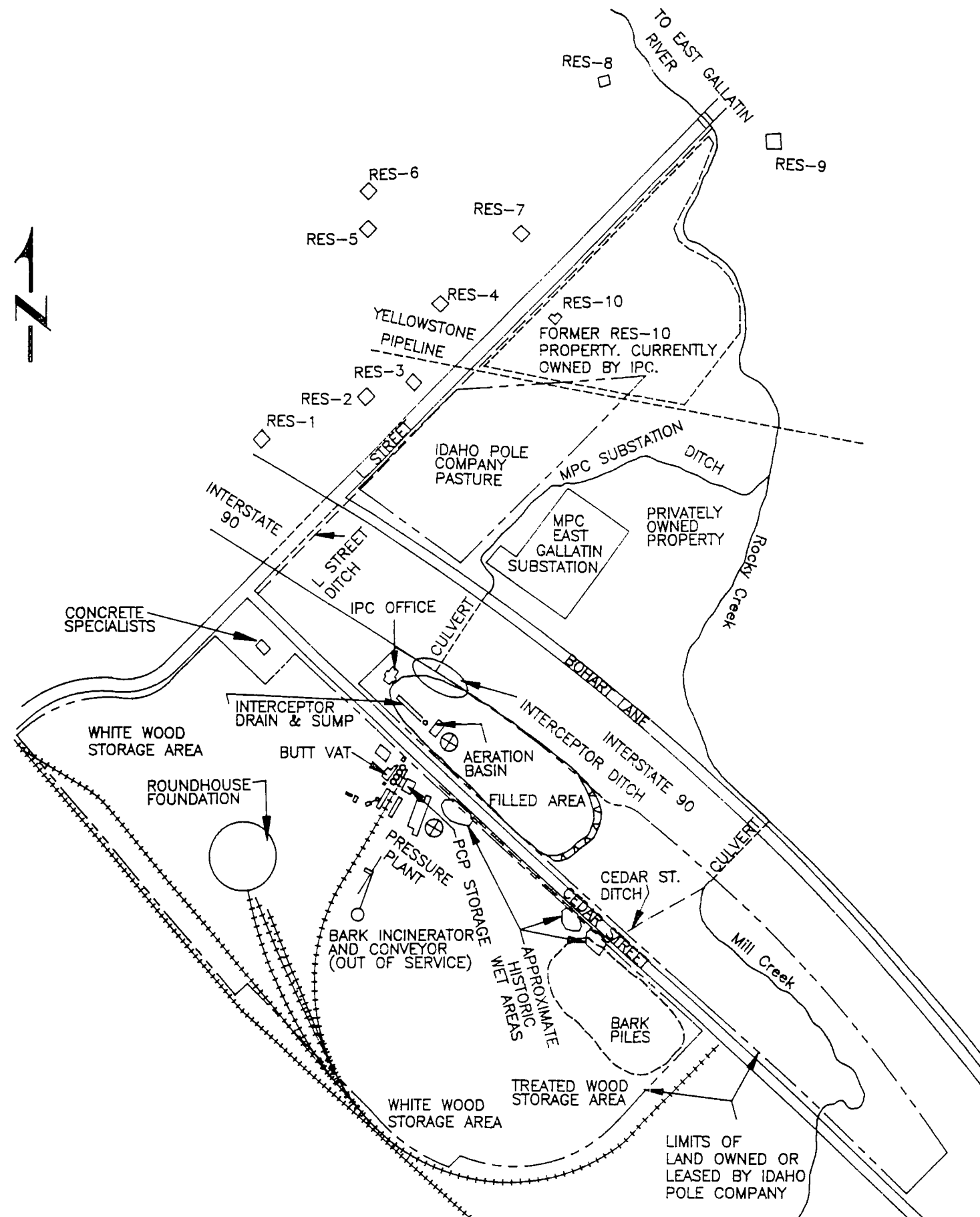
Approved	RG
Drafted	MWP
Project #	
Date	1/21/2015

FIGURE
1



From RI Report (MSE, Inc.), 1992

APPROXIMATE SCALE IN FEET
0 100 200 400 600



⊗ — RECOVERY WELL

FIGURE 2-2
STUDY AREA PLAN
IDAHO POLE COMPANY SITE
BOZEMAN, MONTANA

MSE Inc.
ACAD#: IP07-001
REV: - DATE: 1/24/92
DRAFTER: MFS

Figure 3. Illustration of Historical Site Features



UPDATE TIME: 9:59 AM
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IDAHO POLE COMPANY
BOZEMAN, MONTANA
5029-200

TREATED SOIL AREA

FIGURE
1-2

Hydrometrics, Inc.
Consulting Scientists and Engineers

From Soil Management Plan (Hydrometrics, Inc.), March 2011

Figure 4. "Treated Soils Areas" Where Treated Soils Were Placed Onsite

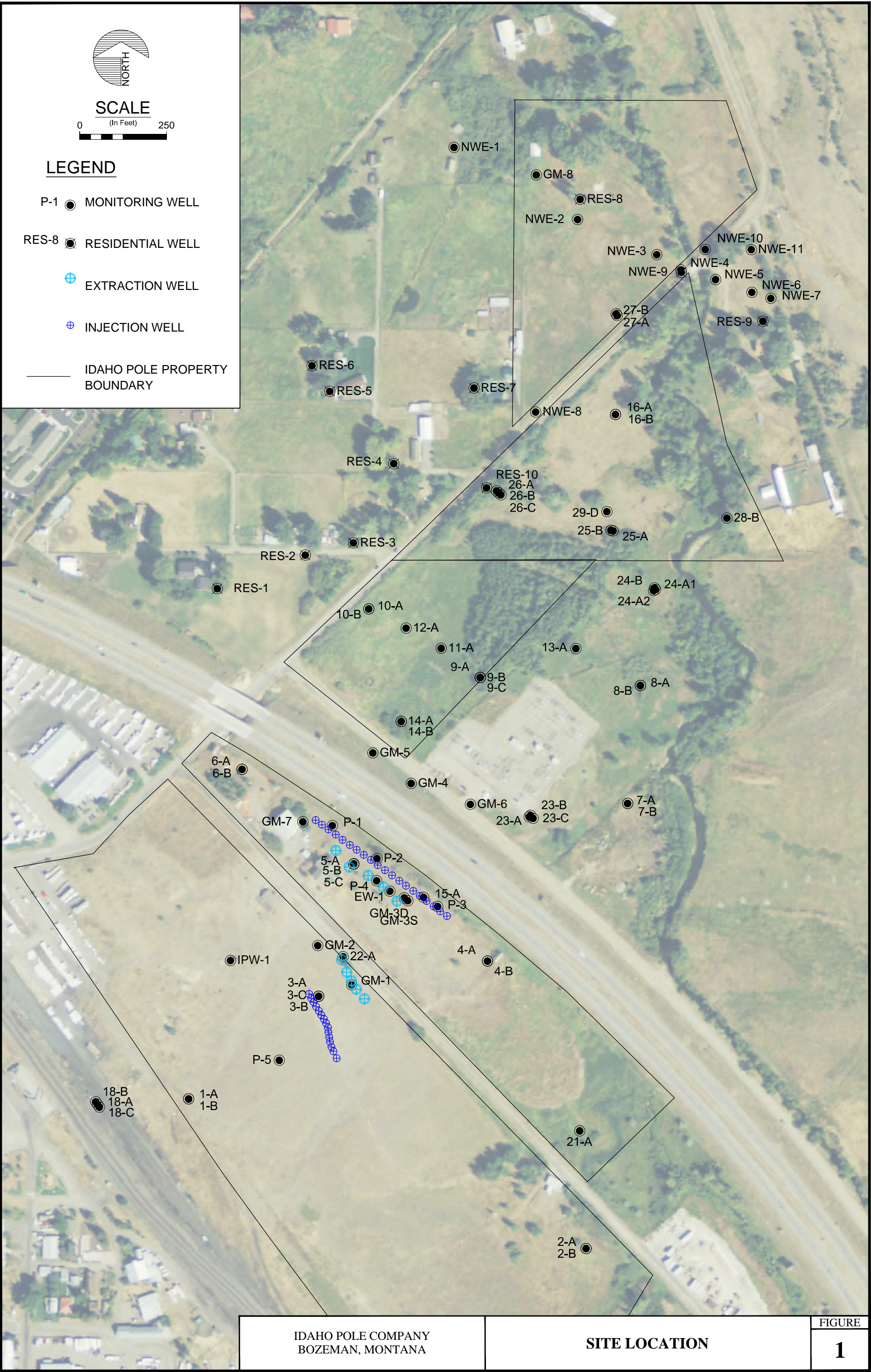


Figure 5 - Monitoring Well Locations (Map Provided by Hydrometrics, January 2015)

From Interim Report 5A Area Investigation (Hydrometrics, 2013)

UPDATE TIME: 9:58 AM
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Hydrometrics, Inc.
Consulting Scientists and Engineers

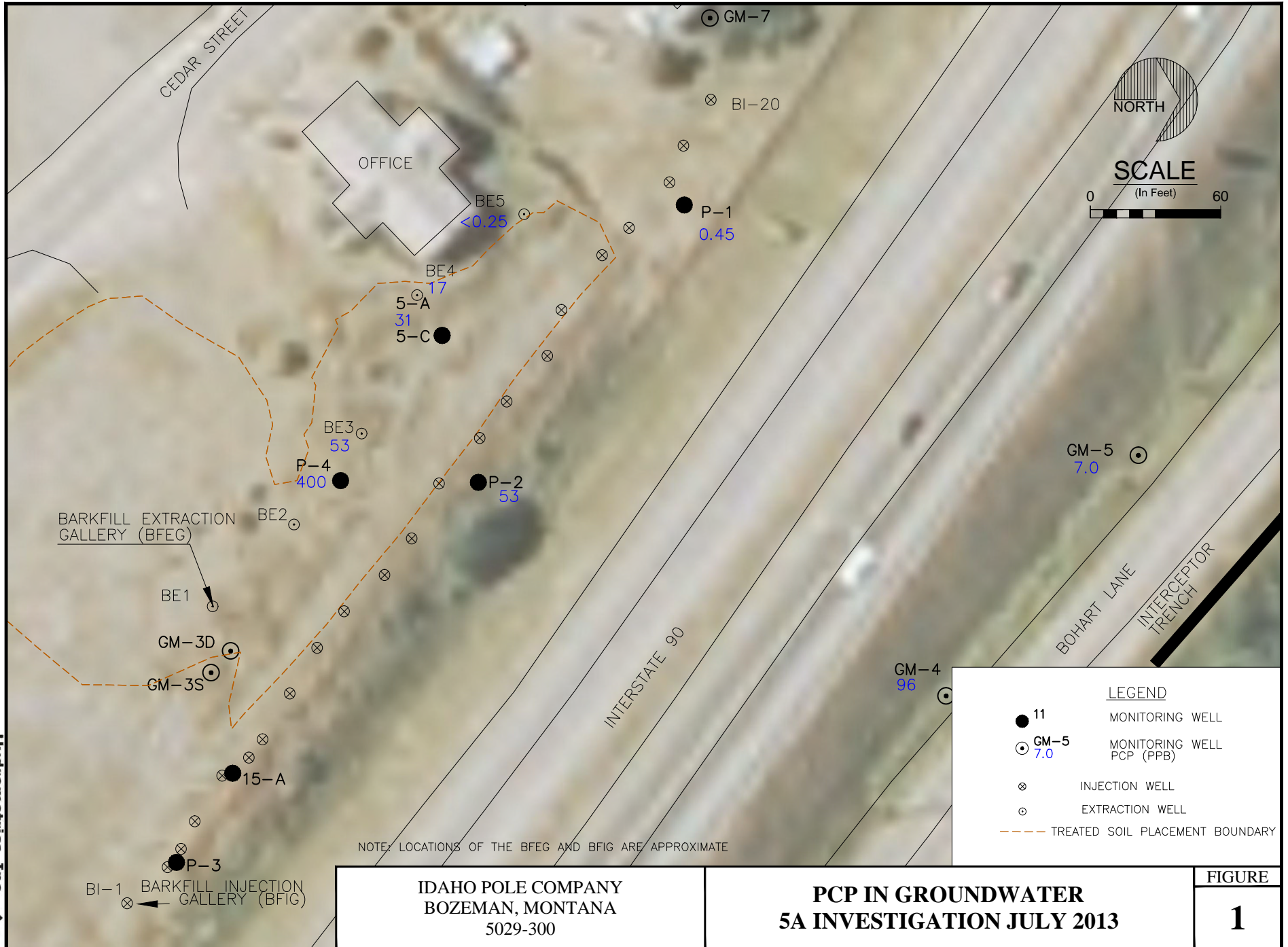


Figure 6 - Groundwater Results for PCP in Source Area Sampling, July 2013

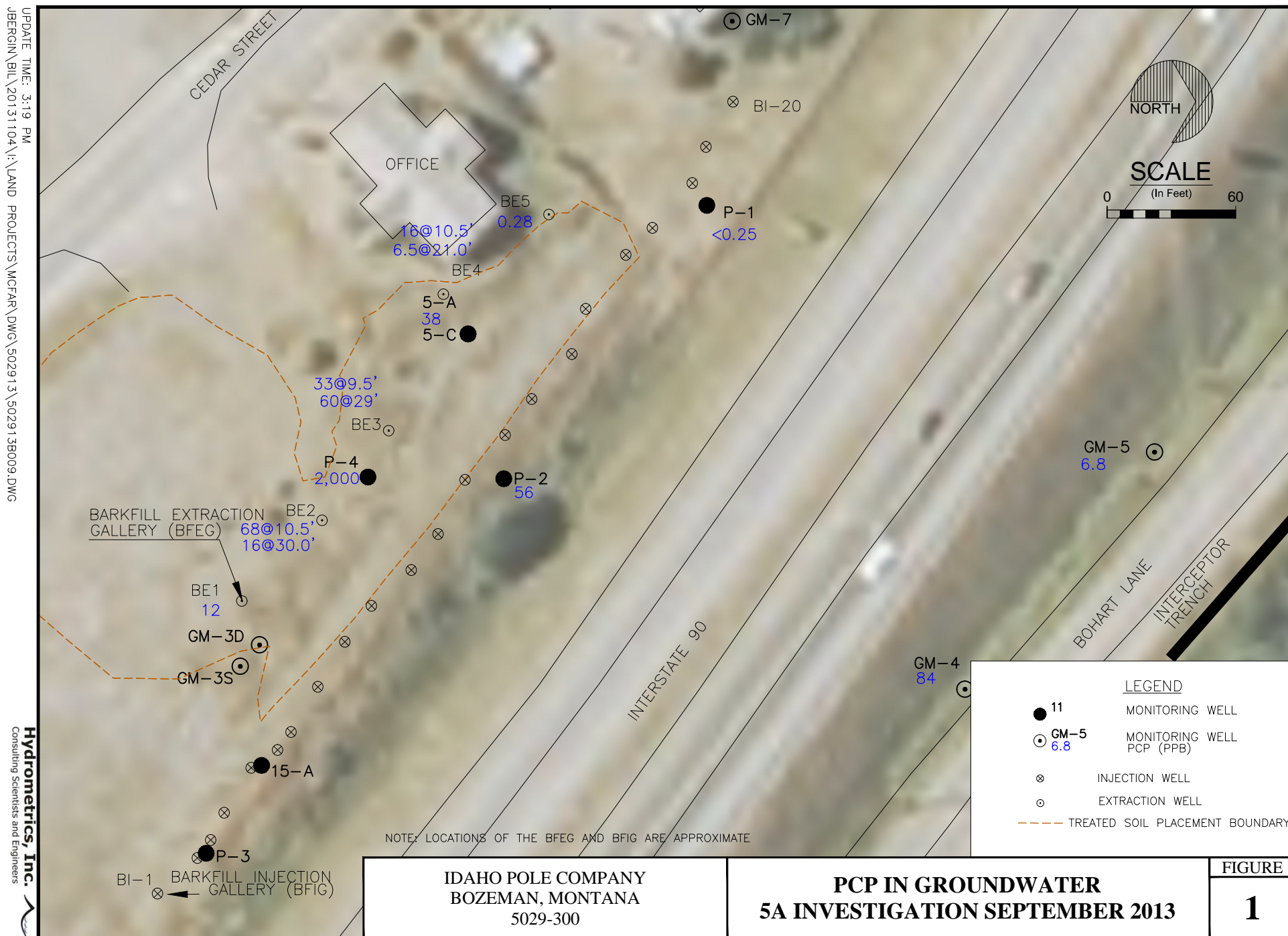


Figure 7 - Groundwater Results for PCP in Source Area Sampling, September 2013

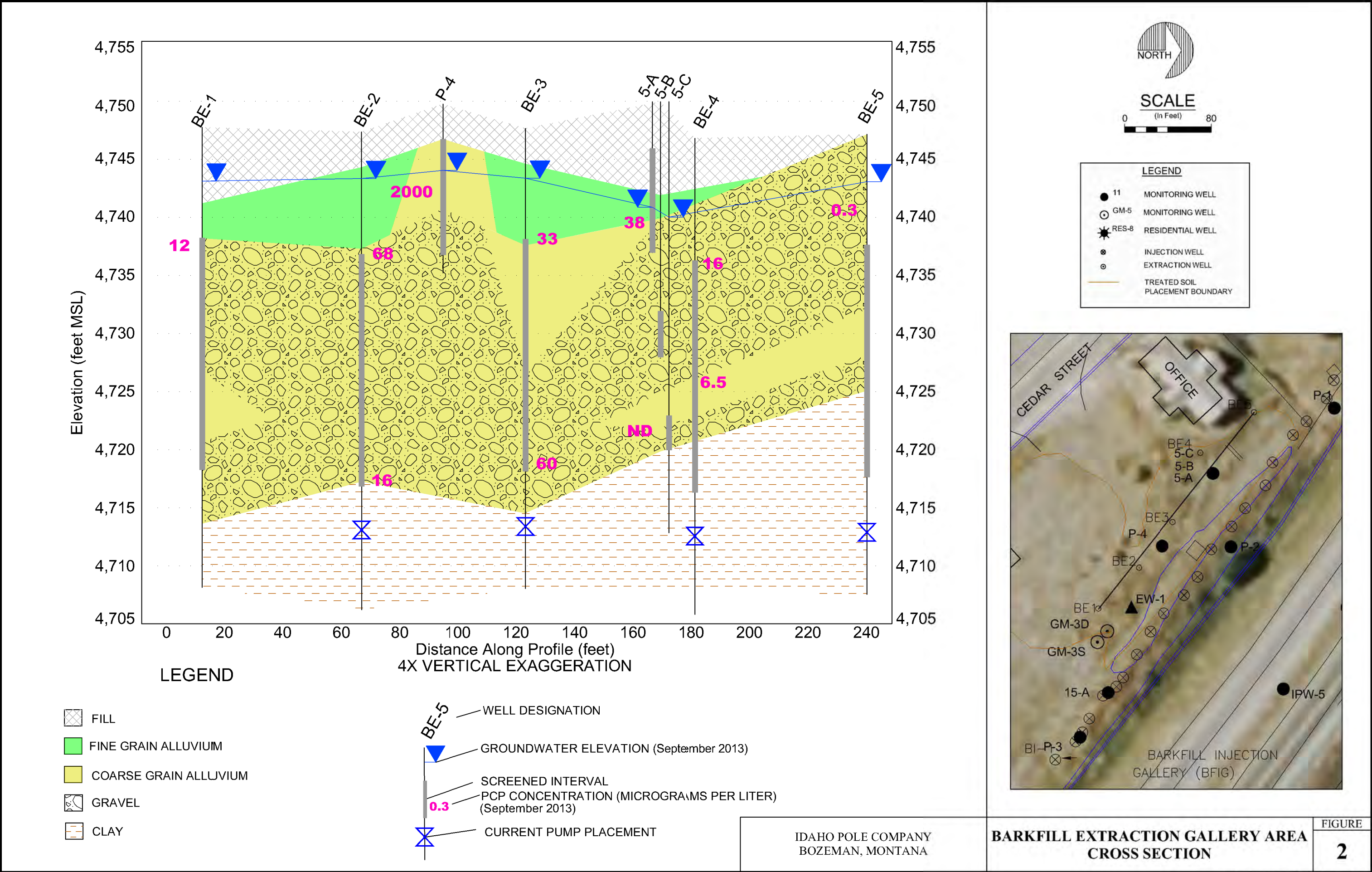
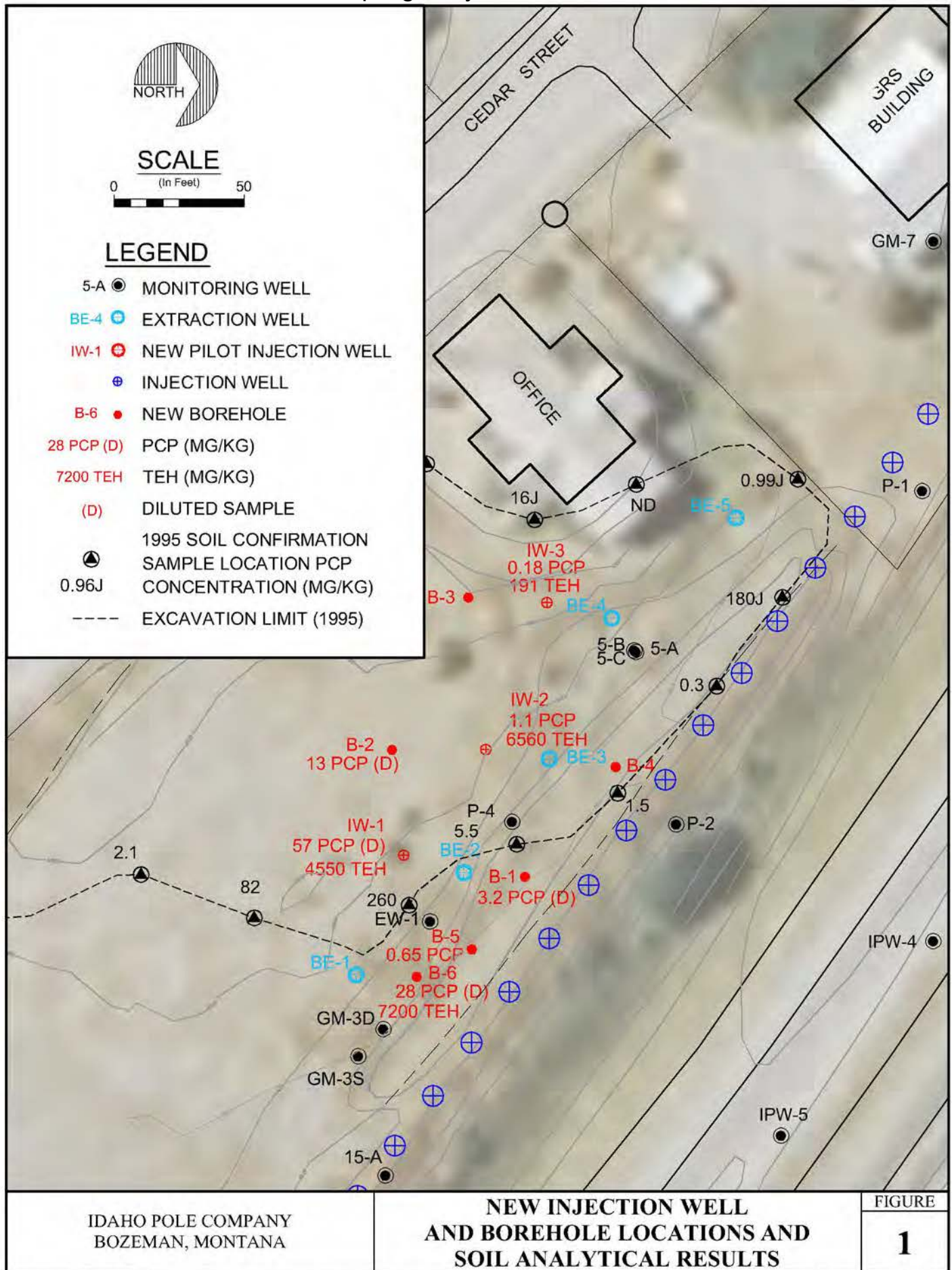


Figure 8 - Groundwater Results for PCP in Source Area Sampling, September 2013 (Cross-Section)

Figure 9: Soil Sampling Results for PCP and Total Extractable Hydrocarbons in Source Area Sampling, May 2014

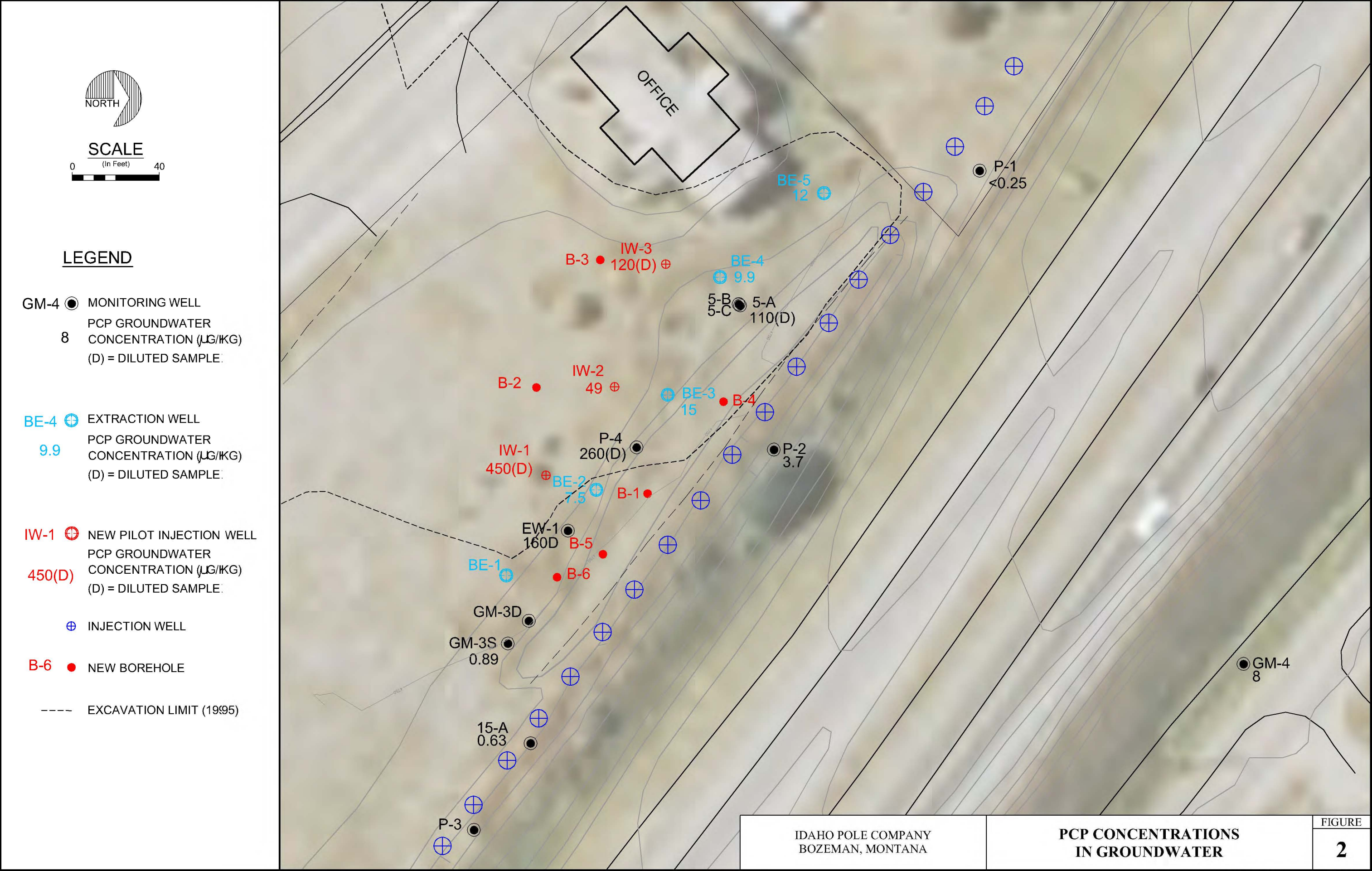


IDAHO POLE COMPANY
BOZEMAN, MONTANA

**NEW INJECTION WELL
AND BOREHOLE LOCATIONS AND
SOIL ANALYTICAL RESULTS**

FIGURE

1



IDAHO POLE COMPANY
BOZEMAN, MONTANA

PCP CONCENTRATIONS
IN GROUNDWATER

FIGURE
2

Figure 10: Groundwater Results for PCP in Source Area Sampling, May 2014

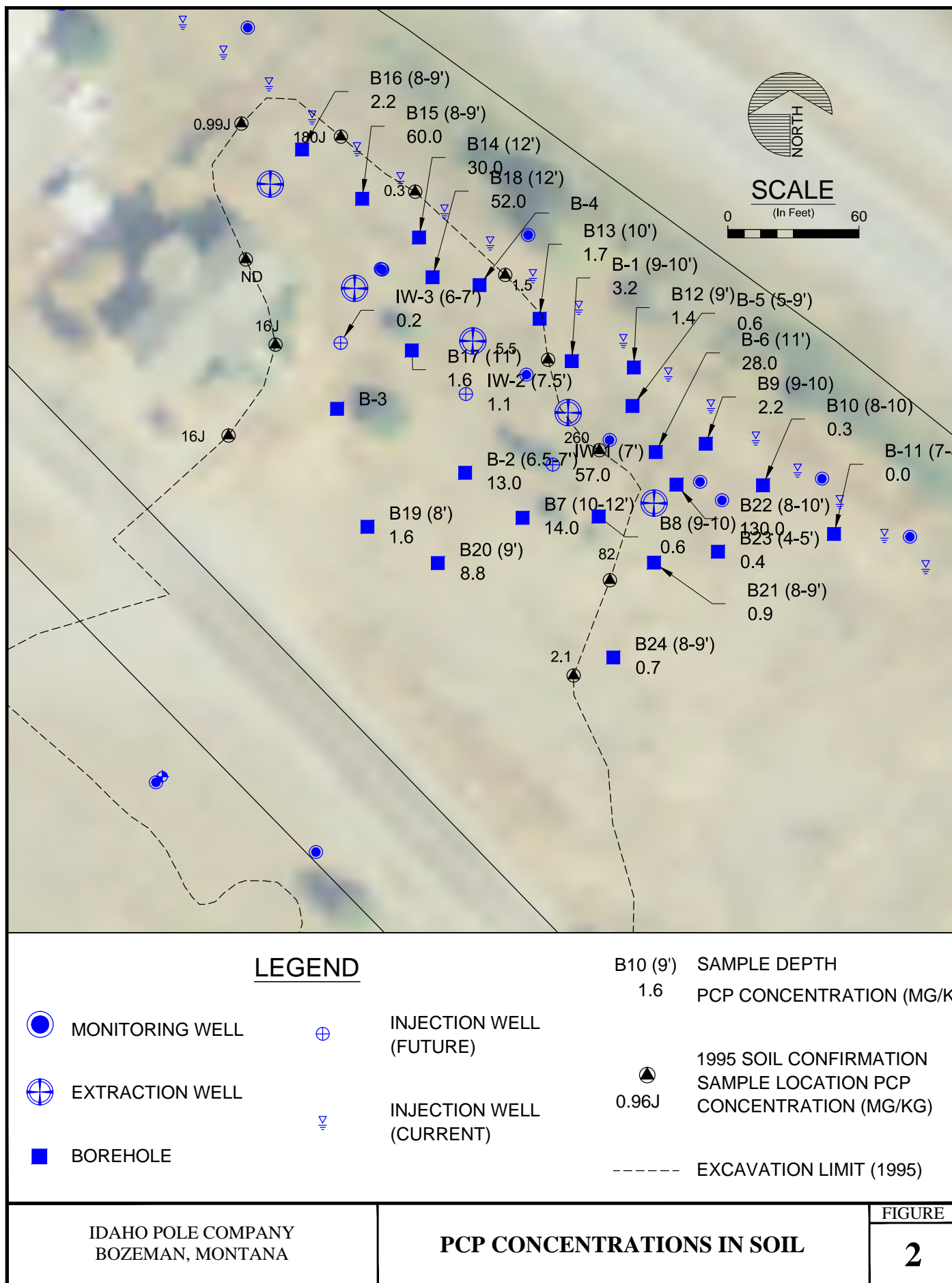


Figure 11 - Soil Sampling Results for PCP in Source Area Sampling, May and August 2014

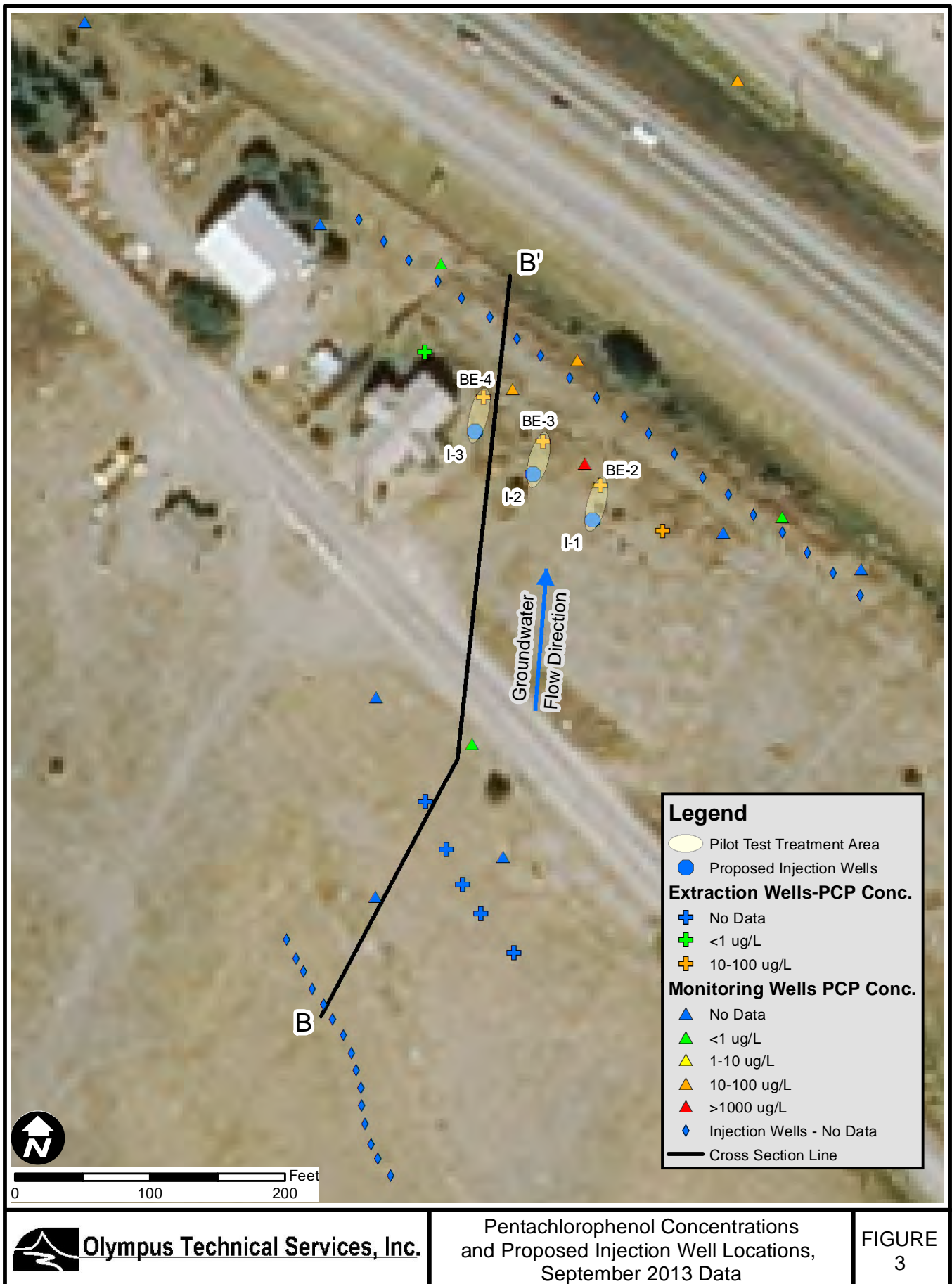


Figure 12 – Layout of Three Injection Test Locations in Pilot Test Work Plan

Attachments

Attachment 1

Completed Site Inspection Checklist

Site Inspection Checklist

I. SITE INFORMATION													
Site name: Idaho Pole Company	Date of inspection: November 5, 2014												
Location and Region: Bozeman, Montana (Region 8)	EPA ID: MTD 006232276												
Agency, office, or company leading the five-year review: EPA Region 8, Montana Office	Weather/temperature: Cloudy, 45-50°F												
Remedy Includes: (Check all that apply) <table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> Landfill cover/containment</td> <td><input type="checkbox"/> Monitored natural attenuation</td> </tr> <tr> <td><input checked="" type="checkbox"/> Access controls</td> <td><input type="checkbox"/> Groundwater containment</td> </tr> <tr> <td><input checked="" type="checkbox"/> Institutional controls</td> <td><input type="checkbox"/> Vertical barrier walls</td> </tr> <tr> <td><input checked="" type="checkbox"/> Groundwater pump and treatment</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Surface water collection and treatment</td> <td></td> </tr> <tr> <td colspan="2"><input checked="" type="checkbox"/> Other Completed active soil remedy included a Land Treatment Unit</td> </tr> </table>		<input type="checkbox"/> Landfill cover/containment	<input type="checkbox"/> Monitored natural attenuation	<input checked="" type="checkbox"/> Access controls	<input type="checkbox"/> Groundwater containment	<input checked="" type="checkbox"/> Institutional controls	<input type="checkbox"/> Vertical barrier walls	<input checked="" type="checkbox"/> Groundwater pump and treatment		<input type="checkbox"/> Surface water collection and treatment		<input checked="" type="checkbox"/> Other Completed active soil remedy included a Land Treatment Unit	
<input type="checkbox"/> Landfill cover/containment	<input type="checkbox"/> Monitored natural attenuation												
<input checked="" type="checkbox"/> Access controls	<input type="checkbox"/> Groundwater containment												
<input checked="" type="checkbox"/> Institutional controls	<input type="checkbox"/> Vertical barrier walls												
<input checked="" type="checkbox"/> Groundwater pump and treatment													
<input type="checkbox"/> Surface water collection and treatment													
<input checked="" type="checkbox"/> Other Completed active soil remedy included a Land Treatment Unit													
Attachments: <input checked="" type="checkbox"/> Inspection team roster attached (see main report) <input checked="" type="checkbox"/> Site map attached (see main report)													
II. INTERVIEWS (Check all that apply)													
<div style="display: flex; justify-content: space-between;"> <div> 1. O&M site manager <u>Les Lonning</u> <div style="display: flex; justify-content: space-between; width: 100%;"> Name Title Date </div> </div> <div> <u>Contractor to IPC</u> <div style="display: flex; justify-content: space-between; width: 100%;"> Name Title Date </div> </div> </div> <p> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input checked="" type="checkbox"/> by phone Phone no. 253-878-4647 Problems, suggestions; <input type="checkbox"/> Report attached _____ _____ </p>													
<div style="display: flex; justify-content: space-between;"> <div> 2. O&M staff <u>Rebecca Fabich</u> <div style="display: flex; justify-content: space-between; width: 100%;"> Name Title Date </div> </div> <div> <u>Plant Manager</u> <div style="display: flex; justify-content: space-between; width: 100%;"> Name Title Date </div> </div> </div> <p> Interviewed <input checked="" type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. 406-570-0002 Problems, suggestions; <input type="checkbox"/> Report attached _____ _____ </p>													
<div style="display: flex; justify-content: space-between;"> <div> O&M staff <u>Heidi Kaiser (Hydrometrics, Inc.)</u> <div style="display: flex; justify-content: space-between; width: 100%;"> Name Title Date </div> </div> <div> <u>Project Manager</u> <div style="display: flex; justify-content: space-between; width: 100%;"> Name Title Date </div> </div> </div> <p> Interviewed <input checked="" type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. 406-656-1172 Problems, suggestions; <input type="checkbox"/> Report attached _____ _____ </p>													

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	O&M Documents <input checked="" type="checkbox"/> O&M manual <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A <input checked="" type="checkbox"/> As-built drawings <input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Maintenance logs <input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks: <i>O&M Manual updated since last five-year review</i>			
2.	Site-Specific Health and Safety Plan <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> Contingency plan/emergency response plan <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks _____			
3.	O&M and OSHA Training Records <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks _____			
4.	Permits and Service Agreements <input type="checkbox"/> Air discharge permit <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Effluent discharge <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Waste disposal, POTW <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Other permits _____ <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks _____			
5.	Gas Generation Records <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks _____			
6.	Settlement Monument Records <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks _____			
7.	Groundwater Monitoring Records <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks _____			
8.	Leachate Extraction Records <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks _____			
9.	Discharge Compliance Records <input type="checkbox"/> Air <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Water (effluent) <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks _____			
10.	Daily Access/Security Logs <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks _____			

IV. O&M COSTS																																											
1.	O&M Organization <div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> State in-house <input checked="" type="checkbox"/> PRP in-house <input type="checkbox"/> Federal Facility in-house <input type="checkbox"/> Other </div> <div> <input type="checkbox"/> Contractor for State <input type="checkbox"/> Contractor for PRP <input type="checkbox"/> Contractor for Federal Facility </div> </div> <p><i>Private Party site, estimated costs provided in main report but not detailed below</i></p>																																										
2.	O&M Cost Records <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> Funding mechanism/agreement in place Original O&M cost estimate _____ <input type="checkbox"/> Breakdown attached <div style="text-align: center;">Total annual cost by year for review period if available</div> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">From _____</td> <td style="width: 20%;">To _____</td> <td style="width: 20%;"></td> <td style="width: 40%;"><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> </tr> <tr> <td>From _____</td> <td>To _____</td> <td></td> <td><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> </tr> <tr> <td>From _____</td> <td>To _____</td> <td></td> <td><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> </tr> <tr> <td>From _____</td> <td>To _____</td> <td></td> <td><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> </tr> <tr> <td>From _____</td> <td>To _____</td> <td></td> <td><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> </tr> </table>			From _____	To _____		<input type="checkbox"/> Breakdown attached	Date	Date	Total cost		From _____	To _____		<input type="checkbox"/> Breakdown attached	Date	Date	Total cost		From _____	To _____		<input type="checkbox"/> Breakdown attached	Date	Date	Total cost		From _____	To _____		<input type="checkbox"/> Breakdown attached	Date	Date	Total cost		From _____	To _____		<input type="checkbox"/> Breakdown attached	Date	Date	Total cost	
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Date	Date	Total cost																																									
3.	Unanticipated or Unusually High O&M Costs During Review Period Describe costs and reasons: _____ _____ _____ _____ _____ _____																																										
V. ACCESS AND INSTITUTIONAL CONTROLS <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A																																											
A. Fencing																																											
1.	Fencing damaged <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Gates secured <input type="checkbox"/> N/A Remarks _____ _____																																										
B. Other Access Restrictions																																											
1.	Signs and other security measures <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A Remarks – <i>Residents know to contact Rebecca Fabich if there is trespass on “Pasture Area”</i>																																										

C. Institutional Controls (ICs)			
1.	Implementation and enforcement Site conditions imply ICs not properly implemented <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A Site conditions imply ICs not being fully enforced <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A Type of monitoring (e.g., self-reporting, drive by) GW Use Restriction Ordinance enforced by City Frequency _____ Responsible party/agency _____ Contact _____ <div style="display: flex; justify-content: space-between; margin-top: 5px;"> Name Title Date Phone no. </div> Reporting is up-to-date <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Reports are verified by the lead agency <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Specific requirements in deed or decision documents have been met <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Violations have been reported <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A Other problems or suggestions: <input type="checkbox"/> Report attached		
<i>EPA proposed shrinking the CGA extent in 2011, but the Gallatin City-County Board of Health did not concur and no further actions have occurred in that regard</i>			
2.	Adequacy <input checked="" type="checkbox"/> ICs are adequate <input type="checkbox"/> ICs are inadequate <input type="checkbox"/> N/A Remarks _____ _____ _____		
D. General			
1.	Vandalism/trespassing <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No vandalism evident Remarks _____ _____		
2.	Land use changes on site <input checked="" type="checkbox"/> N/A Remarks _____ _____		
3.	Land use changes off site <input checked="" type="checkbox"/> N/A Remarks – <i>Planned development of Story Mill Park – see main text. Not expected to impact the remedy</i>		
VI. GENERAL SITE CONDITIONS			
A. Roads <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
1.	Roads damaged <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Roads adequate <input type="checkbox"/> N/A Remarks _____ _____		

B. Other Site Conditions		
Remarks _____ _____ _____ _____ _____ _____		
VII. LANDFILL COVERS <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
A. Landfill Surface		
1.	Settlement (Low spots) Areal extent _____ Depth _____ Remarks _____ _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Settlement not evident
2.	Cracks Lengths _____ Widths _____ Depths _____ Remarks _____ _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Cracking not evident
3.	Erosion Areal extent _____ Depth _____ Remarks _____ _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Erosion not evident
4.	Holes Areal extent _____ Depth _____ Remarks _____ _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Holes not evident
5.	Vegetative Cover <input type="checkbox"/> Grass <input type="checkbox"/> Cover properly established <input type="checkbox"/> No signs of stress <input type="checkbox"/> Trees/Shrubs (indicate size and locations on a diagram) Remarks _____ _____	
6.	Alternative Cover (armored rock, concrete, etc.) <input type="checkbox"/> N/A Remarks _____ _____	
7.	Bulges Areal extent _____ Height _____ Remarks _____ _____	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> Bulges not evident
8.	Wet Areas/Water Damage <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <input type="checkbox"/> Wet areas <input type="checkbox"/> Ponding <input type="checkbox"/> Seeps <input type="checkbox"/> Soft subgrade Remarks _____ _____ </div> <div style="width: 35%;"> <input type="checkbox"/> Wet areas/water damage not evident <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map </div> <div style="width: 30%;"> Areal extent _____ Areal extent _____ Areal extent _____ Areal extent _____ </div> </div>	

9.	Slope Instability <input type="checkbox"/> Slides <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of slope instability Areal extent _____ Remarks _____ _____
B. Benches <input type="checkbox"/> Applicable <input type="checkbox"/> N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)	
1.	Flows Bypass Bench <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay Remarks _____ _____
2.	Bench Breached <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay Remarks _____ _____
3.	Bench Overtopped <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay Remarks _____ _____
C. Letdown Channels <input type="checkbox"/> Applicable <input type="checkbox"/> N/A	
1.	Settlement <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of settlement Areal extent _____ Depth _____ Remarks _____ _____
2.	Material Degradation <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of degradation Material type _____ Areal extent _____ Remarks _____ _____
3.	Erosion <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of erosion Areal extent _____ Depth _____ Remarks _____ _____
4.	Undercutting <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of undercutting Areal extent _____ Depth _____ Remarks _____ _____
5.	Obstructions Type _____ <input type="checkbox"/> No obstructions <input type="checkbox"/> Location shown on site map Areal extent _____ Size _____ Remarks _____ _____
6.	Excessive Vegetative Growth Type _____ <input type="checkbox"/> No evidence of excessive growth <input type="checkbox"/> Vegetation in channels does not obstruct flow <input type="checkbox"/> Location shown on site map Areal extent _____ Remarks _____ _____

D. Cover Penetrations <input type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	Gas Vents	<input type="checkbox"/> Active <input type="checkbox"/> Passive	
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Needs Maintenance
	<input type="checkbox"/> N/A		
	Remarks _____		
2.	Gas Monitoring Probes	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration	<input type="checkbox"/> Needs Maintenance	<input type="checkbox"/> N/A
	Remarks _____		
3.	Monitoring Wells (within surface area of landfill)	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration	<input type="checkbox"/> Needs Maintenance	<input type="checkbox"/> N/A
	Remarks _____		
4.	Leachate Extraction Wells	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration	<input type="checkbox"/> Needs Maintenance	<input type="checkbox"/> N/A
	Remarks _____		
5.	Settlement Monuments	<input type="checkbox"/> Located	<input type="checkbox"/> Routinely surveyed <input type="checkbox"/> N/A
	Remarks _____		
E. Gas Collection and Treatment <input type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	Gas Treatment Facilities	<input type="checkbox"/> Flaring	<input type="checkbox"/> Thermal destruction <input type="checkbox"/> Collection for reuse
	<input type="checkbox"/> Good condition	<input type="checkbox"/> Needs Maintenance	
	Remarks _____		
2.	Gas Collection Wells, Manifolds and Piping	<input type="checkbox"/> Good condition	<input type="checkbox"/> Needs Maintenance
	Remarks _____		
3.	Gas Monitoring Facilities (<i>e.g.</i> , gas monitoring of adjacent homes or buildings)	<input type="checkbox"/> Good condition	<input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A
	Remarks _____		

F. Cover Drainage Layer			<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Outlet Pipes Inspected	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A	
Remarks_____				
2.	Outlet Rock Inspected	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A	
Remarks_____				
G. Detention/Sedimentation Ponds			<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Siltation Areal extent_____	Depth_____	<input type="checkbox"/> N/A	
<input type="checkbox"/> Siltation not evident				
Remarks_____				
2.	Erosion Areal extent_____	Depth_____		
<input type="checkbox"/> Erosion not evident				
Remarks_____				
3.	Outlet Works	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A	
Remarks_____				
4.	Dam	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A	
Remarks_____				
H. Retaining Walls			<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Deformations	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Deformation not evident	
Horizontal displacement_____		Vertical displacement_____		
Rotational displacement_____				
Remarks_____				
2.	Degradation	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Degradation not evident	
Remarks_____				
I. Perimeter Ditches/Off-Site Discharge			<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Siltation	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Siltation not evident	
Areal extent_____		Depth_____		
Remarks_____				
2.	Vegetative Growth	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A	
<input type="checkbox"/> Vegetation does not impede flow				
Areal extent_____		Type_____		
Remarks_____				
3.	Erosion	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Erosion not evident	
Areal extent_____		Depth_____		
Remarks_____				

4.	Discharge Structure	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A
Remarks _____			
VIII. VERTICAL BARRIER WALLS			
		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Settlement	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Settlement not evident
Areal extent _____ Depth _____			
Remarks _____			
2.	Performance Monitoring Type of monitoring _____		
<input type="checkbox"/> Performance not monitored			
Frequency _____ <input type="checkbox"/> Evidence of breaching			
Head differential _____			
Remarks _____			
IX. GROUNDWATER/SURFACE WATER REMEDIES			
		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
A. Groundwater Extraction Wells, Pumps, and Pipelines		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Pumps, Wellhead Plumbing, and Electrical		
<input checked="" type="checkbox"/> Good condition <input checked="" type="checkbox"/> All required wells located <input type="checkbox"/> Needs O&M <input type="checkbox"/> N/A			
Remarks – <i>All wells located and condition verified by O&M Manager in November 2015</i>			
2.	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances		
<input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M			
Remarks: <i>GAC may need to be changed in near future</i>			
3.	Spare Parts and Equipment		
<input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided			
Remarks – <i>backup pumps and pump repairs can be dealt with in a day's time</i>			
B. Surface Water Collection Structures, Pumps, and Pipelines		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Collection Structures, Pumps, and Electrical		
<input type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M <input checked="" type="checkbox"/> N/A			
Remarks _____			
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances		
<input type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M <input checked="" type="checkbox"/> N/A			
Remarks _____			

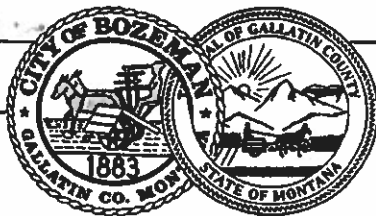
C. Treatment System		<input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A
1.	Treatment Train (Check components that apply) <input type="checkbox"/> Metals removal <input type="checkbox"/> Oil/water separation <input type="checkbox"/> Bioremediation <input type="checkbox"/> Air stripping <input checked="" type="checkbox"/> Carbon adsorbers <input checked="" type="checkbox"/> Filters - Bag Filters <input checked="" type="checkbox"/> Additive (e.g., chelation agent, flocculent) Nutrients (fertilizer) <input type="checkbox"/> Others _____ <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> Sampling ports properly marked and functional <input checked="" type="checkbox"/> Sampling/maintenance log displayed and up to date <input checked="" type="checkbox"/> Equipment properly identified <input checked="" type="checkbox"/> Quantity of groundwater treated annually - <i>can be calculated based on ~100 gpm target rate</i> <input type="checkbox"/> Quantity of surface water treated annually _____ Remarks _____ _____	
2.	Electrical Enclosures and Panels (properly rated and functional) <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____	
3.	Tanks, Vaults, Storage Vessels <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs Maintenance Remarks _____ _____	
4.	Discharge Structure and Appurtenances <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks – <i>both PPIG and BFIG injection galleries operating at time of visit. Noted during visit that they cannot control or measure how much water goes to individual injection wells.</i>	
5.	Treatment Building(s) <input type="checkbox"/> N/A <input type="checkbox"/> Good condition (esp. roof and doorways) <input checked="" type="checkbox"/> Needs repair <input type="checkbox"/> Chemicals and equipment properly stored Remarks – <i>the treatment building roof gutters need to be repaired due to past snow build-up. Additionally the door to the building needs to be retrofitted so the door can stay open.</i>	
6.	Monitoring Wells (pump and treatment remedy) <input checked="" type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning <input checked="" type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____ _____	
D. Monitoring Data		
1.	Monitoring Data <input checked="" type="checkbox"/> Is routinely submitted on time <input checked="" type="checkbox"/> Is of acceptable quality * <i>* Five Year Review Team noted that wells with concentrations below reporting limits (i.e., “not-detected”) were frequently reported to be “ND”. Monitoring data reports should identify actual reporting limit, such as “<0.5” or “0.5 U”. Also some figures incorrectly used “E” values instead or “D” values. Also, water levels should be measured at all wells, not just “A” wells, and all water levels should be measured at all wells in one event (over as short a period as possible) before any of the sampling begins.</i>	
2.	Monitoring data suggests: <input checked="" type="checkbox"/> Groundwater plume is effectively contained <input checked="" type="checkbox"/> Contaminant concentrations are declining There may have been incomplete capture at the BFEG but overall plume is shrinking and PCP declining	

E. Monitored Natural Attenuation			
1.	Monitoring Wells (natural attenuation remedy) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A Remarks _____		
X. OTHER REMEDIES			
<input checked="" type="checkbox"/> N/A			
XI. OVERALL OBSERVATIONS			
A. Implementation of the Remedy			
<p>Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).</p> <p><i>The soil remedy is considered complete, the ICs for the specific areas containing treated soils have been recorded. It may be appropriate to de-list the entire site with respect to soils. The groundwater treatment system has relatively low influent concentrations, and meeting the effluent standards has not been an issue. Groundwater concentrations of PCP have declined over time, presumably due to remedial actions to date (source removal, P&T, and potentially in-situ biodegradation). Concentrations of PCP well above groundwater cleanup standards remain south of I-90 and north of I-90, but protectiveness is provided by a combination of residential well sampling and ICs. The groundwater remedy has transitioned from "Phase 1" to "Phase 2" as intended in the 1996 ESD based on "Phase 1" results. Modifications associated with the transition to "Phase 2" included discontinuation of extraction from the PPEG, increased extraction at the BFEG, and changes to the groundwater monitoring and performance monitoring programs. The duration of the groundwater remedy remains uncertain, but the groundwater remedy is progressing and is functioning as intended. Recently, additional source area characterization has been performed and pilot testing for potential source area remediation has been proposed, with the long-term goal of eliminating the need for P&T operation if the source area remediation efforts are successful.</i></p>			
B. Adequacy of O&M			
<p>Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.</p> <p><i>The third five-year review identified a conceptual difficulty in establishing if there is remaining source material beneath I-90, since there was a possibility that continued PCP impacts in groundwater north of I-90 could be due to incomplete capture of the source area south of the BFEG. The termination of extraction at the PPEG in 2010 was intended to be coupled with increased extraction at the BFEG to improve capture at the BFEG and hopefully resolve this issue. Unfortunately, the pumping rate increase at the BFEG was not fully realized until late 2014. Thus, it is still not possible at this time to establish the significance of potential remaining source material beneath I-90. It still remains possible (and perhaps likely) that addressing the residual source material south of the BFEG will eliminate the vast majority of the groundwater impacts north of I-90.</i></p>			

C. Early Indicators of Potential Remedy Problems
<p>Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.</p> <p><i>None</i></p>
D. Opportunities for Optimization
<p>Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.</p> <p><i>An optimization evaluation was recently previously performed (Tetra Tech, 2010). Most of the optimization recommendations were implemented. As mentioned above, additional source area characterization has recently been performed and pilot testing for potential source area remediation has been proposed, with the long-term goal of eliminating the need for P&T operation if the source area remediation efforts are successful.</i></p>

Attachment 2

**Letters from Gallatin City-County Board of Health Regarding
Extent of the Controlled Groundwater Area, July 3, 2012**



www.gallatin.mt.gov/health

Gallatin City-County Health Department

Human Services
215 W. Mendenhall, Rm 117
Bozeman, MT 59715-3478
(406) 582-3100 • Fax (406) 582-3112

Environmental Health Services
215 W. Mendenhall, Rm 108
Bozeman, MT 59715-3478
406-582-3120 • Fax: 406-582-3128

July 3, 2012

Millie Heffner
Montana Department of Natural Resources
Water Rights Bureau
PO Box 201601
Helena, MT 59620-1601

ENVIRONMENTAL
PROTECTION AGENCY

JUL 06 2012

MONTANA OFFICE

Sean Becker
Mayor of the City of Bozeman
City Hall
PO Box 1230
Bozeman, MT 59715

Les Lonning
Director, Technical and Environmental Affairs
McFarland Cascade Pole and Lumber Company
1640 E. Marc Avenue
Tacoma, WA 978421-2939

Re: Idaho Pole CERCLA Site Status

Dear Ms. Heffner, Mayor Becker and Mr. Lonning:

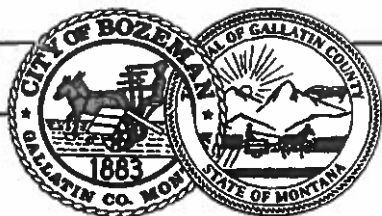
Last year, the Gallatin City-County Board of Health (Board) was approached by a representative of the US Environmental Protection Agency about potentially petitioning DNRC to shrink the Controlled Groundwater Area at the Idaho Pole CERCLA site on the northern edge of Bozeman. Working with the Gallatin County Local Water Quality District, we reviewed site documents, met with Idaho Pole, EPA and DEQ representatives, toured the site and deliberated whether we were ready to forward such a petition. We concluded we were not, as three concerns were outstanding (see attached letter). The Board's principal concern is the enormous volume of hydrocarbon (carrier oil) that was discharged at this site, which has not been tracked nor its status ascertained in two decades. We understand this contamination is not the purview of the federal Superfund program, but it is certainly a potential health concern. Can DEQ do anything to resolve the status of the hydrocarbon plume(s) at the Idaho Pole site? Without better hydrocarbon information than it has now, the Board will not be ready to approve shrinking the Controlled Groundwater Area at this site.

We look forward to your response. If you have questions or concerns about our inquiry, please address them to Health Officer Matt Kelley at 582-3120 or at matt.kelley@gallatin.mt.gov.

Best Regards,

Gretchen Rupp, PE
Chair, Gallatin City-County Board of Health

cc: Roger Hoogerheide, US EPA
Lisa Dewitt, Montana DEQ
Sandra Olsen, MDEQ
Kerri Strasheim, DNRC
Mike Trombetta, MDEQ
Jeff Kuhn, MDEQ
Chris Saunders, City Planning
Dustin Johnson, City Planning



www.gallatin.mt.gov/health

Gallatin City-County Health Department

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July 3, 2012

Les Lonning
Director, Technical and Environmental Affairs
McFarland Cascade Pole and Lumber Company
1640 E. Marc Avenue
Tacoma, WA 978421-2939

ENVIRONMENTAL
PROTECTION AGENCY

JUL 06 2012

MONTANA OFFICE

Lisa Dewitt
Federal Superfund Bureau
Remediation Division, Montana DEQ
PO Box 200901
Helena, MT 59620-0901

RE: Idaho Pole CERCLA Site

Dear Mr. Lonning and Ms. Dewitt:

For the last few years, the Gallatin City-County Board of Health (Board), EPA, DEQ, Bozeman City officials and Idaho Pole representatives have discussed proposed changes in the boundary of the Idaho Pole Controlled Ground Water Area (CGWA). These discussions illustrate that all parties understand the potential benefits of commercial development on the south side of the CGWA. During the discussions the Board has raised specific concerns regarding the site. The purpose of this letter is to reiterate the concerns raised by the Board and the Local Water Quality District during a subcommittee meeting on July 26, 2011. To date, the Board has not received any response from Idaho Pole regarding those concerns. We believe any redevelopment of any portion of the Idaho Pole site should be contemplated in conjunction with an effort to address environmental health concerns related to the site.

The concerns, summarized below, are shared by the Gallatin Local Water Quality District, which has been working with the Board on issues at the Idaho Pole site:

1) Status of petroleum hydrocarbons (carrier oil) in the subsurface; According to the Record of Decision for this site, as much as 300,000 gallons of carrier fluid were spilled during pole treating operations at Idaho Pole. Since hydrocarbons are excluded from CERCLA, ongoing monitoring and testing at the site have not attempted to characterize the nature and extent of hydrocarbon contamination. But, as the Board of Health, we are quite concerned about the fate of this substance. Were there no PCP involved, this would be a state Superfund site, with careful delineation of the hydrocarbon plume(s) and assessment of remediation possibilities. We voiced this issue in a letter to EPA last spring, but its May 27, 2011, response letter did not address this question. The board believes this is an important question since such materials might be in the

ground-water system, encountered in construction excavations and could conceivably release volatile contaminants into the air through foundations in buildings constructed on site.

2) Status of Rocky Creek water and sediments: When the site was originally assessed, Rocky Creek was considered a hydrologic barrier. If that is correct, then any dissolved contaminants in the ground water downgradient of the pump-and-treat system, and any carrier fluid that might have continued to migrate towards the creek, would discharge into the creek. Since the early assessment work was completed, it is our understanding that very little monitoring or assessment has been conducted to assure that no contaminants are entering Rocky Creek. Given the length of time since the ROD was prepared, both the dissolved plumes and free carrier fluid have likely moved. Members of our community drink well water that has interacted with surface water downstream from the site, and others eat fish which swim in the creek and eat macroinvertebrates which live on and in the streambed sediments. The potential for health impacts are of concern to the Board.

3) Groundwater contamination north and east of Rocky Creek: While the creek was assumed to be a hydrologic barrier, no data were generated to show whether hydrocarbons have moved across (north and east) of the creek. Consequently very little information is available to assure that ground water quality north and east of Rocky Creek poses no potential health hazard.

The Board is willing to work with all parties to modify the CGWA; however, we feel it would be premature to move forward on any proposal for such modification until the above questions have been answered to the Board's satisfaction. The Board will entertain a responsible proposal to modify the CGWA, but in order to fulfill our statutory mandates to protect public health and the environment, we must have a clear understanding of status of the constituents of concern, including those not covered by CERCLA. The Board looks forward to resolving these remaining issues and moving forward on this important initiative. If you have questions or concerns, please address them to Matt Kelley at 582-3120 or at matt.kelley@gallatin.mt.gov.

Best regards,



Gretchen Rupp, PE
Chair, Gallatin City-County Board of Health

cc: **Roger Hoogerheide, US EPA**
Sean Becker, Mayor of Bozeman
Mike Trombetta, Montana DEQ
Sandra Olson, MDEQ
Millie Heffner, DNRC
Kerri Strasheim, DNRC
Kris Kukulski, City Manager
Chris Saunders, City Planning
Dustin Johnson, City Planning
Alan English, GLWQD

Attachment 3

Interview Summary Forms

**Idaho Pole Company NPL 5-Year Review Community Interview Questions
November 5, 2014**

Persons interviewed: Heidi Kaiser and Alan Stine
Consultants for Idaho Pole Company and BNSF Railway, respectively
406.656.1172, hkaiser@hydrometrics.com and 406.443.3087, AStine@olytech.com

1. What is your overall impression of the Idaho Pole Company National Priority List (NPL) project?

The remediation at the site is going well. The Responsible Parties are actively trying to achieve treatment standards and are evaluating additional methods to remediate the residual impacts, instead of relying on the Pump & Treat system to operate forever.

2. What effects have site activities/operations had on the surrounding community?

The site activities have had very minimal impacts on the surrounding community, and have had a positive effect of shrinking the plume. The only obvious impacts to the community have been to homeowners providing access to Rebecca Fabich so she can sample private wells once a year, which Heidi and Alan believe is not very intrusive and provides the homeowners with some assurance regarding the quality of their water.

3. Are you aware of any community concerns regarding the Idaho Pole NPL Site?
YES NO

If yes, what are they?

The Health Department has concerns regarding the release of hydrocarbons at the site and the potential migrations of hydrocarbons to the Creek.

4. Do you feel the remedy (including institutional controls) at Idaho Pole is effective?
YES NO

5. Do you feel well informed about site progress and activities? **YES** NO

If no, how would you like to receive information and how often?

6. What other comments or suggestions do you have?

The Responsible Parties continue to implement source control measures. Both Heidi and Alan think that if in situ control measures are effective at this site, it will be possible to stop operating the P&T system.

Interviewer/s: Rob Greenwald, Jennifer Abrahams

**Idaho Pole Company NPL 5-Year Review Community Interview Questions
November 5, 2014**

Person interviewed: David Smith
Manager Environmental Remediation, BNSF Railway
406.256.4046, david.smith4@BNSF.com

1. What is your overall impression of the Idaho Pole Company National Priority List (NPL) project?

The remediation is progressing very well and it may be possible to turn off the P&T system in the future.

2. What effects have site activities/operations had on the surrounding community?

Dave cannot address this question as he is not local to the area.

3. Are you aware of any community concerns regarding the Idaho Pole NPL Site?
YES **NO**

If yes, what are they?

4. Do you feel the remedy (including institutional controls) at Idaho Pole is effective?
YES NO

5. Do you feel well informed about site progress and activities? **YES** NO

If no, how would you like to receive information and how often?

6. What other comments or suggestions do you have?

The remediation at the site is progressing well, largely due to the communication between the Responsible Parties and the regulators. The good working relationships have led to a successful project.

Interviewer/s: Rob Greenwald, Jennifer Abrahams

Idaho Pole Company NPL 5-Year Review Community Interview Questions
November 5, 2014

Person interviewed: Rebecca Fabich
Consultant for Idaho Pole Company
406.570.0002, rmfabich@gmail.com

1. What is your overall impression of the Idaho Pole Company National Priority List (NPL) project?

This is the cleanest site on which Rebecca has worked. The Responsible Parties are proactive and have tried to accelerate the progress of remediation at the site.

2. What effects have site activities/operations had on the surrounding community?

Most people do not even know the site is a Superfund Site. This site has minimal effect on the community. The neighbors on the north side of I90 are happy there is no active manufacturing at the site.

3. Are you aware of any community concerns regarding the Idaho Pole NPL Site?
YES NO

If yes, what are they?

The neighbors on the north side of I90 are concerned that the site will be sold and resume manufacturing; the neighbors are not concerned with contamination at the site.

4. Do you feel the remedy (including institutional controls) at Idaho Pole is effective?
YES NO

5. Do you feel well informed about site progress and activities? **YES** NO

If no, how would you like to receive information and how often?

6. What other comments or suggestions do you have?

None

Interviewer/s: Rob Greenwald, Jennifer Abrahams

Idaho Pole Company NPL 5-Year Review Community Interview Questions
November 5, 2014

Person interviewed: Chris Mehl
Bozeman City Commission
406.581.4992, cmehl@bozeman.net

1. What is your overall impression of the Idaho Pole Company National Priority List (NPL) project?

The site is unused and under-utilized.

2. What effects have site activities/operations had on the surrounding community?

Almost none; with the exception of the nearby neighbors, the public are unaware of the site.

3. Are you aware of any community concerns regarding the Idaho Pole NPL Site?

YES NO

If yes, what are they?

The public do not know or understand the extent of groundwater contamination at and downgradient of the site. The public do not trust the documentation of the extent of contamination at the Idaho Pole Co. Superfund Site, due to poor communication regarding contamination at other sites in/around Bozeman. Chris emphasized that the distrust is not due to any actions by the Responsible Parties or governmental agencies at the IPC Site.

4. Do you feel the remedy (including institutional controls) at Idaho Pole is effective?

YES NO

5. Do you feel well informed about site progress and activities? **YES** NO

But Chris is only informed because he is a City Commissioner.

If no, how would you like to receive information and how often?

6. What other comments or suggestions do you have?

Chris recommends increasing the public awareness of the site, which could include holding public meetings to discuss the status of the site remediation, particularly when sale of the property and/or development at the site may be pending. Chris was impressed with the July 2014 EPA presentation to the Water Quality Board, but only about 10 people saw the presentation.

Chris requested a copy of the Five Year Review when it is released.

Interviewer/s: Rob Greenwald, Jennifer Abrahams

Idaho Pole Company NPL 5-Year Review Community Interview Questions
November 5, 2014

Person interviewed: Kroon Family – Jake and Georgia, Tracey and Rhoda, Steve, and Ashley
406.539.2109, ashley.kroon@gmail.com

1. What is your overall impression of the Idaho Pole Company National Priority List (NPL) project?

The Kroons are not bothered by the site activities, their concern is whether pentachlorophenol is present in their private well and whether the groundwater plume from the IPC site will have a negative impact on the value of their property. Hydrometrics sends the Kroons copies of the analytical results for the annual samples collected from their private well. The Kroons are concerned about the samples collected at their well in 1989 that were reported to have no pentachlorophenol detected with a reporting limit of 50 ug/L, which is 50x greater than the Maximum Contaminant Level.

2. What effects have site activities/operations had on the surrounding community?

The Idaho Pole Co. site has not had a direct impact on the community, with the exception of the Controlled Groundwater Area (CGA). The extent of the CGA has impacted the plans of NorthWestern Energy (NWE) to locate a replacement gas transmission line, which may be moved outside the CGA. Eleven temporary monitoring wells were installed to assess impacts at potential locations for the replacement line; three of the wells are on the Kroons' property. In the spring of 2014, 0.9 ug/L pentachlorophenol was detected in one of the wells (not on their property). The Kroons have requested copies of the second set of analytical results from these wells.

3. Are you aware of any community concerns regarding the Idaho Pole NPL Site?
YES **NO**

This was qualified by saying those who initially had concerns sold their property to Idaho Pole Corporation.

If yes, what are they?

4. Do you feel the remedy (including institutional controls) at Idaho Pole is effective?
YES NO

This was qualified by saying that even though the remedy seems effective, groundwater contamination is still present.

5. Do you feel well informed about site progress and activities? **YES** NO

If no, how would you like to receive information and how often?

6. What other comments or suggestions do you have?

The Kroons are concerned about the NWE replacement of the gas transmission line, since NWE has an easement across the Kroons property. The Kroons are concerned that installing a new trench for the replacement line could create a future conduit for groundwater contamination. If the new gas line is installed in the same location as the current line, the new gas line will be installed under Rocky Creek; the Kroons are concerned that this may compromise the confining clay layer, which could result in mobilizing groundwater contamination. Ashley is also concerned that sealing the old pipe with gas will not be sufficient, and believes filling the old pipe with bentonite is a better approach.

Ashley saw some of the investigations at the site during the summer of 2014 and is aware that strong diesel odors were encountered in the borings collected in the former barkfill area.

Ashley also expressed concern that the City of Bozeman has plans for Story Mill Park (that the city recently purchased) that may involve re-directing surface water into a constructed wetlands, and she believes this could impact the groundwater flow direction.

Interviewer/s: Rob Greenwald, Jennifer Abrahams

Idaho Pole Company NPL 5-Year Review Community Interview Questions
November 6, 2014

Person interviewed: Mary Gail Sullivan, Manager – Environmental Permitting and Compliance, NorthWestern Energy (NWE); Ben Sorensen – Environmental Engineer, NWE, 406.497.3382, marygail.sullivan@northwestern.com; 406.497.3211, benjamin.sorensen@northwestern.com

1. What is your overall impression of the Idaho Pole Company National Priority List (NPL) project?

The cleanup activities have been effective, but there are residual sources that impact NorthWestern Energy (NWE) operations at the existing substation location and the location of a replacement gas transmission line. NWE thinks that IPC should be responsible for completely delineating the contamination at the northern (downgradient) end of the groundwater plume.

2. What effects have site activities/operations had on the surrounding community?

The surrounding community is upset due to consequences resulting from the Controlled Groundwater Area (CGA). NWE needs to replace an 83-year old gas transmission line present in the CGA. Normally, NWE would use the same right-of-way for the new transmission line, but the requirements associated with the CGA have NWE looking for an alternative transmission line location. The local landowners, however, are not granting access to NWE for the alternate line location outside of the CGA. They are also not placing their new line as deep below the river as they would like to, because they have concerns about maintaining the integrity of the confining clay.

3. Are you aware of any community concerns regarding the Idaho Pole NPL Site?

YES NO

If yes, what are they?

The concerns, identified in response to #2, are related to the NWE projects

4. Do you feel the remedy (including institutional controls) at Idaho Pole is effective?

YES NO

In general the remedy is effective, but there are remaining hot spots that impact activities at the NWE substation. NWE has been required to perform additional work to expand and/or make improvements at their substation; work at the substation costs NWE approximately 20% more than it otherwise would, due to the CGA requirements.

5. Do you feel well informed about site progress and activities? **YES** NO

If no, how would you like to receive information and how often?

The EPA and DEQ keep NWE informed, but NWE does not have much interaction with the responsible parties (Idaho Pole Corporation and BNSF)

6. What other comments or suggestions do you have?

NWE is concerned that their projects take longer, cost more, and are more difficult to implement due to the IPC contamination that resulted in the CGA. NWE thinks that IPC should enter into a cost sharing arrangement with NWE that results in IPC paying the “extra” costs associated with work performed within the CGA. Otherwise, the NWE customers are burdened with paying the extra costs.

NWE had to pay IPC an access fee of \$3,500 to install 11 temporary MWs required by the EPA to evaluate options regarding the gas transmission line replacement. They do not feel that they should have to pay an access fee (for sampling the contamination) to the responsible party who caused the contamination in the first place.

NWE would like to be able to address equipment failures, spills, etc. at the substation on an as-needed basis, rather than interacting with the EPA and DEQ each time work is required. NWE would like to prepare an emergency response plan and submit the plan to the EPA and DEQ for approval to allow NWE to perform work in real time when needed.

Interviewer/s: Rob Greenwald, Jennifer Abrahams

Idaho Pole Company NPL 5-Year Review Community Interview Questions
November 6, 2014

Person interviewed: Tim Roark, Environmental Health Director, Gallatin City – County Health Department, 406.582.3120, tim.roark@gallatin.mt.gov

1. What is your overall impression of the Idaho Pole Company National Priority List (NPL) project?

The remediation at the site has progressed well, but has recently stalled.

2. What effects have site activities/operations had on the surrounding community?

Originally Idaho Pole Co. bought the surrounding private properties, which limited the impacts to the community. No complaints are received from the current residents. Recently NorthWestern Energy (NWE) has been working on their gas transmission line replacement which has rekindled local interest in the IPC site (due to the effects of the Controlled Groundwater Area). Tim noted that neither NWE nor the local community have contacted the Health Department regarding the gas transmission line replacement.

3. Are you aware of any community concerns regarding the Idaho Pole NPL Site?
YES **NO**

If yes, what are they?

Except the local community are concerned regarding the final development of the site, which will likely be manufacturing/industrial.

4. Do you feel the remedy (including institutional controls) at Idaho Pole is effective?
YES **NO**

This answer is qualified as follows: the soil remediation was effective, but free product is still found in a trench. The presence of free product (diesel) and potential for that carrier oil to be transported to Rocky Creek needs to be addressed or explained better to the public. If there is no such risk, that needs to be documented better.

5. Do you feel well informed about site progress and activities? **YES** **NO**

If no, how would you like to receive information and how often?

An annual or semi-annual update to the Board of Health would be useful; this could be in the form of a letter, fact sheet, or presentation.

6. What other comments or suggestions do you have?

Tim suggested that IPC should present information regarding the isolated occurrence of the hydrocarbons at the site. Improved communication that presents data collected to date (with an interpretation of the data) would be useful to develop a better relationship (and trust) between the Board of Health and IPC. The Board of Health has not received a response from either EPA or DEQ regarding the July 3, 2012 letters identifying concerns about the hydrocarbons (carrier oil) released at the site.

Interviewer/s: Rob Greenwald, Jennifer Abrahams

**Idaho Pole Company NPL 5-Year Review Community Interview Questions
November 6, 2014**

Person interviewed: Brit Fontenot, Director of Economic Development and Community Relations, City of Bozeman, 406.582.2258, bfontenot@bozeman.net

1. What is your overall impression of the Idaho Pole Company National Priority List (NPL) project?

The site has significant potential for redevelopment, as it is in a zoning area designated for the heaviest manufacturing. The site needs infrastructure to support redevelopment, e.g., water and sewer pipes need to be extended to the site.

2. What effects have site activities/operations had on the surrounding community?

Since the site is zoned industrial, the City thinks that redevelopment is a viable option that will not be deterred by the presence of contaminated groundwater. If IPC approached Brit and explained the current remediation status and what site restrictions are required, Brit would be better prepared to assist in highlighting the property to potential developers.

3. Are you aware of any community concerns regarding the Idaho Pole NPL Site?
YES **NO**

If yes, what are they?

4. Do you feel the remedy (including institutional controls) at Idaho Pole is effective?
YES **NO**

The remedy appears to be working, Brit has seen wildlife at the site.

5. Do you feel well informed about site progress and activities? **YES** **NO**

If no, how would you like to receive information and how often?

Yes, but this is because Brit has contacted the EPA/DEQ to get information (both Roger Hoogerheide and Lisa DeWitt have been helpful and informative).

6. What other comments or suggestions do you have?

Brit would like to get more information regarding site restrictions (with respect to the Institutional Controls and Controlled Groundwater Area). Brit recognizes that the lack of infrastructure at the site has been a barrier to redevelopment. Brit requested that an attempt be made to interview Craig Woolard, Director of Public Works at the City of Bozeman, and also Mitch Overton, the Parks and Recreation Director at the City of Bozeman.

Interviewer/s: Rob Greenwald, Jennifer Abrahams

**Idaho Pole Company NPL 5-Year Review Community Interview Questions
November 6, 2014**

Person interviewed: Gretchen Rupp, Gallatin City-County Board of Health, 406.994.6690,
beesgrmt@gmail.com

1. What is your overall impression of the Idaho Pole Company National Priority List (NPL) project?

Gretchen is disappointed that this is the fourth decade that the site is on the NPL and that remediation is not complete. She qualified this by saying that it is good that the soils remediation is complete.

2. What effects have site activities/operations had on the surrounding community?

Ashley Kroon is very concerned about site operations, and has met and spoken with Gretchen about the potential for the site to impact her grandparents water quality and their property value.

3. Are you aware of any community concerns regarding the Idaho Pole NPL Site?
YES **NO**

If yes, what are they?

The Board of Health wrote two letters in July 2012 expressing concern about the release of hydrocarbons at the site and the lack of characterization or remediation of the hydrocarbons. No response was received from DEQ, and Gretchen indicated that she was unsatisfied with a response from EPA indicating that CERCLA does not address hydrocarbons.

4. Do you feel the remedy (including institutional controls) at Idaho Pole is effective?
YES **NO**

This is a qualified response, as Gretchen does not believe she is up to date concerning the remediation status. The remedy has been effective for the soils, but the groundwater remediation of pentachlorophenol at the smear zone/vadose zone has not been very effective. She is dissatisfied with the characterization and remediation of carrier oil hydrocarbons.

5. Do you feel well informed about site progress and activities? **YES** **NO**

If no, how would you like to receive information and how often?

6. What other comments or suggestions do you have?

The extent of hydrocarbons needs to be characterized and remediated. The Gallatin City-County Board of Health requested characterization of the nature and extent of carrier oil in the subsurface at and downgradient of the Site before the Board will concur with reducing

the extent of the CGA. Gretchen said hydrocarbons have not been analyzed in groundwater for the past 10 to 20 years. She suggested sampling/analyzing the groundwater for hydrocarbons one time, and presenting the information to the Board of Health.

Interviewer/s: Rob Greenwald, Jennifer Abrahams

Idaho Pole Company NPL 5-Year Review Community Interview Questions
November 10, 2014

Person interviewed: Les Lonning, Private Consultant to McFarland Cascade Pole and Lumber Co., 253.878.4647, Les.Lonning@gmail.com

1. What is your overall impression of the Idaho Pole Company National Priority List (NPL) project?

The project is progressing nicely, and seems to be headed in the right direction to ultimately get the site off the NPL.

2. What effects have site activities/operations had on the surrounding community?

There have not been significant impacts on the community. IPC has been open communicating with the neighbors and City.

3. Are you aware of any community concerns regarding the Idaho Pole NPL Site?

YES NO

If yes, what are they?

The expansion of NorthWestern Energy's (NWE) existing substation has led to some community concerns. NWE contacted IPC asking for an agreement to develop/add to the substation. Additionally, NWE has installed some temporary wells to support the replacement of a gas transmission line.

4. Do you feel the remedy (including institutional controls) at Idaho Pole is effective?

YES NO

5. Do you feel well informed about site progress and activities? **YES** NO

If no, how would you like to receive information and how often?

6. What other comments or suggestions do you have?

IPC would like to get the site back into useful production. Everyone appears to be satisfied with the soil remedy, IPC is looking for alternatives to accelerate the residual groundwater remediation. No one (EPA, DEQ, or IPC) wants the groundwater pump and treat remedy to run to infinity.

Interviewer/s: Rob Greenwald, Jennifer Abrahams

**Idaho Pole Company NPL 5-Year Review Community Interview Questions
November 12, 2014**

Person interviewed: Tammy Swinney, Manager Gallatin Local Water Quality District,
406.582.3145, tammy.swinney@gallatin.mt.gov

1. What is your overall impression of the Idaho Pole Company National Priority List (NPL) project?

It has taken a long time to get to this stage of the site remediation. She is encouraged that IPC performed a pilot program this summer/fall to address residual pentachlorophenol contamination. Tammy thinks the hot spot remediation may work faster than the on-going Pump & Treat system.

2. What effects have site activities/operations had on the surrounding community?

There was some community impact to the neighbors adjacent to the IPC site, but the majority of the community is unaware of site activities or even that the IPC site is a Superfund Site.

3. Are you aware of any community concerns regarding the Idaho Pole NPL Site?

YES NO

If yes, what are they?

The Kroons are concerned about the NWE gas transmission line replacement and how it potentially may provide a conduit for migration of contaminated groundwater.

4. Do you feel the remedy (including institutional controls) at Idaho Pole is effective?

YES **NO**

Tammy thinks the remedy has been effective for the soils, the ICs are effective, and the P&T is effective remediating pentachlorophenol in groundwater. The characterization and remediation of the carrier oil (hydrocarbons) has not been performed.

5. Do you feel well informed about site progress and activities? **YES** NO

If no, how would you like to receive information and how often?

Tammy took the initiative to read site documents and follow-up with calls to Roger Hoogerheide and go to the site during some of the area 5A pilot study field work. Tammy would like to receive semi-annual or annual updates from the EPA regarding activities performed and planned; this could be achieved through a newsletter or an email.

6. What other comments or suggestions do you have?

The Gallatin Local Water Quality District has open lines of communication with Roger Hoogerheide (EPA) and Rebecca Fabich (IPC). The Water District has monitoring wells throughout the Bozeman basin, and collects water elevation measurements. The Water District has worked with Roger and Rebecca to use some of the monitoring wells on the IPC site to collect additional water elevation measurements; the Water District would like to put some transducers in some monitoring wells at the IPC site.

Interviewer/s: Rob Greenwald, Jennifer Abrahams

Idaho Pole Company NPL 5-Year Review Community Interview Questions
November 21, 2014

Person interviewed: Craig Woolard, Director of Public Works
406.581.0091, cwoolard@bozeman.net

1. What is your overall impression of the Idaho Pole Company National Priority List (NPL) project?

Generally the remediation is going well, Craig's perspective is based on the fact that the site or issues concerning the site do not show up "on his desk".

2. What effects have site activities/operations had on the surrounding community?

The site is still undeveloped; this is partly due to being a Superfund site and partly due to the need to extend utilities (water, sewer, power, etc.) to the site. Craig is concerned that residual contamination at the site may inhibit redevelopment.

3. Are you aware of any community concerns regarding the Idaho Pole NPL Site?

YES NO

If yes, what are they?

The concerns are related to the downgradient migration of contaminated groundwater/

4. Do you feel the remedy (including institutional controls) at Idaho Pole is effective?

YES NO

5. Do you feel well informed about site progress and activities? YES **NO**

If no, how would you like to receive information and how often?

Craig would like to receive a fact sheet or email with information and links to documents on a quarterly or semi-annual basis, as relevant to site activities.

6. What other comments or suggestions do you have?

None. In response to an information request, Craig provided a description of the City's plans for Story Mill Park (originally identified by Ashley Kroon). The land for this park, near the downgradient portion of the IPC groundwater plume, was purchased by the Trust for Public Lands; the Trust is in the process of selling the land to the City of Bozeman. The northern half of the park is intended to be used for active recreation, included playing fields and some equipment. The southern half of the park is intended to be a reconstructed wetland that will have some walking trails. The park will receive stormwater overflow from Bozeman Creek during high flow events; a goal of the wetlands will be to improve the surface water quality

(specifically nitrate concentration) of the East Gallatin River via nutrient reduction. The City does not anticipate that the recreation of wetlands will substantively change the surface water hydrology or the groundwater flow in this area.

Interviewer/s: Jennifer Abrahams

**Idaho Pole Company NPL 5-Year Review Community Interview Questions
November 25, 2014**

Person interviewed: Rick Hixson, City Engineer
406.586.2284, rhixson@bozeman.net

1. What is your overall impression of the Idaho Pole Company National Priority List (NPL) project?

The remediation process at the site has been very long-lived. It has taken a long time from when the problem was identified at the site to obtaining resolution. This has resulted in a portion of town being off-limits from improvements/development.

2. What effects have site activities/operations had on the surrounding community?

Development at the site has been precluded, forcing development to occur elsewhere.

3. Are you aware of any community concerns regarding the Idaho Pole NPL Site?

YES NO

If yes, what are they?

The concerns, for those who are aware of the site impacts, have been the contamination preventing development at the site. The community at large does not even know about the site; Rick has not heard anyone express health concerns that are related to the site.

4. Do you feel the remedy (including institutional controls) at Idaho Pole is effective?

YES NO

5. Do you feel well informed about site progress and activities? **YES** NO

If no, how would you like to receive information and how often?

Information is available for review, either via the Internet or by calling DEQ/EPA.

6. What other comments or suggestions do you have?

Rick sees the future of the site including someone having a development proposal that triggers active involvement by the City. Rick stated that the lack of existing infrastructure at the site has played a larger role impeding development at the site than the stigma of being a Superfund Site.

Interviewer/s: Rob Greenwald, Jennifer Abrahams

**Idaho Pole Company NPL 5-Year Review Community Interview Questions
December 3, 2014**

Person interviewed: Mitch Overton, City of Bozeman Parks & Recreation Director
406.595.7020, moverton@bozeman.net

1. What is your overall impression of the Idaho Pole Company National Priority List (NPL) project?

The wood treating processes at the site resulted in soil contamination, the chemicals in soil leached into groundwater that still needs to be monitored and remediated.

2. What effects have site activities/operations had on the surrounding community?

The site remediation activities, including monitoring, have had mostly positive effects on the community.

3. Are you aware of any community concerns regarding the Idaho Pole NPL Site?

YES NO

If yes, what are they?

Some individual residents at the downgradient edge of the plume have expressed concerns regarding the potential impact the groundwater contamination may have relative to the value of their property. Mitch is unaware of other community concerns.

4. Do you feel the remedy (including institutional controls) at Idaho Pole is effective?

YES NO

5. Do you feel well informed about site progress and activities? **YES** NO

If no, how would you like to receive information and how often?

6. What other comments or suggestions do you have?

None. Drawing more attention to the site will not assist the implementation of the remedy.

Interviewer/s: Jennifer Abrahams

Attachment 4

**Notices of Fourth Five-Year Review in Bozeman Daily Chronicle
(November 2, 4, and 7, 2014)**

BOZEMAN DAILY CHRONICLE

SUNDAY, NOVEMBER 2, 2014 | D3

Real estate funds needn't be riled by rising rates

NEW YORK (AP) — The threat of rising interest rates is raising real fears about real-estate mutual funds.

Investors have pulled money out of real-estate funds for two straight months, even though they remain among the year's best performers and pay bigger dividends than many stock funds. The worry is that rising rates will hurt growth in the owners of apartment buildings, offices and other commercial real estate, as well as limit demand for their stocks.

Before joining the crowd, bear in mind that rising rates don't always mean losses for real-estate funds. Many have delivered solid returns even during periods of rising interest rates. The key is how quickly and how high rates rise. Real-estate fund managers say they can still make money for investors, though they acknowledge that the performance won't be as good as this year and the recent past.

"One of the things you have to ask is why are rates rising," says John Wenker, co-portfolio manager of Nuveen's Real Estate Securities fund since 1999. "If rates are moving up moderately because the economy is starting to strengthen, that's fine for commercial real estate."

BUILT DIFFERENTLY

For real-estate funds, dividends are king. Most invest in real-estate investment trusts, which can avoid income taxes if they pass on 90 percent of their profit to shareholders as dividends.

REITs can own shopping centers, self-storage units or senior housing communities.

Because they pay out so much of their income as dividends, REITs attracted income investors who grew tired of the low yields offered by bonds. That demand helped the average real-estate fund return an annualized 17.4 percent over the last five years, according to Morningstar. That beats the 15.6 percent annualized return for the Standard & Poor's 500 Index over the same time.

One concern for REITs is that a rise in interest rates, which economists say is inevitable, will push investors to dump them and go back to bonds. Higher interest rates also make it more expensive for REITs to raise money to buy and develop real estate.

Those fears hurt REITs last year, when the Federal Reserve hinted that it may curtail its bond-buying stimulus program. The yield on the 10-year Treasury note quickly jumped from 1.63 percent in early May to nearly 3 percent by the end of the year. That drove the average real-estate fund into the red in the last three quarters of 2013. For the year, the average real-estate fund returned just 1.5 percent, versus 32.4 percent for the S&P 500.

GRADUAL IS GOOD

REITs can deliver gains if the increase in rates is more moderate and the result of an improving economy. In such a scenario, fund managers say property owners should be able to charge higher rents and have fewer vacancies for their apartments and office

buildings. That would lead to higher dividends.

The economy hasn't been as strong as many had hoped, but it is improving. Many economists believe growth next year will be the strongest since 2005. The unemployment rate is also at its lowest level since 2008, and the job market is strong enough that the Federal Reserve earlier this week announced the end to its bond-buying program. The central bank could begin raising its target for short-term interest rates next year, and many economists expect a measured rise.

An encouraging precedent for real-estate investors is the period of 2004-06, when the Federal Reserve raised short-term rates 17 times and they yielded on the 10-year Treasury note gradually rose from 4.62 percent to 5.30 percent. The average real-estate fund had solid returns in each of those years, though the group suffered big losses in the following two years as the housing market slumped.

FAIR EXPECTATIONS

Even proponents of REITs acknowledge that they no longer look cheap following their strong run the last five years. The largest U.S. REIT, mall operator Simon Property Group, has jumped more than a sevenfold since

bottoming in March 2009. The rise in price has helped push its dividend yield down to 2.9 percent. It was above 4 percent as recently as early 2010.

One of the biggest traditional threats to REITs, an overabundance of properties, isn't much of a concern, says Bob Zanous. He is a portfolio manager of the \$750 million Delaware Dividend Income fund, which can invest in various stocks and bonds and has more than 7 percent of its portfolio in real estate. Construction on new projects has remained relatively subdued, though some pockets of concern exist around the country, such as apartments in Washington, D.C., and other areas around the Southeast.

So what kinds of returns are likely in the future? REITs currently offer yields of 3 percent to 4 percent, and managers expect continued growth as the economy improves. Add that to expectations for inflation to remain relatively tame, and Zanous says an annual return in the high single digits is likely. Nuveen's Wenker has a similar forecast, suggesting something between 5 percent and 10 percent in the next 12 months.

Those returns, though, will likely also be less steady than they've been in recent years.

BUSINESS BRIEFS

A&E Architects featured in national magazine

A&E Architects P.C. has been published nationally in the September 2014 issue of Healthcare Design magazine. The article highlights the recently-completed intensive care unit at Billings Clinic. Ideas including improving the patient experience and clinical design excellence were incorporated throughout the design process, leading to an enhanced patient environment and quality of care.

Sage Gardeners receives grant, in-kind gift

Sage Gardeners, a non-profit organization that builds accessible organic garden spaces for seniors in Gallatin County, was awarded with a \$1,500 grant from Town Pump Charitable Foundation and a \$1,237 in-kind gift from Simkins-Hallin Lumber Company. Funding and support for Sage Gardeners goes toward building accessible vegetable gardens for seniors in assisted living communities, retirement communities, public housing, community open spaces, cancer support communities, and private residences.

Bacterin receives \$192,484 grant

Bacterin International Holdings, Inc. has been awarded a \$192,484 grant from the Montana Board of Research and Commercialization Technology (MBRCT) for the development and commercialization of a regenerative medicine technology. Bacterin's research, supported in part by the year-long grant from MBRCT, will address a long-standing clinical challenge which aims to provide life-enhancing care to wounded military personnel and civilians.

If you have news to submit to the Business Page about a new business, new job, promotion, training or other news, the deadline for press releases is 5 p.m. Wednesday. Please keep your copy brief and include a daytime phone number. If your photo has not appeared on this page in the past year, you may leave your photo included. Photos can be submitted (as sport or yearbook-type photos work best; write your name on the back).

For more information call Jason Back, Business Page editor, at 587-4401 or send your information to sundaynews@dailychronicle.com.



Review of Cleanup at the Idaho Pole Superfund Site

The U.S. Environmental Protection Agency (EPA) and Montana Department of Environmental Quality (DEQ) are conducting a Five-Year Review on the Idaho Pole Company (IPC) Superfund Site. The Five-Year Review is a regular checkup on a Superfund site to ensure that cleanup decisions continue to protect people and the environment. This represents the fourth five-year review of the remedial actions implemented at the IPC Site.

The IPC Site, which operated a wood treating facility from 1945 to 1997, is located near the northern limits of Bozeman, Montana. Historic practices using pentachlorophenol as a carrier fuel to preserve the wood resulted in releases to the underlying soil and groundwater.

If you would like to learn more about the Idaho Pole Superfund Site please visit the following web site: <http://www2.epa.gov/region9/idaho-pole-co>

FOR ADDITIONAL INFORMATION CONTACT:

Roger Hoogerheide, EPA Remedial Project Manager
Toll free at 1-866-457-2690 ext. 5031
hoogerheide.10ger@epa.gov

Lisa DeWitt, DEQ Project Officer
406-841-5037
ldewitt@mt.gov

VOTE

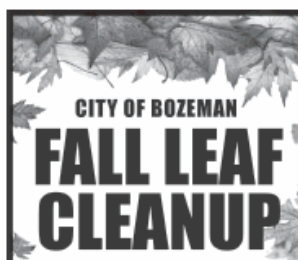
Virjeana (Jeannie) Brown
Democrat for House District 67



As your legislator, I will fight to protect the health of our environment, protect public lands and public education, support the Montana Healthy Initiative and I will work to raise Montana's minimum wage.

I am currently working as a Grassroots Activist for the protection and expansion of Social Security, Medicare and Medicaid.

Paid for by Committee to Elect Virjeana (Jeannie) Brown for House District 67. Democratic, P.O. Box 1101, Bozeman, MT 59711-1101, Suzanne Trapp, Treasurer.



The City of Bozeman Street Department will provide its annual fall cleanup of leaves this October and November. Only leaves will be picked up. Please no brush piles or yard waste.

SUBDIVISION PICKUP BEGINS OCTOBER 29*
All leaves must be in paper compostable bags. Other types of containers will not be picked up.

CORE PICKUP BEGINS NOVEMBER 3*
"No Parking Street Maintenance" signs will be posted one day before scheduled pickup.

MISS YOUR PICKUP DAY?
Bring contained leaves to the City Shop Complex at 814 N. Bozeman from 10am - 2pm on Saturdays, November 8, 15 and 22.

For a complete schedule and listing of specific streets and pickup dates or for more information, visit www.bozeman.net or call 582-3202.



Brought to you by the City of Bozeman Street Department.

*Pickup dates may change due to weather.



Christopher Brown, MD

Eric Johnson, MD

406-414-5000 :: bozemandeaconess.org



WELCOME NEW PHYSICIANS TO BOZEMAN DEACONESS HOSPITAL

We are pleased to welcome hospitalist Christopher Brown, MD, and Eric Johnson, MD, to the Bozeman Deaconess Hospital medical staff.

Christopher Brown, MD

Dr. Brown will be joining our Hospital Medicine team, providing inpatient care as a hospitalist. He graduated from the University of Virginia School of Medicine and completed his residency in internal medicine at the University of Utah, where he was chief resident and then served as a visiting instructor in internal medicine. For the past year, Dr. Brown has practiced general medicine at Wanganui District Hospital in New Zealand. He is board certified in internal medicine. Hospitalists care for hospitalized patients and do not take appointments.

Eric Johnson, MD

Dr. Johnson, board certified in family medicine, joins us as the Medical Director of Bozeman Deaconess Wound Clinic & Hyperbaric Medicine. A graduate of the University of Minnesota Medical School, Dr. Johnson completed his post graduate studies at Family Medicine Residency of Idaho. After working in private practice and spending more than 20 years in emergency medicine in Idaho, he has extensive training in hyperbaric medicine and wound care. Dr. Johnson sees patients both by referral or by appointment, call 406-414-5512.

BOZEMAN DAILY CHRONICLE

NATION

TUESDAY, NOVEMBER 4, 2014 | A5

After deadly crash, Branson says space travel still worth risk

By CHRISTINE MAI-DUC
Los Angeles Times

Virgin Galactic founder Richard Branson says the company's space travel program will press on following last week's crash of one of its spacecrafts, which killed one pilot and injured another.

In his first live interview since the crash, Branson hit the morning show circuit Monday, saying space travel is still "absolutely ... worth the risks."

"It's a grand program which has had a horrible setback," Branson told the "Today" host Matt Lauer,

"but I don't think anybody watching this program would want us to abandon it at this stage."

He said "CBS This Morning" that after Friday's accident two people signed up that day for rides to space and paid in full "as a gesture of goodwill."

Speaking from the British Virgin Islands, Branson called Friday an "incredibly sad" day for the family of pilot Mike Alsbury, who was killed, and the Virgin Galactic team. "But we've now picked ourselves up, the team are pushing on building the next spacecraft and waiting for the final report from the NTSB."

The National Transportation Safety Board said late Sunday that Virgin Galactic SpaceShipTwo's co-pilot changed the spacecraft's aerodynamic controls prematurely. That move may have caused the tail to rise and create drag — an action called "feathering." Moments later, the aircraft "disintegrated," NTSB acting chairman Christopher Hart said.

Using video footage from inside the cockpit as well as telemetry data, investigators found that the co-pilot unlocked the "feathering" handle nine seconds after the rocket engine ignited. This ac-

tion occurred at speeds of Mach 1 instead of Mach 1.4.

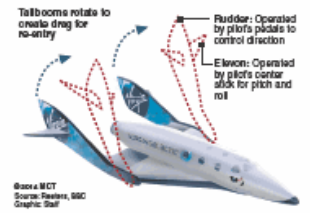
Hart cautioned that "pilot error" was only one possible cause of Friday's crash in the Mojave Desert. Branson says he has not seen the cockpit video, and is awaiting the final results of the NTSB investigation.

"If it did turn out to be human error, we would obviously still need to make sure that it's impossible for something like that to happen in the future," Branson told CBS.

"All of us are determined to continue and make sure that we learn from this and get it right."

Pilot error investigated

SpaceShipTwo's rotating tail boom or "feather" mechanism, a key safety feature for re-enters the atmosphere, rotated early which the crash caused Friday that Christopher Hart, acting chairman of the NTSB, says it is too early to say whether this caused the crash. The investigation could take up to a year.



SpaceShipTwo
Source: Reuters, NBC
Graphic: Staff

Election rides wave of anger at incumbents

By MARK Z. BARABAK
Los Angeles Times

DENVER — The costliest midterm election in history draws to a bitter close with control of the Senate tilting toward Republicans even as governors, in red and blue states alike, face a well of anti-incumbent anger from New England to the Rocky Mountains.

Growing GOP momentum has strengthened Republican challengers in tight Senate races — including Alaska, Colorado and Iowa — and bolstered the prospect of expanding the party's House majority, as the number of competitive contests pushes deeper into Democratic-held territory, including Las Vegas and California.

But unlike a conventional wave election that swamps members of a single party, Tuesday's results could bring a more mixed showing, as Republicans fight to protect Senate seats in the strongholds of Kansas, Georgia and Kentucky and governorships in several states, including Maine, Georgia, Florida and Wisconsin.

For their part, Democrats are battling to keep the governor's office in the blue bastions of Connecticut, Illinois, Maryland, Massachusetts and here in Colorado, where John Hickenlooper easily won four years ago.

Burdened by association with the deeply unpopular President Barack Obama, Democrats have seen little political benefit from the steadily growing economy, which, for many voters, has failed to translate into a sense of greater well-being.

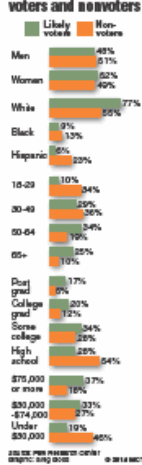
"There's just a lot of folks, they can see that the economy's coming back," Hickenlooper said in an interview at an office near the Capitol, where he ate chicken soup to fight a cold. "But they're not believers yet."

In many ways, Colorado has become the epicenter of this midterm election, which will hit about \$4 billion in spending and feature — if that is the word — well over 2 million TV advertisements, most of them negative. The Denver area has seen more of those commercials than anywhere else in the country: upwards of 78,000 this year through mid-October, and counting.

The Internet offers no respite, as websites and even streaming music services are filled with advertisements depicting the voting record of Rep. Cory Gardner, the GOP Senate nominee, or condemning Democratic Sen. Mark Udall's fealty to Obama.

Adding to the onslaught has been a seemingly endless barrage of bad news — about Ebola, Russia, beheading, hostages beheaded in the Middle East — and a series of Washington mistakes, including

Demographics of voters and nonvoters



the botched rollout of the health care program and scandals at the IRS, the Secret Service and the Department of Veterans Affairs.

The result is a surly electorate, and it goes beyond Colorado. Those not skipping the election in disgust are ready to lash out at lawmakers of both parties.

"I don't like any of the campaigns anymore," said Frank Riehl, a retired farmer in Iowa City, Iowa, another state inundated with a flood of scathing TV ads. He'll vote Tuesday for Democratic hopeful Bruce Braley in his white-hot Senate race with Republican Joni Ernst, but only out of a sense of civic duty.

In House races across the country, the only thing that prevents significant turnover is the drawing of political lines that purposely limit competition and make it extremely difficult to oust most members. Only about three dozen seats out of 435 have the prospect of changing partisan hands after Tuesday.

There will be much greater turnover in the 100-member Senate, with most of the new faces likely belonging to Republicans. The GOP needs to gain six seats to win control and the party seems halfway there, with near-certain victories in Montana, South Dakota and West Virginia.

Elsewhere, the party has been on the offensive throughout this election year, as most competitive races are in states that Obama lost in 2012, including Alaska, Arkansas, Louisiana and, narrowly, North Carolina.

In all, more than a half-dozen Senate races remain too close to call, with history suggesting most will break Tuesday in favor of one party or the other.

SANTA ANA

1 arrested in hit-and-run deaths

A California driver who police say struck and killed three teenage trick-or-treaters on Halloween before fleeing with his own children had recently pleaded guilty to a separate hit-and-run, authorities said Monday.

Jaquinn Bell, 31, of Orange, drove a black Honda SUV through a marked crosswalk on Friday near an elementary school in Santa Ana, hitting 13-year-old twin sisters Lexi and Alexandra Perez and their friend Andrea Gonzalez, police said.

The victims, wearing costumes, were found lying in the street.

Authorities believe Bell fled with his two teenage children after ditching the damaged car in a nearby parking lot. He was arrested Sunday at a motel in Stanton, Santa Ana police Chief Carlos Rojas said.

"He left. He did not try to render aid, and thank God for other witnesses there who contacted the police department and allowed us to respond rather quickly," Rojas said. "Unfortunately it was a tragic end."

It was unclear why the driver fled the scene.

Brenda Gonzalez, Andrea's 24-year-old sister, said she went looking for the girls after her mother heard a loud car crash and wanted to warn them to be safe. As Gonzalez neared the scene, she saw the pillowcases the girls had been carrying to collect

candy and the tufts her sister wore.

"The first thing that came through my mind was, why isn't anybody helping them," she said. "A few seconds later I realized, you know, there's a reason they're not helping them. They're gone."

DENVER

Afghan officials leave Colo. training

Two Afghan prison officials who walked away from a prison-reform training program in Colorado pose no threat, and their names are being withheld for fear their families back home will be retaliated against by those

opposed to U.S. involvement there, officials said.

Their disappearances underscore a difficulty American officials face in training civilian and military Afghan nationals in the United States, then sending them home, where they can face reprisals from the Taliban or other elements hostile to the U.S.-backed government.

One Afghan official left a training center in Canon City in southern Colorado in September 2013. The other disappeared in February. One of the men was found while trying to enter Canada, the Denver Post reported Monday.

The other man has not been located.

STANFORD, CALIF.

NSA: U.S. needs Silicon Valley help

U.S. intelligence depends on Silicon Valley in innovation technologies that strengthen the Internet and staff to provide national cybersecurity, National Security Agency director Mike Rogers told Stanford University professors and students on Monday.

While the federal government is never going to match Silicon Valley salaries, "we are going to give you the opportunity to do some neat stuff, things you probably aren't going to be able to do anywhere else," Rogers said.

From Chronicle wire services

KNIFE RIVER

AN MDU RESOURCES COMPANY

East Belgrade Interchange Project

Week of November 3 - November 7

1.] Asphalt paving has now been completed through the Frontage Road work zone. Both travel lanes along Frontage Road have been shifted back to newly constructed Frontage Road. Over the course of the next couple of weeks crews will continue with the installation of the new signal at the Frontage Road/Airway Boulevard intersection, final slope grading, new sidewalks, signing and pavement markings.



2.] As work continues along the Frontage Road, please expect reduced speed limits, flaggers, changing traffic patterns and potential delays while traveling through the work zone.

3.] Concrete crews are continuing with their work on the new concrete roundabouts at the bottom of the interchange and off-ramps. Dirt crews are finishing up grading work between the interchange and the Frontage Road along Airway Boulevard.

For More Information:

Contact:
Knife River: (406) 388-6832
Project Website:
<http://www.mdt.mt.gov/pub/mvolve/belgrade/>

Construction and Traffic Updates:
Weekly traffic updates in Bozeman Daily Chronicle, Belgrade News, and local radio stations.
Motorists are reminded to watch for work zones and equipment as well as signs indicating reduced speed limits as they travel through the work zones. Posted speed limits are enforced until signs indicate that the work zone has ended. Fines double in work zones.

This project is being constructed in conjunction with the Montana Department of Transportation



Review of Cleanup at the Idaho Pole Superfund Site

The U.S. Environmental Protection Agency (EPA) and Montana Department of Environmental Quality (DEQ) are conducting a Five-Year Review on the Idaho Pole Company (IPC) Superfund Site. The Five-Year Review is a regular checkup on a Superfund site to ensure that cleanup decisions continue to protect people and the environment. This represents the fourth five-year review of the remedial actions implemented at the IPC Site.

The IPC Site, which operated a wood treating facility from 1945 to 1997, is located near the northern limits of Bozeman, Montana. Historic practices using pentachlorophenol as a carrier fuel to preserve the wood resulted in releases to the underlying soil and groundwater.

If you would like to learn more about the Idaho Pole Superfund Site please visit the following web site: <http://www2.epa.gov/region3/idaho-pole-co>

FOR ADDITIONAL INFORMATION CONTACT:

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Toll free at 1-866-457-2690 ext. 5031
hoogerheide.roger@epa.gov

Lisa DeWitt, DEQ Project Officer
406-841-5037
ldewitt@mt.gov

BOZEMAN DAILY CHRONICLE

NATION

FRIDAY, NOVEMBER 7, 2014 | A3

Gay marriage ruling means high court review likely

CINCINNATI (AP) — The expanding legal acceptance of same-sex marriage in the United States hit a roadblock on Thursday when a federal appeals court panel upheld anti-gay marriage laws in four states, making it more likely that the Supreme Court will take up the issue.

The 6th U.S. Circuit Court of Appeals panel that heard arguments on gay marriage bans or restrictions in Ohio, Michigan, Kentucky and Tennessee on Aug. 6 split 3-1, with Circuit Judge Jeffrey Sutton writing the majority opinion for himself and a fellow George W. Bush appointee, while a Bill Clinton appointee dissented.

The ruling concluded that states have the right to set rules for marriage and that such change as expanding a definition of marriage that dates "back to the earliest days of human history" is better done through political processes.

"When the courts do not let the people resolve new social issues like this one, they perpetuate the idea that the heroes in these change events are judges and lawyers," Sutton wrote, adding that it's better to have change "in which the people, gay and straight alike, become the heroes of their own stories by meeting

each other not as adversaries in a court system but as fellow citizens seeking to resolve a new social issue in a fair-minded way."

Cincinnati attorney Al Gerhardt, who represented gay plaintiffs in two cases in which he gained lower-court victories, said he will appeal to the Supreme Court.

"We're disappointed in the ruling. . . We believe the U.S. District Court and the dissent on the three-judge panel got it right," he said.

Attorneys could seek a review of the panel's decision by the full circuit court, but with mostly Republican-appointed judges they likely will try to move the issue directly on to the Supreme Court, seeking a definitive ruling.

The dissenting judge suggested that might have been the goal of Sutton and Judge Deborah Cook in their ruling.

"Because the correct result is so obvious, one is tempted to speculate that the majority has purposefully taken the contrary position to create the circuit split," Judge Martha Craig Daubert wrote, saying getting the case to the Supreme Court would put "an end to the uncertainty of status and the interstate chaos that the current discrep-



In this June 26, 2013 file photo, Sean Lawrence, of Philadelphia, holds up a flag during a rally for gay marriage on Independence Mall in Philadelphia. A federal appeals court on Thursday upheld anti-gay marriage laws in four states, breaking ranks with other courts that have considered the issue and setting up the prospect of Supreme Court review.

ancy in state laws threaten."

The president of pro-gay marriage group Freedom in Marry Evan Wolfson, blasted the ruling as "on the wrong side of history."

He called it "completely out of step with the Supreme Court's clear signal last month, out of step with the constitutional command as recognized by nearly every state and federal court in the past year, and out of step with the majority of the American people."

"This anomalous ruling won't stand the test of time or appeal," he said in a statement.

matic, and the big question now is whether an appeal can be ready for the justices in time for consideration this term. Generally, that means the court would have to decide by mid-January whether to hear the case in time for a decision in June. Otherwise, the case would be pushed back to the following term and probably not decided until June 2016.

The ruling followed more than 20 court victories for supporters of same-sex marriage since the Supreme Court struck down part of the federal Defense of Marriage Act last year. A federal judge in Louisiana recently upheld that state's ban, but four U.S. appeals courts ruled against state bans.

The issue appears likely to return to the Supreme Court so the nation's highest court can settle whether states can ban gay marriage or gay and lesbian couples have a fundamental right to marry under the U.S. Constitution. Thirty-two states recently asked the Supreme Court to settle the issue once and for all.

When the high court on Oct. 6 unexpectedly turned away appeals from five states seeking to prohibit gay and lesbian unions, its order effectively made gay marriage legal in 30 states. The San Francisco-based 9th Circuit Court of Appeals the next day overturned same-sex marriage bans in Idaho and Nevada, the fourth federal appeals court to rule against state bans.

Thursday's ruling out of Cincinnati changes that dy-

NATIONAL DIGEST

SANTA ANA, CALIF.

Nixon Library releases declassified audio

Newly declassified segments from the diary of President Richard Nixon's chief-of-staff provide a detailed, subtle portrait of the disgraced president as H.R. Haldeman recounts both moments of high-stakes diplomacy and unscripted daily life that would never make a White House memo or official document.

More than 40 years after Haldeman made his last audio diary recording, the Richard Nixon Presidential Library & Museum in Yorba Linda on Thursday released 285 segments from entries spanning from 1970 to 1973. At the time, Nixon was engaged in delicate diplomacy that would lead to treaties to limit nuclear armaments and a reopening of China to the world.

The segments include a reference to top-secret intelligence briefings the Nixon administration provided to China, and reveal Nixon's private musings as he wrangled with the then-Soviet Union over limiting nuclear weapons. Mixed in among the accounts of top-level diplomacy, however, are revealing nuggets of daily life: Haldeman surprising Nixon as he smoked a Russian cigarette after long negotiations with Soviet leaders, for example, and Nixon's team struggling to stay sober at a Chinese banquet as they felt obligated to drink toast after toast with top communist officials.

This combination makes the diaries unique and reveals almost as much about Nixon as it does about Haldeman, said Luke Nichter, a Nixon expert and history professor at Texas A&M University.

"It adds to this tapestry that we have on Nixon that we don't have on anyone else," he said. "These are not the White House talking points. This is what was really going on."

NASHVILLE, TENN.

Lawmakers readying abortion restrictions

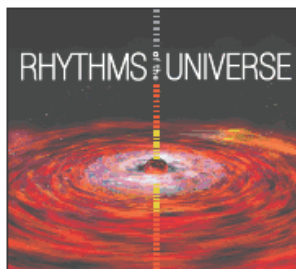
While the rest of the South slowly whittled away at abortion access, Tennessee's clinics operated under less stringent restrictions.

That is about to change.

Voters on Tuesday approved altering the state constitution to make clear that it does not protect the right to an abortion — despite the U.S. Supreme Court's 1973 Roe v. Wade ruling establishing a nationwide right to abortion — and legislators are already talking about mandatory counseling and waiting periods to bring Tennessee in line with the eight surrounding states. The legislature meets again in January.

The amendment, approved by 53 percent of voters, was a slow motion response to a Tennessee Supreme Court ruling in 2010 that said abortion was protected by the state constitution.

From Chronicle wire services



Words and Worlds in Motion

Black Holes, Neutron Stars, Einstein

Come experience it all through spoken word and dance Friday and Saturday, Nov. 7-8

7 pm in the Emerson Center for the Arts & Culture FREE to the public! A Celebrating Einstein Event



Office of the President
College of Letters & Science
Extended University



Review of Cleanup at the Idaho Pole Superfund Site

The U.S. Environmental Protection Agency (EPA) and Montana Department of Environmental Quality (DEQ) are conducting a Five-Year Review on the Idaho Pole Company (IPC) Superfund Site. The Five-Year Review is a regular checkup on a Superfund site to ensure that cleanup decisions continue to protect people and the environment. This represents the fourth five-year review of the remedial actions implemented at the IPC Site.

The IPC Site, which operated a wood treating facility from 1945 to 1997, is located near the northern limits of Bozeman, Montana. Historic practices using pentachlorophenol as a carrier fuel to preserve the wood resulted in releases to the underlying soil and groundwater.

If you would like to learn more about the Idaho Pole Superfund Site please visit the following web site: <http://www.2epa.gov/region8/Idaho-pole-co>

FOR ADDITIONAL INFORMATION CONTACT:

Roger Hoogerheide, EPA Remedial Project Manager
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hoogerheide.roger@epa.gov

Lisa DeWitt, DEQ Project Officer
406-841-5037
lidewitt@mt.gov

HOLIDAY OPEN HOUSE

FRIDAY, SATURDAY, & SUNDAY - NOVEMBER 7, 8, & 9

THREE DAY SPECIALS



1. Bells
Reg. \$3.95—ONLY 99¢
(Limit 5)

Birds
Reg. \$3.99—ONLY 99¢
(Limit 5)



2. Socks
Reg. \$19.99—Now \$0.99
(Limit 5)



3. Santa is coming to Bozeman
Reg. \$9.99—\$1.00 off



4. Holiday Dish Towel
Reg. \$4.99—Now \$1.99
(Limit 5)

Hallmark
GOLD CROWN
Leslie's Hallmark

GALLATIN VALLEY MALL • 596-0613 • OPEN MON-SAT 10-9 • SUN 11-5

Attachment 5

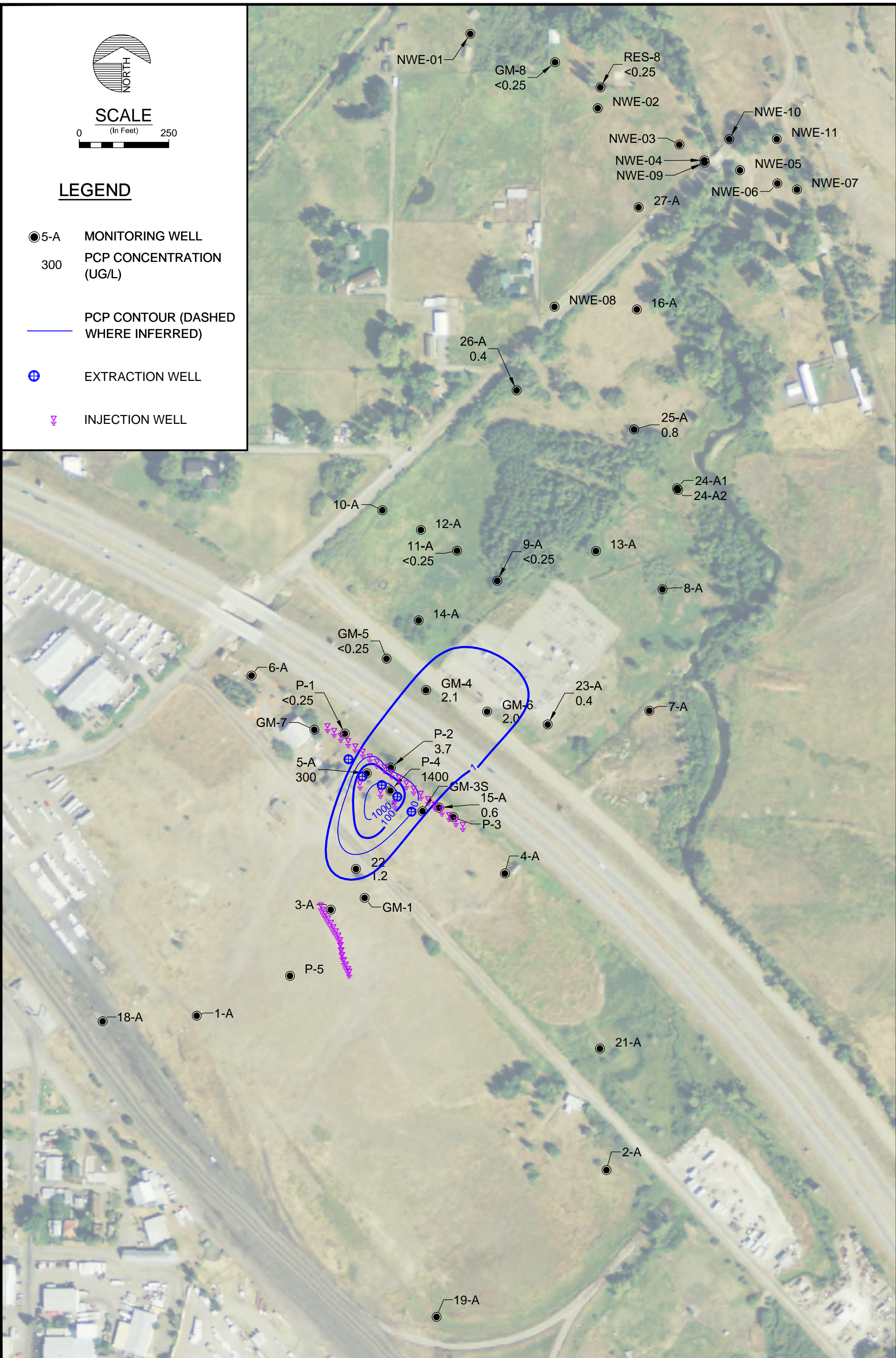
Recent Plume Maps and Water Level Map Prepared by Site Contractors



SCALE
0 (In Feet) 250

LEGEND

- 5-A MONITORING WELL
- 300 PCP CONCENTRATION (UG/L)
- PCP CONTOUR (DASHED WHERE INFERRED)
- ⊕ EXTRACTION WELL
- ▽ INJECTION WELL

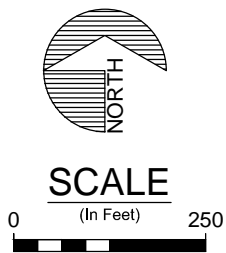


IDAHO POLE COMPANY
Bozeman, Montana
5029-300

PCP ISOCONTOURS IN "A" WELLS
APRIL 2014
IPC - BOZEMAN, MT

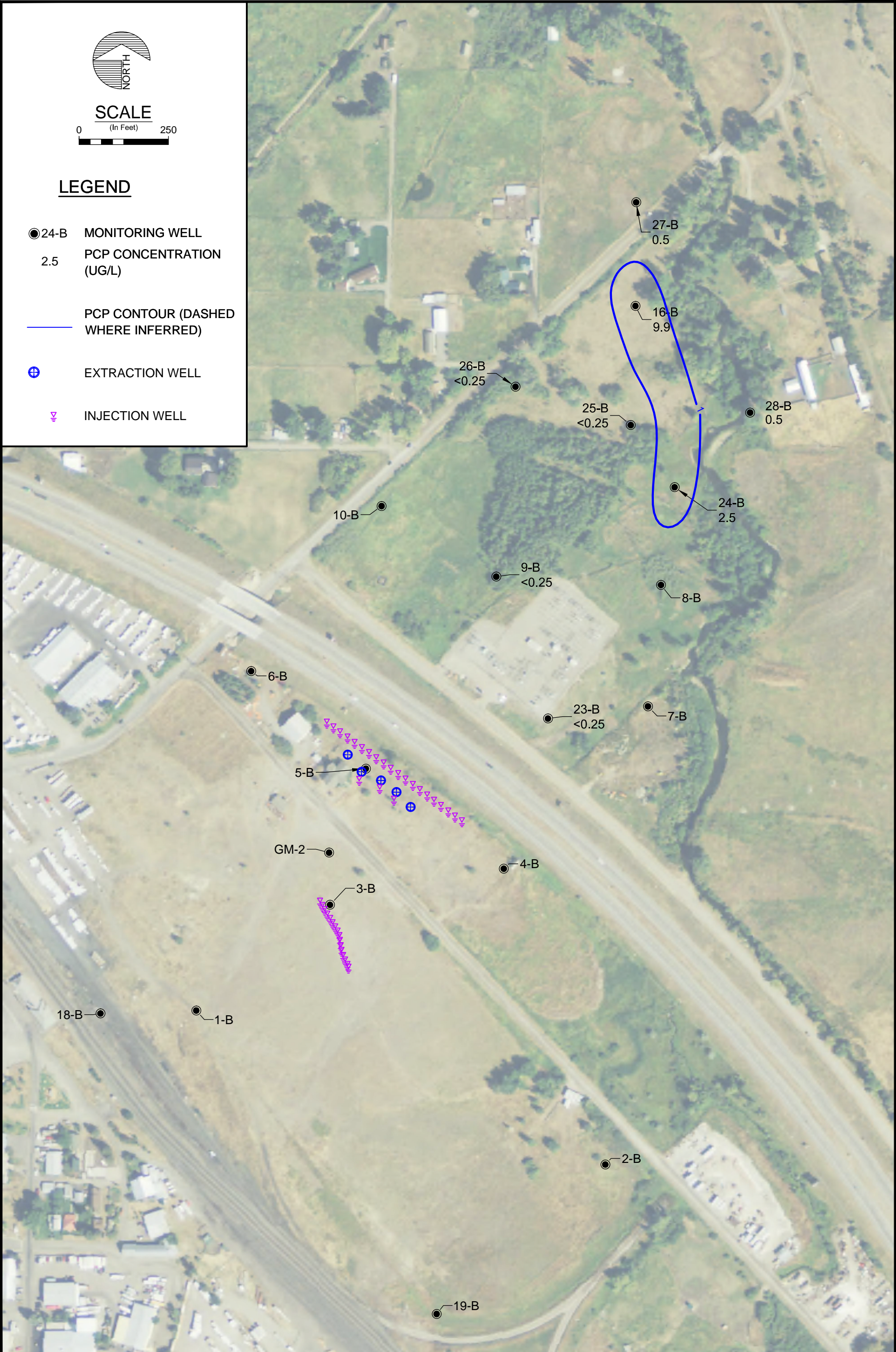
FIGURE

2-5



LEGEND

- 24-B MONITORING WELL
- 2.5 PCP CONCENTRATION (UG/L)
- PCP CONTOUR (DASHED WHERE INFERRED)
- ⊕ EXTRACTION WELL
- ▽ INJECTION WELL



IDAHO POLE COMPANY
Bozeman, Montana
5029-300

PCP ISOCONTOURS IN "B" WELLS
APRIL 2014
IPC - BOZEMAN, MT

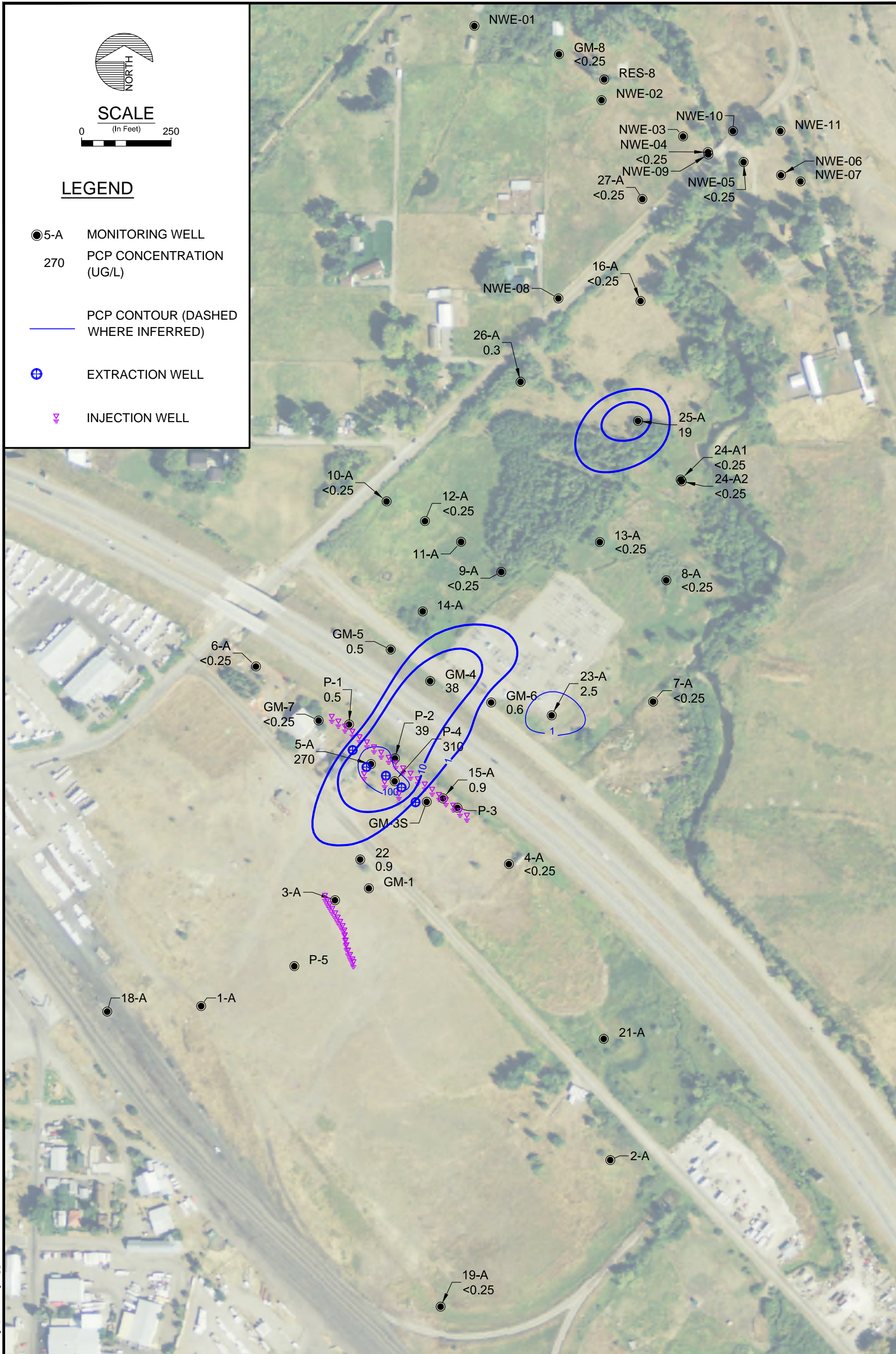
FIGURE
2-6



SCALE
0 (In Feet) 250

LEGEND

- 5-A MONITORING WELL
- 270 PCP CONCENTRATION (UG/L)
- PCP CONTOUR (DASHED WHERE INFERRED)
- ⊕ EXTRACTION WELL
- ▽ INJECTION WELL



IDAHO POLE COMPANY
Bozeman, Montana
5029-300

**PCP ISOCONTOURS IN "A" WELLS
SEPTEMBER 2014
IPC - BOZEMAN, MT**

FIGURE

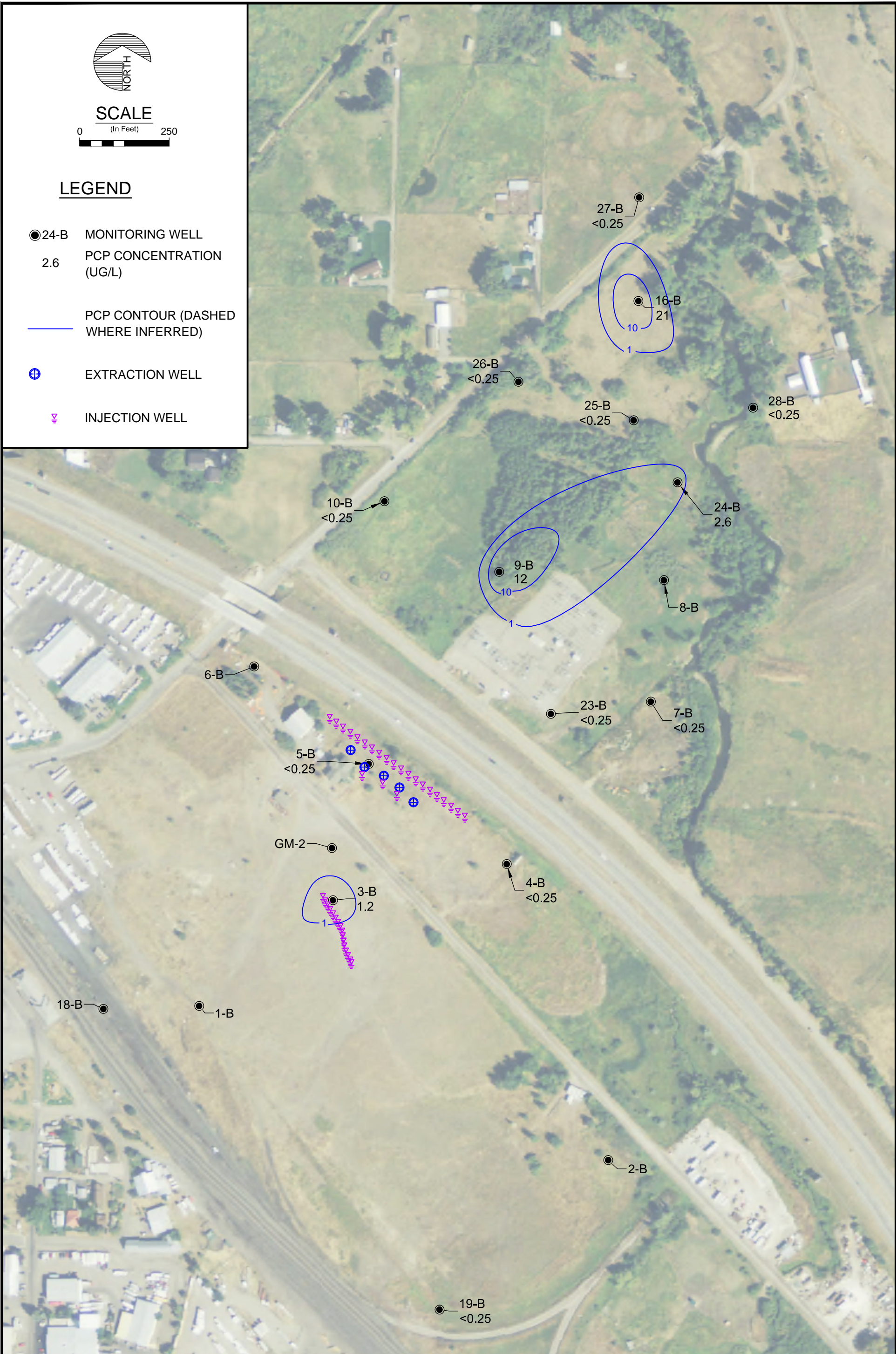
2-7



SCALE
0 (In Feet) 250

LEGEND

- 24-B MONITORING WELL
- 2.6 PCP CONCENTRATION (UG/L)
- PCP CONTOUR (DASHED WHERE INFERRED)
- ⊕ EXTRACTION WELL
- ▽ INJECTION WELL

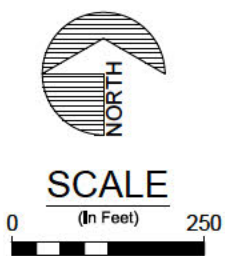


IDAHO POLE COMPANY
Bozeman, Montana
5029-300

**PCP ISOCONTOURS IN "B" WELLS
SEPTEMBER 2014
IPC - BOZEMAN, MT**

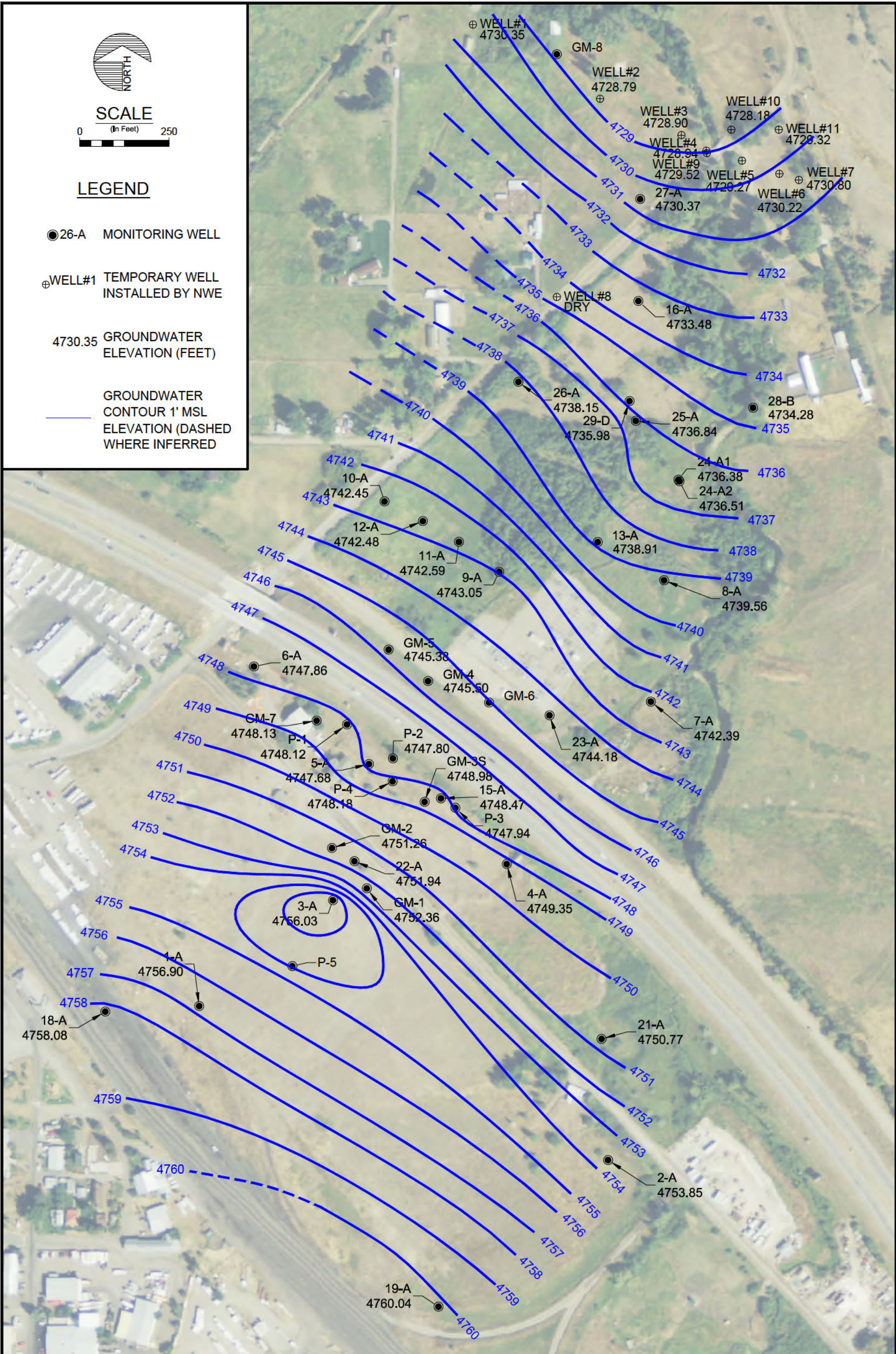
FIGURE

2-8



LEGEND

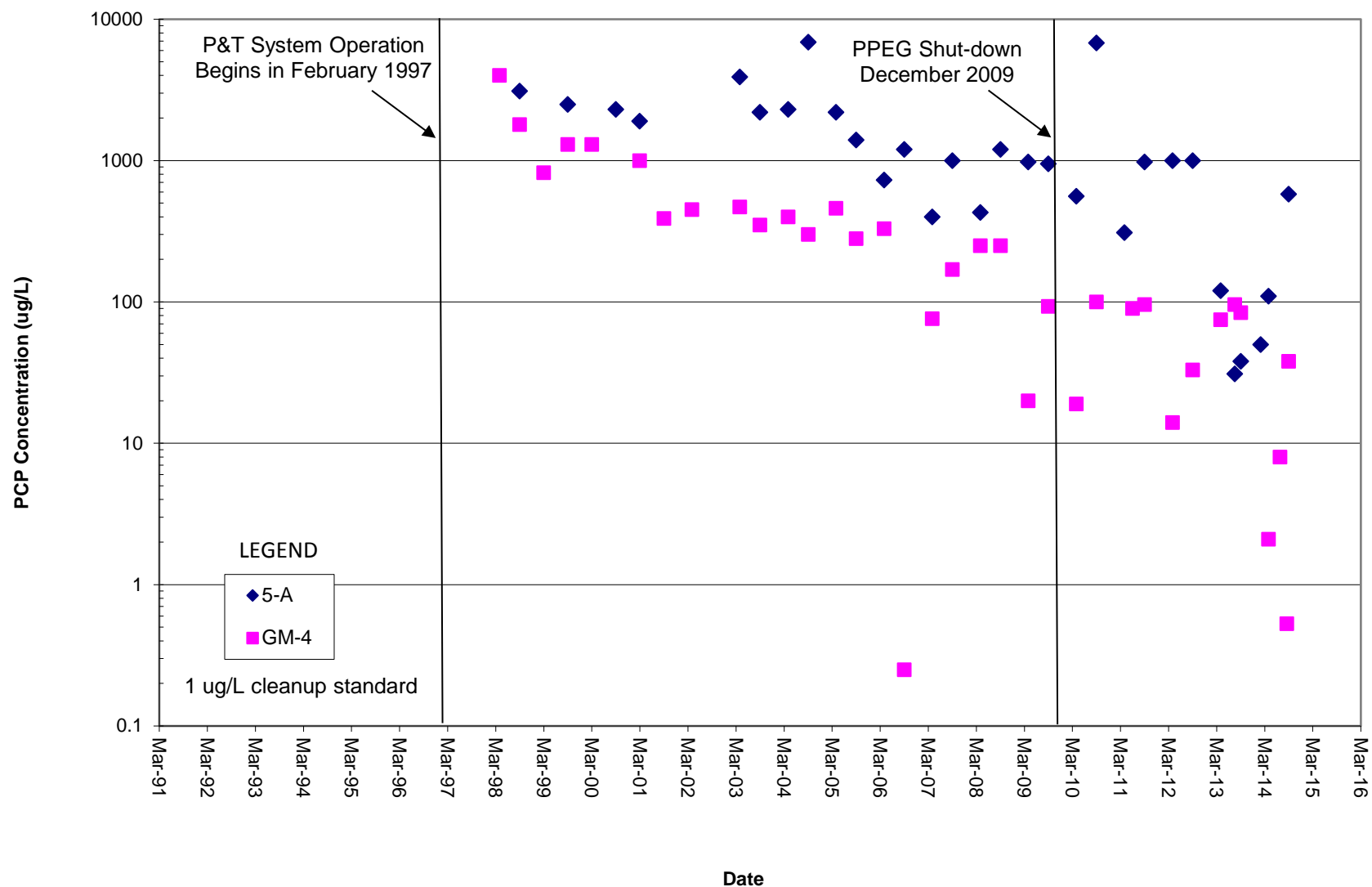
- 26-A MONITORING WELL
- ⊕ WELL#1 TEMPORARY WELL INSTALLED BY NWE
- 4730.35 GROUNDWATER ELEVATION (FEET)
- GROUNDWATER CONTOUR 1' MSL ELEVATION (DASHED WHERE INFERRED)



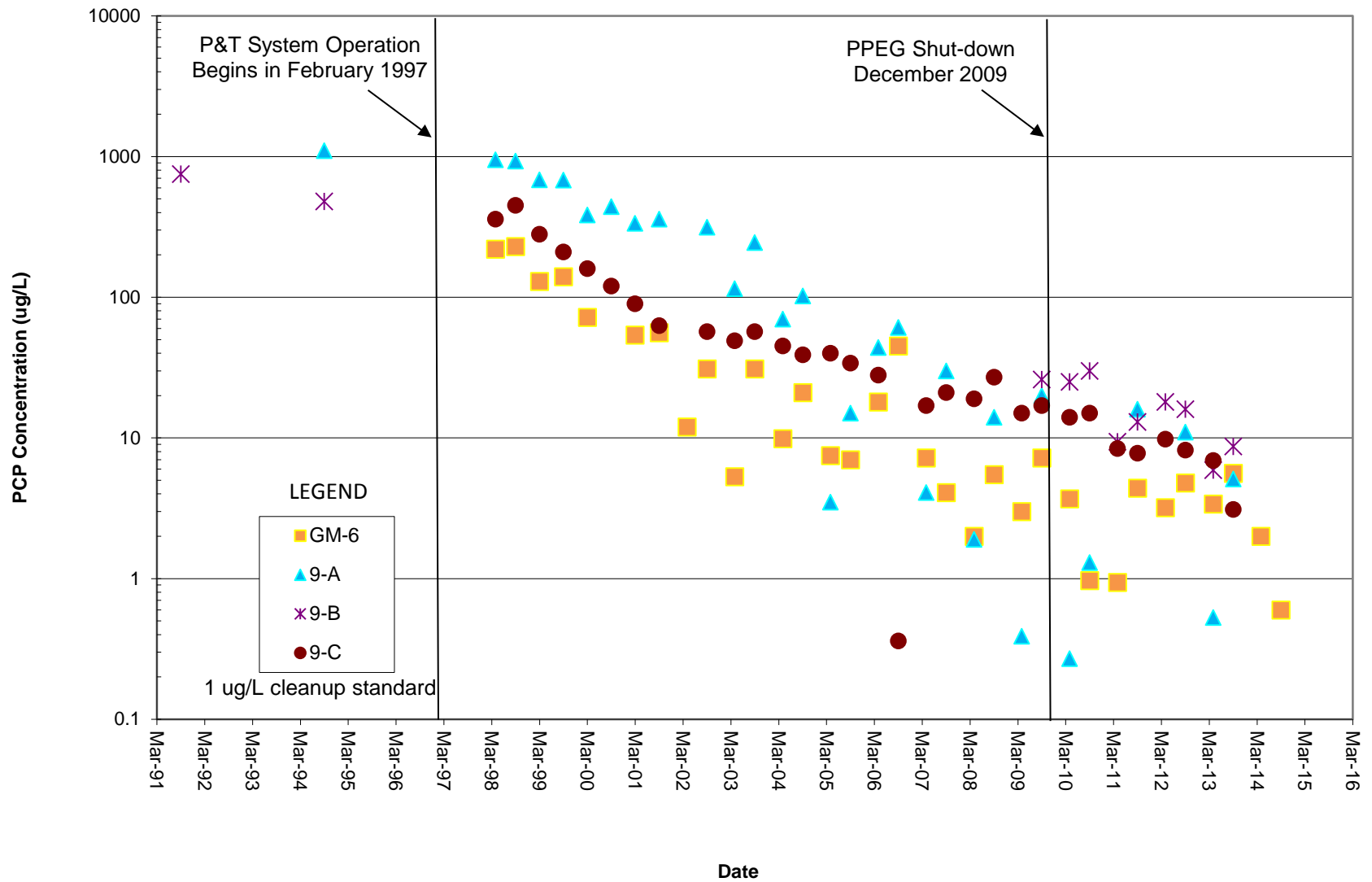
Attachment 6

**PCP Concentration versus Time Plots at Selected Wells Prepared by
Tetra Tech based on Data provided by the Site Team**

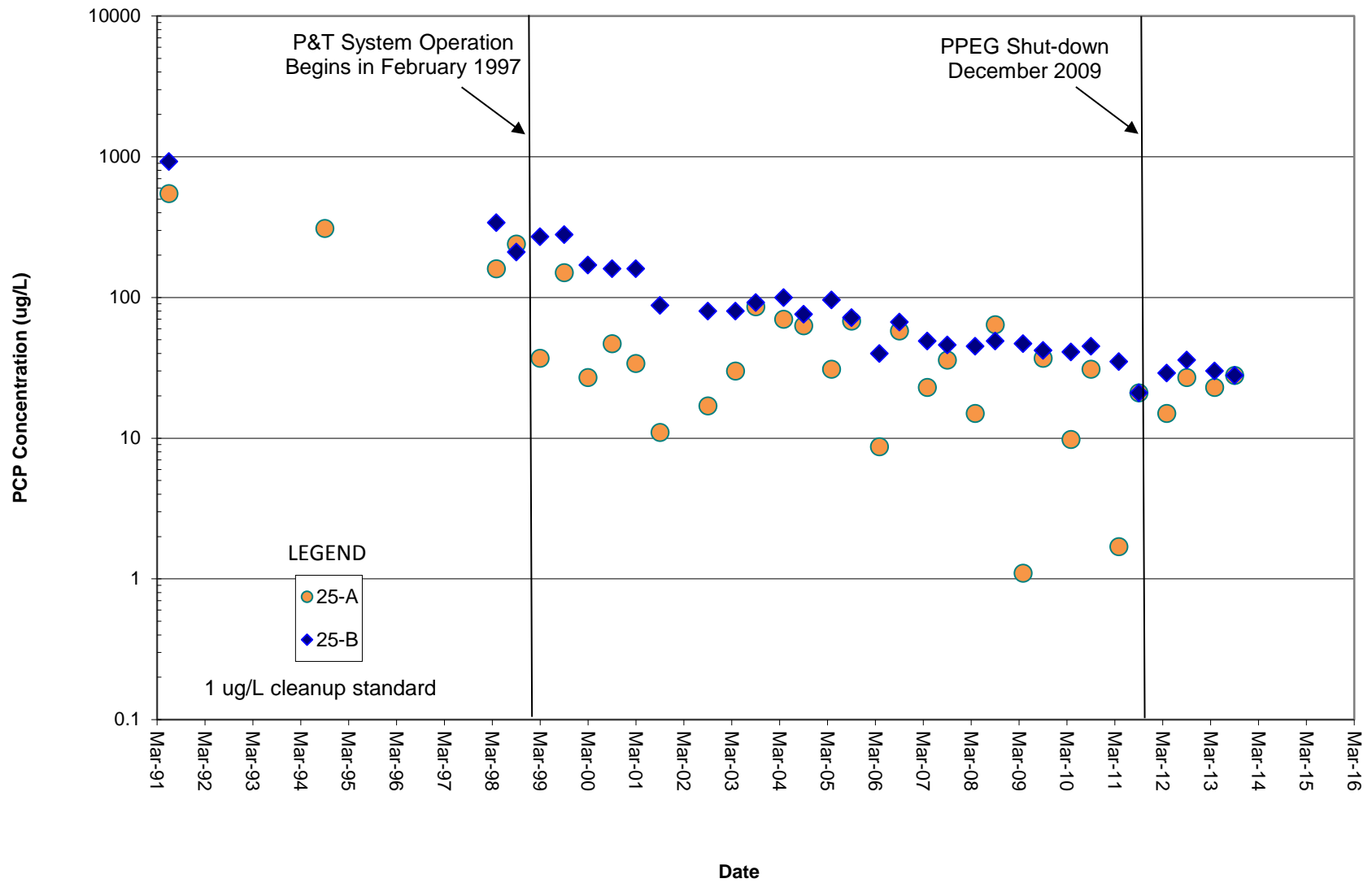
PCP Concentrations at Selected Wells Near Source Area (5-A) and Just North of I-90 (GM-4) (Prepared By Tetra Tech Based on Data Provided By Site Team)



PCP Concentrations at Selected Mid-Plume Wells
(Prepared By Tetra Tech Based on Data Provided By Site Team)



PCP Concentrations at Selected Wells Near Plume Toe (Prepared By Tetra Tech Based on Data Provided By Site Team)



Attachment 7

Mann-Kendall Analyses Performed as Part of This Five-Year Review

Mann-Kendall Evaluation

The previous five-year review (September 2010) included the following text in the “Data Review” section:

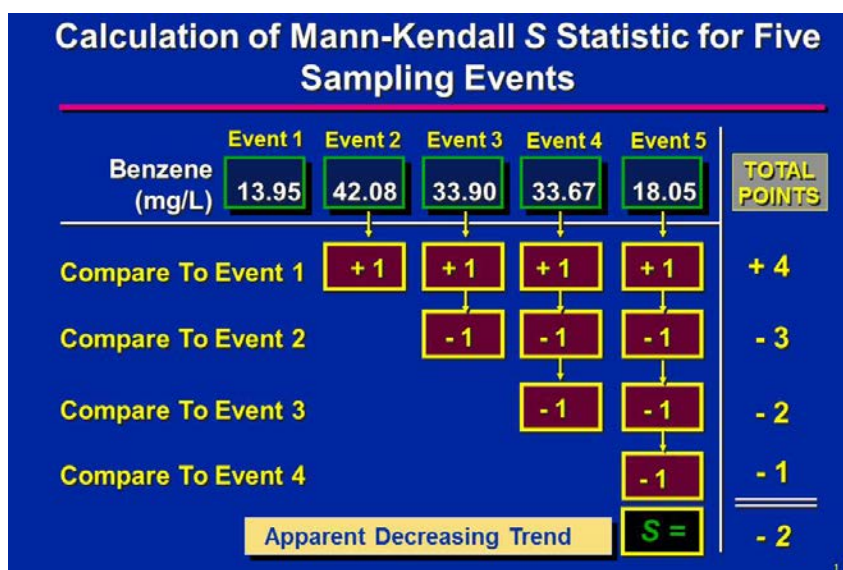
“The RSE also identified the possibility that the down-gradient portion of the PCP plume could parallel Rocky Creek for some distance...Because of this, the RSE suggested that the Site team identify any wells (supply or otherwise) located in this area, determine their uses, determine their construction, and sample any such wells for PCP. Subsequent to the RSE, EPA and MDEQ confirmed there are currently no supply wells along the southern edge of Rocky Creek, to the north and northwest of GM-8 and RES-8. However, there is still the potential that groundwater is contaminated in that area, and that such contamination extends beyond the current extent of the CGA. Sampling of groundwater from temporary or permanent wells in that area could indicate whether there is contamination beyond the current CGA. If that is the case, it may be necessary to modify the extent of the CGA. As an initial first step, PCP will be monitored semi-annually at six deeper-screened monitoring wells (9-B, 16-B, 24-B, 26-B, 27-B and GM-5). A single well Mann Kendall statistical test of each well will be conducted during the next five-year review. If the statistical test demonstrates no trend or an increasing trend in groundwater contamination at 95% Confidence Level, the Agencies will consider sampling of groundwater downgradient of GM-8 and RES-8 from temporary or permanent wells, to determine if there is contaminated groundwater beyond the current CGA boundary.”

The Mann-Kendall analysis is a non-parametric statistical procedure that is used for analyzing trends in data over time. Nonparametric methods require no assumptions regarding the underlying statistical distribution of the data. Accordingly, the Mann-Kendall test does not require a specific statistical distribution of the data and is not sensitive to the sampling interval over which the monitoring data are collected. The outcome of the procedure depends on the ranking of individual data points and not the overall magnitude of the data points. Therefore, the Mann-Kendall procedure can be used for data sets that include irregular sampling intervals, data below the detection limit, and trace or missing data.

Tetra Used the *GSI Mann-Kendall Toolkit* which was downloaded from the GSI Environmental website on October 15, 2014. The free tool can be downloaded at: <http://www.gsi-net.com/en/software/free-software/gsi-mann-kendall-toolkit.html>. Programmed in the Microsoft Excel spreadsheet environment, the software employs the same Mann-Kendall plume stability methodology that was previously developed for the MAROS software (Aziz et al., 2003; AFCEE, 2004). The Mann-Kendall test for trend analysis, as coded in this Toolkit, relies on three statistical metrics (Aziz et al., 2003), as follows:

- The ‘S’ Statistic: Indicates whether concentration trend vs. time is generally decreasing (negative S value) or increasing (positive S value).
- The Confidence Factor (CF): The CF value modifies the S Statistic calculation to indicate the degree of confidence in the trend result, as in ‘Decreasing’ vs. ‘Probably Decreasing’ or ‘Increasing’ vs. ‘Probably Increasing.’ Additionally, if the confidence factor is quite low, due either to considerable variability in concentrations vs. time or little change in concentrations vs. time, the CF is used to apply a preliminary ‘No Trend’ classification, pending consideration of the COV.
- The Coefficient of Variation (COV): The COV is used to distinguish between a ‘No Trend’ result (significant scatter in concentration trend vs. time) and a ‘Stable’ result (limited variability in concentration vs. time) for datasets with no significant increasing or decreasing trend (e.g. low CF).’’

An example from the toolkit documentation illustrating how the ‘S’ statistic is calculated based on ranking of results is presented below.

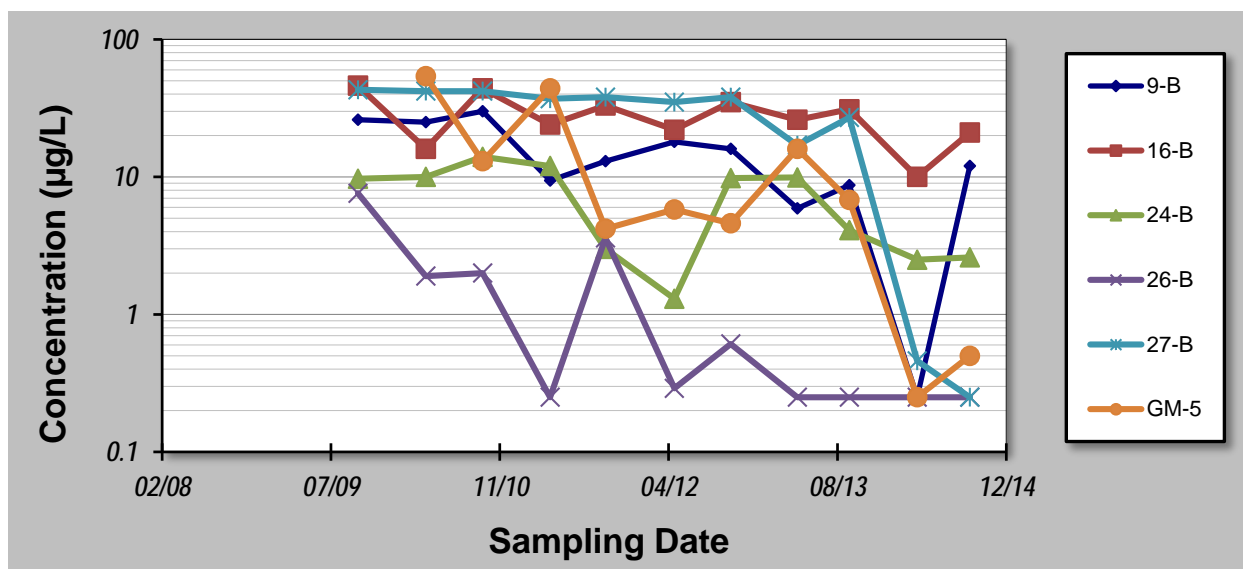


Per the previous five-year review (September 2010), the Mann-Kendall analysis was performed for PCP concentrations in six “B” monitoring wells (9-B, 16-B, 24-B, 26-B, 27-B, and GM-5). These wells have been consistently sampled since the last five-year review and have data from September 2009 to September 2014. Previous to 2009, select “B” series wells were sampled in 1990, 1991, and 1994. Because the data prior to 2009 is sporadic and there is a large time span between 1994 and when the wells were sampled again in 2009, only data from 2009 and after are being included in this analysis. The data from the time period from 2009 to 2014 included in the Mann-Kendall Analysis are as follows:

Sampling Event #	Sampling Dates	Pentachlorophenol (PCP) Concentrations in µg/L					
		9-B	16-B	24-B	26-B	27-B	GM-5
1	September 2009	26	46	9.7	7.6	43	
2	April 2010	25	16	10	1.9	42	54
3	September 2010	30	44	14	2	42	13
4	April 2011	9.4	24	12	0.25	37	44
5	September 2011	13	33	3	3.6	38	4.2
6	April 2012	18	22	1.3	0.29	35	5.8
7	September 2012	16	35	9.8	0.61	38	4.6
8	April 2013	5.9	26	9.9	0.25	17	16
9	September 2013	8.7	31	4.1	0.25	27	6.8
10	April 2014	0.25	10	2.5	0.25	0.46	0.25
11	September 2014	12	21	2.6	0.25	0.25	0.5

For the Mann-Kendall analysis, non-detect results need to be quantified. For the purpose of this analysis, the input values for non-detect results was assigned 0.25 ug/l which is generally the detection limit (there were a few results where the detection was not provided, and the same detection limit of 0.25 ug/l was assumed).

Charts from the Toolkit for the PCP concentrations are provided below.



Results from the Mann-Kendall analysis are presented below.

	9-B	16-B	24-B	26-B	27-B	GM-5
Coefficient of Variation:	0.61	0.40	0.63	1.45	0.55	1.26
Mann-Kendall Statistic (S)	-31	-19	-21	-31	-45	-23
Confidence Factor	99.2%	91.8%	94.0%	99.2%	>99.9%	97.7%
Concentration Trend:	Decreasing	Probably Decreasing	Probably Decreasing	Decreasing	Decreasing	Decreasing

Attachment 8

Notice of Institutional Controls (September 9, 2010)

Notice of Institutional Controls

1. This Notice of Institutional Controls ("Institutional Controls") is made this 9th day of September, 2010, by Idaho Pole Company ("Owner"), pursuant to Section 75-10-727 Montana Code Annotated ("MCA") as amended with the approval of the United States Environmental Protection Agency ("EPA") and Montana Department of Environmental Quality ("DEQ"), third party beneficiaries of these Institutional Controls.

2. WHEREAS, Owner is the owner of real property located in the City of Bozeman, County of Gallatin, State of Montana that comprises approximately 65 acres hereinafter referred to as the "Property" (Attachment A) within which lies the Idaho Pole Superfund site ("Site") [EPA ID No MTD006232276] located near the northern limits of Bozeman, Montana, in the east half of Section 6 and the west half of Section 5, Township 2S, Range 6E of Gallatin County as further defined by Site Legal Description (Attachment B); and

3. WHEREAS, in the Record of Decision dated September 28, 1992 as amended (the "ROD"), the Acting Regional Administrator for EPA Region VIII selected a Remedial Action for the Site which allows for waste to be left on Site above levels that allow for unlimited use and unrestricted exposure providing these Institutional Controls are employed to minimize potential for human exposure, limit land/resource use, and/or protect the integrity of the remedy. "Remedial Action" shall mean the Remedial Action described in the Idaho Pole Superfund Site ROD, and amendments thereto; and

4. WHEREAS, EPA and DEQ have determined that, with implementation of this Notice of Institutional Controls (NOIC) on the "Property", all appropriate Remedial Actions under CERCLA, other than five-year reviews and operation and maintenance, have been completed for the surface and unsaturated subsurface soils on all the Property as described as shown on Attachment A, or more particularly described as real property located in the City of Bozeman, County of Gallatin, State of Montana that comprises approximately 65 acres.

5. WHEREAS, EPA and DEQ have determined that contaminated soil excavated from the Property has been successfully treated, and the treated soil has been placed as backfill in several areas consisting of 4.1 acres on the Property, as depicted on the attached Attachment D (the "Treated Soil Areas" or "TSAs"). Treated soil was placed above historic high ground water levels and was covered with a minimum of twelve inches of fill material to prevent direct contact risk. A Controlled Ground water Use Area was issued by the Montana Division of Natural Resources (Decision 41H-114172) in 2001 pursuant to Section 85-2-506 and 508, MCA as amended (Attachment E), that currently restricts use of ground water beneath the Property for any purpose, except as provided in the Remedial Action or as otherwise authorized by EPA and DEQ. No further or ongoing surface and unsaturated subsurface soil operation and maintenance activities are required other than those provided for in this NOIC and maintaining a protective cover over the TSAs.

6. WHEREAS, Owner, EPA and DEQ agree that it is necessary to restrict the use of the Property to mitigate the risk posed to the public health, safety, and welfare and the environment by imposing appropriate Institutional Controls on the Property, the purpose of which is to ensure the permanent preservation and maintenance of remedial structures, including the Treated Soil Areas cover, that are required to minimize potential for human exposure and/or protect the integrity of the remedy;

7. WHEREAS, these Institutional Controls shall restrict present and future use of the Property including the Treated Soil Areas and shall run with the land and be binding on all successors in interest to the Property, until the Institutional Controls are removed in whole or in part pursuant to Section 75-10-727 MCA as amended;

8. WHEREAS, Owner, EPA and DEQ agree that Owner shall file this Notice of Institutional Controls promptly in the real property records in the Clerk and Recorder's Office in and for Gallatin County, Montana;

NOW, THEREFORE,

9. Grant: Owner, on behalf of itself, its successors and assigns, in consideration of the terms of agreement among Owner, EPA and DEQ, regarding the Idaho Pole Superfund Site does hereby through this Notice of Institutional Controls declare that the use of the Property shall hereinafter be subject to the following restrictions that shall run with the land and be binding upon all successors-in-interest to the Property until these restrictions are removed in whole or in part pursuant to the terms of this Notice of Institutional Control; the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. § 9601, *et seq.* ("CERCLA"); the Comprehensive Environmental Cleanup and Responsibility Act, as amended, Title 75, Chapter 10, Part 7 MCA ("CECRA"), including Section 75-10-727 MCA, and Title 85, Chapter 2, Part 5 MCA, including Sections 85-2-506 and 508, MCA (pertaining to Controlled Ground Water Areas):

10. Restrictions on Use: The following covenants, conditions and restrictions apply to the use of the Property, run with the land and are binding on the Owner, its successors and assigns:

- a) Restriction on New Construction. No new Construction, other than surface paving, landscaping curbs, light standards, traffic signs and greenways, shall take place on the Treated Soil Areas, except as provided in the Remedial Action or as otherwise authorized by EPA and DEQ.
- b) Restriction on Excavation within the TSAs. No excavation deeper than 12 inches shall take place on the TSAs, except as provided in the Remedial Action and described in the December 23, 2002 "*Remedial Action Completion Report Idaho Pole Company Superfund Site Soil Remediation Phase*" or as otherwise authorized by EPA and DEQ. Owner, its successors and assigns, shall maintain a protective cover of at least 12 inches of clean soil over the TSAs. A 12 inch gravel layer, gravel and

asphalt overlay, or other cover that prevents erosion and which maintains the integrity of the remedy can be substituted for clean soil. In the event that soils within the TSA must be disturbed at or below 12 inches and approval has been granted by EPA and DEQ, Owner must comply with a soils and groundwater management plan that is in EPA's administrative record for the Idaho Pole Superfund Site, or such other soils and groundwater management plan that may be approved by EPA and DEQ. Soils and groundwater management plans should provide guidance on health and safety precautions required to protect human health and the environment.

- c) Restriction on Excavation within Controlled Ground Water Area. In addition to the Restriction on Excavation within the TSAs, above, no excavation shall be allowed on the Property within Controlled Ground Water Area (Decision 41H-114172) where that excavation reaches saturated soil or groundwater, except where the Owner meets the requirements of CERCLA, as amended, 42 U.S.C. § 9601, *et seq.*; CECRA, as amended, Title 75, Chapter 10, Part 7 MCA, including Section 75-10-727 MCA, and Title 85, Chapter 2, Part 5 MCA, including Sections 85-2-506 and 508, MCA (pertaining to Controlled Ground Water Areas) and the Occupational Safety and Health Administration, including 29 C.F.R. 1910.120 *et seq.*; and where the excavation is accomplished in compliance with the Site soils and groundwater management plan or except as otherwise authorized by EPA and DEQ.
- d) Restriction on Use of Ground Water. Ground water within the boundaries described by the Controlled Ground Water Area shall not be used or developed for any purpose, except as provided in the Remedial Action or as otherwise authorized by EPA and DEQ.
- e) Protection of the Integrity of Remedial Action. Use of the Property shall not in any way materially interfere with the operation and/or maintenance of the Remedial Action, including, but not limited to, access to and the operation and maintenance of ground water monitoring wells, injection and extraction wells, any equipment or infrastructure constructed or used for the Remedial Action, or any cap or other covering to prevent contact with residual contamination, except as otherwise authorized by EPA and DEQ.
- f) Access, Cooperation and Information. EPA and DEQ and their authorized representatives shall have access at all reasonable times with prior notice to use the Property for purposes consistent with these Institutional Controls and EPA's ROD as amended. Owner, its successors and assigns shall comply with 42 U.S.C. § 9601(35), which defines the status and responsibilities of a purchaser who takes an interest in the Property by

contract. Nothing herein shall impair any other authority EPA and DEQ may otherwise have to enter and inspect the Property, and to obtain information about the property concerning response actions under CERCLA or CECRA.

11. Filing Notice of Institutional Controls. Owner shall file this Notice of Institutional Controls in the land records of the Clerk and Recorder's Office, Gallatin County, Montana, within thirty (30) days of the date it is executed by the Owner. Owner must provide EPA and DEQ with a certified true copy of said instrument and its recording reference.
12. Reserved Rights of Owner. Owner hereby reserves unto itself, its successors and assigns, all rights and privileges in and to the use of the Property which are not incompatible with the restrictions and rights granted herein.
13. Nothing in this document shall limit or otherwise affect EPA's rights of entry and access or EPA's authority to take response actions under CERCLA, the National Contingency Plan, or other federal law. Nothing in this document shall limit or otherwise affect DEQ's rights of entry and access or DEQ's authority to take remedial actions under CECRA or the State's authority under other applicable state laws.
14. Notice Requirement. Owner on its behalf, and on behalf of its successors and assigns, agrees to include in any instrument conveying any portion of the Property, including, but not limited to, deeds, leases and mortgages, a notice which is in substantially the following form:

NOTICE: THE INTEREST CONVEYED HEREBY IS SUBJECT TO A NOTICE OF INSTITUTIONAL CONTROLS, DATED 9-9, 2010, RECORDED IN THE PUBLIC LAND RECORDS ON 9-13, 2010, IN BOOK _____, PAGE _____, IN GALLATIN COUNTY. DOCUMENT 2369872

Within sixty (60) days of the date any such instrument or conveyance is executed, Owner must provide EPA and DEQ with a certified true copy of said instrument and, if it has been recorded in the public land records, its recording reference.

15. Enforcement of Institutional Controls. Owner, EPA and/or DEQ shall be entitled to enforce the terms of this instrument by resort to specific performance or other legal process as third party beneficiaries including but not limited to the authority provided by CECRA as amended Section 75-10-701 *et seq.* MCA and CERCLA as amended 42 U.S.C. § 9601, *et seq.* All remedies available hereunder shall be in addition to any and all other remedies at law or in equity, including CERCLA and CECRA. Any

forbearance, delay or omission to exercise rights under this instrument in the event of a breach of any term of this instrument shall not be deemed to be a waiver of such term or of any subsequent breach of the same or any other term, or of any of the rights under this instrument.

16. Notices. Any notice, demand, request, consent, approval or communication that any party desires or is required to give to the others shall be in writing and shall either be served personally or sent by first class mail, postage prepaid, addressed as follows:

Owner: Idaho Pole Company, c/o
Director, Technical and Environmental Affairs
P.O. Box 1496
Tacoma, WA 98401-1496

or

1640 E. Marc Avenue
Tacoma, WA 98421-2939

EPA: Director, Montana Operations Office
U.S. Environmental Protection Agency
Baucus Federal Building
10 West 15th Street
Helena, MT 59626

DEQ: Federal Superfund Section Manager, Remediation Division
Montana Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620

17. Controlling Law. The interpretation and performance of this instrument shall be governed by the laws of the United States and the laws of the State of Montana.

These Institutional Controls shall run with the land and be binding on all successors in interest to the Property until the Institutional Controls are removed in accordance with CERCLA; CECRA (including Section 75-10-727 MCA); and Sections 85-2-506 and 508, MCA (pertaining to Controlled Ground Water Areas).

IN WITNESS WHEREOF, Idaho Pole-Company, a Washington corporation, has caused this instrument to be executed this 9th day of September, 2010.

By: 

Greg D. McFarland, solely in his capacity as
Vice President of Idaho Pole Company, and
not his individual capacity

STATE OF Washington)
) ss:
COUNTY OF Pierce)

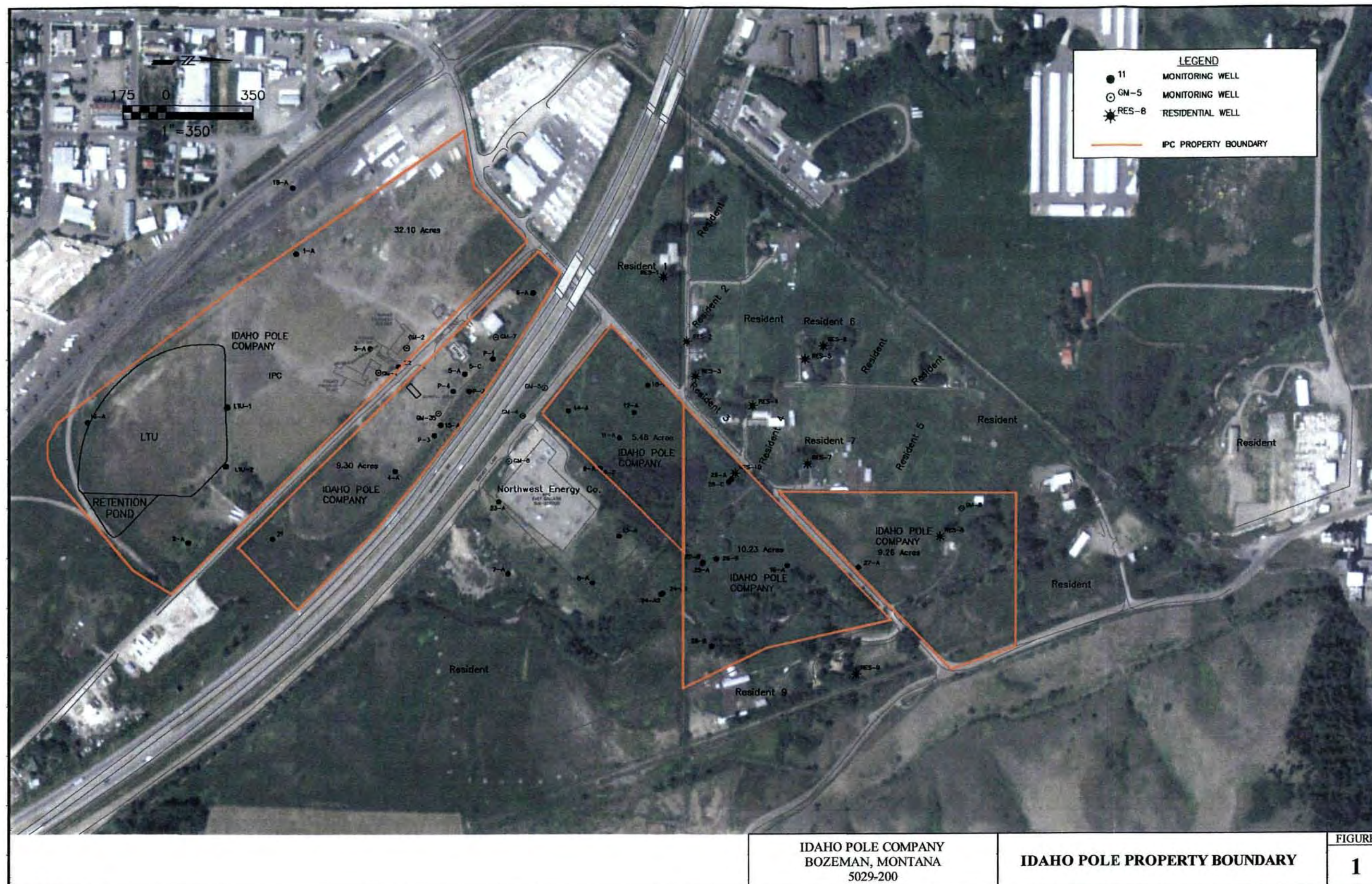
The foregoing instrument was acknowledged before me this 9th day of
September 2010, by Greg D. McFarland on behalf Idaho Pole Company, a
Washington Corporation, and not in his individual capacity, and acknowledged the said
instrument to be the free and voluntary act and deed of said corporation, for the uses and
purposes therein mentioned, and on oath stated that they are authorized to execute said
instrument.

Witness my hand and official seal hereto affixed the day and year written above



Cynthia A. Harris
Notary Public

4806 60th St Ct E, Tacoma, WA 98443
Address
My commission expires: 8-17-2013



Attachment B

Site Legal Description

The Idaho Pole site is located near the northern limits of Bozeman, Montana and occupies approximately 65 acres in the east half of Section 6 and the west half of Section 5, Township 25, Range 6E of Gallatin County.

Individual legal lot descriptions are:

Northern Pacific ADD, SO5, TO2 S, RO6 E, All BLK 70PT of Blocks 73 & 83, Plus VAC St & Alleys.

NP-BOZ PT BLK 87 S of Highway SEC 6 25, 6E, COS 21

Northern Pacific ADD, SO6, TO2 S, RO6 E, Lots 1-9 BLK 86 APP 142' x 225'

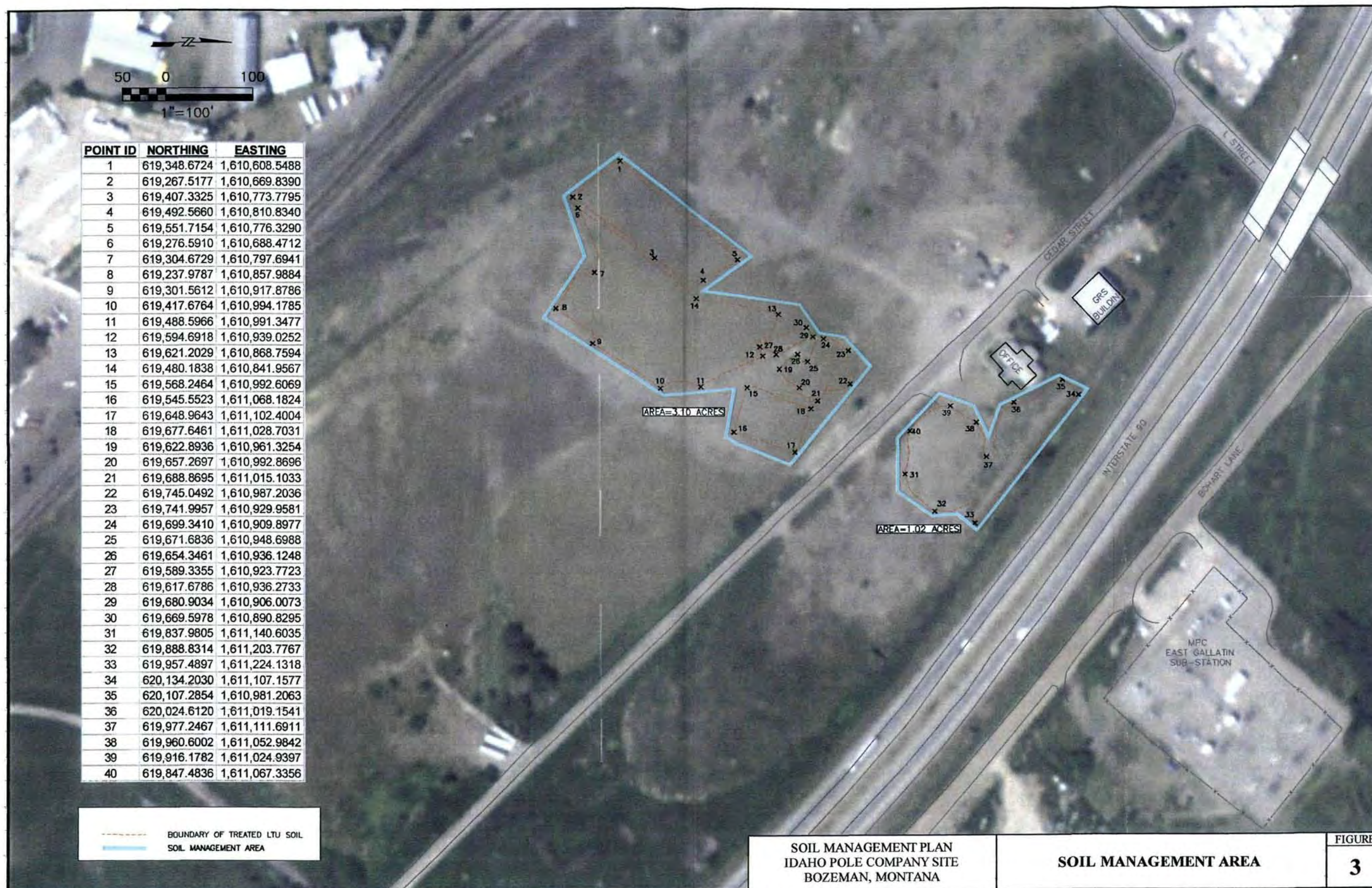
SO6, TO2 S, RO6 E, PT Tract A SE4 & SW4, 22.1 AC COS 1876

Northern Pacific addition, SO, T02 S, RO6 E, PT BLK 88 all BLKS 89-90

SO5, TO2 S – RO6 E, Tract J in SW 4NW4 SEC 525 6E 6.5A TR in SE COR SE 4NE4 SECT 6 25 6E

SO5, TO2 S, RO6 E, SW 4NW4 W of Rd & E of River See 5 25 6E 9AC





UPDATE TIME: 11:01 AM
JBERGIN\HEL\20100713\1\LAND PROJECTS\MCFAR\DWG\5029\502910B019.DWG

Hydrometrics, Inc.
Consulting Scientists and Engineers

Attachment 9

DEQ Approval Correspondence for This Five-Year Review



August 24, 2015
Roger Hoogerheide, RPM
10 West 15th Street, Suite 3200
Environmental Protection Agency
Helena, MT 59626

RE: Idaho Pole Five-Year Review

Dear Roger,

DEQ has reviewed and commented on the Draft Idaho Pole Five-Year Review, and has been intimately involved in the development of both the draft and final documents. DEQ hereby concurs with the findings and recommendations of the Idaho Pole Five-Year Review. We appreciate the opportunity to work with you on this effort.

Sincerely,

A handwritten signature in black ink, appearing to read "Tom Stoops", is written over a faint, circular, dotted-line background.

Tom Stoops

Cc: Katherine Haque-Hausrath, DEQ
Steven Moores, EPA
Les Lonning, Idaho Pole
Lisa DeWitt, DEQ
Enforcement