Please keep in order as one submittal. Thank you.

PO Box 2198, Kalispell, MT 59903

May 6th, 2024
To the Flathead County Commissioners & the Flathead County Planning Board

Based on Flathead County Subdivision Regulations[1] the MCA code covering new information regarding subdivisions, we ask that you accept and consider this new information that has not been considered within the EA, Staff report, and proposed findings.

While the EA does acknowledge that the STEAMBOAT LANDING subdivision is located adjacent to the BNSF Railway Company (BNSF) Somers Former Tie Treating Plant, an active superfund site, where ground water contamination has been documented, the subdivision application and EA fail to provide any real analysis or factual basis for its assertion that nothing about this superfund site will impact the proposed subdivision. New information based on conversations

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[1] **4.4.6 Major Subdivision Determination of New Information**
If new and additional information is presented following the Planning Boards' public hearing regarding the proposed major subdivision, the Commission shall determine if the new information constitute the need for a subsequent public hearing. New information is considered to be information or analysis of information not considered by the Planning Board at the public hearing:
a. The Commission shall consider if the public or the subdivider was provided a reasonable opportunity to examine and comment on the new information;
• b. If the Commission determines that public comments or documents presented constitute new information the Commission shall either:
i. Approve, conditionally approve, or deny the proposed major subdivision without basing its decision on the new information if the Commission determines the information is either irrelevant or not credible;
ii. Direct the Planning Board to schedule a subsequent public hearing pursuant to Section 4.4.7 for consideration of only the new information that may have an impact on the findings and conclusions that the Commission will rely on to make its decision on the proposed subdivision.
c. The Commission shall consult with the Planning and Zoning Office in the determination of new information.
4.4.7 Subsequent Public Hearing
When a subsequent public hearing is scheduled for a major subdivision preliminary plat, it must be held within 45 days of the Commission's determination to schedule a subsequent hearing pursuant to Section 4.0.14. Only the new information shall be considered at the subsequent public hearing:
a. If a subsequent public hearing is scheduled, the review period is suspended as of the date of the Commission's decision to schedule a subsequent hearing and resumes five working days following the subsequent public hearing;
b. The Commission shall not consider any information regarding the major subdivision application that is presented after the subsequent hearing when making its decision to approve, conditionally approve, or deny the proposed major subdivision.

and emails with the Montana Department of Environmental Quality and the Montana EPA staff who manage this superfund site, which are being presented to you today, call for the need for a much more extensive and fact-based review of potential interaction and harm to water quality from the proposed location and design of the proposed Steamboat Landing Subdivision.

Additionally, the concerns being raised by DEQ and EPA regarding potential interaction and harm to water quality, from the proposed location and design of the proposed Steamboat Landing Subdivision adjoining this superfund site, need to be evaluated along with the attached report that was not addressed in the subdivision's EA or staff report. This report identifies the potential additional harm that this subdivision faces under a flood easement that covers this property. This easement is owned and managed by Energy Keepers, Inc., the federally chartered corporation of the Confederated Salish and Kootenai Tribes, which was created to manage the conveyance, and then subsequently operate, the Kerr Hydroelectric Project. EKI has been full steam ahead ever since this fall day in 2012.

We ask that you identify in the information we and others here today are providing you as new information, and hold an additional public hearing on the Steamboat Landing subdivision so that this critical water quality issue can be properly reviewed.

May 7, 2024

Good morning commissioners,

I would like to respectfully request that the new information that is being submitted today be made a part of the hearing coming up for you to consider all the facts before making your final decision whether to approve the Steamboat Landing subdivision. We believe that this new information needs to be considered in order to ensure the health and safety of current and future Somers residents.

We are submitting into the record an email exchange in which Dick Sloan from DEQ asks us to note that the monitoring wells S-10, S-12, and S-15 contained elevated levels of benzene in the April 2023 samples. He also states that the environmental assessment for the proposed development needs to be updated to detail the actions required to ensure human health and ecological protection and that a detailed hydrogeological assessment of the proposed high capacity new well to service this subdivision should be included in the updated environmental assessment and that it is critical to ensure there is no impact from the well on groundwater associated with the Superfund site.

We are also submitting two Flathead Beacon articles about the Somers BNSF Superfund site and the fact that the contamination has migrated outside of BNSF's property. The EPA project manager in 2014 said that findings revealed a large plume of creosote further underground than originally thought. In 2017 the Flathead County Health Board approved a resolution petitioning the Montana DNRC to extend the boundary limiting well usage in and around the Somers plant because of two underground plumes that continue two slowly grow with fluctuations in groundwater. Site samples showed contaminated product was moving underground north and east from the designated Superfund site. This is in the direction of the proposed subdivision.

We also have concerns with how this subdivision may impact the wetland to the south. Why is the developer ignoring Fish, Wildlife, and Parks recommendations that there be a 100 ft vegetated buffer as well as a 30 ft building setback and instead only proposing a 50 ft buffer around the wetland? Why is the park, where children will play, being proposed to be located adjacent to the Superfund boundary? There are also concerns with how excavation for water/sewer/utility lines may affect the contaminated ground and groundwater. Where will stormwater runoff end up? Will it be treated? How might all of this impact water quality in the area?

Lastly, we have concerns about the area's soils that are subject to liquification and the high seismic activity. The county engineer submitted comments to the Planning office stating that the EA implies that there is no known seismic activity affecting the area. She correctly states that this region of the valley has the potential to experience relatively high

ground accelerations and that structures should be detailed for the appropriate Seismic Design Category. That line is then struck out and she states that because the Flathead County doesn't regulate building codes, those comments aren't applicable. It is concerning to me that this earthquake information won't be considered and that there won't be any regulations on the condos to ensure the safety of these residents, especially considering the known soil liquification issues and high seismic activity in the area.

I hope that you will include this new information as part of the public hearing prior to your final decision on Steamboat Landing. There is significant public interest in how this high-density subdivision may affect the health and safety of Somers residents. We hope you will give this matter the attention it deserves.

Thank you for your time and consideration,

Jennifer Tipton

North Shore Water Alliance

P. O. Box 42

Somers, MT 59932

406-253-7863

Steamboat Landing and Somers Superfund Site reports and media

Superfund documents for inclusion as background for new information that should be considered in the Steamboat Landing Subdivision hearing given recent concerns with the inadequate Steamboat Landing Subdivision EA raised by DEQ and EPA staff initially at recent hearings April 24-25 2024 on the CFAC superfund site cleanup and in follow up correspondes with these agencies that has been submitted as new information.

https://nepis.epa.gov/Exe/ZyNET.exe/9100MYAT.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1986+Thru+1990&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C86thru90%5CTxt%5C00000022%5C9100MYAT.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL

https://cumulis.epa.gov/supercpad/cursites/cscdocument.cfm?id=0800390&doc=Y&colid=35861

https://nepis.epa.gov/Exe/ZyNET.exe/9100MXRQ.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1995+Thru+1999&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C95thru99%5CTxt%5C00000027%5C9100MXRQ.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL

Flathead Beacon articles

"The company acknowledges that zinc, petroleum hydrocarbons and polynuclear aromatic hydrocarbons have been detected in soil and groundwater on the property and have migrated "to some extent outside BNSF's property."
"EPA project manager Diana Hammer said recent findings have revealed a large plume of creosote further underground than originally thought. Research on the property will continue as EPA officials determine how to more thoroughly clean the contaminated soil and groundwater. The affected residents obtain their drinking water from the city water system, not the groundwater."

https://flatheadbeacon.com/2014/04/29/residents-near-contaminated-bnsf-site-settle-suit/

"Last week the Flathead City-County Health Board approved a resolution petitioning the Montana Department of Natural Resources and Conservation to extend the boundary limiting well usage in and around the Somers plant because of two underground plumes that continue to slowly grow with fluctuations in groundwater.
Joe Russell, the department's public health officer, said site samples were collected a year ago that showed contaminated product was moving underground north and east from the designated Superfund site. The new controlled groundwater boundary would impact three private property owners. Russell said the three property owners are aware of the process. He expects the extended boundaries to take effect within a year. ..."
https://flatheadbeacon.com/2017/05/22/epa-renews-focus-somers-superfund-site-following-new-detections/

Mayre Flowers
Mayre@Flatheadcitizens.org , 406-755-4521 H,

May 7, 2024

Good morning commissioners,

I would like to respectfully request that the new information that is being submitted today be made a part of the hearing coming up for you to consider all the facts before making your final decision whether to approve the Steamboat Landing subdivision. We believe that this new information needs to be considered in order to ensure the health and safety of current and future Somers residents.

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Thank you for your time and consideration,

Jennifer Tipton

North Shore Water Alliance

P. O. Box 42

Somers, MT 59932

406-253-7863

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Compose Back Move Delete Spam More 6

Today on AOL

New Mail 251K
Old Mail
Starred
Drafts 78
Sent
Spam
Recently Deleted
Views Hide
Contacts
Photos
Documents
Subscriptions
Receipts
Credits
Travel

Folders Hide
New Folder
Saved Mail 637
022_DOD Sapro
2009_2016Emails 83
2012
2015 426
2016Jan-Nov 1.5K
2017 emails 9K
2018
accidently deleted re...
adoptions 129
AOLMail2014 535
Archive
birthday
Do Not Call List Regis...
Drafts
Feb2011-Dec31... 32
jamesmmathieu 96
Jan2012-Jun2012
Jan2013-May1... 1.6K
January2012-D... 2.9K
July2018
Junk
Keep
MyMail2009-au... 238
new mailbox(3) 98

Fw: Steamboat Landing and the Somers BNSF Superfund site

Aol/Old Mail ☆

Jennifer
From: jtip1780@gmail.com
To: Lori Mathieu

Mon, May 6 at 7:44 PM ☆

From: Brooke Nash <brookeanash94@gmail.com>
Sent: Friday, May 3, 2024 3:06 PM
To: Sloan, Richard <RSloan@mt.gov>
Cc: Jennifer <jtip1780@gmail.com>; Stone, Kevin <Kevin.Stone@mt.gov>; Rappe, Jason <Rappe.Jason@epa.gov>; Dorrington, Matthew <Dorrington.Matthew@epa.gov>; Janie Lewe <janielewer@gmail.com>
Subject: Re: Steamboat Landing and the Somers BNSF Superfund site

Hello Dick!

Thank you for your call today.

Attached is the letter sent to your agency back in January asking for your comments on this subd

Thank you,

Brooke Nash
406-250-6457

On Wed, May 1, 2024 at 2:58 PM Brooke Nash <brookeanash94@gmail.com> wrote:
Dick,

Thank you for your time on this.

Who will be asking these developers to update the environmental assessment?

Has your agency provided comments regarding this subdivision as this is set to go before the Planning Board May 8th?

Thank you for your efforts keeping residents and future residents of Somers safe.

Brooke Nash
406-250-6457

On Wed, May 1, 2024 at 2:45 PM Sloan, Richard <RSloan@mt.gov> wrote:
Jennifer,
Brook,
I sent you the 6th FYR for the Somers site and the January-Jun 2023 ground water monitoring report for the Somers site via the State File Transfer system.
Please note that monitoring wells S-10, S-12, and S-15 contain elevated levels of benzene in the April, 2023 samples.
Also please note the institutional control areas (figure 3 from the FYR report). The environmental assessment for the proposed development needs to be updated to detail the actions required insure human health and ecological protection.
It was mentioned that the development and the city of Somers drill a new potable water well to provide 400 gpm of capacity. Tl location, depth, and screen interval of this high capacity well is critical to insure no impact on the impacted ground water associated with the Superfund site. A detailed hydrogeological assessment of the proposed high capacity new well should be included in the updated environmental assessment.
Please contact me if you have any questions or comments.
Thank you.
Dick Sloan

From: Jennifer <jtip1780@gmail.com>
Sent: Tuesday, April 30, 2024 12:19 PM
To: Sloan, Richard <RSloan@mt.gov>

Jtip1780
jtip1780@gmail.com
+ Add to contacts

RECEIVED
MAY 08 2024
AT PUBLIC HEARING

May2013-31De... 784
Nextcare
Notebook 1
Notes
Nov10-Jan2011 205
PenFed CreditU... 23
RECIPES! 53
Retirement (In ... 136
SavedIMs
Sent Messages
Tricare 14
USCG 2019_2020

Cc: dorrington.matthew@epa.gov
Subject: [EXTERNAL] Steamboat Landing and the Somers BNSF Superfund site

Hello Dick,

Thank you for taking the time to hear my concerns regarding the Steamboat Landing subdivision proposal and its proximity to the Somers BNSF superfund site. I appreciate you t closer look at how the excavation during the development of the property and how the drawc from the new high capacity well that the developer/Somers Water and Sewer District is planr drill may affect the movement of groundwater and the migration of contamination. I have atta links to the Flathead Beacon articles stating that the contamination is shown to be moving to north and east, towards this proposed development.

Flathead Beacon articles

The company acknowledges that zinc, petroleum hydrocarbons and polynuclear aromatic hydrocarbons have been detected in soil and groundwater on the property and have migrate some extent outside BNSF's property."

EPA project manager Diana Hammer said recent findings have revealed a large plume of cr further underground than originally thought.

Research on the property will continue as EPA officials determine how to more thoroughly cl contaminated soil and groundwater. The affected residents obtain their drinking water from t water system, not the groundwater.

https://flatheadbeacon.com/2014/04/29/residents-near-contaminated-bnsf-site-settle-suit/

Montana Code Annotated 2023

TITLE 76. LAND RESOURCES AND USE
CHAPTER 3. LOCAL REGULATION OF SUBDIVISIONS
Part 5. Local Regulations

Subdivision Regulations -- Contents

76-3-504. Subdivision regulations -- contents. (1) The subdivision regulations adopted under this chapter must comply with the requirements provided for in **76-3-501** and, at a minimum:

(a) list the materials that must be included in a subdivision application in order for the application to be determined to contain the required elements for the purposes of the review required in **76-3-604**(1);

(b) except as provided in **76-3-509**, **76-3-609**, or **76-3-616**, require the subdivider to submit to the governing body an environmental assessment as prescribed in **76-3-603**;

(c) establish procedures consistent with this chapter for the submission and review of subdivision applications and amended applications;

(d) prescribe the form and contents of preliminary plats and the documents to accompany final plats;

(e) provide for the identification of areas that, because of natural or human-caused hazards, are unsuitable for subdivision development. The regulations must prohibit subdivisions in these areas unless the hazards can be eliminated or overcome by approved construction techniques or other mitigation measures authorized under 76-3-608(4) and (5). Approved construction techniques or other mitigation measures may not include building regulations as defined in **50-60-101** other than those identified by the department of labor and industry as provided in **50-60-901**.

(f) prohibit subdivisions for building purposes in areas located within the floodway of a flood of 100-year frequency, as defined by Title 76, chapter 5, or determined to be subject to flooding by the governing body;

(g) prescribe standards for:

(i) the design and arrangement of lots, streets, and roads;

(ii) grading and drainage;

(iii) subject to the provisions of **76-3-511**, water supply and sewage and solid waste disposal that meet the:

(A) regulations adopted by the department of environmental quality under **76-4-104** for subdivisions that will create one or more parcels containing less than 20 acres; and

(B) standards provided in **76-3-604** and **76-3-622** for subdivisions that will create one or more parcels containing 20 acres or more and less than 160 acres; and

(iv) the location and installation of public utilities;

(h) provide procedures for the administration of the park and open-space requirements of this chapter;

(i) provide for the review of subdivision applications by affected public utilities and those agencies of

local, state, and federal government identified during the preapplication consultation conducted pursuant to subsection (1)(q) or those having a substantial interest in a proposed subdivision. A public utility or agency review may not delay the governing body's action on the application beyond the time limits specified in this chapter, and the failure of any agency to complete a review of an application may not be a basis for rejection of the application by the governing body.

(j) when a subdivision creates parcels with lot sizes averaging less than 5 acres, require the subdivider to:

(i) reserve all or a portion of the appropriation water rights owned by the owner of the land to be subdivided and transfer the water rights to a single entity for use by landowners within the subdivision who have a legal right to the water and reserve and sever any remaining surface water rights from the land;

(ii) if the land to be subdivided is subject to a contract or interest in a public or private entity formed to provide the use of a water right on the subdivision lots, establish a landowner's water use agreement administered through a single entity that specifies administration and the rights and responsibilities of landowners within the subdivision who have a legal right and access to the water; or

(iii) reserve and sever all surface water rights from the land;

(k) (i) except as provided in subsection (1)(k)(ii), require the subdivider to establish ditch easements in the subdivision that:

(A) are in locations of appropriate topographic characteristics and sufficient width to allow the physical placement and unobstructed maintenance of open ditches or belowground pipelines for the delivery of water for irrigation to persons and lands legally entitled to the water under an appropriated water right or permit of an irrigation district or other private or public entity formed to provide for the use of the water right on the subdivision lots;

(B) are a sufficient distance from the centerline of the ditch to allow for construction, repair, maintenance, and inspection of the ditch; and

(C) prohibit the placement of structures or the planting of vegetation other than grass within the ditch easement without the written permission of the ditch owner.

(ii) Establishment of easements pursuant to this subsection (1)(k) is not required if:

(A) the average lot size is 1 acre or less and the subdivider provides for disclosure, in a manner acceptable to the governing body, that adequately notifies potential buyers of lots that are classified as irrigated land and may continue to be assessed for irrigation water delivery even though the water may not be deliverable; or

(B) the water rights are removed or the process has been initiated to remove the water rights from the subdivided land through an appropriate legal or administrative process and if the removal or intended removal is denoted on the preliminary plat. If removal of water rights is not complete upon filing of the final plat, the subdivider shall provide written notification to prospective buyers of the intent to remove the water right and shall document that intent, when applicable, in agreements and legal documents for related sales transactions.

(l) require the subdivider, unless otherwise provided for under separate written agreement or filed easement, to file and record ditch easements for unobstructed use and maintenance of existing water delivery ditches, pipelines, and facilities in the subdivision that are necessary to convey water through the subdivision to lands adjacent to or beyond the subdivision boundaries in quantities and in a manner that are consistent with historic and legal rights;

(m) require the subdivider to describe, dimension, and show public utility easements in the subdivision on the final plat in their true and correct location. The public utility easements must be of sufficient width to allow the physical placement and unobstructed maintenance of public utility facilities for the provision of public utility services within the subdivision.

(n) establish whether the governing body, its authorized agent or agency, or both will hold public hearings;

(o) establish procedures describing how the governing body or its agent or agency will address information presented at the hearing or hearings held pursuant to **76-3-605** and **76-3-615**;

(p) establish criteria that the governing body or reviewing authority will use to determine whether a proposed method of disposition using the exemptions provided in **76-3-201** or **76-3-207** is an attempt to evade the requirements of this chapter. The regulations must provide for an appeals process to the governing body if the reviewing authority is not the governing body.

(q) establish a preapplication process that:

(i) requires a subdivider to meet with the authorized agent or agency, other than the governing body, that is designated by the governing body to review subdivision applications prior to the subdivider submitting the application;

(ii) requires, for informational purposes only, identification of the state laws, local regulations, and growth policy provisions, if a growth policy has been adopted, that may apply to the subdivision review process;

(iii) requires a list to be made available to the subdivider of the public utilities, those agencies of local, state, and federal government, and any other entities that may be contacted for comment on the subdivision application and the timeframes that the public utilities, agencies, and other entities are given to respond. If, during the review of the application, the agent or agency designated by the governing body contacts a public utility, agency, or other entity that was not included on the list originally made available to the subdivider, the agent or agency shall notify the subdivider of the contact and the timeframe for response.

(iv) requires that a preapplication meeting take place no more than 30 days from the date that the authorized agent or agency receives a written request for a preapplication meeting from the subdivider; and

(v) establishes a time limit after a preapplication meeting by which an application must be submitted;

(r) require that the written decision required by **76-3-620** must be provided to the applicant within 30 working days following a decision by the governing body to approve, conditionally approve, or deny a subdivision;

(s) establish criteria for reviewing an area, regardless of its size, that provides or will provide multiple spaces for recreational camping vehicles or mobile homes.

(2) In order to accomplish the purposes described in **76-3-501**, the subdivision regulations adopted under **76-3-509** and this section may include provisions that are consistent with this section that promote cluster development.

History: En. Sec. 5, Ch. 500, L. 1973; amd. Sec. 3, Ch. 334, L. 1974; amd. Sec. 20, Ch. 213, L. 1975; R.C.M. 1947, 11-3863(2), (3); amd. Sec. 1, Ch. 236, L. 1981; amd. Sec. 17, Ch. 274, L. 1981; amd. Sec. 238, Ch. 418, L. 1995; amd. Sec. 18, Ch. 471, L. 1995; amd. Sec. 1, Ch. 201, L. 1999; amd. Sec. 21, Ch. 582, L. 1999; amd. Sec. 5, Ch. 348, L. 2001; amd. Sec. 3, Ch. 527, L. 2001; amd. Sec. 1, Ch. 564, L. 2001; amd. Sec. 11, Ch. 599, L. 2003; amd. Sec. 3, Ch. 298, L. 2005; amd. Sec. 1, Ch. 302, L. 2005; amd. Sec.

1, Ch. 317, L. 2007; amd. Sec. 3, Ch. 443, L. 2007; amd. Sec. 13, Ch. 446, L. 2009; amd. Sec. 1, Ch. 109, L. 2013; amd. Sec. 10, Ch. 379, L. 2013; amd. Sec. 2, Ch. 319, L. 2021.

40 11th Street West, Ste. 220
Kalispell, MT, 59901
OFFICE: (406) 751-8200
EMAIL: planning.zoning@flathead.mt.gov
WEB: flathead.mt.gov/planning_zoning

January 2, 2024

«Name»
«Field1»
«Agency»
«Address»
«City_State_Postal_Code»

RE: FPP-23-22 Steamboat Landing – Preliminary Plat Request

«Salutation»

This office has received a request from Somers Project, LLC and Somers Property, LLC, with technical assistance from Morrison-Maierle, for preliminary plat approval of Steamboat Landing, a proposal to create 180 single-family residential lots and five condominium lots with a total of 72 units on 63.59 acres. The subdivision would be served by the Somers Water & Sewer District for water supply and sewage treatment. Access to the lots would be from new internal subdivision roads via Sunnybrook Lane and Somers Road. The property is located at 603 Somers Road in Somers, Montana and can legally be described as follows:

Tract 1:

Parcel B of Certificate of Survey No. 16017, located and being in the North Half of the Southwest Quarter and in the Southwest Quarter of the Northwest Quarter of Section 24, Township 27 North, Range 21 West, P.M.M., Flathead County, Montana.

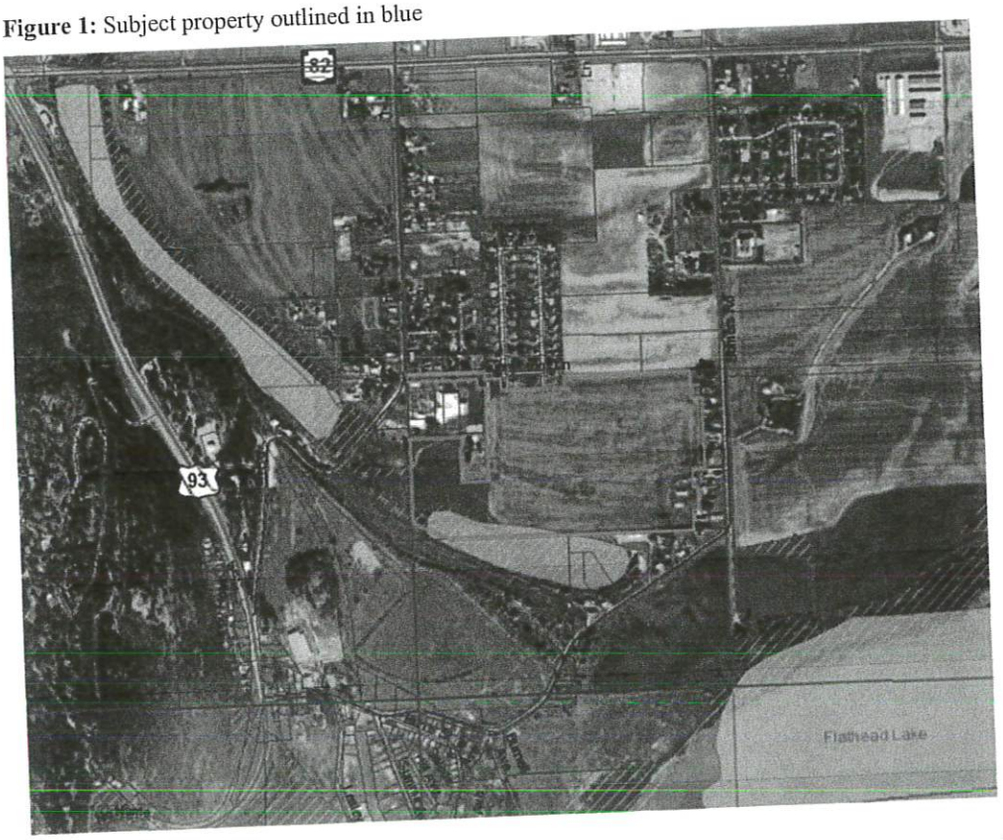
Excepting Therefrom

Parcel A of Certificate of Survey No. 20777, located and being in the Northwest Quarter of the Southwest Quarter of Section 24, Township 27 North, Range 21 West, P.M.M., Flathead County, Montana

Tract 2:

A 60 foot roadway and utility easement for access from the County Road on the East as shown on Certificate of Survey No. 3935, granted in Notice of Purchaser's Interest recorded July 26, 1978 in Book 648, page 152 and Warranty Deed recorded July 7, 1995 as Document No. 95-188-15540

Figure 1: Subject property outlined in blue



I encourage your comments on this proposal and ask that you please submit them to the Flathead County Planning and Zoning Office, in writing or via email (eappert@flathead.mt.gov), by **Friday, January 19, 2024,** so they may be included in the staff report and considered by the Flathead County Planning Board and Flathead County Commissioners in their review of this subdivision request. If you have any questions, feel free to contact me at (406) 751-8200.

Sincerely,

Erin Appert

Erin Appert
Planner III

Attachments: Major Subdivision Preliminary Plat Application
Preliminary Plat
Environmental Assessment*
Fire Prevention, Control and Fuels Reduction Plan**

The following is a list of agencies we will be contacting during our review process. This list does not limit this office from contacting additional agencies if necessary:

- ☑ *Bonneville Power Administration*
- ☑ *DEQ*
- ☑ *DNRC**
- ☑ *Flathead City-County Health Department (inter-office mail)*
- ☑ *Flathead Conservation District*
- ☑ *Flathead County Address Coordinator/GIS Department*
- ☑ *Flathead County Road and Bridge Department**
- ☑ *Flathead County Engineer, Beth Kappes, PE*
- ☑ *Flathead County Sheriff's Office*
- ☑ *Flathead County Solid Waste District*
- ☑ *Flathead County Superintendent of Schools*
- ☑ *Flathead County Weeds & Parks Department*
- ☑ *Montana Department of Transportation*
- ☑ *Montana Fish, Wildlife & Parks**
- ☑ *Somers Fire District*
- ☑ *Somers Elementary School District*
- ☑ *Flathead High School District*
- ☑ *Somers Water & Sewer District*
- ☑ *U.S. Army Corps of Engineers*

Residents Near Contaminated BNSF Site Settle Suit

BY BEACON STAFF
APRIL 29, 2014

Nearly three decades after the U.S. Environmental Protection Agency designated a contaminated railroad tie-treating plant near Somers a Superfund site, BNSF Railway has settled an ongoing lawsuit with landowners living adjacent to the 80-acre site near Flathead Lake.

Although the details of the settlement are confidential, a spokesman for BNSF said the company will purchase most of the plaintiffs' private property near the site on Somers Road, and will continue cleanup efforts that have been ongoing for two

decades.

BNSF and 17 plaintiffs resolved the lawsuit at a settlement conference earlier this month in U.S. District Court in Missoula.

"BNSF and all plaintiffs were able to resolve the pending litigation at this conference. BNSF can confirm that the resolution includes the acquisition of most properties owned by plaintiffs; however, specific terms of the settlement are confidential," according to a statement from company spokesman Matt Jones.

The Somers Tie Plant is a remediation site managed by the EPA and the Montana Department of Environmental Quality. BNSF and its predecessors have been investigating and remediating the site since 1984, and BNSF's work at and around the historic tie plant will continue, Jones said.

The company acknowledges that zinc, petroleum hydrocarbons and polynuclear aromatic hydrocarbons have been detected in soil and groundwater on the property and have migrated "to some extent outside BNSF's property."

EPA project manager Diana Hammer said recent findings have revealed a large plume of creosote further underground than originally thought.

Research on the property will continue as EPA officials determine how to more thoroughly clean the contaminated soil and groundwater. The affected residents obtain their drinking water from the city water system, not the groundwater.

The 80-acre site near downtown Somers was once home to a railroad tie treatment plant. Owned by the Great Northern Railway, it was established in 1901 and operated until 1986. Today, the land is owned by Great Northern successor BNSF Railway.

For nearly a century, the plant produced wooden railroad ties that were coated with creosote to protect the ties from the elements. Other chemicals used in the tie-making process included zinc chloride and petroleum preservative mixtures, according to the EPA and the lawsuit, filed in 2009.

After a tie was coated with protective chemicals it was allowed to dry out on a "drip track." According to an EPA report, the process produced up to 1,000 pounds of

sludge every two years that impacted both the soil and groundwater. The contamination was discovered in 1984 and later that year the area was designated an EPA Superfund site.

In 1994, the EPA, DEQ and BNSF contractors began excavating and treating 50,000 cubic yards of soil and the groundwater underneath the site. Soil remediation was completed in 2002 and water treatment continued until 2007, when the railroad requested that the treatment system be turned off. Because the soils are so dense in that area, the groundwater moved very slowly and was difficult to treat. Since then, government agencies and the railroad have monitored the water's condition.

A 1989 Record of Decision by the EPA called for treating contaminated soil on-site in a land treatment unit and constructing and operating a groundwater treatment plant. The remedial action started in 1991.

The most recent five-year review's sampling results have raised questions about how far from the plant the contamination could have spread.

The case was originally filed by Kalispell law firm McGarvey, Heberling, Suyllivan and Lacey in Flathead County District Court on behalf of plaintiffs Richard Ortiz, Alice Enterprises, LLC and its members Thomas and Sheryl Abel.

The case was then transferred to U.S. District Court by BNSF under diversity jurisdiction and was consolidated to include plaintiffs David Graham, Michael Barragan, Pamela Barragan, Barbara Brown, Kathy Dugre, David Hayes, Deborah Hayes, Michael Michaelis, Melissa Michaelis, Mark Blasdel, Alice Blasdel, Robert Lincoln and Beth Lincoln.

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EPA Superfund
Explanation of Significant Difference for the Record of Decision:

Burlington Northern (Somers Plant)
Somers, MT
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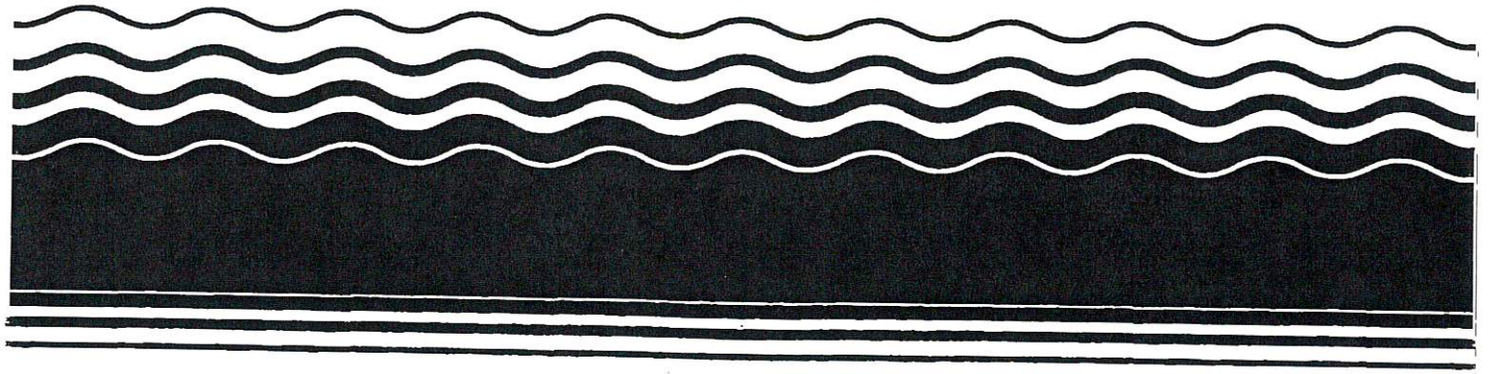

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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EXPLANATION OF SIGNIFICANT DIFFERENCES

Burlington Northern (Somers Plant) Site
Somers, Flathead County, Montana

United States Environmental Protection Agency
July 1998

I. INTRODUCTION

This Explanation of Significant Differences (ESD) is being issued by the U.S. Environmental Protection Agency (EPA) to modify certain remediation criteria established in the Record of Decision (ROD) issued by EPA on September 27, 1989 and modified by the previous ESD issued on June 26, 1992 for the Burlington Northern (Somers Plant) Site (hereby referred to as "Somers Plant" or the "Site") and identifies the documents that serve as the basis for the determination.

EPA, in consultation with the Montana Department of Environmental Quality (MDEQ), and after consideration of documents prepared pursuant to the first Five-Year Review of the Somers Plant and other documents in the Administrative Record, has determined that modifications to the remediation levels established in the 1989 ROD are required to incorporate criteria developed since the ROD was issued.

The modifications to the remedy described in this ESD do not fundamentally alter the overall approach of the remedy selected in the ROD. However, the modifications to the remediation goals at the site significantly change the scope and performance of the selected remedy. Therefore this ESD is required by the NCP and EPA guidance.

In accordance with Sections 117(c) and 121 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (Superfund), as amended, 42 U.S.C. Section 9601, et seq. ("CERCLA"), and the regulations at 40 C.F.R. Section 300.435(c)(2)(i), the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), this ESD has been prepared for the following reasons:

- to provide the public with an explanation of the nature of the changes to the remedy;
- to summarize the circumstances that led to the changes to the remedy; and
- to affirm that the revised remedy complies with all statutory requirements.

MDEQ (formerly the Montana Department of Health and Environmental Sciences, MDHES) concurred on the ROD issued on September 27, 1989, and has participated in the review of information leading to this ESD, including the Five-Year Review Report which includes the Protectiveness Evaluation and the Five-Year Review Site Visit (Roy F. Weston, Inc., 1995a and 1995b). MDEQ has reviewed and concurred on this final ESD.

This document presents a summary of the changes to the selected remedy and a synopsis of information on the Site. The Administrative Record, which contains this ESD and the complete documentation supporting the revisions selected herein, is available for public review at the locations indicated at the end of this report.

II. SITE HISTORY AND BACKGROUND

The Burlington Northern (Somers Plant) Site is located in northwestern Montana in the unincorporated town of Somers, Flathead County. The Somers Plant was operated by Burlington Northern Railroad (BNRR) between 1901 and 1986, and covers approximately 80 acres. The plant treated railroad ties and other miscellaneous lumber products to protect the materials from weathering and insects. Treatment fluids used by BNRR included zinc chloride, chromated zinc chloride and creosote/petroleum preservative mixtures. The treatment process generated wastewater primarily consisting of steam condensate containing zinc chloride or creosote. Floor and shop washing, drippage from treated ties pulled from the retort onto the drip track and storage of treated ties on the property were other sources of process-generated wastewater. Prior to 1971, BNRR discharged wastewater into a lagoon (the "CERCLA Lagoon") located immediately south of the retort building. Overflow from this lagoon flowed in an open ditch from the facility into a swamp on the shore of Flathead Lake. Sometime prior to 1946, a pond formed in the swamp area (the "swamp pond") adjacent to Flathead Lake and waste material discharged through the open ditch accumulated there.

BNRR abandoned the CERCLA Lagoon and ditch in 1971 when the company constructed two new wastewater holding impoundments [the Resource Conservation and Recovery Act (RCRA) impoundments]. In 1984 BN implemented a recycling system and stopped all wastewater discharges.

In February 1984, the Montana Department of Health and Environmental Sciences (MDHES) sampled the soils at the Somers Plant. Based on the results of this investigation, the Site was proposed for inclusion on the Superfund National Priorities List (NPL) in 49 CFR 40320, October 15, 1984. The proposed listing cited potential adverse effects on Flathead Lake and the water supply for the town of Somers, which drew water from the lake.

In May 1985, EPA, BNRR and Sliters Corporation (a corporation which owns a portion of the site) signed an Administrative Order on Consent (AOC) (Docket No. CERCLA-VIII-85-02) providing for an Emergency Removal Action in the area of the swamp pond adjacent to Flathead Lake. The area was determined to pose an imminent and substantial hazard to Flathead Lake because of the presence of creosote contamination in water and soil located within two (2) feet of the shoreline. Pursuant to the 1985 AOC, BNRR removed

contaminated soil and surface water from the swamp pond area and the drainage ditch. The soils were temporarily placed in the lined RCRA impoundments and eventually hauled to the BN RCRA-regulated facility in Paradise, Montana for treatment. The water was processed at the plant. The excavated areas were backfilled with clean soil and riprap was placed along the lakeshore.

In October 1985, EPA, BNRR, and Sliters Corporation signed another AOC (Docket No. CERCLA-VIII-85-07) for a Remedial Investigation and Feasibility Study (RI/FS). The purpose of the RI/FS was to determine the nature and extent of contamination at the Site, to evaluate the impacts of contamination on public health and the environment, and to formulate alternatives for remedial action. The field work to support the RI was performed from the Fall of 1985 to Fall 1988. An RI/FS Report (Remediation Technologies, Inc., 1989) was submitted to EPA in the spring of 1989.

The RCRA impoundments were closed in 1988 under the MDEQ Hazardous Waste Permitting Program. Subsequent to the closure, a groundwater monitoring well located adjacent to the impoundment indicated that groundwater was contaminated; therefore, groundwater corrective action was required.

After completion of the RI/FS, a ROD was signed on September 27, 1989 (EPA 1989a). The ROD selected a remedy and a contingency remedy for remediation of soil, groundwater and sediments, which were determined to pose a potential threat to human health and the environment. The selected remedy addressed the principal threats by removing the potential for direct contact with soils, by reducing the impact of the soils and sediments on groundwater and surface water and by treating the groundwater. The contingency remedy was to be implemented if the selected remedy was not determined to be effective. On December 20, 1991, the EPA entered into a Consent Decree (Civil Action No. CV-91-32-M-CCL) with BNRR and Burlington Northern, Inc. for Remedial Design/Remedial Action (RD/RA) of the selected remedy at the Site. The Consent Decree required performance of a Pilot Study to demonstrate the "practicability" of the innovative bioremediation component of the selected groundwater remedy. The Consent Decree required that the Pilot Study be conducted prior to any soil application on the Land Treatment Unit (LTU).

EPA issued an ESD in June 1992 (EPA, 1992) that modified the elements of the selected remedy, based on the "practicability" determination required in the ROD. The results of the Pilot Study were presented in the Remedial Design Investigation Report for the Former Somers Tie Plant (Remediation Technologies, Inc., 1991). The study was conducted to more accurately define and quantify the conditions under which the groundwater could be successfully remediated.

Operation of the 14.4 acre LTU commenced in 1994 following removal of soil from the CERCLA Lagoon to a 15 foot depth (22,300 cubic yards), Swamp Pond Area to a 12 foot depth (19,030 cubic yards), and the Drip Track/Retort Building (10,000 cubic yards). After the first year of LTU operation, the ROD remediation levels for soils were achieved. The second year of operation of the LTU produced a 19% reduction in carcinogenic Polycyclic Aromatic Hydrocarbons (cPAH) concentrations (RETEC 1995a). The cPAH reduction

allowed BN to apply a second lift of soil to the LTU in the fall of 1995 in accordance with the 1989 ROD requirements.

The groundwater remedy consisting of five (5) extraction and ten (10) injection wells and a granular activated carbon (GAC) water treatment plant was put into operation at the end of April 1994 to capture and treat contaminants at the CERCLA Lagoon and downgradient of the CERCLA Lagoon. The system is designed to hydraulically contain Polycyclic Aromatic Hydrocarbons (PAH) contaminated groundwater within the boundary of the influence of the well fields. Extracted water is chemically and mechanically treated for free product, dissolved organics and iron at the site Water Treatment Plant prior to reinjection. Groundwater contamination at the site consists of Dense Non Aqueous Phase Liquids (DNAPL) within and adjacent to the CERCLA Lagoon and dissolved components downgradient from the lagoon.

Excavation activity in the swamp pond and slough areas resulted in the determination of the need for mitigation of damage to wetland environments. The Fish and Wildlife Service delineated and determined functional values of the wetland area in July 1993 (USFWS, 1994), which are described in the Wetlands Compensation Determination (EPA, 1994c). BNRR reconstructed the swamp pond in accordance with the plan and conducts semi-annual water quality sampling and assessment of vegetation recovery for the area.

A Five-Year Review of the Remedial Action at the Somers Plant was performed in April 1996. The objectives of the Five-Year Review were: (1) to verify that the remedy is operating and functioning as designed and, (2) to evaluate whether the remedial action selected for the site remains protective of human health and the environment. The Five-Year Review conducted for the Somers site was performed in accordance with the Office of Solid Waste and Emergency Response (OSWER) Directives 9355.7-02 entitled "Structure and Components of Five-Year Reviews", (EPA 1991) and 9355.7-02A, entitled "Supplemental Five-Year Review Guidance", (EPA 1994a).

The Five-Year Review of the Somers site was triggered by the initiation of a portion of the remedy by the responsible party, Burlington Northern Railroad, in 1991. The Five-Year Review includes recommendations for the evaluation of remediation levels for the site to ensure that the remedy is protective of human health and the environment and that the remediation levels are current and consistent with CERCLA Section 121, and EPA and State policy and guidance.

III. SUMMARY OF THE 1989 RECORD OF DECISION

The objectives of the remedy selected in the 1989 ROD are to reduce human exposure to soil, sediment and groundwater contaminants of concern. The components of the remedy are excavation and biological treatment of soils within an onsite LTU, and *in situ* biological treatment of contaminated groundwater within the water table aquifer, supplemented by extraction and treatment of contaminated water through a mechanical and chemical treatment process to remove free product, metals and particulates, and dissolved organics

through oil/water separation, equalization, oxidation, particulate settling and granulated activated carbon filtration.

A list of the components of the original remedy selected for the site can be found on pages 40 through 46 of the 1989 ROD (EPA, 1989a). The remedy was modified by the 1992 ESD (EPA, 1992) based on the Pilot Study for ground water contaminants of concern. A brief summary of the original and modified remedy is provided below. The ROD remediation levels for contaminated soil and ground water are presented in Table 1.

- The soil remedy involved excavation of creosote and zinc contaminated soils in the CERCLA lagoon, drip track, drainage ditch, beneath the retort building and in the slough and beach areas. Some soil left below the water table in the CERCLA lagoon and swamp would be treated as part of the groundwater component of the remedy. The ROD included provisions for groundwater monitoring and post-closure care for up to 30 years or deed restrictions placed if hazardous constituents remained. Due to RCRA land disposal restrictions, a demonstration of no-migration of hazardous constituents was conducted to satisfy requirements.

- The original feasibility study alternative was modified for the selected remedy to exclude the excavation of the beach sediments. The sediments were not excavated due to a determination that the ecological risks to Flathead Lake from beach excavation outweighed the benefits of removing the contaminated sediments.

- Excavated areas were required to be backfilled with clean borrow soils and revegetated. The remedy also included replacement or restoration of wetlands lost during the remedial action.

- The ROD identified groundwater remedy involved the evaluation of the applicability of innovative technology, either hot water flushing of contaminated groundwater, ozone/UV or peroxide/UV treatment at the surface and *in situ* biological treatment of residual contamination.

  The 1991 Consent Decree required that a pilot test of the hot water flushing and *in situ* biological treatment technologies be conducted to evaluate their "practicability" in the low permeability hydrogeologic conditions at the Site. Implementation of the soil remedy was restricted until after the pilot test was conducted, as the contingency remedy involved deep excavation and incineration of soils. The remedy involved the installation of injection and recovery wells in the CERCLA Lagoon and the swamp pond area. Recovered groundwater would be treated in a chemical reactor in order to reduce contaminant levels.

- Identification and implementation of institutional controls to restrict use of groundwater downgradient of the contaminated areas was required.

- Monitoring activities required to assess the performance of the components of the remedy would be conducted throughout the life of the remedial activities. Activities

involve monitoring of groundwater wells and semi-annual monitoring of the Somers municipal supply well until cleanup concentrations are achieved.

- The Site conditions will be reviewed no less than every five years after initiation of the remedial action to ensure that the remedy remains protective of human health and the environment.

In 1992, EPA modified the remedy selected for the site through an ESD. The ESD presented the "practicability" determination for the innovative bioremediation technology for the groundwater component. The significant differences between the remedy described in the 1989 ROD and the 1992 ESD are listed below:

1. Excavation of additional soils in the CERCLA Lagoon and the Swamp Pond Areas increasing the total excavated materials from 11,700 cubic yards to 41,000 cubic yards. Additional excavation was conducted to aid the remediation process.

2. Increase the size of the Land Treatment Facility from 10 acres to 14 acres to decrease the time required to meet remedial objectives and cleanup remediation levels. Procedure for completion of land treatment described in the ROD (p. 42) was not modified.

3. Elimination of the hot water flushing option of the groundwater remedy due to the low permeability of the aquifer materials. Excavation of additional soil in the CERCLA Lagoon would remove more source material and aid the remediation process.

4. Change in soil and groundwater cleanup times. Decrease the time to achieve soil remediation levels to 4 to 6 years rather than 10 years. Increase the estimate to achieve groundwater remediation levels from 10 to 15 years to 50 years.

IV. SUMMARY OF SIGNIFICANT DIFFERENCES TO THE REMEDY

The significant differences between the remedy selected in the 1989 ROD and the 1992 ESD and in this ESD are:

1. The soil remediation level for carcinogenic polycyclic aromatic hydrocarbon (cPAH) is revised from 36 to 57 milligrams per kilogram (mg/kg) calculated as benzo(a)pyrene (B(a)P) equivalents using the revised B(a)P cancer slope factor.

2. The limitations established in the 1989 ROD for pyrene, naphthalene and phenanthrene in soils are removed. EPA cites in part the rationale provided by field data, toxicological assessment and the language within the No-

Migration Petition as reasons for removing these requirements. Further discussion is provided below.

3. The soil remediation level for total non-carcinogenic PAH is revised from 1875 mg/kg to 1500 mg/kg based on the revisions to the Reference Dose (RfD) for naphthalene equivalents which has been revised from 0.005 to 0.004 mg/kg-day.

4. The groundwater remediation level for total non-carcinogenic PAH is revised from 0.3 μg/L to 40 μg/L based on the current procedure of not considering co-carcinogenicity and the change in the Reference Dose (RfD) equivalent to naphthalene noted in item 3. above.

5. The groundwater remediation level for total phenolics is revised from 15,000 μg/L to 6000 μg/L calculated, based on revisions in the RfD for Phenol and RfD values for other phenolic compounds.

Only those changes in Section IV paragraphs 1 through 5 above are being made to the remedy selected in the 1989 ROD and 1992 ESD. All other aspects of the selected remedy documented in 1989 ROD and 1992 ESD remain the same. A detailed rationale and background for the changes in this ESD follows.

Risk-Based Remedial Goals

Risk-based cleanup remediation levels established in the ROD for contaminated soils and groundwater were reviewed to determine the impact of changes in the toxicological assessment of contaminants of concern (COCs) including total PAHs, cPAHs and phenolic compounds using current EPA toxicological information and updated relative potency factor (RPF) and Toxicity Equivalency Factor (TEF) guidance (EPA, 1989b, EPA 1994b, EPA 1993). This review effort was performed to assess the degree of protectiveness afforded by the current risk-based remediation levels documented in the 1989 ROD for Somers.

The residential exposure scenarios were used as the basis for 1989 cleanup levels presented in the ROD for groundwater and soil. The site-specific exposure parameters established in the human health evaluation for these scenarios were used in the calculation of chemical concentrations for specific target risk levels. In the absence of site-specific information, standard default exposure parameters were used in the calculations. Risk-based remediation levels were also prepared for contaminants with MCLs for comparison purposes only (EPA, 1994e).

A summary of the results of the risk-based cleanup goal review effort is presented in Table 1.0. Details regarding the methods and input parameters used to develop the 1998 risk-based remediation levels presented in these tables are provided in the Supplemental Remedy Protectiveness Evaluation (Roy F. Weston, 1995b).

Soils Remediation Levels

The 1989 risk-based remediation levels for total carcinogenic and non-carcinogenic PAHs in soils differ from the 1998 risk-based remediation levels. The differences are based on revisions in the slope factor for B(a)P and the establishment of new RfD's for non-carcinogenic PAHs. Table 3 provides a summary of the slope factor and RfD revisions.

Total cPAH

The 1989 risk-based remedial remediation levels for total carcinogenic PAHs for soils, established using residential exposure scenarios differ from the 1998 risk-based remediation levels. The difference is due to revisions in the slope factor for B(a)P from 11.5 to 7.3 $(mg/kg\text{-}d)^{-1}$. Also, the 1989 remediation levels were applied to the sum of all cPAHs with the assumption that each cPAH was equal in carcinogenic potency to B(a)P. However, since promulgation of the ROD, cPAHs have been assigned RPFs which are used to convert individual cPAHs to B(a)P equivalent concentrations, thus resulting in less potent classification and having an effect of decreasing the estimated risk from cPAHs. The determination of compliance to the revised remediation levels for soils can be accomplished using EPA Region VIII Superfund Technical Guidance, Development of Toxicity Values for PAHs (EPA, 1994b).

Using the updated slope factor for B(a)P results in a change of the soil treatment cPAH limitation from 36 mg/kg to 57 mg/kg.

Total non-carcinogenic PAH

In 1989 non-carcinogenic effects of total PAHs were based upon the assumption that all PAHs were as toxic as naphthalene with an RfD of 0.005 mg/kg-d. Since promulgation of the ROD, the RfD for naphthalene has been revised from 0.005 to 0.004 mg/kg-d. Additionally, RfDs for other PAHs have been derived. As with the groundwater, those PAHs that have no RfD are conservatively evaluated as equal to most potent known RfD (naphthalene).

Application of the revised RfD produces a soil cleanup level for non-carcinogenic PAHs of 1500 mg/kg to replace the 1875 mg/kg level found in the 1989 ROD.

Naphthalene, Pyrene and Phenanthrene

EPA and MDHES established soil cleanup levels in the 1989 ROD that were based on both risk assessment results and proposed (Best Demonstrated Available Treatment) BDAT requirements for land disposal of the wastes found at the Site. These remediation levels include.

Contaminant(s)	Cleanup Goal	Source
Total cPAH	36.0 mg/kg	Risk Assessment

Total PAH	**1,875 mg/kg**	**Risk Assessment**
Naphthalene	**8.0 mg/kg**	**BDAT Requirements**
Phenanthrene	**8.0 mg/kg**	**BDAT Requirements**
Pyrene	**7.3 mg/kg**	**BDAT Requirements**

The remediation levels listed above that are based on BDAT requirements were incorporated within the 1988 ROD due to the land disposal restrictions (LDRs) that applied to the remedy (a land treatment unit) proposed for the wastes found in soils at the Site. The BDAT limitations were included in the ROD due to the lack of other numerical standards that applied to the contaminated soils. The BDAT limitations were derived from a demonstration using an incineration technology not a bioremediation technology as was selected for implementation at the Somers site.

It was recognized by both Burlington Northern and EPA at the time of the ROD that achievement of the pyrene level by land treatment would likely prove most difficult because the BDAT limitations were based on incineration as the applicable treatment technology. The No-Migration Petition for the Somers site was submitted by ReTec, Inc., as Appendix D of the Remedial Design investigation Report (December 1991). The petition evaluated migration potential for all contaminants of concern at the Site, including pyrene, naphthalene and phenanthrene. The petition was reviewed by EPA and MDEQ and commented on extensively by EPA. EPA approved the final No-Migration Petition with the issuance of the 1992 ESD on June 26, 1992. The study demonstrated that no migration of contaminants and no adverse impact to human health or the environment would occur during operation and closure of the LTU. 40 C.F.R. Section 268.6 allows EPA to approve a waiver of the Land Disposal Restrictions BDAT standard based on a successful No Migration Demonstration and Petition.

Removing the BDAT requirement for pyrene will not compromise the overall protectiveness of the selected remedy. Pyrene is now included in the list of total PAH compounds (no longer considered by EPA to be carcinogenic) whose sum total concentration must be remediated below the risk-based cleanup goal of 1,875 (modified to 1,500 by this ESD). By remediating the total PAHs below this level, EPA has determined that the residual concentrations of PAHs (including pyrene) will be protective of human health and the environment.

Field data available in BNRR's *LTU Annual Operations Reports* also indicate that BDAT requirements for both naphthalene and phenanthrene are achievable with the selected soils remedy. During operation of the Site LTU, remediation levels for these compounds are achieved prior to achievement of remediation levels for total carcinogenic PAHs. Thus, the standard set for total carcinogenic PAHs would ultimately govern the total time required to fully remediate a soil lift within the LTU.

With a potential for expediting the time required to remediate the contaminated soils at the Site while still maintaining the degree of protectiveness for human health and the environment, and EPA's approval of the No-Migration Petition, EPA is removing the soil treatment levels for pyrene, naphthalene and phenanthrene. As explained above, the degree of protectiveness for human health and the environment will be maintained by remediating the total PAH compounds to 1,875 mg/kg and the carcinogenic PAH compounds to the new risk-based goal of 57 mg/kg. All other requirements for remediating the contaminated soils within the LTU (as listed above) will remain in effect.

Only the initial treatment levels are being changed by this ESD. The ROD requirement for additional treatment of soils, after attaining the new initial treatment levels, until the annual reduction in cPAH is less than 20 percent, remains unchanged. The additional ROD requirement that health risks posed by direct contact with site soils be reduced to at least 1x10-5 also remains unchanged.

Groundwater Remediation Levels

Total non-carcinogenic PAHs

In 1989, the Risk Assessment for the BN Somers site identified a concentration for total PAHs of 50 μg/L as being protective against noncancer health effects. This level was calculated based on the assumption that all PAHs had an RfD equivalent to naphthalene (0.005 mg/kg-d). However, this risk-based value was not selected for incorporation in the ROD due to concerns at the time over carcinogenic promotion or co-carcinogenicity of noncarcinogenic PAHs. Therefore, a cleanup level for total PAHs of 0.300 μg/L was set, using a value one order of magnitude greater than the risk-based cleanup level for carcinogenic PAHs (0.03μg/L).

Currently, carcinogenic promotion by noncarcinogenic PAHs is not considered in estimating potential carcinogenic effects from exposure to PAHs (EPA, 1994c) and a health-based level using RfDs for noncarcinogenic effects is appropriate. As noted above, since issuance of the ROD in 1989, the RfD for naphthalene has been revised from 0.005 to 0.004 mg/kg-d, and many of the PAHs have been assigned individual RfDs. Those PAHs for which no RfD has been assigned have been assumed to be equal to the most potent known RfD (naphthalene = 0.004 mg/kg-d).

The recalculation of the health based clean-up goal is 40 μg/L. To determine compliance levels, exposure point concentrations (EPCs) for individual PAHs are recalculated based on the revised RfDs and converted to naphthalene equivalent concentrations using RfD ratios. These naphthalene equivalent concentrations are then summed to represent total PAHs present in groundwater for comparison to the revised clean-up level.

There is no change in the exposure risk to the public due to this revision in the remediation level for non-carcinogenic PAHs.

Total phenolics

For total phenolic compounds, the RfD for phenol has been revised to 0.6 mg/kg-d, resulting in a revised clean-up goal of 6000 µg/L which replaces the 1989 ROD level of 15,000. As with the cPAHs and PAHs, RfD values for other phenolic chemicals of concern have been derived (phenol, 2,4-dimethylphenol, 2-methylphenol, 4-methyphenol). Again, EPCs for individual phenolic compounds are converted to phenol equivalent concentrations using ratios of RfDs, which are summed to represent total phenolics present at the site for comparison to the revised clean-up level.

There is no change in the exposure risk to the public due to this change in the remediation level for total phenolics.

Carcinogenic PAHs

Although federal MCLs for cPAHs have been promulgated since the ROD was issued, no change is made to the ROD at this time because: (1) MDEQ is currently revising the Montana WQB-7 standards for these compounds and (2) BNSF will prepare a Technical Impracticability (TI) waiver application relative to groundwater cleanup at the Site. Updated groundwater standards will be addressed as part of the TI waiver analysis and application.

V. SUMMARY OF STATE COMMENTS AND AVAILABILITY OF ADMINISTRATIVE RECORD

As stated above, MDEQ has reviewed the documents that serve as the basis for this determination and has provided comments to EPA on the documents and on this ESD. All of the MDEQ comments were incorporated into the final reports. MDEQ has been provided with the opportunity to review and comment on this ESD and all of their comments have been incorporated.

Documents referenced within this ESD are part of the Administrative Record for the Somers Site. The administrative record will also contain any written public comments that may be received regarding this ESD. The complete administrative record for the Site is available for public review at the following location:

U.S. EPA Montana Office
Federal Building, Room 192
301 South Park, Box 10096
Helena, Montana 59626-0096
(406) 441-1150
Mon-Fri, 8:00 a.m. to 5:00 p.m.

Flathead County Public Library
247 1st Avenue East
Kalispell, Montana 59901

(406) 756-5690
Mon-Fri, 8:00 a.m. to 4:00 p.m.

VI. AFFIRMATION OF STATUTORY REQUIREMENTS

Considering the new information that has been developed and the changes that have been made to the selected remedy, EPA, in consultation with MDEQ, believes that the remedy remains protective of human health and the environment, complies with Federal and State requirements that both applicable or relevant and appropriate to this remedial action or involves appropriate waivers of these requirements, and is cost-effective. In addition, the revised remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for the Site.

VII. APPROVAL

Mark A. Simonich

Mark A. Simonich, Director
Montana Department of Environmental Quality

7/13/98

Date

Max H. Dodson

Max H. Dodson, ARA
Office of Ecosystems Protection and Remediation
U.S. Environmental Protection Agency

2/24/98

Date

REFERENCES

Montana Department of Environmental Quality. 1995. Circular WQB-7. Montana Numeric Water Quality Standards. August 1995.

Remediation Technologies, Inc. (RETEC). 1995a. BN-Somers Land Treatment Facility 1994 Operations Report. Somers, Montana. Prepared for Burlington Northern Railroad.

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TABLE 1.0
COMPARISON OF 1989 AND 1995 RISK-BASED REMEDIATION LEVELS FOR BN-SOMERS [a,e]

Contaminants of Concern	Groundwater		Soil	
	1989 Risk Based Goal[d] (µg/L)	Risk-Based 1995 Target Clean-up Concentration (µg/L)	1989 Risk Based Goal (mg/kg)	Risk-Based 1995 Target Clean-up Concentration (mg/kg)
Total Carcinogenic PAHS [b]	0.030 µg/L	0.047 µg/L	36 mg/kg	57 mg/kg
Total PAHs - NonCancer Effects	0.300 µg/L Based on concern over possible co-carcinogenicity	40 µg/L Based on noncancer health effects calculated using naphthalene equivalent concentrations	1,875[c]	1,500
Phenol	—	6000	—	45,000
Total Phenolics	15,000	6000	3,000[c]	45,000

(a) Calculated using toxicity values shown in Table 2.0.
(b) Benzo(g,h,i)perylene assessed as a potential carcinogen in 1989; not classifiable as to human carcinogenicity and assessed as a noncarcinogen in 1995.
(c) Value cited as an excavation concentration.
(d) Values obtained from 1989 ROD for BN-Somers.
(e) Methods for comparing site concentrations to risk-based remediation levels have been revised since 1989. See text for further detail.
— Risk-based value not used as goal in 1989 ROD.

TABLE 2.0
COMPARISON OF TOXICITY VALUES USED FOR RISK CHARACTERIZATION AT BN-SOMERS 1989 AND 1998 VALUES

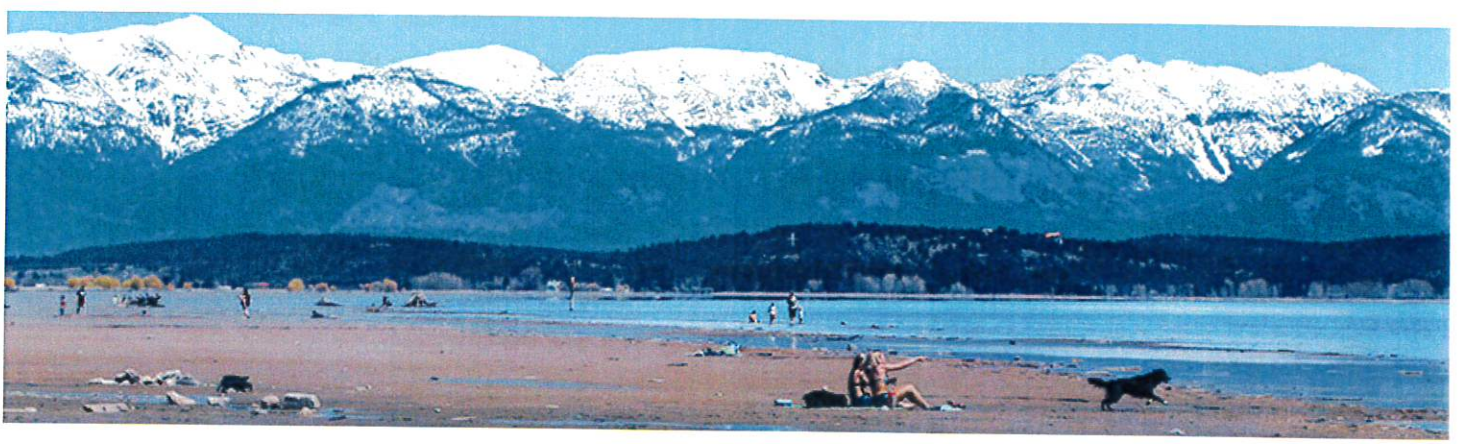
Contaminant of Concern	1989 Values[a] RfD (mg/kg-d)	1989 Values[a] oSF (mg/kg-d)$^{-1}$	1998 Values[c] RfD (mg/kg-d)	1998 Values[c] oSF (mg/kg-d)$^{-1}$ [b]
PAHs:				
Naphthalene	0.05 to 0.005[d]		0.004	
Acenaphthylene	0.03		NA	
Acenaphthene	0.20		0.06	
Fluorene	0.07*		0.04	
Phenanthrene	0.07*		NA	
Fluoranthene	0.07*		0.04	
Pyrene	0.06		0.03	
Benzo(a)anthracene	0.07*	11.5	NA	0.73
Chrysene	0.07*	11.5	NA	0.0073
Benzo(b)fluoranthene	0.07*	11.5	NA	0.73
Benzo(k)fluoranthene	0.07*	11.5	NA	0.073
Benzo(a)pyrene	0.07*	11.5	NA	7.3
Indeno(1,2,3-c,d)pyrene	0.07*	11.5	NA	0.73
Dibenzo(a,h)anthracene	0.07*	11.5	NA	7.3
Benzo(g,h,i)perylene[e]	0.07*	11.5	NA	–
2,4-dimethylphenol	NA		0.02	
2-methylphenol	NA		0.05	
4-methylphenol	NA		NA	
Phenol	0.04		0.6	
Zinc	0.21		0.3	

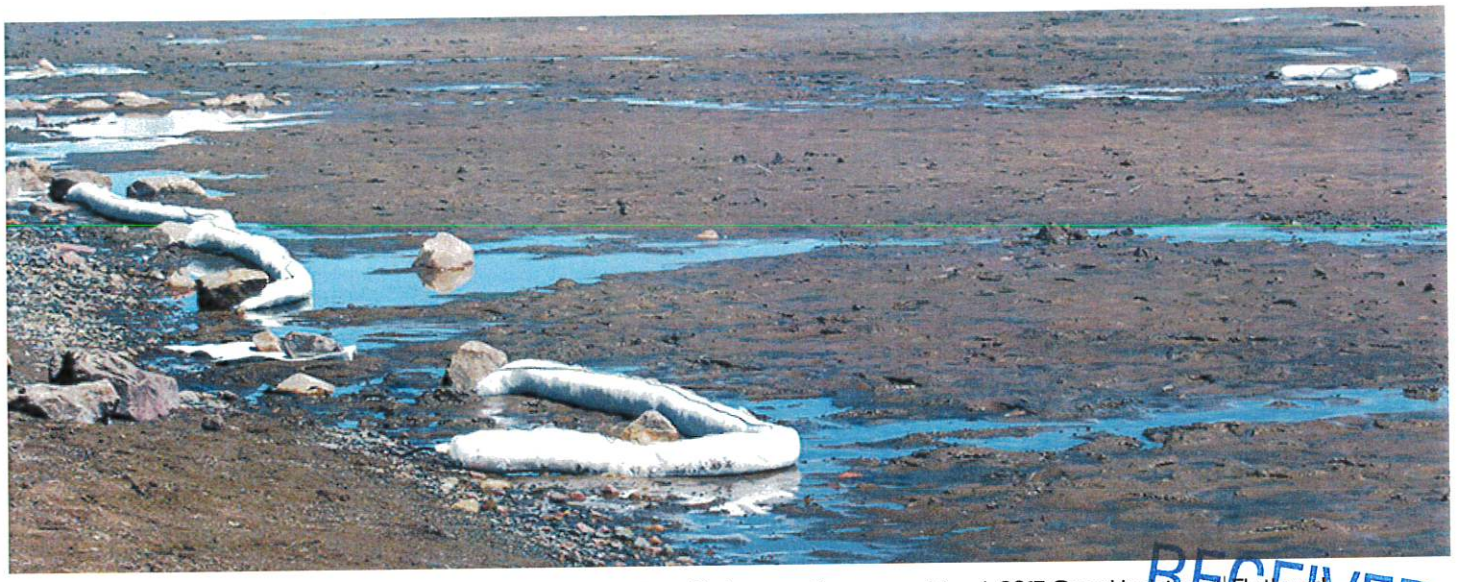
(a) Values from Table 2 of the 1989 ROD
(b) PAH specific Slope Factors calculated from B(a)P by multiplying by RPF (see text)
(c) Values obtained through reviews of IRIS, HEAST and Safe Drinking Water Guidance (EPA, 1995, 1994d, 1994e)
(d) Provided range of RfDs for Naphthalene, however used most stringent (0.005) in calculations
(e) Assessed as a potential carcinogen in 1989; not classifiable as to human carcinogenicity and assessed as a non carcinogen in 1998
* Value assumed equal to average RfD for other noncarcinogenic PAHs
NA Not Available

EPA Renews Focus on Somers Superfund Site Following New Detections

Federal agency reviewing potential cleanup needs at former railroad tie plant

BY DILLON TABISH
MAY 22, 2017





An unidentified sheen seeps onto the north shore of Flathead Lake near Somers on May 4, 2017. Greg Lindstrom | Flathead Beacon

Contamination concerns surrounding an oily sheen along the north shore of Flathead Lake have dissipated, but the U.S. Environmental Protection Agency has renewed its focus on the former railroad tie plant and Superfund site in Somers.

Katherine Jenkins, a public affairs specialist with the federal agency, said water samples collected along the shoreline have identified "generally low levels of volatile organic compounds and semi-volatile organic compounds with concentrations of naphthalene and acenaphthene exceeding standards established under the 1989 Superfund Record of Decision for the (Burlington Northern) Somers Former Tie Treating site."

Naphthalene is made from crude oil or coal tar, or it can also be a byproduct of burning. It is commonly used as an insecticide and pest repellent. It was first registered as a pesticide in 1948. Acenaphthene is a crystalline tricyclic hydrocarbon obtained especially from coal tar and used chiefly as a dye intermediate.

"While there is no indication of widespread contamination along the shoreline or in the lake that would represent a public health risk, these findings underscore the importance of ongoing efforts at the site," Jenkins said. "EPA has made no conclusions about potential sources ... however, these contaminants are potentially associated with former wood treating activities and known contaminants at the (BNSF Railway) Somers site."

The EPA is working with the Montana Department of Environmental Quality and BNSF Railway to assess conditions in the area and undergo a feasibility study to evaluate cleanup needs and actions for the site, expected early next year, Jenkins said.

Attention has refocused on the section of lakeshore near Somers after residents reported an unknown sheen along the shoreline earlier this month. An investigation focused along a section of shore spanning roughly 1,000 feet. The EPA notified BNSF, which owns adjacent property, including the former Somers tie plant, an 80-acre site about 1,200 feet from the lake's shoreline where wooden railroad ties were chemically treated for nearly a century before a lengthy environmental cleanup occurred.

Last week the Flathead City-County Health Board approved a resolution petitioning the Montana Department of Natural Resources and Conservation to extend the boundary limiting well usage in and around the Somers plant because of two underground plumes that continue to slowly grow with fluctuations in groundwater.

Joe Russell, the department's public health officer, said site samples were collected a year ago that showed contaminated product was moving underground north and east from the designated Superfund site. The new controlled groundwater boundary would impact three private property owners. Russell said the three property owners are aware of the process. He expects the extended boundaries to take effect within a year.

Russell said he's holding back any pre-judgment about the possible contamination lingering from the Somers Superfund site, but he is confident the EPA will identify and remedy potential cleanup needs in light of the recent detection.

The level of contaminants recently detected is low but still important and worth addressing, he said.

"These are harmful chemicals. We need to make sure we understand what we're dealing with. The (1989 record of decision) set those exceeding standards extremely low but they did for one reason: to trigger a response if necessary," he said. "And that's what's happening."

He continued, "Is there any human health exposures right now? Probably not. But do we want to make sure we don't get any in the future? Absolutely."

Jenkins said the EPA has made no determinations regarding the source of the original sheen, which has since dissipated with rapidly rising lake levels.

BNSF Railway collected water and soil samples that identified low levels of contaminants from an unknown source, as well as the sheen, which is very likely biological in nature, according to BNSF.

"Based on BNSF field studies and analytical test results, BNSF is confident the source of the sheen was biological in nature," Ross Lane, BNSF spokesperson, said. "Out of caution and at the direction of EPA, we removed the material with paper towels and a vacuum and continue to monitor the area. However, we have no further activities planned for the location where the sheen was spotted. The very low levels of contaminants detected could have come from a variety of sources including motorized boat use on the lake and natural processes."

He continued, "With respect to the former Somers Tie Plant, we are continuing to work with EPA and Montana DEQ on any potential further activities."

From 1901 until 1986, the Great Northern Railway and its successor Burlington Northern operated a major tie plant on 80 acres in Somers. The facility was the railroad giant's only supplier of treated ties in the West. For two decades during its peak, the Somers site was producing 600,000 ties per year.

The treatment process was messy business, producing constant wastewater and chemical dribble from the ties. Thousands of pounds of sludge piled up over the years, and an untold amount of wastewater was released into a lagoon at the south end of the property, about 1,200 feet from Flathead Lake. Overflow from the lagoon discharged through an open ditch directly into the lake or accumulated at a new pond that formed in the swampy area near the lake.

It was designated for cleanup through the federal Superfund program in 1984. By May of 1985, the EPA and BNSF Railway, the successor of Great Northern and Burlington Northern railroads, agreed on an emergency environmental action to address the swamp pond immediately next to the lakeshore. An investigation found

the area posed "an imminent and substantial hazard to Flathead Lake because of the presence of heavy creosote contamination in the water and soil located within 20 feet of the shoreline," historical EPA documents say.

In 1989, the EPA published its Record of Decision outlining the $12 million cleanup project at the site, including excavating and treating 11,700 cubic yards of contaminated soil and sediment.

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AECOM

2022 Annual Groundwater Monitoring Report

Former Tie Treatment Plant
Somers, Montana

BNSF Railway Company

AECOM Project Number: 60679805

February 3, 2023

Delivering a better world

Quality information

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List of Acronyms and Abbreviations

µg/L	micrograms per liter
AECOM	AECOM Technical Services, Inc.
ASTs	above ground storage tanks
bgs	below ground surface
BNSF	BNSF Railway Company
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CGA	controlled groundwater area
COC	constituent of concern
CY	cubic yard
DNRC	Montana Department of Natural Resources and Conservation
DO	dissolved oxygen
ENSR	ENSR International Corporation
ESD	Explanation of Significant Difference
ft /ft	feet per foot
GWTS	groundwater treatment system
HVI	high volume injection
ICs	institutional controls
IDW	investigation derived waste
K/JC	Kennedy/Jenks Consultants
LTU	land treatment unit
MCL	Maximum Contaminant Level
MDEQ	Montana Department of Environmental Quality
MDL	method detection limit
MRL	method reporting limit
MS/MSD	matrix spike and matrix spike duplicate
NAPL	non aqueous phase liquid
Pace	Pace Analytical Services, Inc.
PAH	polycyclic aromatic hydrocarbons
QAPP	Quality Assurance Action Project Plan
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
RSL	regional screening levels
SAP	Sampling and Analysis Plan
SIM	selective ion monitoring
site	former Tie Treatment Plant in Somers, Montana
SVOC	semi-volatile organic compound
U.S.	United States
USA	United States of America
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound

1 Introduction

This 2022 Annual Groundwater Monitoring Report, prepared by AECOM Technical Services, Inc. (AECOM) on behalf of BNSF Railway Company (BNSF), presents the results of groundwater monitoring and a summary of additional activities conducted at the BNSF former tie treatment plant in Somers, Montana (Site) in 2022. The groundwater monitoring activities were conducted to comply with the groundwater remedy requirements described in the Record of Decision (ROD) issued in 1989 by the United States (U.S.) Environmental Protection Agency (USEPA) (USEPA 1989). Remedial actions at the Site are being conducted pursuant to a Consent Decree between BNSF and the USEPA: United States v. Burlington Northern Railroad Company, U.S. District Court for the District of Montana, Cause No. CV-91-32-M-CCL (USA 1991). A BNSF certification letter for this document is provided in **Appendix A**.

Regular monitoring activities were conducted in April and September 2022 consistent with the requirements outlined in the Revised Groundwater Monitoring Sampling and Analysis Plan (SAP) submitted to the USEPA and the Montana Department of Environmental Quality (MDEQ), collectively referred to as the Agency in this document, in August 2020 (AECOM 2020a). An updated Quality Assurance Action Project Plan (QAPP), which revised the groundwater monitoring network was submitted and approved in August 2020 (AECOM 2020b). Groundwater quality results prior to 2022 can be found in previous annual groundwater monitoring reports, annual interim monitoring reports, and the Phase I Groundwater Remedy Annual Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) reports submitted annually since 1995.

1.1 Site Background and Description

A railroad tie treatment plant was operated by BNSF in Somers, Montana from 1901 until the plant's closure in 1986. Wood preservatives used at the plant were creosote, a non-aqueous phase liquid (NAPL), zinc chloride, and chromated zinc chloride. Prior to 1971, process waste waters were discharged to a lagoon located immediately south of the treatment or retort building. This lagoon, referred to as the CERCLA Lagoon, overflowed into a ditch, which discharged to a swampy area (referred to as the swamp pond) and then to Flathead Lake. Groundwater monitoring wells installed during the 1980s and 1990s within the CERCLA Lagoon area, and in a portion of the swamp pond area, contained evidence of NAPL. Through implementation of a number of remedial actions in the swamp pond area, monitoring wells in the vicinity of the swamp pond no longer exhibit indicator compound (2,4-dimethylphenol, naphthalene, and benzene) concentrations above the ROD criteria.

The USEPA issued the ROD for the Site in 1989, which specified the approach for soil and groundwater cleanup actions. Designs of the selected remedies proceeded and the on-site land treatment unit (LTU) and groundwater treatment system (GWTS) were drafted in 1991 and 1992, respectively. The general site layout is shown on **Figure 1**.

1.2 Soil Remedial Action Summary

Part of the soil remedial efforts conducted in 1993 included excavating the swamp pond area to a depth of approximately 12 feet below ground surface (bgs) and the CERCLA Lagoon to depths up to 15 feet bgs; the total excavated in-place volume was approximately 19,000 cubic yards (CY) and 22,260 CY, respectively. The excavations removed the bulk of the NAPL impacted soils in each respective area. Excavated soils were placed in the LTU for treatment.

In the CERCLA Lagoon area, impacted soils located below the water table were treated as part of the groundwater remedy. NAPL present in the former CERCLA Lagoon area is currently being removed through routine recovery events discussed in Section 4.0.

In the swamp pond area, monitoring has been conducted to evaluate the groundwater quality and groundwater results have met cleanup criteria since June 1996; therefore, no additional groundwater remedial actions have been conducted. Surface water samples were collected and analyzed during the

spring 2017 sampling event and the three indicator compounds (2,4-dimethylphenol, naphthalene, and benzene) were not detected in the samples collected. In 2018, the Flathead Lake shoreline east of the swamp pond area was reconstructed and stabilized by planting native grasses and trees to prevent continued erosion and further reclaim the area.

1.3 Groundwater Remedial Action Summary

Historically, multiple groundwater remedial actions have been implemented at the Site, mostly in the CERCLA Lagoon Area. Additionally, site-wide Institutional controls (ICs) and deed restrictions have been put in place to prevent NAPL exposure.

Site-wide ICs in the form of a controlled groundwater area (CGA) designation to prohibit the installation of groundwater supply wells and extraction of groundwater from the surficial aquifer for any purpose other than remediation, were approved by the Montana Department of Natural Resources and Conservation (DNRC) in 2003 (DNRC 2003). The CGA was formally revised on December 8, 2018 to extend the eastern boundary and reduce the western boundary of the 2003 CGA (**Figure 1**), prohibit the installation of groundwater supply wells, and prohibit extraction of groundwater from both the surficial aquifer and underlying bedrock aquifer for any purpose other than remediation (DNRC 2018).

BNSF filed restrictive covenants developed in 2019, which imparted land use controls on property owned by BNSF pursuant to the Consent Decree (USA 1991).

1.3.1 CERCLA Lagoon Area

Installation of extraction and injection wells and construction of facilities to treat and enrich extracted groundwater was completed in December 1993, in accordance with the selected Phase 1 GWTS and startup of the Phase I GWTS to address NAPL in the CERCLA Lagoon Area, was initiated in the spring of 1994. Monitoring of the Phase I GWTS and fate-and-transport analyses demonstrated the low permeability aquifer (as a result of intermittent and disconnected sand lenses) limits the mobility and recoverability of NAPL-impacted groundwater. The low permeability of the aquifer, in conjunction with the ICs discussed in Section 1.3, resulted in a minimal demonstrable risk associated with the presence of NAPL-impacted groundwater at the Site. Consequently, BNSF requested to terminate operation of the GWTS and continue groundwater monitoring through the Request to Modify the Groundwater Treatment System (Request) report, submitted on April 30, 2004, and finalized May 2008 (ENSR 2008). The Interim Groundwater Treatment System Shut-Down Plan was approved by the Agency on October 11, 2007 and the GWTS was terminated on October 12, 2007 and decommissioned during April and May of 2018 in accordance with the Agency-approved Groundwater Treatment System Decommissioning Work Plan (AECOM 2017). Seven injection wells and three extraction wells were retained for continued NAPL recovery.

NAPL recovery has occurred at the Site since 2011, initially using sorbent socks, then through pumping, due to the observation of separate-phase NAPL in 2013. Approximately 1,614 gallons of NAPL fluid has been removed from recovery wells between July 2013 and December 2022, which does not include NAPL removed through sorbent socks placed in select wells prior to April 2013.

1.3.2 AST Area

A pilot test to evaluate the effectiveness of biosparging at the Site, specifically in the area downgradient of the former above-ground storage tanks (ASTs) began in September 2014 and operated in three intermittent phases through December 2015. An evaluation of the pilot test and full-time operation of the biosparge system was presented in the Biosparge Optimization Report (K/JC 2016). The pilot test results indicated the biosparging system was effective at reducing constituent of concern (COC) concentrations in the area and the biosparge system was restarted on July 13, 2016. The pilot test continued through December 21, 2016. Following the pilot test, and with Agency approval, it was agreed that further operation of the system was not needed based on the effectiveness of the pilot system at reducing benzene concentrations in the area as part of the pilot test.

1.3.3 Swamp Pond Area

Groundwater quality at the Swamp Pond Area has been monitored since June 1996 and groundwater quality results have met cleanup criteria since June 1996; therefore, no additional groundwater remedial actions have been conducted. Surface water samples were collected and analyzed during the spring 2017 sampling event and the analytical results show the three creosote indicator compounds (2,4-dimethylphenol, naphthalene, and benzene) were not detected. In 2018, the Flathead Lake shoreline east of the Swamp Pond Area was reconstructed with shoreline stabilization to prevent erosion and was stabilized by planting native grasses and trees to further reclaim the area.

1.4 2022 Activities

Site activities in 2022 included sample collection associated with the semi-annual and annual monitoring well networks, NAPL gauging and recovery, routine Site inspections, and Site operations and maintenance activities.

Groundwater monitoring followed procedures for data acquisition provided in the QAPP – Revision 3, which was submitted as an attachment to the August 2020 SAP (AECOM 2020b). The revised monitoring well networks (**Table 1**, **Figure 2**) were used for sampling during 2022. Groundwater monitoring and analytical parameters can be found in **Table 5**. Groundwater analytical results can be found in **Tables 6** through **7** and are discussed in Section 3.0 of this report.

2 Groundwater Elevations

Historically, over 100 groundwater monitoring wells have been installed at the Site, most of which were monitored to document groundwater elevation and to determine the direction of groundwater flow across the Site. Thirty-eight monitoring wells and the town well (TW-1) are included in the groundwater monitoring network, which was approved in the revised QAPP (AECOM 2020a). The current monitoring networks, as well as the sampling frequency and purpose/monitoring objective(s) of the wells is presented in **Table 1**. The well and piezometer construction details for the active wells used for site-wide groundwater monitoring is presented in **Table 2**.

A groundwater convergence in the area east of the former CERCLA Lagoon became apparent after installation and gauging of monitoring wells S-16-2S and S-16-2D in 2016. The presence of a groundwater convergence appears consistent with the likely local hydraulic interactions among Flathead Lake, the slough, and Site groundwater. A groundwater divide is generally observed onsite east of the former CERCLA Lagoon area. The divide is generally observed in the upper alluvial aquifer near monitoring well S-15-2S and in the deep alluvial aquifer near monitoring well S-15-2D.

2.1 Spring 2022 Groundwater Elevations

Site-wide groundwater elevations for the Spring 2022 event were measured on April 20, 2022 (**Table 3**). Groundwater elevation data were used to estimate the groundwater flow directions within the upper and deep alluvial aquifers (**Figure 3A** and **Figure 3B**, respectively). **Figure 3A** presents groundwater elevations and flow direction in the upper alluvial aquifer. **Figure 3B** presents groundwater elevations and flow direction in the deep alluvial aquifer.

Groundwater flow within the upper alluvial aquifer in monitoring wells screened at shallow/intermediate depths (up to 65 feet bgs) is shown on **Figure 3A**. In the northwestern part of the Site, in the former LTU area, groundwater flow is to the east-northeast at a gradient of approximately 0.0024 feet per foot (ft/ft). In the northeastern area of the Site between the former ASTs and Pickleville Road, groundwater flow is to the north-northeast at a gradient of approximately 0.0009 ft/ft. During the April 2022 event, groundwater west of the upper alluvial divide flows north-northeast toward monitoring well S-84-16 at a gradient of 0.0009 ft/ft, while groundwater northeast of the divide flows west at a gradient of approximately 0.0070 ft/ft. Groundwater elevations were 0.13 feet lower on average in April 2022 when compared to elevations in April 2021.

Groundwater flow in the deep alluvial aquifer in monitoring wells screened at deeper depths (up to 100 feet bgs) is shown in **Figure 3B**. In the northeastern area of the Site, between the former ASTs and Pickleville Road, groundwater flows to the east at a gradient of approximately 0.0007 ft/ft. Groundwater to the west of the deep alluvial divide flows east-northeast at a gradient of approximately 0.0019 ft/ft, while groundwater northeast of the divide flows west-southwest at a gradient of approximately 0.0091 ft/ft. Groundwater elevations were 0.16 feet lower on average in April 2022, when compared to elevations in April 2021.

2.2 Fall 2022 Groundwater Elevations

Site-wide groundwater elevations for the Fall 2022 event were measured on September 26, 2022 (**Table 3**). Groundwater elevation data was used to estimate the groundwater flow directions within the upper and deep alluvial aquifers (**Figure 4A** and **Figure 4B**, respectively). **Figures 4A** present groundwater elevations and flow direction in the upper alluvial aquifer. **Figure 4B** presents groundwater elevations and flow direction in the deep alluvial aquifer.

Groundwater flow within the upper alluvial aquifer in monitoring wells screened at shallow/intermediate depths is shown on **Figure 4A**. In the northwestern part of the Site, in the former LTU area, groundwater flow is to the northeast at a gradient of approximately 0.0028 feet per foot (ft/ft). In the northeastern area of the Site between the former ASTs and Pickleville Road, groundwater flow is to the northeast at a gradient of approximately 0.0011 ft/ft. During the September 2022 event, groundwater west of the upper alluvial divide flows north toward monitoring well S-84-16 at a gradient of 0.0008 ft/ft, while groundwater

northeast of the divide flows west-southwest at a gradient of approximately 0.0117 ft/ft. Groundwater elevations were 0.29 feet higher on average in September 2022 when compared to elevations in September 2021.

Groundwater flow in the deep alluvial aquifer in monitoring wells screened at deeper depths is shown in **Figure 4B**. In the northeastern area of the Site, between the former ASTs and Pickleville Road, groundwater flows to the east-northeast at a gradient of approximately 0.0008 ft/ft. Groundwater to the west of the deep alluvial divide flows east-southeast at a gradient of approximately 0.0016 ft/ft, while groundwater northeast of the divide flows west-southwest at a gradient of approximately 0.0101 ft/ft. Groundwater elevations were 0.30 feet higher on average in September 2022, when compared to elevations in September 2021.

2.3 Vertical Gradient

Vertical groundwater flow was evaluated by collecting groundwater elevation measurements from nested monitoring wells. Two sets of nested wells have historically been used to evaluate vertical gradients. One set is used to evaluate the vertical gradients within the surficial aquifer (upper and deep alluvial aquifers) and the second set is used to evaluate the vertical gradient between the surficial aquifer and bedrock aquifer. The two nested well sets and their locations are described below:

- **Surficial Aquifer:** Upper alluvial aquifer well S-85-6A and deep alluvial aquifer well S-85-6BR with a 20-foot screen separation. The wells in this nested pair are located east of the former CERCLA Lagoon area.
- **Surficial vs Deep Aquifers:** Surficial aquifer well S-84-10 screened in the upper alluvial aquifer and bedrock aquifer well S-91-4 with an 80-foot screen separation. The wells in this nested pair are located in the swamp pond area.

The Flathead Lake water level is artificially controlled by the Seli'š Ksanka Qlispe' Dam (formerly known as Kerr Dam) located at the south end of Flathead Lake, near USGS lake level monitoring location 12371550[1]. Under an agreement with the Flathead lakefront property owners, the lake level should be at full pool by June 15 of every year and is maintained at full pool until after Labor Day, although this is dependent on weather and the demand for power. In the fall, the lake level is lowered to create storage for snow melt and spring runoff. During the late spring, summer, and early fall months, when lake levels are maintained at a higher elevation, the surficial aquifer is recharged by the lake. During the late fall, winter, and early spring, when the lake level is lowered, the surficial aquifer begins to discharge to the lake.

Historical data from the nested well sets beginning in Fall 2010 through Fall 2022 is presented in **Table 4**. Hydrographs of the nested well sets and the corresponding Flathead Lake water surface elevations are presented on **Figures 5** and **6**.

2.3.1 Spring 2022

A vertical gradient within the surficial aquifer between well S-85-6A and S-85-6BR was measured as an upward gradient of 0.003 ft/ft. This is consistent with historical spring events, which have ranged from an upward gradient of 0.009 to a downward gradient of -0.010 ft/ft.

The vertical gradient between the surficial aquifer and the bedrock aquifer between well S-84-10 and S-91-4 was measured as 0.000 ft/ft. This is consistent with historical spring events, which have ranged from an upward gradient of 0.021 to a downward gradient of -0.032 ft/ft.

[1] Flathead Lake at Polson MT - USGS Water Data for the Nation

2.3.2 Fall 2022

The vertical gradient within the surficial aquifer between well S-85-6A and S-85-6BR was measured as an upward gradient of 0.004 ft/ft. This is consistent with historical fall events, which have ranged from an upward gradient of 0.017 to a downward gradient of -0.002 ft/ft.

The vertical gradient between the surficial aquifer and the bedrock aquifer between well S-84-10 and S-91-4 was measured as an upward gradient of 0.038 ft/ft. This is constant with historical fall events, which have ranged from an upward gradient of 0.029 to 0.059 ft/ft.

3 Groundwater Quality

Groundwater samples were analyzed for the COCs identified in the ROD and revised QAPP using the following analytical methods: phenols by USEPA Method 8270 for semi-volatile organic compounds (SVOCs), polycyclic aromatic hydrocarbon (PAH) compounds by USEPA Method 8270 Selective Ion Monitoring (SIM) using a high-volume injection (HVI) method, and volatile organic compounds (VOCs) by USEPA Method 8260.

Concentrations of the three indicator compounds (i.e., 2,4-dimethylphenol, naphthalene, and benzene) were used to evaluate plume stability and trends in concentrations in semi-annual, annual, biennial, and five-year review monitoring wells sampled during 2021. Indicator compounds provide the best data set to compare plume metrics over time, as they are the individual analytes with the greatest distribution and exceedance of remedial and screening goals (GSI 2015). The ROD or subsequent Explanation of Significant Difference (ESD) provided cleanup levels for naphthalene and benzene (620 micrograms per liter [µg/L] and 5 µg/L, respectively). The ROD did not specify a cleanup level for 2,4-dimethylphenol; therefore, the USEPA tap water regional screening level (RSL) of 360 µg/L was used as a screening level (USEPA 2018).

3.1 Analytical Program

Groundwater quality monitoring was performed for the monitoring wells identified in **Table 1**. The Spring event included samples collected from the semi-annual monitoring well network. The Fall event included samples collected from the semi-annual and annual monitoring well networks. **Figure 2** depicts the monitoring well networks. Groundwater samples collected were analyzed by Pace Analytical Services, Inc. (Pace) in Minneapolis, Minnesota for the ROD COCs, as previously indicated.

3.2 Sampling Protocol

Each well was unlocked, and the groundwater level was measured using a decontaminated interface oil-water level probe, which would indicate if a separate phase NAPL was present in the well. The interface probe was also used to measure the total well depths during the fall monitoring event. A peristaltic pump was used for purging and sample collection using low-flow sampling techniques. At wells where the depth to groundwater exceeded the performance capabilities of the peristaltic pump (approximately 23 feet bgs), a disposable polyethylene bailer was used to purge three well volumes prior to sampling. Identification of wells sampled with a peristaltic pump or bailer is provided in **Table 5**.

Purge water was discharged into a bucket or other container to measure the volume. Based on approval from the Agency, contents of the bucket were emptied onto the ground surface at the well if known historical analytical results in the individual well were below Resource Conservation and Recovery Act (RCRA) treatment standards. However, if emulsified creosote was observed in the purge water, the historical groundwater concentrations were above RCRA treatment standards, or historical groundwater results from the well were not available (i.e., minimum of 2 sampling events per the approved SAP), the water was contained and transferred to a 55-gallon steel drum for storage on-site and subsequent management as discussed in Section 5.0.

Field parameters collected include pH, conductivity, oxidation reduction potential, dissolved oxygen (DO), and temperature (**Table 5**). Once the conductivity, pH, and temperature readings were stable, as defined in the QAPP, groundwater samples were collected. For wells that were purged and sampled using a bailer, samples were collected after a minimum of three well volumes were removed, and the parameters stabilized. Groundwater samples were placed immediately into laboratory provided coolers, along with bags of ice and a chain-of-custody and were sent to Pace for laboratory analysis.

Quality control samples included collection of field blanks, duplicate samples, and matrix spike and matrix spike duplicate (MS/MSD) samples. Field blanks and duplicate samples were collected and analyzed for each parameter. A minimum of one field blank was collected for every 20 samples by pouring newly opened deionized water directly into sample bottles. Duplicate samples were collected at a minimum of one per 10 samples by filling two sets of sample bottles from a chosen well. Quality control samples (field

blanks and duplicates) were sent blind to the laboratory by labeling the sample bottles with false well numbers. Additional sample volume was collected at sampled wells at a minimum of one per 20 samples for MS/MSD samples as another measure of accuracy. MS/MSDs measure matrix-specific method performance and are used to assess the influence of the sample media (media interference) on the analysis.

3.3 Data Quality Evaluation

Data validation was performed on analytical data per the QAPP (AECOM 2020a). Data were evaluated based on validation criteria set forth in the USEPA Contract Laboratory Program National Functional Guidelines (USEPA 2017a, 2017b, MDEQ 2018), as they applied to the reported methodology. Data validation evaluates quality control outliers to determine method compliance and the effect on precision and accuracy. Tables summarizing analytical data results have been amended with data qualifiers based on data validation results. The data validation report for samples collected in September 2022 is included in **Appendix B**. The data reported, as qualified, are usable for meeting project objectives.

The following data qualifier flags were assigned to analytical results:

- "J" flag – Concentration reported is estimated. This is usually caused by an analytical result that is below the practical quantitation limit, or reporting limit, of the analytical method; however, other factors such as surrogate recovery, lab QC sample failures, etc. can cause the concentration to be reported as estimated.

3.4 Plume Stability Evaluation

Groundwater samples collected from monitoring wells were analyzed to evaluate the long-term data quality objectives outlined in Section 1.4 of the QAPP (AECOM 2020a). Plume stability trends were evaluated through preparation of concentration contour figures (**Figures 7** through **9**) and Mann-Kendall trend analysis graphs showing the three indicator compounds (**Appendix C**). As discussed below, concentrations of indicator compounds were generally similar to or lower than measured in 2021. **Table 1** lists the groundwater monitoring wells and parameters evaluated in 2022. The municipal, or town well, was also sampled during each event.

3.4.1 Monitoring Well Networks

The monitoring well networks evaluated for the Site are summarized in the following sections, and the monitoring well networks evaluated specifically in 2022 include the semi-annual and annual monitoring well networks. The text discusses the dissolved-phase concentrations for the former ASTs area and the former CERCLA Lagoon area.

3.4.1.1 Semi-Annual Monitoring Well Network

The semi-annual monitoring well network is monitored in the spring and fall to coincide with seasonal high and low groundwater and further evaluate the plume extent and stability in the two areas. The semi-annual monitoring well network includes the following wells listed by area:

Area Downgradient of Former ASTs

- **Upper Alluvial Aquifer**: S-12-4S and S-16-1S
- **Deep Alluvial Aquifer**: S-16-1D

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- **Upper Alluvial Aquifer:** S-10-2S, S-15-2S, S-16-2S and S-19-6S
- **Deep Alluvial Aquifer:** S-15-2D, S-16-2D and S-19-6D

Additionally, the town well (TW-1) is included in the semi-annual network and analytical results are discussed in the Somers Semi-Annual Progress Report (AECOM 2022).

3.4.1.2 Annual Monitoring Well Network

The annual monitoring well network is monitored in the fall to evaluate the stability and extent of the dissolved phase plume in the surficial aquifer and monitor source area wells to evaluate the stability and strength of NAPL. The annual monitoring well network includes the following wells listed by area.

Area Downgradient of Former ASTs

- **Upper Alluvial Aquifer:** S-12-1S, S-12-2S, S-12-5I S-15-1S and S-6R
- **Deep Alluvial Aquifer**: S-15-1D

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- **Upper Alluvial Aquifer:** S-10-1I, S-10-1S, S-12-7I, S-88-2RS, S-88-3, S-91-2, S-93-2S and S-93-5S
- **Deep Alluvial Aquifer**: S-93-2D

3.4.1.3 Biennial Monitoring Well Network

The biennial monitoring well network is sampled to confirm horizontal and vertical plume extent in downgradient wells with historically low COC concentrations. This monitoring network is sampled in the fall every other year on odd years, therefore it was not monitored in 2022. The biennial monitoring well network includes the following wells listed by area:

Area Downgradient of Former ASTs

- **Deep Alluvial Aquifer:** S-12-1DR, S-12-2D, S-12-5D and S-12-4D

Former CERCLA Lagoon Area

- **Upper Alluvial Aquifer:** S-10-2I, S-12-8S, S-12-9S
- **Deep Alluvial Aquifer**: S-10-1D, S-10-2D, S-12-6D, S-12-7D, S-12-8D and S-85-6BR

As part of the biennial monitoring network, three surface water samples were collected from the slough with the sample identifications Slough 1, Slough 2, and Slough 3.

The next sampling event for this network is scheduled for fall of 2023.

3.4.1.4 Five Year Review Monitoring Well Network

The Five-Year Review monitoring well network is sampled to confirm low to non-detect concentrations, extent of plumes to the south, and measure NAPL or COC concentrations at clustered locations. These wells are also gauged for depth to water semi-annually to establish groundwater flow direction and magnitude. This monitoring network is sampled every five years with the most recent year being 2021, and includes the following wells listed by area:

Area Downgradient of Former ASTs

- **Upper Alluvial Aquifer:** S-12-1I, S-12,2I, S-12-3S, S-12-4I, and S-12-5s
- **Deep Alluvial Aquifer**: S-85-5BR

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- **Upper Alluvial Aquifer:** S-12-7S, S-12-8I, S-12-9I, S-84-15, S-84-16, S-85-6A, and S-85-6AR
- **Deep Alluvial Aquifer**: S-85-8B

Upgradient Well

- **Upper Alluvial Aquifer**: S-10-3R, S-86-1R

Swamp Pond

- **Upper Alluvial Aquifer**: S-84-10, and S-86-1R

As part of the Five-Year Review monitoring network, one surface water sample is also collected from the Swamp Pond. The next sampling event for this network is scheduled for fall of 2026.

3.4.2 Plume Stability Analytical Results

Groundwater samples collected in September 2022 were analyzed for the COCs for the Site identified in the 1989 ROD (**Tables 6A** through **6E**). Groundwater analytical results were compared to the ROD or subsequent ESD cleanup levels for the individual compounds. At the direction of the USEPA, results were also compared to the USEPA maximum contaminant levels (MCLs) (USEPA 2018) for compounds that do not have assigned ROD cleanup levels or the USEPA tap water RSLs, if no USEPA MCL or ROD level has been established for the compound.

Results for non-detected compounds are shown in **Tables 6A** through **6F** as less than the MRL; however, the lab reports estimated results detected above the MDL and below the MRL. At the direction of the Agency, the tables include a footnote at the bottom listing parameters where the MRL was greater than the MCL or RSLs. This footnote provides the MDL for the compounds, where the laboratory reporting limit exceeded the MCL or RSLs.

3.4.2.1 Spring 2022 Event

Analytical results from samples collected during the Spring 2022 event from the semi-annual monitoring well network is provided in **Table 6**. The table shows results for the ROD COCs. The table also includes additional PAH compounds reported by the lab that were not listed in the ROD and additional detected VOC compounds. Copies of the field notes, laboratory analytical reports and AECOM data validation reports were also included in the Semi-Annual Report (AECOM 2022). Results from the three indicator compounds (2,4-dimethylphenol, naphthalene, and benzene) are discussed below. Concentration extent figures were not developed for the Spring 2022 event due to the limited sampling done. The indicator compounds were not detected in the town well samples (parent and duplicate sample).

Area Downgradient of Former ASTs

- **2,4-Dimethylphenol:** Total phenols were not detected at concentrations exceeding the ROD cleanup level of 6,000 µg/L. 2,4-Dimethylphenol was generally not detected or below the USEPA RSL of 360 µg/L except in one groundwater sample collected from an upper alluvial well downgradient of the former ASTs area.
  - *Upper Alluvial Aquifer:* 2,4-Dimethylphenol exceeded the USEPA RSL in the sample collected from S-12-4S (2,190 µg/L). 2,4-Dimethylphenol was not detected in the sample collected from S-16-1S.
  - *Deep Alluvial Aquifer:* 2,4-Dimethylphenol was not detected in the sample collected from S-16-1D.
- **Naphthalene**: Naphthalene was not detected in any of the samples collected downgradient of the former ASTs area.
- **Benzene**: Benzene was detected at concentrations below the ROD cleanup level of 5.0 µg/L except in one groundwater sample collected from an upper alluvial well downgradient of the former ASTs area.
  - *Upper Alluvial Aquifer:* Benzene was detected in the sample collected from S-16-1S (0.14 J µg/L) and exceeded the ROD cleanup level in the sample collected from S-12-4S (55.7 µg/L).
  - *Deep Alluvial Aquifer:* Benzene was not detected in the sample collected from S-16-1D.

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- **2,4-Dimethylphenol:** Total phenols were not detected at concentrations exceeding the ROD cleanup level of 6,000 µg/L. 2,4-Dimethylphenol was generally not detected or below the USEPA RSL of 360 µg/L except in one groundwater sample collected from an upper alluvial well and one

groundwater sample collected from a deep alluvial well downgradient of the former CERCLA Lagoon area.

- *Upper Alluvial Aquifer:* 2,4-Dimethylphenol was detected in samples collected from S-10-2S (321 µg/L) and S-19-6S (251 J µg/L) and exceeded the USEPA MCL in the sample collected from well S-15-2S (466 µg/L). 2,4-Dimethylphenol was not detected in the sample collected from S-16-2S.
- *Deep Alluvial Aquifer:* 2,4-Dimethylphenol exceeded the USEPA MCL in the sample collected from S-15-2D and its duplicate (362 µg/L and 557 µg/L respectively). 2,4-Dimethylphenol was not detected in samples collected from S-16-2D and S-19-6D

- **Naphthalene:** Naphthalene was generally not detected or below the ROD cleanup level of 620 µg/L except in one sample collected from an upper alluvial well downgradient of the former CERCLA Lagoon area.
  - *Upper Alluvial Aquifer:* Naphthalene exceeded the ROD cleanup level in the sample collected from S-10-2S (716 µg/L). Naphthalene was not detected in samples collected from S-15-2S, S-16-2S, and S-19-6S.
  - *Deep Alluvial Aquifer:* Naphthalene was not detected in samples collected from S-15-2D, S-16-2D, and S-19-6D.
- **Benzene:** Benzene was generally not detected or below the ROD cleanup level of 5.0 µg/L except in one groundwater sample collected from an upper alluvial well and one groundwater sample collected from a deep alluvial well downgradient of the former CERCLA Lagoon area.
  - *Upper Alluvial Aquifer:* Benzene was detected in samples collected from S-15-2S (3.1 µg/L) and S-19-6S (3.8 µg/L) and exceeded the ROD cleanup level in the sample collected from S-10-2S (200 µg/L). Benzene was not detected in the sample collected from S-16-2S.
  - *Deep Alluvial Aquifer:* Benzene exceeded the ROD cleanup level in the sample collected from S-15-2D and its duplicate (25.0 µg/L and 28.5 µg/L respectively). Benzene was not detected in samples collected from S-16-2D and S-19-6D.

Town Well Results

The laboratory analytical results from the town well indicate no COCs were detected.

3.4.2.2 Fall 2022 Event

The Fall 2022 event included sample collection from wells in the semi-annual and annual networks. September 2022 analytical results are provided in **Table 7A** (semi-annual network well results), **Table 7B** (annual network well results), and **Table 7C** (quality control sample results). Concentration contour maps of the three indicator compounds (2,4-dimethylphenol, naphthalene, and benzene) are shown on **Figures 7** through **9**, respectively, where concentration extents exceeding the ROD criteria for each compound are depicted in hatch shading. In addition, estimated concentration extents are drawn for detected concentrations of these indicator compounds greater than the MRL. A table showing results from the complete list of VOC compounds is included in **Appendix B**. Copies of the laboratory analytical report, AECOM data validation report, and field notes are also included in **Appendix B**.

Samples were not collected from monitoring wells S-10-1S, S-10-1I, and S-12-1S due to the presence of NAPL. A sample was not collected from well S-93-5S due to damage to the stickup protective casing and polyvinyl chloride riser.

Area Downgradient of Former ASTs

- **2,4-Dimethylphenol (Figure 7):** 2,4-Dimethylphenol was generally not detected or below the USEPA RSL of 360 µg/L in samples collected from wells downgradient of the former ASTs area. Total phenols were not detected at concentrations greater than the ROD cleanup level of 6,000 µg/L in any of the samples collected.

  - *Upper Alluvial Aquifer:* 2,4-Dimethylphenol was detected in samples collected from wells S-12-4S (85.3 µg/L), and S-16-1S (46.4 µg/L). 2,4-Dimethylphenol was not detected in samples collected from S-12-2S, S-12-5I, S-15-1S and S-6R.
  - *Deep Alluvial Aquifer:* 2,4-Dimethylphenol was not detected in samples collected from S-16-1D and S-15-1D.

- **Naphthalene (Figure 8):** Naphthalene was generally not detected or below the ROD cleanup level of 620 µg/L in samples collected from wells downgradient of the former ASTs area.
  - *Upper Alluvial Aquifer:* Naphthalene was detected in samples collected from S-6R (17.8 µg/L) and S-12-5I (3.81 J µg/L). Naphthalene was not detected in samples collected from S-12-4S, S-16-1S, S-12-2S, and S-15-1S.
  - *Deep Alluvial Aquifer:* Naphthalene was not detected in samples collected from S-16-1D and S-15-1D.
- **Benzene (Figure 9):** Benzene was generally not detected or below the ROD cleanup level of 5.0 µg/L in samples collected from wells downgradient of the former ASTs area.
  - *Upper Alluvial Aquifer:* Benzene was detected in samples collected from S-12-4S (3.64 µg/L), S-16-1S (3.11 µg/L), and S-6R (0.552 J µg/L). Benzene was not detected in samples collected from S-12-2S, S-12-5I, and S15-1S.
  - *Deep Alluvial Aquifer:* Benzene was not detected in samples collected from S-16-1D and S-15-1D.

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- **2,4-Dimethylphenol (Figure 7):** 2,4-Dimethylphenol was generally below the USEPA RSL of 360 µg/L except in five samples collected from upper alluvial wells downgradient of the former CERCLA Lagoon area. Total phenols were not detected at concentrations greater than the ROD cleanup level of 6,000 µg/L
  - *Upper Alluvial Aquifer:* 2,4-Dimethylphenol was detected in samples collected from S-19-6S (167 µg/L), and S-12-7I (94.6 µg/L) and exceeded the USEPA RSL in samples collected from S-10-2S (1,150 µg/L), S-15-2S (539 µg/L), S-91-2 (2,670 µg/L), S-88-2RS (3,840 µg/L), and S-93-2S (3,640 µg/L). 2,4-Dimethylphenol was not detected in samples collected from S-16-2S, and S-88-3.
  - *Deep Alluvial Aquifer:* 2,4-Dimethylphenol was detected in samples collected from S-15-2D (296 µg/L), and S-93-2D (157 µg/L) at concentrations below the USEPA RSL. 2,4-Dimethylphenol was not detected in samples collected from S-16-2D, S-19-6D and S-93-2D.
- **Naphthalene (Figure 8):** Naphthalene was generally not detected or below the ROD cleanup level of 620 µg/L except in one sample collected from an upper alluvial well downgradient of the former CERCLA Lagoon area.
  - *Upper Alluvial Aquifer:* Naphthalene was detected in samples collected from S-91-2 (2.03 J µg/L), S-88-3 (11.9 µg/L), S-93-2S (223 µg/L), and S-10-2S (597 µg/L) and exceeded the ROD cleanup level in the sample collected from S-88-2RS (7,450 µg/L). Naphthalene was not detected in samples collected from S-15-2S, S-16-2S, S-19-6S, and S-12-7I.
  - *Deep Alluvial Aquifer:* Naphthalene was detected in the sample collected from S-93-2D (65.6 J µg/L). Naphthalene was not detected in samples collected from S-15-2D, S-16-2D, and S-19-6D.
- **Benzene (Figure 9):** Benzene was generally below the ROD cleanup level of 5.0 µg/L except in four samples collected from upper alluvial wells and two samples collected from deep alluvial wells downgradient of the former CERCLA Lagoon area.
  - *Upper Alluvial Aquifer:* Benzene was detected in samples collected from S-15-2S (2.21 µg/L), S-88-3 (4.43 µg/L), S-19-6S (4.06 µg/L), and S-12-7I (0.938 J µg/L), and exceeded the ROD

cleanup level in samples collected from S-10-2S (178 µg/L), S-91-2 (44 µg/L), S-88-2RS (172 µg/L), and S-93-2S (156 µg/L). Benzene was not detected in samples collected from S-16-2S.

- *Deep Alluvial Aquifer:* Benzene exceeded the ROD cleanup level in samples collected from S-15-2D and its duplicate (13.5 µg/L and 13.4 µg/L respectively) and S-93-2D (10.5 J µg/L). Benzene was not detected in samples collected from S-16-2D and S-19-6D.

Town Well Results

The laboratory analytical results from the town well indicate no COCs were detected. The Fall 2022 results continue to indicate the town well is not impacted by past Site activities.

3.4.2.3 Indicator COC Trend Analysis

Trend evaluations using Mann-Kendall analyses were completed for benzene, 2,4-dimethylphenol, and naphthalene, measured in five wells in the ASTs area, and five wells in the CERCLA Lagoon area, using analytical data dating back to 2011. The Mann-Kendall analysis is commonly used to determine if a data set displays a monotonic trend of either increasing or decreasing concentrations over time. The Mann-Kendall analysis needs four independent sampling events to calculate a trend and results can be seen in **Appendix C**. If a sample is non-detect for one of the three Site COC's, a blank cell is entered to avoid generating trends using non-detect values. Wells with enough analytical detections and that display a trend are discussed below.

Area Downgradient of Former ASTs

- S-15-1D: Stable Benzene, not enough analytical detections to generate a trend for 2,4-Dimethylphenol, and Naphthalene.
- S-16-1S: Probably decreasing Benzene, no trend 2,4-Dimethylphenol, and not enough analytical detections to generate a trend for Naphthalene.
- S-6R: Decreasing Benzene, no trend 2,4-Dimethylphenol and Naphthalene.

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- S-88-3: Probably increasing Benzene, stable 2,4-Dimethylphenol, and no trend Naphthalene.
- S-93-2D: Increasing Benzene and 2,4-Dimethylphenol, no trend Naphthalene.
- S-10-2S: Increasing Benzene, 2,4-Dimethylphenol and Naphthalene.
- S-15-2S: Stable Benzene and 2,4-Dimethylphenol, and not enough analytical detections to generate a trend for Naphthalene.
- S-15-2D: Stable Benzene and 2,4-Dimethylphenol, and not enough analytical detections to generate a trend for Naphthalene.

4 NAPL Recovery

Monitoring and recovery wells with observations of mottling or separate phase NAPL were gauged for the presence of NAPL and accumulated NAPL was removed following the procedures outlined in the SAP (AECOM 2020a). **Appendix D** includes a table showing NAPL gauging observations and removal activities from 2014 to 2022, as well as a figure graphing NAPL volume removed cumulatively and by month.

The NAPL recovery wells were gauged and NAPL was recovered utilizing peristaltic pumps in accordance with the 2020 SAP. As a minor deviation to the SAP and with Agency approval, the NAPL recovery frequency was modified to include recovery during the winter months (November and December). Previously, NAPL recovery was suspended in October and resumed in April. This change will help establish a more consistent data set for evaluation NAPL discharge rates. The SAP will be revised in the first quarter of 2023 to reflect this change. A summary of NAPL recovery volumes over time is included in **Appendix D**.

Gauging activities consisted of lowering a weighted cotton string down the wells to evaluate the presence of a separate phase NAPL or NAPL mottling. The thickness of separate phase NAPL was estimated through solid staining observed on a cotton string.

Recovered fluids are stored on-site in a satellite accumulation drum. Decontamination materials (i.e., paper towels, sorbent pads, cotton string, and gloves) are placed in a separate satellite drum with other solids or debris impacted with creosote. Once full, each drum is shipped off-site and disposed of as an F034 listed hazardous waste. Investigation Derived Waste (IDW) is discussed further in Section 5.0.

The total NAPL fluid volume recovered from all monitoring wells since 2013 is approximately 1,614 gallons. With the changes in the NAPL recovery criteria (NAPL removed from select wells if NAPL thickness was 2 feet or greater), approximately 154 gallons of NAPL fluids were recovered in 2022 (May through December). The table below shows the volume of NAPL removed annually starting in 2016 and the associated NAPL removal rate per event. **Appendix D** contains a graph depicting cumulative NAPL recovery over time.

Year	NAPL Removed (gallons)	Number of NAPL Removal Events	NAPL Removal Rate (gallons/event)
2016	182	9	20
2017	116	6	19
2018	195	7	28
2019	189	8	24
2020	138.5	6	23
2021	177.75	9	20
2022	154.15	12	13
Average	164.63	8	21

Note:
NAPL = non aqueous phase liquid

5 Investigation Derived Waste

IDW including, but not limited to, solids and liquids generated during Site activities was containerized and stored within the fenced area of the Site, as indicated in Section 7.0 of the SAP (AECOM 2020a). Drums containing recovered NAPL and water were shipped off-site for disposal via incineration as F034 RCRA listed hazardous waste in January and November of 2022.Impacted decontamination materials will be shipped off-site for disposal via incineration as F034 RCRA listed hazardous waste in early 2022.

6 Operation and Maintenance Activities

The Site was inspected at least quarterly during 2022. The inspection included checking the integrity of the fence and gate to ensure unauthorized access to the Site is prevented. Monitoring wells were inspected during the Fall 2022 groundwater monitoring event to ensure protective well caps were in place and locked. Extraction and injection well vaults were inspected during NAPL gauging and recovery activities to ensure the well vaults were covered and the lids for wells located outside of the fenced area of the Site were locked and secure.

In 2022 additional site fencing was installed along Somers Road to compliment fencing installed by Montana Fish Wildlife and Parks and to prevent trespassing related to the development of the new state park on adjacent properties. Other on-site activities completed in 2022 include mowing, as needed, to allow safe access. BNSF security conducted Site inspections on an as-needed basis.

7 Anticipated Activities for 2023

Activities to be completed in 2023 include groundwater monitoring, NAPL gauging and recovery, and Site inspection and maintenance. Activities are outlined in the 2020 SAP with revisions to be presented in the pending 2023 revised SAP that will supersede the 2020 SAP. The inspection will include checking the integrity of the fence and gate to ensure unauthorized access to the Site is prevented. The building and well vaults will be checked to ensure they are closed and that locks are intact and locked. Other on-site activities include mowing and snow removal. Noxious weeds, if identified on BNSF property, will be sprayed as needed.

Additional activities anticipated for completion in 2023 include the following:

- Submittal of revised SAP as discussed with EPA.
- Continue NAPL gauging/recovery and monitoring NAPL well recharge rates/discharge volumes.
- Groundwater monitoring at Site wells associated with the Semi-annual groundwater monitoring network in spring and fall and annual groundwater monitoring network in the fall.

8 References

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Tables

Table 1 Groundwater Monitoring and Analytical Parameters
BNSF Somers Site, Somers, Montana

Monitoring Well	Area Monitored	Alluvial Aquifer Monitored	Semi-annual, Annual, or Biennial Monitoring						USEPA Five-Year Review			Purpose
			Field Collection			Laboratory Analysis			Field			
						Plume Stability Parameters			Natural Attenuation			
			Depth to Groundwater	Total Depth	Field Parameters[1]	PAH 8270 SIM HVI	Phenols 8270C	VOCs 8260B	Zinc 6020	Methane MS GC-Thermal	Ferrous Iron	
Semi-Annual Network												
S-10-2S[2]	C	U	S/F	F	S/F	S/F	S/F	S/F		5	5	Further delineate plume extent (primarily benzene) and evaluate stability.
S-12-4S[2]	A	U	S/F	F	S/F	S/F	S/F	S/F				
S-15-2D	C	D	S/F	F	S/F	S/F	S/F	S/F				
S-15-2S	C	U	S/F	F	S/F	S/F	S/F	S/F	5			
S-16-1D	A	D	S/F	F	S/F	S/F	S/F	S/F	5	5	5	
S-16-1S	A	U	S/F	F	S/F	S/F	S/F	S/F	5			
S-16-2D	C	D	S/F	F	S/F	S/F	S/F	S/F	5			
S-16-2S	C	U	S/F	F	S/F	S/F	S/F	S/F				
S-19-6D	C	D	S/F	F	S/F	S/F	S/F	S/F				
S-19-6S	C	U	S/F	F	S/F	S/F	S/F	S/F	5			
TW-1	TW	--	--	--	S/F	S/F	S/F	S/F				
Annual Network												
S-10-1I[2,3]	C	U	S/F	F	F	F	F	F		5 (S)	5 (S)	Monitor source area wells to evaluate the stability and strength of NAPL and evaluate the stability and extent of the dissolved phase plume in the surficial aquifer.
S-10-1S[2,3]	C	U	S/F	F	F	F	F	F		5 (S)	5 (S)	
S-12-1S[2,3]	A	U	S/F	F	F	F	F	F				
S-12-2S	A	U	S/F	F	F	F	F	F				
S-12-5I	A	U	S/F	F	F	F	F	F		5 (DG)	5 (DG)	
S-12-7I	C	U	S/F	F	F	F	F	F				
S-15-1D	A	D	S/F	F	F	F	F	F				
S-15-1S	A	U	S/F	F	F	F	F	F				
S-6R	A	U	S/F	F	F	F	F	F				
S-88-2RS[2,3]	C	U	S/F	F	F	F	F	F				
S-88-3[2]	C	U	S/F	F	F	F	F	F				
S-91-2	C	U	S/F	F	F	F	F	F		5 (S)	5 (S)	
S-93-2D	C	D	S/F	F	F	F	F	F		5 (S)	5 (S)	
S-93-2S[2]	C	U	S/F	F	F	F	F	F		5 (S)	5 (S)	
S-93-5S[2,3]	C	U	S/F	F	F	F	F	F				
Biennial Network												
S-10-1D[2]	C	D	S/F	F	BF	BF	BF	BF				Confirm horizontal and vertical plume extent in downgradient wells with historically low concentrations of COCs.
S-10-2D[2]	C	D	S/F	F	BF	BF	BF	BF				
S-10-2I[2]	C	U	S/F	F	BF	BF	BF	BF				
S-12-1DR	A	D	S/F	F	BF	BF	BF	BF				
S-12-2D	A	D	S/F	F	BF	BF	BF	BF				
S-12-4D	A	D	S/F	F	BF	BF	BF	BF				
S-12-5D	A	D	S/F	F	BF	BF	BF	BF				
S-12-6D	C	D	S/F	F	BF	BF	BF	BF		5 (DG)	5 (DG)	
S-12-7D	C	D	S/F	F	BF	BF	BF	BF				
S-12-8D	C	D	S/F	F	BF	BF	BF	BF				
S-12-8S	C	U	S/F	F	BF	BF	BF	BF				
S-12-9S	C	U	S/F	F	BF	BF	BF	BF	5	5 (DG)	5 (DG)	
S-85-6BR	C	D	S/F	F	BF	BF	BF	BF				

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Monitoring Well	Area Monitored	Alluvial Aquifer Monitored	Semi-annual, Annual, or Biennial Monitoring						USEPA Five-Year Review			Purpose
			Field Collection			Laboratory Analysis					Field	
						Plume Stability Parameters				Natural Attenuation		
			Depth to Groundwater	Total Depth	Field Parameters[1]	PAH 8270 SIM HVI	Phenols 8270C	VOCs 8260B	Zinc 6020	Methane MS GC-Thermal	Ferrous Iron	
Five Year Review												
S-10-3R	UG	U	S/F	F	5F	5F	5F	5F	5	5	5	Confirm low to non-detect concentrations, extent of plumes to the south, and measure NAPL or COC concentrations at clustered locations during Five Year Review; Groundwater elevations semi-annually for flow direction and magnitude.
S-12-1I	A	U	S/F	F	5F	5F	5F	5F				
S-12-2I	A	U	S/F	F	5F	5F	5F	5F				
S-12-3S	A	U	S/F	F	5F	5F	5F	5F				
S-12-4I	A	U	S/F	F	5F	5F	5F	5F				
S-12-5S	A	U	S/F	F	5F	5F	5F	5F				
S-12-7S	C	U	S/F	F	5F	5F	5F	5F				
S-12-8I	C	U	S/F	F	5F	5F	5F	5F				
S-12-9I	C	U	S/F	F	5F	5F	5F	5F				
S-84-10	SP	U	S/F	F	5F	5F	5F	5F				
S-84-15	C	U	S/F	F	5F	5F	5F	5F				
S-84-16	C	U	S/F	F	5F	5F	5F	5F				
S-85-5BR	A	D	S/F	F	5F	5F	5F	5F				
S-85-6A	C	U	S/F	F	5F	5F	5F	5F	5			
S-85-8AR	C	U	S/F	F	5F	5F	5F	5F	5 (DG)	5 (DG)	5 (DG)	
S-85-8B	C	D	S/F	F	5F	5F	5F	5F	5			
S-86-1R	UG	U	S/F	F	5F	5F	5F	5F	5			
S-91-4	SP	D	S/F	F	5F	5F	5F	5F	5			
LTU Post-Closure Wells												
S-85-5A	LTU	U	S/F	F	F 2032	F 2032	F 2032	F 2032	F 2032[4]			LTU Post-Closure Wells
S-93-7	LTU	U	S/F	F	F 2032	F 2032	F 2032	F 2032	F 2032[4]			
Flathead Lake	--	--	S/F	--	--	--	--	--				Elevation

Notes:

[1] = Field Parameters include temperature, conductivity, ORP, and pH. If the water quality meter used during routine semiannual, annual, and biennial sampling includes a DO probe, DO will be recorded on a more frequent basis.
[2] = Contain purge water collected from the monitoring well pending disposal determination.
[3] = Mottled or measurable creosote has been observed in the well; if present, no groundwater samples will be collected.
[4] = TSS will be analyzed in addition to zinc in samples collected from the LTU post-closure wells (S-6R, S-93-7, and S-85-5A) in 2018 and 2032.
5F = Sampled every 5 years in the fall prior to the USEPA Five Year Review.
A = Former AST Area
BF = Biennially (every 2 years) in the Fall
C = Former CERCLA Lagoon Area
COC = Constituent of Concern
D = Deep Alluvial Aquifer
DG = Downgradient well
F = Annually in the Fall
LTU = Land Treatment Unit
NA = Natural Attenuation
NAPL = Non-aqueous Phase Liquid
ORP = oxidation/reduction potential
PAH = Polycyclic Aromatic Hydrocarbons
(S) = Source well
S/F = Sampled semi-annually in the Spring and Fall; however, gauging and sampling activities were suspended in Spring 2020 due to COVID-19.
SIM HVI = select ion monitoring by high volume injection
SP = Swamp Pond
TW = Town Well
U = Upper Alluvial Aquifer
UG = Upgradient Well
USEPA = U.S. Environmental Protection Agency
VOC = Volatile Organic Compounds

The LTU was closed in 2002; the last remaining post closure monitoring for the LTU is scheduled for the 30th year of monitoring in 2032. LTU wells include S-6R, S-93-7, and S-85-5A.

Table 2 Well and Piezometer Construction Information
BNSF Somers Site, Somers, Montana

Well or Boring Number	Alluvial Aquifer Interval Monitored	Date Installed	Casing Diameter (inches)	Total Boring Depth (ft. bgs)	Total Well Depth (ft. bgs)	Ground Surface Elevation (feet)[1]	Top of Inner Casing Elevation (feet)[1]	Screen Length (feet)	Northing (feet)[2]	Easting (feet)[2]	Elevation at Top of Screen (feet)[1]	Screen Location in Well (ft. bgs)	Sump (feet)
Semi-Annual Network													
S-10-2S	Upper	10/30/2010	2	16	16	2900.30	2899.80	10	1431368.220	816373.457	2894.30	6 to 16	0
S-12-4S	Upper	10/9/2012	2	25	25	2905.56	2908.12	15	1432095.300	816092.212	2895.56	10 to 25	0
S-15-2D	Deep	8/26/2015	2	70	70	2895.54	2896.35	10	1431235.411	816659.046	2835.54	60 to 70	0
S-15-2S	Upper	8/26/2015	2	38	38	2894.65	2896.37	10	1431235.826	816653.141	2866.65	28 to 38	0
S-16-1D	Deep	10/11/2016	2	50	50	2893.58	2895.67	5	1432206.882	816132.264	2848.58	45 to 50	0
S-16-1S	Upper	10/12/2016	2	20	20	2893.58	2895.34	15	1432209.383	816126.617	2888.58	5 to 20	0
S-16-2D	Deep	8/31/2015	2	62	59	2897.02	2899.07	15	1431403.362	816995.524	2853.02	44 to 59	0
S-16-2S	Upper	9/3/2015	2	15	15	2898.18	2898.61	10	1431408.510	816995.762	2893.18	5 to 15	0
S-19-6D	Deep	8/20/2019	2	57.0	59.12	2895.72	2897.84	15	1431086.677	816368.49	2851.62	44.1 to 59.1	0
S-19-6S	Upper	8/20/2019	2	32.0	34.34	2895.65	2897.99	15	1431080.741	816367.804	2878.69	19.3 to 34.3	0
Annual Network													
S-10-1I	Upper	10/29/2010	2	40	40	2900.66	2900.26	10	1431270.238	816181.817	2870.66	30 to 40	0
S-10-1S	Upper	10/26/2010	2	21	21	2900.96	2900.65	15	1431280.795	816180.19	2888.96	6 to 21	0
S-12-1S	Upper	10/5/2012	2	35	35	2918.53	2921.17	15	1431660.821	815846.825	2898.53	20 to 35	0
S-12-2S	Upper	10/9/2012	2	25	25	2907.90	2910.79	15	1432145.436	815863.863	2897.90	10 to 25	0
S-12-5I	Upper	10/11/2012	2	65	65	2906.06	2905.81	10	1431678.613	816280.844	2851.06	55 to 65	0
S-12-7I	Upper	10/21/2012	2	45	45	2897.68	2900.49	10	1431675.218	816737.653	2862.68	35 to 45	0
S-15-1D	Deep	8/27/2015	2	77	70	2902.66	2900.60	10	1432066.268	816214.392	2842.66	60 to 70	0
S-15-1S	Upper	8/27/2015	2	20	20	2900.48	2902.60	15	1432069.530	816209.083	2895.48	5 to 20	0
S-6R[3]	Upper	10/29/2010	2	70	37	2917.79	2919.87	15	1431693.251	816009.209	2895.79	22 to 37	0
S-88-2RS	Upper	8/20/2019	4	15.0	17.44	2899.43	2901.87	10	1431238.712	816237.35	2892.03	7.4 to 17.4	0
S-88-3	Upper	6/11/1988	3.25	82.5	53.5	2895.31	2895.81	15	1431167.285	816518.732	2856.81	38.5 to 53.5	0
S-91-2	Upper	5/21/1991	2	35	35	2899.55	2900.83	10	1431583.409	816550.256	2874.55	25 to 35	0
S-93-2D	Deep	9/13/1993	2	60	60	2899.27	2901.21	20	1431160.093	816155.618	2859.27	40 to 60	0
S-93-2S	Upper	9/14/1993	2	30	30	2899.15	2901.00	20	1431158.969	816159.998	2889.15	10 to 30	0
S-93-5S	Upper	9/17/1993	2	30	30	2903.00	2904.36	20	1431297.515	816066.387	2893.00	10 to 30	0
Biennial Network													
S-10-1D	Deep	10/25/2010	2	70	65	2900.71	2900.24	10	1431271.077	816175.574	2845.71	55 to 65	0
S-10-2D	Deep	10/28/2010	2	75	60	2900.38	2899.74	10	1431379.214	816375.215	2850.38	50 to 60	0
S-10-2I	Upper	10/30/2010	2	31	31	2900.25	2899.75	10	1431373.377	816374.433	2879.25	21 to 31	0
S-12-1DR	Deep	8/28/2015	2	82	80	2917.56	2919.31	10	1431716.874	815914.097	2847.56	70 to 80	0
S-12-2D	Deep	10/12/2012	2	85	85	2907.88	2910.75	10	1432149.427	815867.664	2832.88	75 to 85	0
S-12-4D	Deep	10/17/2012	2	85	85	2905.45	2908.12	10	1432097.948	816088.283	2830.45	75 to 85	0
S-12-5D	Deep	10/11/2012	2	85	85	2906.07	2905.78	10	1431681.643	816279.627	2831.07	75 to 85	0
S-12-6D	Deep	10/20/2012	2	65	65	2899.37	2902.02	10	1431581.425	816545.802	2844.37	55 to 65	0
S-12-7D	Deep	10/21/2012	2	85	80	2897.68	2900.41	10	1431673.278	816733.591	2827.68	70 to 80	0
S-12-8D	Deep	10/18/2012	2	60	60	2892.54	2895.19	10	1430901.952	816698.122	2842.54	50 to 60	0
S-12-8S	Upper	10/19/2012	2	20	19	2892.56	2895.16	15	1430898.026	816691.092	2888.56	4 to 19	0
S-12-9S	Upper	10/20/2012	2	19	19	2900.61	2903.19	15	1431045.002	815951.609	2896.61	4 to 19	0
S-85-6BR[3,4]	Deep	11/1/2010	2	52	50	2893.03	2894.98	10	1431038.397	816762.674	2853.03	40 to 50	0

Table 2 Well and Piezometer Construction Information
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Well or Boring Number	Alluvial Aquifer Interval Monitored	Date Installed	Casing Diameter (inches)	Total Boring Depth (ft. bgs)	Total Well Depth (ft. bgs)	Ground Surface Elevation (feet)[1]	Top of Inner Casing Elevation (feet)[1]	Screen Length (feet)	Northing (feet)[2]	Easting (feet)[2]	Elevation at Top of Screen (feet)[1]	Screen Location in Well (ft. bgs)	Sump (feet)
Five Year Review													
S-10-3R[3]	Upper	10/30/2010	2	42	27	2911.43	2913.29	15	1432043.023	814578.835	2899.43	12 to 27	0
S-12-1I	Upper	10/6/2012	2	65	65	2918.52	2921.12	10	1431657.381	815847.798	2863.52	55 to 65	0
S-12-2I	Upper	10/17/2012	2	58	58	2907.83	2910.63	10	1432151.785	815870.876	2859.83	48 to 58	0
S-12-4I	Upper	10/18/2012	2	65	65	2905.46	2907.88	10	1432100.326	816084.283	2850.46	55 to 65	0
S-12-5S	Upper	10/9/2012	2	24	24	2906.04	2905.77	15	1431683.821	816277.843	2897.04	9 to 24	0
S-12-7S	Upper	10/21/2012	2	19	19	2897.68	2900.36	15	1431676.708	816740.966	2893.68	4 to 19	0
S-12-3S	Upper	10/10/2012	2	24	24	2907.34	2907.04	15	1431958.522	816045.571	2898.34	9 to 24	0
S-12-8I	Upper	10/19/2012	2	38	38	2892.49	2895.11	10	1430899.832	816694.363	2864.49	28 to 38	0
S-12-9I	Upper	10/19/2012	2	45	45	2900.56	2903.29	10	1431047.128	815957.142	2865.56	35 to 45	0
S-84-10[4]	Upper	3/19/1984	2	18.5	18.4	2893.28	2894.59	10	1429651.075	816032.394	2884.88	8.4 to 18.4	0
S-84-15	Upper	5/22/1984	2	16	16	2899.52	2900.68	5	1431585.171	816553.72	2888.52	11 to 16	0
S-84-16	Upper	5/22/1984	2	11.5	11	2892.10	2894.07	5	1430703.652	816553.745	2886.10	6 to 11	0
S-85-5BR[3]	Deep	11/2/2010	2	40	37	2898.49	2899.87	10	1432524.220	815332.647	2871.49	27 to 37	0
S-85-6A[4]	Upper	10/11/1985	2	31	31	2892.75	2894.25	10	1431056.650	816797.61	2873.75	19 to 29	2
S-85-8AR[3]	Upper	11/1/2010	2	30	29	2895.49	2897.52	10	1430842.515	816075.332	2876.49	19 to 29	0
S-85-8B	Deep	10/6/1985	2	97	97	2895.42	2896.93	5	1430866.220	816098.4	2805.42	90 to 95	2
S-86-1R[3]	Upper	10/31/2010	2	40	40	2917.91	2920.03	15	1432537.523	814891.411	2892.91	25 to 40	0
S-91-4[4,5]	Deep/Bedrock	9/11/1991	2	101	100.3	2893.58	2895.74	5	1429644.078	816014.036	2798.58	95 to 100	0.3
LTU Post-Closure Wells													
S-85-5A	Upper	10/5/1985	2	19	19	2896.70	2899.71	10	1432562.060	815337.61	2889.70	7 to 17	2
S-93-7	Upper	9/16/1993	4.25	30	30	2916.43	2918.19	10	1432166.871	815543.275	2896.43	20 to 30	0
NAPL Gauging and Recovery Wells													
EW-1	Upper	10/5/1993	6	60	60	2905.69	2903.92	50	1431189.140	815880.14	2895.69	10 to 60	0
EW-2	Upper	10/5/1993	6	60	60	2904.99	2902.34	50	1431213.500	815921.4	2894.99	10 to 60	0
EW-3	Upper	9/29/1993	6	60	60	2904.29	2902.16	50	1431237.360	815963.89	2894.29	10 to 60	0
EW-4	Upper	9/28/1993	6	60	60	2903.89	2901.58	50	1431256.060	815996.22	2893.89	10 to 60	0
EW-5	Upper	9/27/1993	6	60	60	2902.89	2901.15	50	1431285.640	816047.95	2892.89	10 to 60	0
EW-6	Upper	10/12/1993	6	60	60	2898.79	2897.53	50	1431184.170	816159.2	2888.79	10 to 60	0
IW-1	Upper	9/22/1993	6	60	60	2906.19	2904.20	50	1431167.538	815816.431	2896.19	10 to 60	0
IW-2	Upper	9/26/1993	6	60	60	2907.59	2904.64	50	1431228.077	815863.42	2897.59	10 to 60	0
IW-3	Upper	9/25/1993	6	60	60	2906.99	2904.45	50	1431251.238	815905.913	2896.99	10 to 60	0
IW-4	Upper	9/24/1993	6	60	60	2906.39	2903.96	50	1431272.380	815950.431	2896.39	10 to 60	0
IW-5	Upper	9/23/1993	6	60	60	2905.59	2903.05	50	1431300.408	815993.553	2895.59	10 to 60	0
IW-6	Upper	9/27/1993	6	60	60	2902.79	2900.18	50	1431315.523	816074.619	2892.79	10 to 60	0
IW-7	Upper	10/8/1993	6	60	60	2902.49	2900.49	50	1431254.666	816019.808	2892.49	10 to 60	0
IW-8	Upper	10/7/1993	6	60	60	2902.89	2900.31	50	1431231.056	815979.595	2892.89	10 to 60	0
IW-9	Upper	10/6/1993	6	60	60	2903.29	2900.94	50	1431207.942	815934.361	2893.29	10 to 60	0
IW-10	Upper	10/6/1993	6	60	60	2903.69	2901.10	50	1431181.732	815892.088	2893.69	10 to 60	0
IW-11	Upper	10/13/1993	6	60	60	2898.89	2897.04	50	1431187.333	816110.982	2888.89	10 to 60	0
IW-12	Upper	10/13/1993	6	60	60	2899.89	2898.01	50	1431217.273	816149.473	2889.89	10 to 60	0
IW-13	Upper	10/11/1993	6	60	60	2898.59	2896.77	50	1431179.718	816180.49	2888.59	10 to 60	0
IW-14	Upper	9/21/1993	6	60	60	2898.79	2897.41	50	1431136.516	816141.647	2888.79	10 to 60	0
S-14-1S	Upper	9/3/2015	4	24	22	2904.34	2905.72	15	1431332.527	816020.945	2897.34	7 to 22	0
S-14-2S	Upper	9/3/2015	4	22	21	2901.90	2903.67	15	1431321.415	816168.923	2895.90	6 to 21	0
S-14-3S	Upper	9/3/2015	4	22	21	2901.93	2903.52	15	1431360.846	816186.946	2895.93	6 to 21	0
S-15-3S	Upper	8/31/2015	4	25	21	2904.25	2906.42	10	1431426.677	816148.709	2893.25	11 to 21	0
S-19-1	Upper	8/20/2019	4	57.0	32.59	2901.74	2904.33	10	1431459.365	816254.359	2884.14	17.6 to 27.6	5

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BNSF Somers Site, Somers, Montana

Well or Boring Number	Alluvial Aquifer Interval Monitored	Date Installed	Casing Diameter (inches)	Total Boring Depth (ft. bgs)	Total Well Depth (ft. bgs)	Ground Surface Elevation (feet)[1]	Top of Inner Casing Elevation (feet)[1]	Screen Length (feet)	Northing (feet)[2]	Easting (feet)[2]	Elevation at Top of Screen (feet)[1]	Screen Location in Well (ft. bgs)	Sump (feet)
S-19-2	Upper	8/20/2019	4	57.0	52.83	2900.36	2903.19	5	1431384.969	816235.031	2857.56	42.8 to 47.8	5
S-19-3D	Deep	8/20/2019	4	57.0	49.04	2899.70	2902.24	5	1431312.511	816250.35	2860.70	39.0 to 44.0	5
S-19-4	Upper	8/20/2019	4	57.0	54.2	2899.95	2901.15	5	1431360.730	816298.059	2855.75	44.2 to 49.2	5
S-19-5	Upper	8/20/2019	4	57.0	59.01	2900.10	2902.11	10	1431415.744	816328.584	2856.10	44.0 to 54.0	5
S-88-2RD	Deep	8/20/2019	4	57.0	42.5	2899.18	2901.68	5	1431239.945	816242.862	2866.68	32.5 to 37.5	5
Abandoned Wells													
S-88-2	Upper	5/12/1988	4.25	39	38	2899.93	2900.94	10	Abandoned	Abandoned	2871.93	28 to 38	0

Notes:
[1] = elevation relative to National Geodetic Vertical Datum of 1929 (NGVD29)
[2] = northing and easting expressed in international feet relative to the North American Datum of 1983 Montana State Plane coordinate system.
[3] = Replacement well installed October 2010.
[4] = Used to calculate vertical gradient.
[5] = S-91-4 is screened at the top of the bedrock aquifer.

ft. bgs = feet below ground surface
LTU = Land Treatment Unit
NAPL = Non aqueous phase liquid. Wells gauged for the presence of NAPL.
NM = Not measured

Table 3 Annual Groundwater Elevations
BNSF Somers Site, Somers, Montana

Well Number	Measuring Point Elevation (feet)[1]	Spring Event April 2022 (feet)[1]	Fall Event September 2022 (feet)[1]
Upper Alluvial Aquifer			
S-6R	2919.87	2890.74	2890.40
S-84-10	2894.59	2890.01	2887.17
S-84-15	2900.68	2890.33	2889.52
S-84-16	2894.07	2891.08	2890.25
S-85-5A	2899.71	2890.92	2890.33
S-85-6A	2894.25	2890.41	2889.44
S-85-8AR	2897.52	2889.62	2889.02
S-86-1R	2920.03	2891.62	2891.34
S-88-2RS	2901.87	2890.48	2889.05
S-88-3	2895.81	2890.45	2887.24
S-91-2	2900.83	2890.38	2889.62
S-93-2S	2901.00	2890.30	2889.41
S-93-5S	2904.36	Damaged	Damaged
S-93-7	2918.19	2890.95	2890.53
S-10-1S	2900.65	2891.75	2889.37
S-10-2S	2899.80	2890.43	2889.64
S-10-1I	2900.26	2890.90	2889.44
S-10-2I	2899.75	2890.35	2889.67
S-10-3R	2913.29	2893.10	2892.93
S-12-1S	2921.17	2891.27	2890.82
S-12-1I	2921.12	2891.32	2890.61
S-12-2S	2910.79	2890.88	2890.38
S-12-2I	2910.63	2890.94	2890.42
S-12-3S	2907.04	2890.80	2890.31
S-12-4S	2908.12	2890.74	2890.24
S-12-4I	2907.88	2890.85	2890.34
S-12-5S	2905.77	2890.52	2890.00
S-12-5I	2905.81	2890.79	2890.19
S-12-7S	2900.36	2890.18	2888.88
S-12-7I	2900.49	2890.28	2889.52
S-12-8S	2895.16	2890.71	2889.52
S-12-8I	2895.11	2890.64	2889.70
S-12-9S	2903.19	2891.00	2889.88
S-12-9I	2903.29	2891.02	2889.82
S-15-1S	2902.60	2890.65	2890.15
S-15-2S	2896.37	2890.26	2889.40
S-16-1S	2895.34	2890.70	2890.16
S-16-2S	2898.61	2893.54	2893.48
S-19-1	2904.33	2890.01	NM
S-19-2	2903.19	2890.05	NM
S-19-4	2901.15	2889.76	NM
S-19-5	2902.11	NM	NM
S-19-6S	2897.99	2890.36	2889.32

Table 3 Annual Groundwater Elevations
BNSF Somers Site, Somers, Montana

Well Number	Measuring Point Elevation (feet)[1]	Spring Event April 2022 (feet)[1]	Fall Event September 2022 (feet)[1]
Deep Alluvial Aquifer			
S-85-5BR	2899.87	2890.89	2890.31
S-85-6BR	2894.98	2890.47	2889.53
S-85-8B	2896.93	2891.53	2890.21
S-88-2RD	2901.68	2889.33	NM
S-91-4	2895.74	2890.03	2890.38
S-93-2D	2901.21	2890.41	2889.52
S-10-1D	2900.24	2891.19	2889.48
S-10-2D	2899.74	2890.53	2889.81
S-12-1DR	2919.31	2890.95	2890.55
S-12-2D	2910.75	2891.01	2890.40
S-12-4D	2908.12	2890.98	2890.40
S-12-5D	2905.78	2890.85	2890.20
S-12-6D	2902.02	2890.43	2889.75
S-12-7D	2900.41	2890.37	2889.70
S-12-8D	2895.19	2890.59	2889.71
S-15-1D	2902.66	2890.78	2890.20
S-15-2D	2896.35	2890.32	2889.46
S-16-1D	2895.67	2890.56	2890.22
S-16-2D	2899.07	2893.71	2893.25
S-19-3D	2902.24	2889.26	NM
S-19-6D	2897.84	2890.40	2889.32
Other			
Flathead Lake[2]	--	2885.25	2892.02

Notes:
Measuring point is TOC (top of casing).
[1] = elevation relative to National Geodetic Vertical Datum of 1929 (NGVD29)
[2] = Flathead Lake elevation obtained from the United States Geological Website:
https://waterdata.usgs.gov/nwis/uv?site_no=12371550
* = Water was not encounterd when gauged. Well full of non-aqueous phase liquids (NAPL)
NM= not measured

Table 4 Vertical Gradient Analysis
BNSF Somers Site, Somers, Montana

Well Number	Top of Screen Elevation (feet)[1]	Bottom of Screen Elevation (feet)[1]	Oct 2010[2]	Dec 2010	Mar 2011	Jun 2011	Sep 2011	Dec 2011
SURFICIAL AQUIFER								
S-85-6A (Upper Alluvial)	2873.75	2863.75	2893.12	2889.79	2892.05	2891.09	2888.89	2889.75
S-85-6BR (Deep Alluvial)	2853.03	2843.03	2889.49	2890.37	2891.84	2891.18	2889.25	2889.73
Elevation Difference (feet)*	20.72		-3.63	0.58	-0.21	0.09	0.36	-0.02
Vertical Gradient (ft./ft.)**			**-0.175**	**0.028**	**-0.010**	**0.004**	**0.017**	**-0.001**
SURFICIAL AND BEDROCK AQUIFER								
S-84-10 (Upper Alluvial)	2884.88	2874.88	2893.13	2891.09	2892.50	2892.40	2888.68	2890.22
S-91-4 (Bedrock)	2798.58	2793.58	2895.83	2891.23	2889.80	2894.27	2892.15	2892.50
Elevation Difference (feet)*	83.80		2.70	0.14	-2.70	1.87	3.47	2.28
Vertical Gradient (ft./ft.)**			**0.032**	**0.002**	**-0.032**	**0.022**	**0.041**	**0.027**

Well Number	Top of Screen Elevation (feet)[1]	Bottom of Screen Elevation (feet)[1]	Mar 2012	Jun 2012	Oct 2012	Dec 2012	Mar 2013	Jun 2013
SURFICIAL AQUIFER								
S-85-6A (Upper Alluvial)	2873.75	2863.75	2890.14	2891.63	2889.31	2890.47	2890.35	2890.73
S-85-6BR (Deep Alluvial)	2853.03	2843.03	2890.24	2890.33	2889.35	2890.45	2890.53	2890.74
Elevation Difference (feet)*	20.72		0.10	-1.30	0.04	-0.02	0.18	0.01
Vertical Gradient (ft./ft.)**			**0.005**	**-0.063**	**0.002**	**-0.001**	**0.009**	**0.000**
SURFICIAL AND BEDROCK AQUIFER								
S-84-10 (Upper Alluvial)	2884.88	2874.88	2891.07	2890.45	2889.65	2890.72	2890.72	2890.88
S-91-4 (Bedrock)	2798.58	2793.58	2891.04	2892.60	2892.98	2892.27	2890.19	2892.82
Elevation Difference (feet)*	83.80		-0.03	2.15	3.33	1.55	-0.53	1.94
Vertical Gradient (ft./ft.)**			**-0.00036**	**0.026**	**0.040**	**0.018**	**-0.006**	**0.023**

Table 4 Vertical Gradient Analysis
BNSF Somers Site, Somers, Montana

Well Number	Top of Screen Elevation (feet)[1]	Bottom of Screen Elevation (feet)[1]	Sep 2013	Jan 2014	Mar 2014	Jul 2014	Sep 2014	Apr 2015
SURFICIAL AQUIFER								
S-85-6A (Upper Alluvial)	2873.75	2863.75	2888.60	2889.27	2891.50	2890.80	2889.34	2891.35
S-85-6BR (Deep Alluvial)	2853.03	2843.03	2888.90	2889.24	2891.42	2890.89	2889.55	2891.50
Elevation Difference (feet)*	20.72		0.30	-0.03	-0.08	0.09	0.21	0.15
Vertical Gradient (ft./ft.)**			**0.014**	**-0.001**	**-0.004**	**0.004**	**0.010**	**0.007**
SURFICIAL AND BEDROCK AQUIFER								
S-84-10 (Upper Alluvial)	2884.88	2874.88	2888.13	2889.50	2891.85	2892.1	2888.44	2890.79
S-91-4 (Bedrock)	2798.58	2793.58	2890.74	2891.51	2891.16	2893.74	2892.66	2892.00
Elevation Difference (feet)*	83.80		2.61	2.01	-0.69	1.64	4.22	1.21
Vertical Gradient (ft./ft.)**			**0.031**	**0.024**	**-0.008**	**0.020**	**0.050**	**0.014**

Well Number	Top of Screen Elevation (feet)[1]	Bottom of Screen Elevation (feet)[1]	Oct 2015	Mar 2016	Oct 2016	Apr 2017	Oct 2017	Apr 2018
SURFICIAL AQUIFER								
S-85-6A (Upper Alluvial)	2873.75	2863.75	2888.60	2890.50	2888.82	2892.11	2888.04	2891.51
S-85-6BR (Deep Alluvial)	2853.03	2843.03	2888.77	2890.59	2888.96	2892.00	2888.19	2891.51
Elevation Difference (feet)*	20.72		0.17	0.09	0.14	-0.11	0.15	0.00
Vertical Gradient (ft./ft.)**			**0.008**	**0.004**	**0.007**	**-0.005**	**0.007**	**0.000**
SURFICIAL AND BEDROCK AQUIFER								
S-84-10 (Upper Alluvial)	2884.88	2874.88	2886.73	2889.80	2888.43	2891.68	2887.25	2891.12
S-91-4 (Bedrock)	2798.58	2793.58	2891.71	2890.26	2891.86	2893.45	2891.04	2891.27
Elevation Difference (feet)*	83.80		4.98	0.46	3.43	1.77	3.79	0.15
Vertical Gradient (ft./ft.)**			**0.059**	**0.005**	**0.041**	**0.021**	**0.045**	**0.002**

Table 4 Vertical Gradient Analysis
BNSF Somers Site, Somers, Montana

Well Number	Top of Screen Elevation (feet)[1]	Bottom of Screen Elevation (feet)[1]	Sep 2018	Apr 2019	Sep 2019	Apr 2020	Sep 2020	Apr 2021
SURFICIAL AQUIFER								
S-85-6A (Upper Alluvial)	2873.75	2863.75	2888.56	2891.28	2890.13	--	2888.39	2889.97
S-85-6BR (Deep Alluvial)	2853.03	2843.03	2888.83	2891.23	2890.19	--	2888.58	2889.96
Elevation Difference (feet)*	20.72		0.27	-0.05	0.06	--	0.19	-0.01
Vertical Gradient (ft./ft.)**			**0.013**	**-0.002**	**0.003**	**--**	**0.009**	**0.000**
SURFICIAL AND BEDROCK AQUIFER								
S-84-10 (Upper Alluvial)	2884.88	2874.88	2887.34	2890.94	2889.36	--	2886.71	2889.48
S-91-4 (Bedrock)	2798.58	2793.58	2890.61	2891.05	2891.79	--	2890.05	2889.21
Elevation Difference (feet)*	83.80		3.27	0.11	2.43	--	3.34	-0.27
Vertical Gradient (ft./ft.)**			**0.039**	**0.001**	**0.029**	**--**	**0.040**	**-0.003**

Well Number	Top of Screen Elevation (feet)[1]	Bottom of Screen Elevation (feet)[1]	Sep 2021	Apr 2022	Sep 2022
SURFICIAL AQUIFER					
S-85-6A (Upper Alluvial)	2873.75	2863.75	2888.85	2890.41	2889.44
S-85-6BR (Deep Alluvial)	2853.03	2843.03	2888.56	2890.47	2889.53
Elevation Difference (feet)*	20.72		-0.29	0.06	0.09
Vertical Gradient (ft./ft.)**			**-0.014**	**0.003**	**0.004**
SURFICIAL AND BEDROCK AQUIFER					
S-84-10 (Upper Alluvial)	2884.88	2874.88	2886.61	2890.01	2887.17
S-91-4 (Bedrock)	2798.58	2793.58	2889.85	2890.03	2890.38
Elevation Difference (feet)*	83.80		3.24	0.02	3.21
Vertical Gradient (ft./ft.)**			**0.039**	**0.000**	**0.038**

Notes:
All groundwater elevation readings are in feet above mean sea level.
ft./ft. = Feet per foot.
* = Difference in screen elevations was calculated using the midpoint of the screen interval.
** = Negative value indicates downward gradient and positive value indicates upward gradient.
[1] = elevation relative to North American Vertical Datum of 1929 (NAVD29)
[2] = Monitoring well elevations were resurveyed in December 2010; the elevations for October 2010 are based on previous survey data.
-- = Groundwater elevations were not measured in April 2020 due to COVID-19

Table 5 Groundwater Field Parameters
BNSF Somers Site, Somers, Montana

Well Number	Sample Equipment	Temperature (°C)		pH (Standard Units)		Conductivity (µmhos/cm)		ORP (mV)		Dissolved Oxygen (mg/L)	
		First Reading	Last Reading	First Reading	Last Reading	First Reading	Last Reading	First Reading	Last Reading	First Reading	Last Reading
April 2022											
S-10-2S	PP	7.6	7.7	7.29	7.34	1,538	1,541	-65.7	-77.8	1.93	0.88
S-12-4S	PP	7.9	7.7	7.50	7.48	1,474	1,447	-72.8	-85.7	1.40	0.83
S-15-2S	PP	8.6	8.6	7.16	7.14	1,192	1,178	-92.3	-96.8	1.04	0.67
S-15-2D	PP	9.0	9.1	6.90	6.93	1,808	1,815	-90.2	-94.5	0.88	0.66
S-16-1S	PP	6.0	5.7	7.46	7.51	1,634	1,631	-44.2	-52.3	2.45	1.08
S-16-1D	PP	7.1	7.3	7.28	7.32	2,170	2,114	-98.2	-111.3	1.56	0.88
S-16-2S	PP	4.9	4.7	7.63	7.70	1,304	1,286	-98.0	-107.0	1.51	0.98
S-16-2D	PP	6.9	7.8	8.00	7.58	1,490	1,470	-91.6	-104.0	1.24	0.68
S-19-6S	PP	7.9	7.9	7.16	7.15	1,364	1,368	-63.9	-66.3	0.65	0.64
S-19-6D	PP	7.8	7.8	7.55	7.39	699	689	-103.0	-99.0	1.05	0.78
September 2022											
Semi-Annual Network											
S-10-2S	PP	12.1	12.0	7.27	7.35	1,561	1,551	-87.7	-105.5	49.3*	61.5*
S-12-4S	PP	10.1	10.6	8.40	8.25	1,365	1,363	-37.3	-41.7	916.5*	918.9*
S-15-2S	PP	12.5	11.8	6.86	6.85	1,196	1,177	-88.2	-107.8	0.23	0.11
S-15-2D	PP	11.3	12.1	6.75	6.71	1,732	1,766	-89.8	-104.1	0.20	0.09
S-16-1S	PP	10.0	10.8	8.00	8.00	1,911	1,895	-118.1	-124.8	281.1*	284.2*
S-16-1D	PP	9.0	9.5	8.41	8.16	2,239	2,182	-134.6	-137.6	205.3*	214.6*
S-16-2S	PP	12.1	12.3	7.44	7.42	2,070	2,522	-40.1	-85.3	0.29	0.10
S-16-2D	PP	11.8	11.9	6.92	6.89	3,488	3,488	-4.7	-42.3	0.23	0.12
S-19-6S	PP	9.3	9.3	6.70	6.80	1,416	1,386	-60.7	-134.2	0.25	0.26
S-19-6D	PP	10.4	10.5	7.21	7.21	724	718	-117.8	-135.7	0.21	0.16
TW-1	--	--	--	--	--	--	--	--	--	--	--
Annual Network											
S-10-1S	NM	--	--	--	--	--	--	--	--	--	--
S-10-1I	NM	--	--	--	--	--	--	--	--	--	--
S-12-1S	NM	--	--	--	--	--	--	--	--	--	--
S-12-2S	PP	11.1	11.0	8.04	7.97	2,016	2,020	-39.7	-49.6	951.3*	953.8*
S-12-5I	PP	9.8	10.2	7.99	7.70	208.7	208.3	-147.9	-144.0	30.7*	17.1*
S-12-7I	PP	12.9	13.0	6.88	6.88	1,379	1,400	-75.7	-101.3	0.33	0.12
S-15-1S	PP	10.3	11.1	8.05	8.07	1,099	1,101	-72.4	-75.9	283.1*	291.2*
S-15-1D	PP	10.8	11.0	7.57	7.65	3,355	3,464	-78.6	-91.3	341.2*	357.1*
S-6R	PB	9.8	9.7	6.99	7.11	4,249	4,241	171.2	173.0	3.32	4.16
S-88-2RS	NM	--	--	--	--	--	--	--	--	--	--
S-88-3	PP	11.9	11.6	7.25	7.21	1,826	1,839	-112.2	-140.4	0.65	0.10
S-91-2	PP	13.0	13.3	6.80	6.80	1,493	1,490	-75.1	-103.8	0.21	0.11
S-93-2S	PP	12.9	13.4	6.84	6.86	3,852	3,841	6.4	-32.7	0.20	0.12
S-93-2D	PP	13.3	13.4	7.06	7.04	2,008	2,000	-16.3	-50.7	0.20	0.11
S-93-5S	NM	--	--	--	--	--	--	--	--	--	--

Notes:

* = DO values considered anomalous; sensor likely failing
[1] = Groundwater was not sampled in April 2020 due to COVID-19
°C = Degrees Celsius
mg/L = milligrams per liter
mV = millivolts

NM = Not measured due to sheen, strong hydrocarbon odor or emulsified creosote in well.
ORP = oxidation reduction potential
PP = Low flow sampling with a peristaltic pump.
PB = Sampling with a poly bailer; depth to groundwater exceeded peristaltic pump capabilities.
µmhos/cm = microohms per centimeter.

Table 6 Groundwater Analytical Results, April 2022
Semi-Annual Monitoring Well Network
BNSF Somers Site, Somers, Montana

Sample Location / Collection Date	ROD Cleanup Level [1]	USEPA MCL or RSL for Tapwater [2]	Former ASTs			Former CERCLA Lagoon								Municipal Well		Quality Control Samples	
			Upper Aquifer		Deep Aquifer	Upper Aquifer				Deep Aquifer							
			S-16-1S 04/21/22	S-12-4S 04/21/22	S-16-1D 04/21/22	S-10-2S 04/21/22	S-15-2S 04/20/22	S-16-2S 04/20/22	S-19-6S 04/20/22	S-15-2D 04/20/22	(S-36) S-15-2D 04/20/22	S-16-2D 04/20/22	S-19-6D 04/20/22	TW-1 04/20/22	(TW-2) TW-1 Dup 04/20/22	(S-35) Field 04/20/22	Trip Blank 04/22/22
Phenols Method 8270 (µg/L)																	
2,4,5-Trichlorophenol	--	1,200 *	< 12.7	< 12.8	< 12.2 UJ	< 10.3 UJ	< 10.5	< 11.8 UJ	< 11.5	< 10.4 UJ	< 11.2	< 12.0 UJ	< 12.5 UJ	< 12.7	< 12.7	< 12.7 UJ	NS
2,4,6-Trichlorophenol	--	4.1 *,3	< 12.7	< 12.8	< 12.2 UJ	< 10.3 UJ	< 10.5	< 11.8 UJ	< 11.5	< 10.4 UJ	< 11.2	< 12.0 UJ	< 12.5 UJ	< 12.7	< 12.7	< 12.7 UJ	NS
2,4-Dichlorophenol	--	46 *	< 12.7	< 12.8	< 12.2 UJ	< 10.3 UJ	< 10.5	< 11.8 UJ	< 11.5	< 10.4 UJ	< 11.2	< 12.0 UJ	< 12.5 UJ	< 12.7	< 12.7	< 12.7 UJ	NS
2,4-Dimethylphenol	--	360 *	< 12.7	**2190**	< 12.2 UJ	321	**466**	< 11.8 UJ	251 J	**362 J**	**557 J**	< 12.0 UJ	< 12.5 UJ	< 12.7	< 12.7	< 12.7 UJ	NS
2,4-Dinitrophenol	--	39 *	< 12.7	< 12.8	< 12.2 UJ	< 10.3 UJ	< 10.5	< 11.8 UJ	< 11.5	< 10.4 UJ	< 11.2	< 12.0 UJ	< 12.5 UJ	< 12.7	< 12.7	< 12.7 UJ	NS
2-Chlorophenol	--	91 *	< 12.7	< 12.8	< 12.2 UJ	< 10.3 UJ	< 10.5	< 11.8 UJ	< 11.5	< 10.4 UJ	< 11.2	< 12.0 UJ	< 12.5 UJ	< 12.7	< 12.7	< 12.7 UJ	NS
2-Methylphenol (o-Cresol)	--	930 *	< 12.7	< 12.8	< 12.2 UJ	< 10.3 UJ	< 10.5	< 11.8 UJ	< 11.5	< 10.4 UJ	< 11.2	< 12.0 UJ	< 12.5 UJ	< 12.7	< 12.7	< 12.7 UJ	NS
2-Nitrophenol	--	--	< 12.7	< 12.8	< 12.2 UJ	< 10.3 UJ	< 10.5	< 11.8 UJ	< 11.5	< 10.4 UJ	< 11.2	< 12.0 UJ	< 12.5 UJ	< 12.7	< 12.7	< 12.7 UJ	NS
3 & 4-Methylphenol (m&p Cresol)	--	1,900 *	< 12.7	< 12.8	< 12.2 UJ	< 10.3 UJ	< 10.5	< 11.8 UJ	1.7 J	< 10.4 UJ	< 11.2	< 12.0 UJ	< 12.5 UJ	< 12.7	< 12.7	< 12.7 UJ	NS
4,6-Dinitro-2-methylphenol	--	1.5 *,3	< 12.7	< 12.8	< 12.2 UJ	< 10.3 UJ	< 10.5	< 11.8 UJ	< 11.5	< 10.4 UJ	< 11.2	< 12.0 UJ	< 12.5 UJ	< 12.7	< 12.7	< 12.7 UJ	NS
4-Chloro-3-methylphenol	--	1,400 *	< 12.7	< 12.8	< 12.2 UJ	< 10.3 UJ	< 10.5	< 11.8 UJ	< 11.5	< 10.4 UJ	< 11.2	< 12.0 UJ	< 12.5 UJ	< 12.7	< 12.7	< 12.7 UJ	NS
4-Nitrophenol	--	--	< 12.7	< 12.8	< 12.2 UJ	< 10.3 UJ	< 10.5	< 11.8 UJ	< 11.5	< 10.4 UJ	< 11.2	< 12.0 UJ	< 12.5 UJ	< 12.7	< 12.7	< 12.7 UJ	NS
Pentachlorophenol	--	1.0 [3]	< 25.3	< 25.6	< 24.4 UJ	< 20.6 UJ	< 21.1	< 23.5 UJ	< 23.0	< 20.8 UJ	< 22.5	< 24.1 UJ	< 25.0 UJ	< 25.3	< 25.3	< 25.3 UJ	NS
Phenol	3,500	5,800 *	< 12.7	< 12.8	< 12.2 UJ	< 10.3 UJ	< 10.5	< 11.8 UJ	< 11.5	< 10.4 UJ	< 11.2	< 12.0 UJ	< 12.5 UJ	< 12.7	< 12.7	< 12.7 UJ	NS
Total Phenols (µg/L)	6,000	--	ND	2190	ND	321	466	ND	252.7 J	362 J	557 J	ND	ND	ND	ND	ND	ND
PAH Method 8270 SIM HVI (µg/L)																	
Acenaphthene (PAH)	20	530 *	< 0.040	< 0.049 UJ	< 0.040	< 0.040 UJ	< 0.040	< 0.040	< 0.040	< 0.040 UJ	< 0.040 UJ	< 0.040 UJ	< 0.040	< 0.040	< 0.040	0.031 J	NS
Acenaphthylene (PAH)	--	--	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	NS
Anthracene (PAH)	--	1,800 *	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	NS
Benzo(a)anthracene (CPAH)	--	0.03 *,3	< 0.040	< 0.040	< 0.040	< 0.040	0.47 J	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	NS
Benzo(a)pyrene (CPAH)	--	0.20	< 0.040	< 0.040	< 0.040	< 0.040	0.26 J	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	NS
Benzo(b)fluoranthene (CPAH)	--	0.25 *	< 0.040	< 0.040	< 0.040	< 0.040	0.45 J	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	NS
Benzo(g,h,i)perylene (PAH)	--	--	< 0.040	< 0.040	< 0.040	< 0.040	0.36 J	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	NS
Benzo(k)fluoranthene (CPAH)	--	2.5 *	< 0.040	< 0.040	< 0.040	< 0.040	0.18 J	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	NS
Chrysene (CPAH)	--	25 *	< 0.040	< 0.040	< 0.040	< 0.040	0.24 J	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	NS
Dibenz(a,h)anthracene (CPAH)	--	0.025 *,3	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	NS
Fluoranthene (PAH)	42	800 *	< 0.040	0.021 J	< 0.040	< 0.040	0.65 J	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	NS
Fluorene (PAH)	--	290 *	< 0.040	< 0.040 UJ	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040 UJ	< 0.040	< 0.040 UJ	< 0.040	< 0.040	< 0.040	0.049	NS
Indeno(1,2,3-cd)pyrene (CPAH)	--	0.25 *	< 0.040	< 0.040	< 0.040	< 0.040	0.25 J	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	NS
Phenanthrene (PAH)	--	--	< 0.040	< 0.054 UJ	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040 UJ	< 0.040	< 0.040	< 0.040	0.089	NS
Pyrene (PAH)	--	120 *	< 0.040	0.016 J	< 0.040	< 0.040	0.56 J	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	NS
TPAH (µg/L)	40	--	ND	0.037 J	ND	ND	1.57 J	ND	ND	ND	ND	ND	ND	ND	ND	0.169 J	ND
CPAH (µg/L)	0.030	--	ND	ND	ND	ND	1.85 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PAH Method 8270 SIM HVI (µg/L)																	
1-Methylnaphthalene	--	1.1 *	< 0.80	< 0.80	< 0.040	< 10.0	< 0.80	< 0.040	< 0.80	< 0.80	< 0.80	< 0.040	< 0.040 UJ	< 0.040	< 0.040	0.023 J	NS
2-Methylnaphthalene	--	36 *	< 0.80	< 0.80	< 0.040	< 10.0	< 0.80	< 0.040	< 0.80	< 0.80	< 0.80	< 0.040	< 0.040 UJ	< 0.040	< 0.040	0.050	NS
2-Chloronaphthalene	--	750 *	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	0.018 J	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	NS
Benzo(e)pyrene	--	--	< 0.040	< 0.040	< 0.040	< 0.040	0.3 J	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	NS

Table 6 Groundwater Analytical Results, April 2022
Semi-Annual Monitoring Well Network
BNSF Somers Site, Somers, Montana

Sample Location / Collection Date	ROD Cleanup Level [1]	USEPA MCL or RSL for Tapwater [2]	Former ASTs			Former CERCLA Lagoon								Municipal Well		Quality Control Samples	
			Upper Aquifer		Deep Aquifer	Upper Aquifer				Deep Aquifer							
			S-16-1S 04/21/22	S-12-4S 04/21/22	S-16-1D 04/21/22	S-10-2S 04/21/22	S-15-2S 04/20/22	S-16-2S 04/20/22	S-19-6S 04/20/22	S-15-2D 04/20/22	(S-36) S-15-2D 04/20/22	S-16-2D 04/20/22	S-19-6D 04/20/22	TW-1 04/20/22	(TW-2) TW-1 Dup 04/20/22	(S-35) Field 04/20/22	Trip Blank 04/22/22
VOC Method EPA 8260 (µg/L)																	
1,2,4-Trimethylbenzene	--	56*	< 1.0	< 1.0	< 1.0	**60.3**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	--	60*	< 1.0	< 1.0	< 1.0	6.5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	--	75	< 1.0	< 1.0	< 1.0	0.24 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	5.0	5.0	0.14 J	**55.7**	< 1.0	**200**	3.1	< 1.0	3.8	**25.0**	**28.5**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	--	700	< 1.0	0.43 J	< 1.0	179	< 1.0	< 1.0	0.25 J	0.56 J	0.57 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	--	--	< 1.0	< 1.0	< 1.0	0.44 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	620	0.12*	< 1.0	< 1.0	< 1.0	**716**	< 1.0	< 1.0	< 1.0 UJ	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	**0.26 J**	< 1.0
n-Propylbenzene	--	660*	< 1.0	< 1.0	< 1.0	0.65 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	--	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	--	1,000	< 1.0	< 1.0	< 1.0	43.3	0.13 J	< 1.0	0.17 J	0.49 J	0.50 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylenes, total	--	10,000	< 3.0	0.88 J	< 3.0	475	0.97 J	< 3.0	1.9 J	4.9	5.4	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0

Notes:

[1] = Results exceeding the 1989 Record of Decision (ROD) or subsequent Explanation of Significant Difference (ESD) cleanup levels have been bolded.

[2] = If no ROD level has been assigned, results are compared to the United States Environmental Protection Agency (USEPA) Maximum Contaminant Le (MCLs) if no MCL is established, USEPA Risk Screening Levels (RSLs) are used. (MCLs and RSLs via May 2021 USEPA Regional Screening Lev

[3] = The laboratory reporting limit exceeded the USEPA MCL or RSL. The table below compares the MCL/RSL to the laboratory reporting limit and meth detection limit (MDL).

Compound	MCL/RSL	Reporting Limit	MDL
2,4,6-Trichlorophenol	4.1*	10.3 - 12.7	1.8 - 4.0
4,6-Dinitro-2-methylphenol	1.5*	10.3 - 12.8	4.6 - 5.8
Pentachlorophenol	1.0	20.6 - 25.6	4.6 - 5.8
Benzo(a)anthracene (CPAH)	0.03*	0.040	0.016 - 0.32
Dibenz(a,h)anthracene (CPAH)	0.025*	0.040	0.0098
Naphthalene	0.12*	1.0	0.18 - 1.8

* = No USEPA MCL established, USEPA RSL for tapwater was used.

-- = No ROD target cleanup level, USEPA MCL or USEPA RSL is listed for the compound

< = Result not detected above the indicated laboratory reporting detection limit

µg/L = micrograms per liter

ASTs = Area downgradient from the former Above Ground Storage Tanks (ASTs)

Bold = Concentration exceeded established ROD/ESD target cleanup level or USEPA MCLs/RSLs for the compound.

CERCLA = Area downgradient from the former Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Lagoon

CPAH = Carcinogenic Polycyclic Aromatic Hydrocarbons

DL = Sample was diluted by the Laboratory due to high constituent concentrations.

Dup = Duplicate Sample

HVI = High Volume Injection

J = estimated concentration

NA = Not Analyzed

ND = Not Detected

NR = determined not reportable by the analytical method during data validation

PAH = Polycyclic Aromatic Hydrocarbons

SIM = Select Ion Monitoring

TPAH = Total Polycyclic Aromatic Hydrocarbons

UJ = Undetected, reporting limit is estimated

VOC = Volatile Organic Compounds

Table 7A Groundwater Analytical Results, September 2022
Semi-Annual Monitoring Well Network
BNSF Somers Site, Somers, Montana

	ROD Cleanup Level	USEPA MCL or RSL for Tapwater[1]	Former ASTs			Former CERCLA Lagoon										Municipal Well	
			Upper		Deep	Upper				Deep							
Sample ID / *Collection Date*			S-12-4S 09/26/2022	S-16-1S 09/26/2022	S-16-1D 09/26/2022	S-10-2S 09/27/2022	S-15-2S 09/26/22	S-16-2S 09/27/22	S-19-6S 09/26/22	S-15-2D 09/26/22	(S-15-2D DUP) DUP-1 09/26/22	S-16-2D 09/27/22	(S-15-2D DUP) DUP-2 09/27/22	S-19-6D 09/26/22	TW-1 09/26/22	(TW-1 DUP) TW-2 09/26/22
Phenols Method 8270E (µg/L)																	
2,4,6-Trichlorophenol	--	4.1[a]	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	
2,4-Dichlorophenol	--	46[a]	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	
2,4-Dimethylphenol	--	360[a]	85.3	46.4	<10.0	1,150	539	<10.0	167	296	323	<10.0	5.35 J	<10.0	<10.0	<10.0	
2,4-Dinitrophenol	--	39[a]	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	
2-Chlorophenol	--	91[a]	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	
2-Nitrophenol	--	--	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	
4,6-Dinitro-2-methylphenol	--	1.5[a]	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	
4-Chloro-3-methylphenol	--	1,400[a]	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	
4-Nitrophenol	--	--	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	
Pentachlorophenol	--	1.0[b]	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	
Phenol	3,500	5,800[a]	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	
Total Phenols (µg/L)	6,000	--	85.3	46.4	ND	1,150	539	ND	167.0	296	323	ND	5.35 J	ND	ND	ND	
PAH Method 8270E SIM (µg/L)																	
Acenaphthene (PAH)	20	530[a]	<0.0500	0.0366 J	<0.0500	<1.00	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	0.115 J	<0.0500	<0.0500	<0.0500	
Acenaphthylene (PAH)	--	--	<0.0500	<0.0500	<0.0500	0.0926 J	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	
Anthracene (PAH)	--	1,800[a]	<0.0500	<0.0500	<0.0500	0.0435 J	<0.0500	<0.0500	0.0501	0.0496 J	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	
Benzo(a)anthracene (CPAH)	--	0.030[a]	<0.0500	<0.0500	<0.0500	<1.00	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	
Benzo(a)pyrene (CPAH)	--	0.20[b]	<0.0500	<0.0500	<0.0500	<1.00	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	
Benzo(b)fluoranthene (CPAH)	--	0.25[a]	<0.0500	<0.0500	<0.0500	<1.00	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	
Benzo(g,h,i)perylene (PAH)	--	--	<0.0500	<0.0500	<0.0500	<1.00	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	
Benzo(k)fluoranthene (CPAH)	--	2.5[a]	<0.0500	<0.0500	<0.0500	<1.00	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	
Chrysene (CPAH)	--	25[a]	<0.0500	<0.0500	<0.0500	<1.00	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	
Dibenz(a,h)anthracene (CPAH)	--	0.025[b]	<0.0500	<0.0500	<0.0500	<1.00	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	
Fluoranthene (PAH)	42	800[a]	<0.100	<0.100	<0.100	<1.00	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	
Fluorene (PAH)	--	290[a]	<0.0500	0.026 J	0.023 J	0.0569 J	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	
Indeno(1,2,3-cd)pyrene (CPAH)	--	0.25[a]	<0.0500	<0.0500	<0.0500	<1.00	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	
Naphthalene	620	0.17[a]	<0.250	<0.250	<0.250	597	<0.250	<0.250	<0.667	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	
Phenanthrene (PAH)	--	--	<0.0500	0.0321 J	0.0251 J	0.023 J	<0.0500	<0.0500	<0.0500	0.0182 J	<0.0500	<0.0500	<0.0500	0.0182 J	<0.0500	<0.0500	
Pyrene (PAH)	--	120[a]	<0.0500	<0.0500	<0.0500	<1.00	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	
TPAH (µg/L)	40	--	ND	0.0947 J	0.0481 J	**597.216 J**	ND	ND	0.0501	0.0678 J	ND	ND	0.115	0.0182 J	ND	ND	
CPAH (µg/L)	0.030	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
PAH Method 8270E SIM (µg/L)																	
1-Methylnaphthalene	--	1.1[a]	<0.250	<0.250	<0.250	<250	<0.250	<0.250	<0.250	<0.250	0.0738 J	<0.250	<0.250	<0.250	<0.250	<0.250	
2-Methylnaphthalene	--	36[a]	<0.250	<0.250	<0.250	<250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	
2-Chloronaphthalene	--	750[a]	<0.250	<0.250	<0.250	<1.00	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	
VOC Method EPA 8260B (µg/L)																	
1,1,1,2-Tetrachloroethane	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	
1,1,1-Trichloroethane	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	
1,1,2,2-Tetrachloroethane	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	
1,1,2-Trichloroethane	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	
1,1,2-Trichlorotrifluoroethane	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	
1,1-Dichloroethane	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	
1,1-Dichloroethene	--	--	<1.00	<1.00	<1.00	0.146 J	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	
1,1-Dichloropropene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	
1,2,3-Trichlorobenzene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	
1,2,3-Trichloropropane	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	
1,2,3-Trimethylbenzene	--	--	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	
1,2,4-Trichlorobenzene	--	--	<1.00	<1.00	<1.00	41.8	0.137 J	<1.00	0.121 J	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	
1,2,4-Trimethylbenzene	--	56[a]	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	
1,2-Dibromo-3-chloropropane	--	--	<5.00	<5.00	<5.00	**64.6**	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	
1,2-Dibromoethane (EDB)	--	--	<1.00	<1.00	<1.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	
1,2-Dichlorobenzene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	
1,2-Dichloroethane	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	
1,2-Dichloropropane	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	
1,3,5-Trimethylbenzene	--	60[a]	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	
1,3-Dichlorobenzene	--	--	<1.00	<1.00	<1.00	6.88	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	
1,3-Dichloropropane	--	--	<1.00	<1.00	<1.00	<1.00	0.255 J	<1.00	0.492 J	0.206 J	0.234 J	<1.00	<1.00	0.498 J	<1.00	<1.00	
1,4-Dichlorobenzene	--	75[b]	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	
2,2-Dichloropropane	--	--	<1.00	<1.00	<1.00	0.204 J	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	
2-Butanone (MEK)	--	--	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	
2-Chlorotoluene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	
4-Chlorotoluene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	

Table 7A Groundwater Analytical Results, September 2022
Semi-Annual Monitoring Well Network
BNSF Somers Site, Somers, Montana

			Former ASTs			Former CERCLA Lagoon									Municipal Well	
			Upper		Deep	Upper				Deep						
Sample ID / *Collection Date*	ROD Cleanup Level	USEPA MCL or RSL for Tapwater[1]	S-12-4S 09/26/2022	S-16-1S 09/26/2022	S-16-1D 09/26/2022	S-10-2S 09/27/2022	S-15-2S 09/26/22	S-16-2S 09/27/22	S-19-6S 09/26/22	S-15-2D 09/26/22	(S-15-2D DUP) DUP-1 09/26/22	S-16-2D 09/27/22	(S-16-2D DUP) DUP-2 09/27/22	S-19-6D 09/26/22	TW-1 09/26/22	(TW-1 DUP) TW-2 09/26/22
4-Methyl-2-pentanone (MIBK)	--	--	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Acetone	--	--	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Benzene	5.0	5.0[b]	3.64	3.11	<1.00	178	2.21	<1.00	4.06	13.5	13.4	<1.00	<1.00	<1.00	<1.00	<1.00
Bromobenzene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Bromodichloromethane	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Bromoform	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Bromomethane	--	--	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Carbon tetrachloride	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Chlorobenzene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Chloroethane	--	--	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Chloroform	--	190[a]	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Chloromethane	--	--	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50
Dibromomethane	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Dichlorodifluoromethane	--	--	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Ethylbenzene	--	700[b]	<1.00	0.229 J	<1.00	154	<1.00	<1.00	0.256 J	0.248 J	0.261 J	<1.00	<1.00	<1.00	<1.00	<1.00
Hexachloro-1,3-butadiene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Isopropylbenzene	--	--	<1.00	<1.00	<1.00	9.04	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Methyl-tert-butyl ether	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Methylene Chloride	--	--	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Naphthalene	620	0.17[a]	<0.250	<0.250	<0.250	597	<0.250	<0.250	<0.667	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250
Styrene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Tetrachloroethene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Toluene	--	1,000[b]	<1.00	<1.00	<1.00	54.4	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Trichloroethene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Trichlorofluoromethane	--	--	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Vinyl chloride	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
cis-1,2-Dichloroethene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
cis-1,3-Dichloropropene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
n-Butylbenzene	--	--	<1.00	<1.00	<1.00	0.582 J	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
n-Propylbenzene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
p-Isopropyltoluene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
sec-Butylbenzene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
tert-Butylbenzene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
trans-1,2-Dichloroethene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
trans-1,3-Dichloropropene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Xylenes, total	--	10,000[b]	<3.00	0.509 J	<3.00	420	0.527 J	<3.00	1.78 J	2.31 J	2.41 J	<3.00	<3.00	<3.00	<3.00	<3.00

Notes:
-- = No ROD target cleanup level, USEPA MCL, or USEPA RSL is listed for the compound.
< = Result was not detected above the indicated laboratory reporting limit.
µg/L = Micrograms per liter.
[a] = USEPA RSL for Tapwater.
ASTs = Area downgradient from the former Above Ground Storage Tanks (ASTs)
[b] = USEPA MCL (May 2018 Traditional USEPA Regional Screening Level table) .
BOLD values indicate results exceeded the applicable ROD/ESD cleanup level or, if no ROD level has been assigned, values exceeded USEPA MCLs or RSLs.
CERCLA = Area downgradient from the former Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Lagoon.
CPAH = Carcinogenic Polycyclic Aromatic Hydrocarbons.
Dup = Duplicate sample.
ESD = Explanation of Significant Differences.
1 = The laboratory reporting limit (RL) exceeded the USEPA MCL or RSL in the samples below. The table below compares the MCL/RSL to the laboratory RL and method detection limit (MDL). Compounds where the RSL is less than the MDL are highlighted in the table below.

Compound	MCL/RSL	RL	MDL
2,4,6-Trichlorophenol	4.1	10.0	0.100
4,6-Dinitro-2-methylphenol	1.5	10.0	1.12
Pentachlorophenol	1.0	10.0	0.313
Benzo(a)anthracene	0.030	0.0500	0.199
Dibenz(a,h)anthracene	0.025	0.0500	0.0644

HVI = High Volume Injection.
J = Estimated concentration.
MCL = Maximum Concentration Limit.
mg/L = Milligrams per liter.
NA = Not analyzed.
ND = Compounds were not detected above the reporting limit.
RL = Reporting Limit
ROD = 1989 Record of Decision target cleanup levels.
RSL = Traditional USEPA RSL for Tapwater (May 2018).
TPAH = Total Polycyclic Aromatic Hydrocarbons
SIM = Select Ion Monitoring.
UJ = The analyte was not detected above the reported sample quantitation limit or was qualified as not detected due to blank contamination. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
VOC = Volatile Organic Compounds.

Table 7B Groundwater Analytical Results, September 2022
Annual Monitoring Well Network
BNSF Somers Site, Somers, Montana

	ROD Cleanup Level	USEPA MCL or RSL for Tapwater[1]	Former ASTs					Former CERCLA Lagoon					
			Upper Alluvial Aquifer				Deep	Upper Alluvial Aquifer					Deep
Sample ID / *Collection Date*			S-12-2S 09/26/22	S-6R 09/27/22	S-12-5I 09/27/22	S-15-1S 09/26/22	S-15-1D 09/26/22	S-12-7I 09/26/22	S-91-2 09/26/22	S-88-2RS 09/27/22	S-93-2S 09/27/22	S-88-3 09/26/22	S-93-2D 09/27/22
Phenols Method 8270E (µg/L)													
2,4,6-Trichlorophenol	–	4.1[a]	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<50.0	<10.0	<10.0	<10.0
2,4-Dichlorophenol	–	46[a]	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<50.0	<10.0	<10.0	<10.0
2,4-Dimethylphenol	–	360[a]	<10.0	<10.0	<10.0	<10.0	<10.0	94.6	**2670**	**3840**	**3640**	<10.0	157
2,4-Dinitrophenol	–	39[a]	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<50.0	<10.0	<10.0	<10.0
2-Chlorophenol	–	91[a]	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<50.0	<10.0	<10.0	<10.0
2-Nitrophenol	–	–	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<50.0	<10.0	<10.0	<10.0
4,6-Dinitro-2-methylphenol	–	1.5[a]	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<50.0	<10.0	<10.0	<10.0
4-Chloro-3-methylphenol	–	1,400[a]	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<50.0	<10.0	<10.0	<10.0
4-Nitrophenol	–	–	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<50.0	<10.0	<10.0	<10.0
Pentachlorophenol	–	1.0[b]	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<50.0	<10.0	<10.0	<10.0
Phenol	3,500	5,800[a]	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<50.0	<10.0	<10.0	<10.0
Total Phenols (µg/L)	6,000	–	ND	ND	ND	ND	ND	94.6	2,670	3,840	3,640	ND	157
PAH Method 8270E SIM (µg/L)													
Acenaphthene (PAH)	20	530[a]	<0.0500	0.549	0.0793 J	<0.0500	<0.0500	<0.0500	<0.0500	145	14.1	<0.0500	1.71
Acenaphthylene (PAH)	–	–	<0.0500	<0.0500	<0.100 UJ	<0.0500	<0.0500	<0.0500	<0.0500	5.33 J	0.238 J	<0.0500	0.0351 J
Anthracene (PAH)	–	1,800[a]	<0.0500	0.0287 J	<0.100 UJ	<0.0500	<0.0500	<0.0500	0.0738	4.66 J	1.77	<0.0500	0.201
Benzo(a)anthracene (CPAH)	–	0.030[a]	<0.0500	<0.0500	<0.100 UJ	<0.0500	<0.0500	<0.0500	<0.0500	**0.142 J**	**0.263**	<0.0500	**0.0443 J**
Benzo(a)pyrene (CPAH)	–	0.20[b]	<0.0500	0.1 J	<0.100 UJ	<0.0500	<0.0500	<0.0500	<0.0500	0.0221 J	0.079	<0.0500	<0.0500
Benzo(b)fluoranthene (CPAH)	–	0.25[a]	<0.0500	0.14 J	<0.100 UJ	<0.0500	<0.0500	<0.0500	<0.0500	0.0283 J	0.113	<0.0500	<0.0500
Benzo(g,h,i)perylene (PAH)	–	–	<0.0500	0.148 J	<0.100 UJ	<0.0500	<0.0500	<0.0500	<0.0500	<5.00	0.0276 J	<0.0500	<0.0500
Benzo(k)fluoranthene (CPAH)	–	2.5[a]	<0.0500	0.137 J	<0.100 UJ	<0.0500	<0.0500	<0.0500	<0.0500	<5.00	0.0405 J	<0.0500	<0.0500
Chrysene (CPAH)	–	25[a]	<0.0500	<0.0500	<0.100 UJ	<0.0500	<0.0500	<0.0500	<0.0500	0.148 J	0.234	<0.0500	0.0432 J
Dibenz(a,h)anthracene (CPAH)	–	0.025[a]	<0.0500	**0.165 J**	<0.100 UJ	<0.0500	<0.0500	<0.0500	<0.0500	<5.00	<0.0500	<0.0500	<0.0500
Fluoranthene (PAH)	42	800[a]	<0.100	<0.100	0.117 J	<0.100	<0.100	<0.100	<0.100	4.72 J	3.67	<0.100	0.556
Fluorene (PAH)	–	290[a]	<0.0500	0.372	<0.100 UJ	<0.0500	<0.0500	<0.0500	<0.0500	47.6 J	8.74	0.0454 J	0.938
Indeno(1,2,3-cd)pyrene (CPAH)	–	0.25[a]	<0.0500	<0.0500	<0.100 UJ	<0.0500	<0.0500	<0.0500	<0.0500	<5.00	0.0342 J	<0.0500	<0.0500
Naphthalene	620	0.17[a]	<0.250	17.8	3.81 J	<0.250	<0.250	<0.250	2.03 J	**7450**	223	11.9	65.6 J
Phenanthrene (PAH)	–	–	<0.0500	0.129	0.18 J	<0.0500	<0.0500	<0.0500	0.0244 J	24.6	5.3	0.0221 J	1.22
Pyrene (PAH)	–	120[a]	<0.0500	<0.0500	<0.100 UJ	<0.0500	<0.0500	<0.0500	<0.0500	2.74 J	2.23	<0.0500	0.356
TPAH (µg/L)	40	–	ND	19.5687 J	4.1863 J	ND	ND	ND	2.1282 J	**7684.9904 J**	259.8393 J	11.9675 J	**70.7036 J**
CPAH (µg/L)	0.030	–	ND	**0.542 J**	ND	ND	ND	ND	ND	**0.3404**	**0.7637 J**	ND	**0.0875 J**
PAH Method 8270E SIM (µg/L)													
1-Methylnaphthalene	–	1.1[a]	<0.250	**1.11**	0.174 J	<0.250	<0.250	<0.250	<0.250	**477**	**4.55 J**	<0.250	0.35
2-Methylnaphthalene	–	36[a]	<0.250	1.31	<0.500 UJ	<0.250	<0.250	<0.250	<0.250	**915**	<0.413	<0.250	<0.250
2-Chloronaphthalene	–	750[a]	<0.250	<0.250	<0.500 UJ	<0.250	<0.250	<0.250	0.165 J	1.80 J	<0.250	<0.250	<0.250
VOC Method EPA 8260B (µg/L)													
1,1,1,2-Tetrachloroethane	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,1,1-Trichloroethane	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,1,2,2-Tetrachloroethane	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,1,2-Trichloroethane	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,1,2-Trichlorotrifluoroethane	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,1-Dichloroethane	–	–	<1.00	<1.00	<1.00	0.165 J	<1.00	<1.00	<1.00	0.504 J	<1.00	<1.00	<1.00
1,1-Dichloroethene	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,1-Dichloropropene	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,2,3-Trichlorobenzene	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,2,3-Trichloropropane	–	–	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50
1,2,3-Trimethylbenzene	–	–	<1.00	0.900 J	<1.00	<1.00	<1.00	<1.00	0.686 J	<1.00	15.2	0.374 J	0.906 J
1,2,4-Trichlorobenzene	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,2,4-Trimethylbenzene	–	56[a]	<1.00	0.500 J	<1.00	<1.00	<1.00	<1.00	<1.00	179	25.3	<1.00	1.31 J
1,2-Dibromo-3-chloropropane	–	–	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
1,2-Dibromoethane (EDB)	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,2-Dichlorobenzene	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,2-Dichloroethane	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,2-Dichloropropane	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,3,5-Trimethylbenzene	–	60[a]	<1.00	0.126 J	<1.00	<1.00	<1.00	<1.00	0.191 J	**67.3**	1.6	0.151 J	<1.00
1,3-Dichlorobenzene	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	0.159 J	<1.00	<1.00	0.348 J	<1.00
1,3-Dichloropropane	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,4-Dichlorobenzene	–	75[b]	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
2,2-Dichloropropane	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
2-Butanone (MEK)	–	–	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0

Table 7B Groundwater Analytical Results, September 2022
Annual Monitoring Well Network
BNSF Somers Site, Somers, Montana

			Former ASTs					Former CERCLA Lagoon					
			Upper Alluvial Aquifer				Deep	Upper Alluvial Aquifer					Deep
Sample ID / *Collection Date*	ROD Cleanup Level	USEPA MCL or RSL for Tapwater[1]	S-12-2S 09/26/22	S-6R 09/27/22	S-12-5I 09/27/22	S-15-1S 09/26/22	S-15-1D 09/26/22	S-12-7I 09/26/22	S-91-2 09/26/22	S-88-2RS 09/27/22	S-93-2S 09/27/22	S-88-3 09/26/22	S-93-2D 09/27/22
2-Chlorotoluene	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
4-Chlorotoluene	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
4-Methyl-2-pentanone (MIBK)	–	–	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	2.93 J	<10.0	<10.0	<10.0
Acetone	–	–	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Benzene	5.0	5.0[b]	<1.00	0.552 J	<1.00	<1.00	<1.00	0.938 J	44	172	156	4.43	10.5 J
Bromobenzene	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Bromodichloromethane	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Bromoform	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Bromomethane	–	–	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Carbon tetrachloride	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Chlorobenzene	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Chloroethane	–	–	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Chloroform	–	190[a]	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Chloromethane	–	–	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50
Dibromomethane	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Dichlorodifluoromethane	–	–	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Ethylbenzene	–	700[b]	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	4.97	198	30	0.718 J	2.01 J
Hexachloro-1,3-butadiene	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Isopropylbenzene	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	0.112 J	13.6	1.26	<1.00	<1.00
Methyl-tert-butyl ether	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Methylene Chloride	–	–	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Naphthalene	620	0.17[a]	<0.250	17.8	3.81 J	<0.250	<0.250	<0.250	2.03 J	7450	223	11.9	65.6 J
Styrene	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	70.8	<1.00	<1.00	<1.00
Tetrachloroethene	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	17.8	0.353 J	0.768 J
Toluene	–	1,000[b]	<1.00	0.281 J	<1.00	<1.00	<1.00	<1.00	1.52	263	<1.00	<1.00	<1.00
Trichloroethene	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<5.00	<5.00	<5.00
Trichlorofluoromethane	–	–	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<1.00	<1.00	<1.00
Vinyl chloride	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
cis-1,2-Dichloroethene	–	–	<1.00	0.308 J	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
cis-1,3-Dichloropropene	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
n-Butylbenzene	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	4.67	0.237 J	<1.00	<1.00
n-Propylbenzene	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	7.49	<1.00	<1.00	<1.00
p-Isopropyltoluene	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	0.631 J	<1.00	<1.00	<1.00
sec-Butylbenzene	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
tert-Butylbenzene	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
trans-1,2-Dichloroethene	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
trans-1,3-Dichloropropene	–	–	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Xylenes, Total	–	10,000[b]	<3.00	0.644 J	<3.00	<3.00	<3.00	<3.00	24.6	454	174	1.86 J	6.46 J

Notes:

– = No ROD target cleanup level, USEPA MCL, or USEPA RSL is listed for the compound.
< = Result was not detected above the indicated laboratory reporting limit.
µg/L = Micrograms per liter.
[a] = USEPA RSL for Tapwater.
ASTs = Area downgradient from the former Above Ground Storage Tanks (ASTs)
[b] = USEPA MCL (May 2018 Traditional USEPA Regional Screening Level table).
BOLD values indicate results exceeded the applicable ROD/ESD cleanup level or, if no ROD level has been assigned, values exceeded USEPA MCLs or RSLs.
CERCLA = Area downgradient from the former Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Lagoon.
CPAH = Carcinogenic Polycyclic Aromatic Hydrocarbons.
Dup = Duplicate sample.
ESD = Explanation of Significant Differences.
1 = The laboratory reporting limit (RL) exceeded the USEPA MCL or RSL in the samples below. The table below compares the MCL/RSL to the laboratory RL and method detection limit (MDL). Compounds where the RSL is less than the MDL are highlighted in the table below.

Compound	MCL/RSL	RL	MDL
2,4,6-Trichlorophenol	4.1	10.0	0.100
4,6-Dinitro-2-methylphenol	1.5	10.0	1.12
Pentachlorophenol	1.0	10.0	0.313
Benzo(a)anthracene	0.030	0.0500	0.199
Dibenz(a,h)anthracene	0.025	0.0500	0.0944

HVI = High Volume Injection.
J = Estimated concentration.
MCL = Maximum Concentration Limit.
mg/L = Milligrams per liter.
NA = Not analyzed.
ND = Compounds were not detected above the reporting limit.
RL = Reporting Limit
ROD = 1989 Record of Decision target cleanup levels.
RSL = Traditional USEPA RSL for Tapwater (May 2018).
TPAH = Total Polycyclic Aromatic Hydrocarbons
SIM = Select Ion Monitoring.
UJ = The analyte was not detected above the reported sample quantitation limit or was qualified as not detected due to blank contamination. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
VOC = Volatile Organic Compounds.

Table 7C Groundwater Analytical Results, September 2022
Quality Assurance/Quality Control Samples
BNSF Somers Site, Somers, Montana

Sample ID / Collection Date	ROD Cleanup Level	USEPA MCL or RSL for Tapwater[1]	Quality Assurance/Quality Control Samples									
			Field Blanks		Trip Blanks							
			FB-1 09/26/22	FB-2 09/27/22	TB-1 09/27/22	TB-2 09/27/22	TB-3 09/27/22	TB-4 09/27/22	TB-5 09/27/22	TB-6 09/27/22	TB-7 09/27/22	TB-8 09/27/22
Phenols Method 8270E (µg/L)												
2,4,6-Trichlorophenol	--	4.1[a]	<10.0	<10.0	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	--	46[a]	<10.0	<10.0	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	--	360[a]	<10.0	0.814 J	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	--	39[a]	<10.0	<10.0	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	--	91[a]	<10.0	<10.0	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	--	--	<10.0	<10.0	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	--	1.5[a]	<10.0	<10.0	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	--	1,400[a]	<10.0	<10.0	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	--	--	<10.0	<10.0	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	--	1.0[b]	<10.0	<10.0	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	3,500	5,800[a]	<10.0	<10.0	NA	NA	NA	NA	NA	NA	NA	NA
Total Phenols (µg/L)	6,000	--	ND	0.814 J	NA	NA	NA	NA	NA	NA	NA	NA
PAH Method 8270E SIM (µg/L)												
Acenaphthene (PAH)	20	530[a]	<0.0500	<0.0500	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene (PAH)	--	--	<0.0500	<0.0500	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene (PAH)	--	1,800[a]	<0.0500	<0.0500	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene (CPAH)	--	0.030[a]	<0.0500	<0.0500 J	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene (CPAH)	--	0.20[b]	<0.0500	<0.0500 J	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene (CPAH)	--	0.25[a]	<0.0500	<0.0500 J	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene (PAH)	--	--	<0.0500	<0.0500 J	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene (CPAH)	--	2.5[a]	<0.0500	<0.0500 J	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene (CPAH)	--	25[a]	<0.0500	<0.0500 J	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene (CPAH)	--	0.025[a]	<0.0500	<0.0500 J	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene (PAH)	42	800[a]	<0.100	<0.100	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene (PAH)	--	290[a]	<0.0500	<0.0500	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene (CPAH)	--	0.25[a]	<0.0500	<0.0500 J	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	620	0.17[a]	0.255	0.277	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene (PAH)	--	--	<0.0500	<0.0500	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene (PAH)	--	120[a]	<0.0500	<0.0500	NA	NA	NA	NA	NA	NA	NA	NA
TPAH (µg/L)	40	--	0.255	0.277	NA	NA	NA	NA	NA	NA	NA	NA
CPAH (µg/L)	0.030	--	0.255	0.277	NA	NA	NA	NA	NA	NA	NA	NA
PAH Method 8270E SIM (µg/L)												
1-Methylnaphthalene	--	1.1[a]	<0.250	<0.250	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	--	36[a]	0.078 J	0.0934 J	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	--	750[a]	<0.250	<0.250	NA	NA	NA	NA	NA	NA	NA	NA
VOC Method EPA 8260B (µg/L)												
1,1,1,2-Tetrachloroethane	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,1,1-Trichloroethane	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,1,2,2-Tetrachloroethane	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,1,2-Trichloroethane	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,1,2-Trichlorotrifluoroethane	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,1-Dichloroethane	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,1-Dichloroethene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,1-Dichloropropene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,2,3-Trichlorobenzene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,2,3-Trichloropropane	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,2,3-Trimethylbenzene	--	--	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50
1,2,4-Trichlorobenzene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,2,4-Trimethylbenzene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,2-Dibromo-3-chloropropane	--	56[a]	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,2-Dibromoethane (EDB)	--	--	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
1,2-Dichlorobenzene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,2-Dichloroethane	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,2-Dichloropropane	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,3,5-Trimethylbenzene	--	60[a]	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,3-Dichlorobenzene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,3-Dichloropropane	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,4-Dichlorobenzene	--	75[b]	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
2,2-Dichloropropane	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
2-Butanone (MEK)	--	--	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
2-Chlorotoluene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
4-Chlorotoluene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
4-Methyl-2-pentanone (MIBK)	--	--	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Acetone	--	--	22.6 J	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
Benzene	5.0	5.0[b]	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Bromobenzene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Bromodichloromethane	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Bromoform	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Bromomethane	--	--	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Carbon tetrachloride	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Chlorobenzene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Chloroethane	--	--	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Chloroform	--	190[a]	0.146 J	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Chloromethane	--	--	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50
Dibromomethane	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Dichlorodifluoromethane	--	--	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Ethylbenzene	--	700[b]	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Hexachloro-1,3-butadiene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Isopropylbenzene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Methyl-tert-butyl ether	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Methylene Chloride	--	--	<5.00	<5.00	1.11 J	0.992 J	1.03 J	1.28 J	1.14 J	1.17 J	1.39 J	1.17 J
Naphthalene	620	0.17[a]	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Styrene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Tetrachloroethene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Toluene	--	1,000[b]	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Trichloroethene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Trichlorofluoromethane	--	--	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Vinyl chloride	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
cis-1,2-Dichloroethene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
cis-1,3-Dichloropropene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00

Table 7C Groundwater Analytical Results, September 2022
Quality Assurance/Quality Control Samples
BNSF Somers Site, Somers, Montana

			Quality Assurance/Quality Control Samples									
			Field Blanks		Trip Blanks							
Sample ID / *Collection Date*	ROD Cleanup Level	USEPA MCL or RSL for Tapwater[1]	FB-1 09/26/22	FB-2 09/27/22	TB-1 09/27/22	TB-2 09/27/22	TB-3 09/27/22	TB-4 09/27/22	TB-5 09/27/22	TB-6 09/27/22	TB-7 09/27/22	TB-8 09/27/22
n-Butylbenzene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
n-Propylbenzene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
p-Isopropyltoluene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
sec-Butylbenzene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
tert-Butylbenzene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
trans-1,2-Dichloroethene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
trans-1,3-Dichloropropene	--	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Xylenes, total	--	10,000[b]	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00

Notes:

-- = No ROD target cleanup level, USEPA MCL, or USEPA RSL is listed for the compound.

< = Result was not detected above the indicated laboratory reporting limit.

µg/L = Micrograms per liter.

* = USEPA RSL for Tapwater.

ASTs = Area downgradient from the former Above Ground Storage Tanks (ASTs)

[b] = USEPA MCL (May 2018 Traditional USEPA Regional Screening Level table) .

BOLD values indicate results exceeded the applicable ROD/ESD cleanup level or, if no ROD level has been assigned, values exceeded USEPA MCLs or RSLs.

CERCLA = Area downgradient from the former Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Lagoon.

CPAH = Carcinogenic Polycyclic Aromatic Hydrocarbons.

Dup = Duplicate sample.

ESD = Explanation of Significant Differences.

1 = The laboratory reporting limit (RL) exceeded the USEPA MCL or RSL in the samples below. The table below compares the MCL/RSL to the laboratory RL and method detection limit (MDL). Compounds where the RSL is less than the MDL are highlighted in the table below.

Compound	MCL/RSL	RL	MDL
2,4,6-Trichlorophenol	4.1	10.0	0.100
4,6-Dinitro-2-methylphenol	1.5	10.0	1.12
Pentachlorophenol	1.0	10.0	0.313
Benzo(a)anthracene	0.030	0.0500	0.199
Dibenz(e,h)anthracene	0.025	0.0500	0.0644

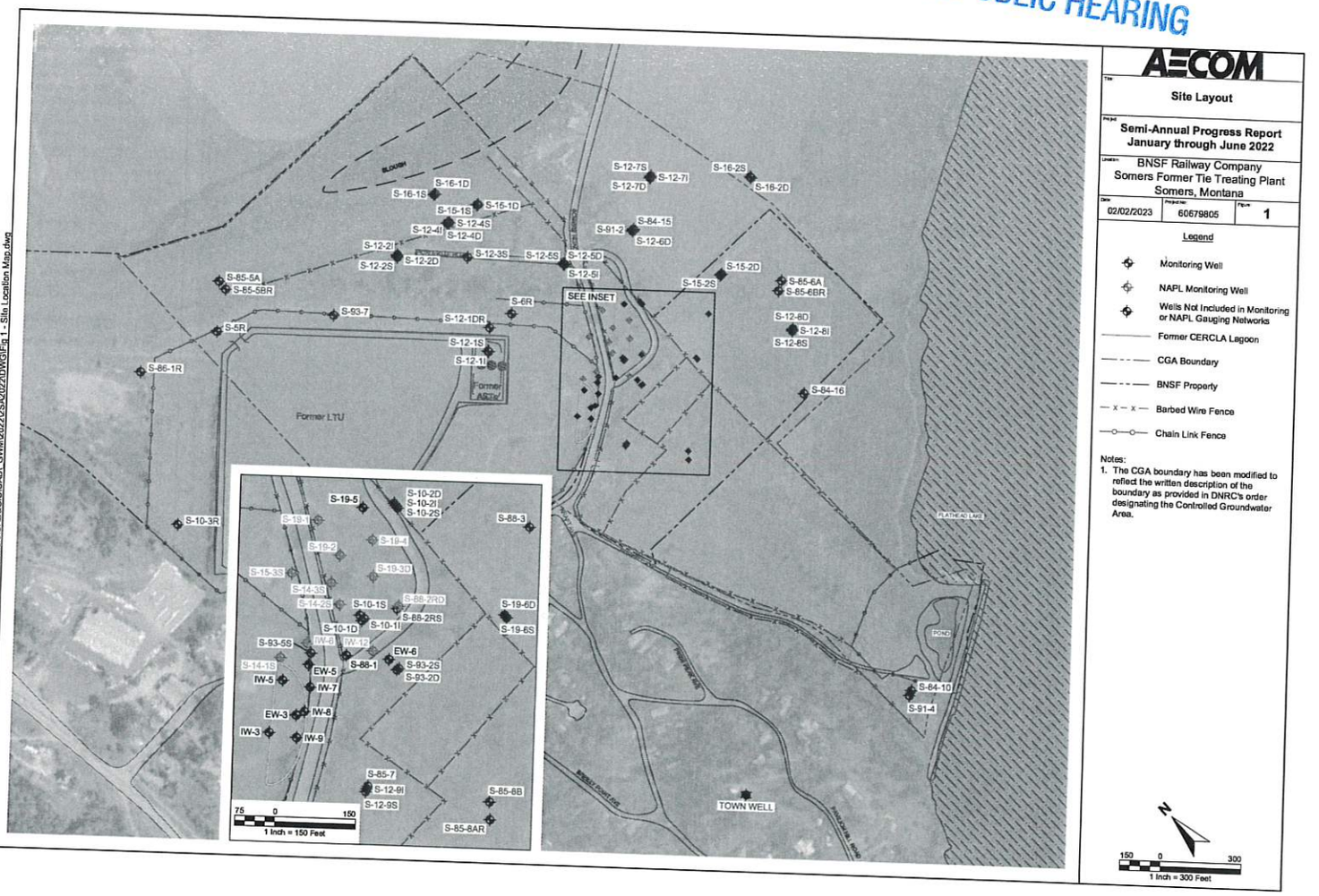
Table 8 Groundwater Analytical Results, September 2022
2,4-Dimethylphenol, Naphthalene, and Benzene

Sample Location	Area Monitored	Alluvial Aquifer Interval	Collection Date	2,4-Dimethylphenol by EPA 8270E (µg/L)	Naphthalene by EPA 8260B (µg/L)	Benzene by EPA 8260B (µg/L)
ROD Cleanup Level[1]				--	620	5.0
USEPA MCL or RSL for Tapwater[1]				360[a]	0.17[a]	5.0[b]
Semi-Annual Network						
S-10-2S	CERCLA	Upper	09/27/22	**1,150**	597	**178**
S-12-4S	Former AST	Upper	09/26/22	85.3	<0.250	3.64
S-15-2S	CERCLA	Upper	09/26/22	**539**	<0.250	2.21
S-15-2D	CERCLA	Deep	09/26/22	296	<0.250	**13.5**
S-15-2D Duplicate (DUP-1)	CERCLA	Deep	09/26/22	323	<0.250	**13.4**
S-16-1S	Former AST	Upper	09/26/22	46.4	<0.250	3.11
S-16-1D	Former AST	Deep	09/26/22	<10.0	<0.250	<1.00
S-16-2S	CERCLA	Upper	09/27/22	<10.0	<0.250	<1.00
S-16-2D	CERCLA	Deep	09/27/22	<10.0	<0.250	<1.00
S-16-2D Duplicate (DUP-2)	CERCLA	Deep	09/27/22	5.35 J	<0.250	<1.00
S-19-6S	CERCLA	Upper	09/26/22	167	<0.667	4.06
S-19-6D	CERCLA	Deep	09/26/22	<10.0	<0.250	<1.00
TW-1	Town Well	--	09/26/22	<10.0	<0.250	<1.00
TW-1 Duplicate (TW-2)	Town Well	--	09/26/22	<10.0	<0.250	<1.00
Annual Network						
S-10-1S	CERCLA	Upper	--	NS	NS	NS
S-10-1I	CERCLA	Upper	--	NS	NS	NS
S-12-1S	Former AST	Upper	--	NS	NS	NS
S-12-2S	Former AST	Upper	09/26/22	<10.0	<0.250	<1.00
S-12-5I	Former AST	Upper	09/27/22	<10.0	3.81 J	<1.00
S-12-7I	CERCLA	Upper	09/26/22	94.6	<0.250	0.938 J
S-15-1S	Former AST	Upper	09/26/22	<10.0	<0.250	<1.00
S-15-1D	Former AST	Deep	09/26/22	<10.0	<0.250	<1.00
S-6R	Former AST	Upper	09/27/22	<10.0	17.8	0.552 J
S-88-2RS	CERCLA	Upper	09/27/22	**3,840**	**7,450**	**172**
S-88-3	CERCLA	Upper	09/26/22	<10.0	11.9	4.4
S-91-2	CERCLA	Upper	09/26/22	**2,670**	2.03 J	**44**
S-93-2S	CERCLA	Upper	09/27/22	**3,640**	223	**156**
S-93-2D	CERCLA	Deep	09/27/22	157	65.6 J	**10.5 J**
S-93-5S	CERCLA	Upper	--	NS	NS	NS

Notes:

-- = No ROD target cleanup level is listed for the compound.
< = analyte not detected above the laboratory reporting limit.
µg/L = micrograms per liter
[1] = Results exceeding the ROD/ESD cleanup levels have been bolded.
If no ROD level has been assigned, values exceeding MCLs or RSLs are bolded.
[a] = USEPA RSL for Tapwater.
[b] = USEPA MCL (May 2018 Traditional USEPA Regional Screening Level table).
J = Estimated result. Result is less then reporting limit.
AST = above-ground storage tank
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
ESD = Explanation of Significant Difference
MCL = Maximum Concentration Limit.
NS = not sampled
ROD = 1989 Record of Decision target cleanup levels.
RSL = Traditional USEPA RSL for Tapwater (May 2018).
USEPA = United States Environmental Protection Agency

Figures



AECOM

Site Layout

Semi-Annual Progress Report
January through June 2022

BNSF Railway Company
Somers Former Tie Treating Plant
Somers, Montana

Date	Project No.	Figure
02/02/2023	60679805	1

Legend

- Monitoring Well
- NAPL Monitoring Well
- Wells Not Included in Monitoring or NAPL Gauging Networks
- Former CERCLA Lagoon
- CGA Boundary
- BNSF Property
- Barbed Wire Fence
- Chain Link Fence

Notes:
1. The CGA boundary has been modified to reflect the written description of the boundary as provided in DNRC's order designating the Controlled Groundwater Area.

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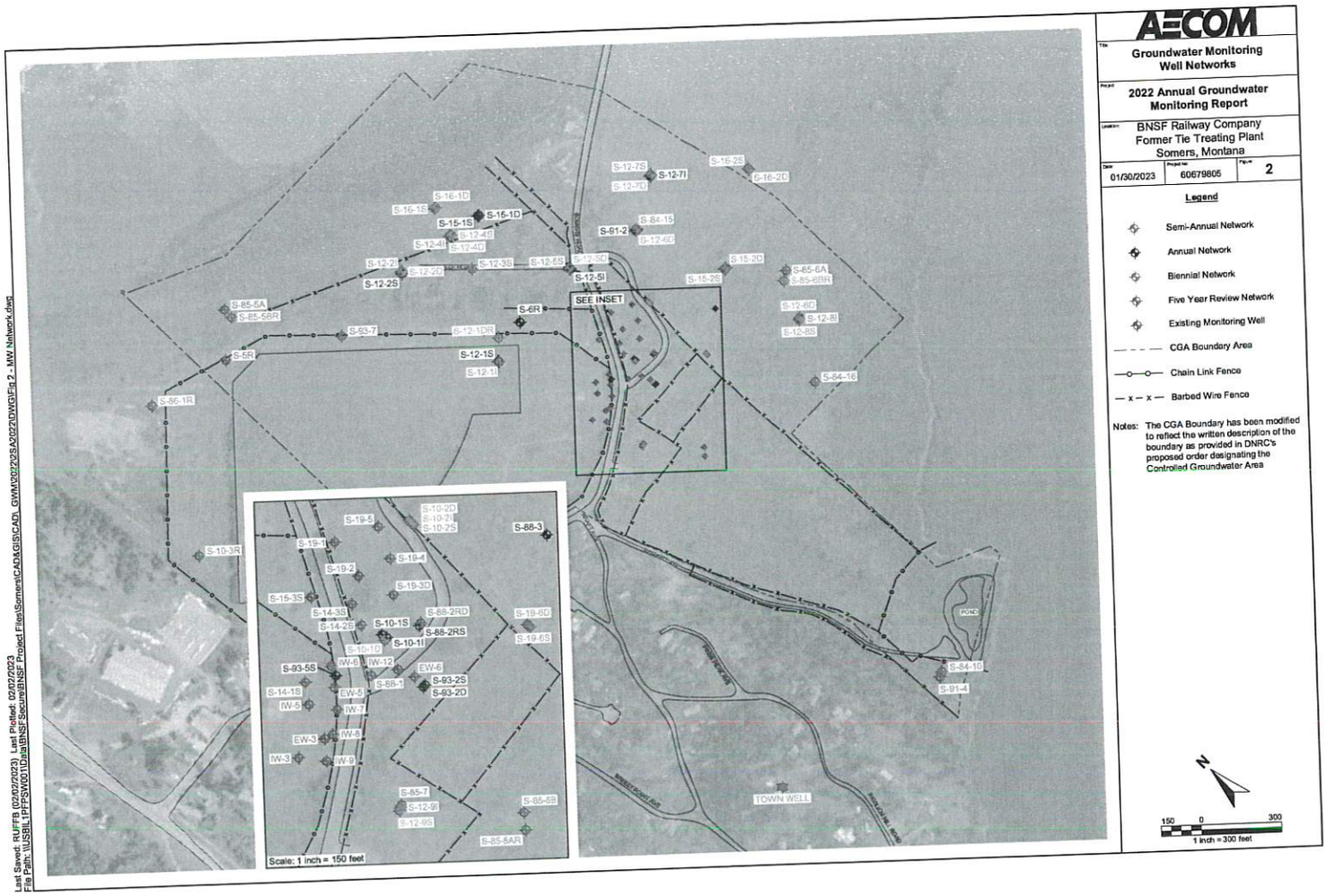

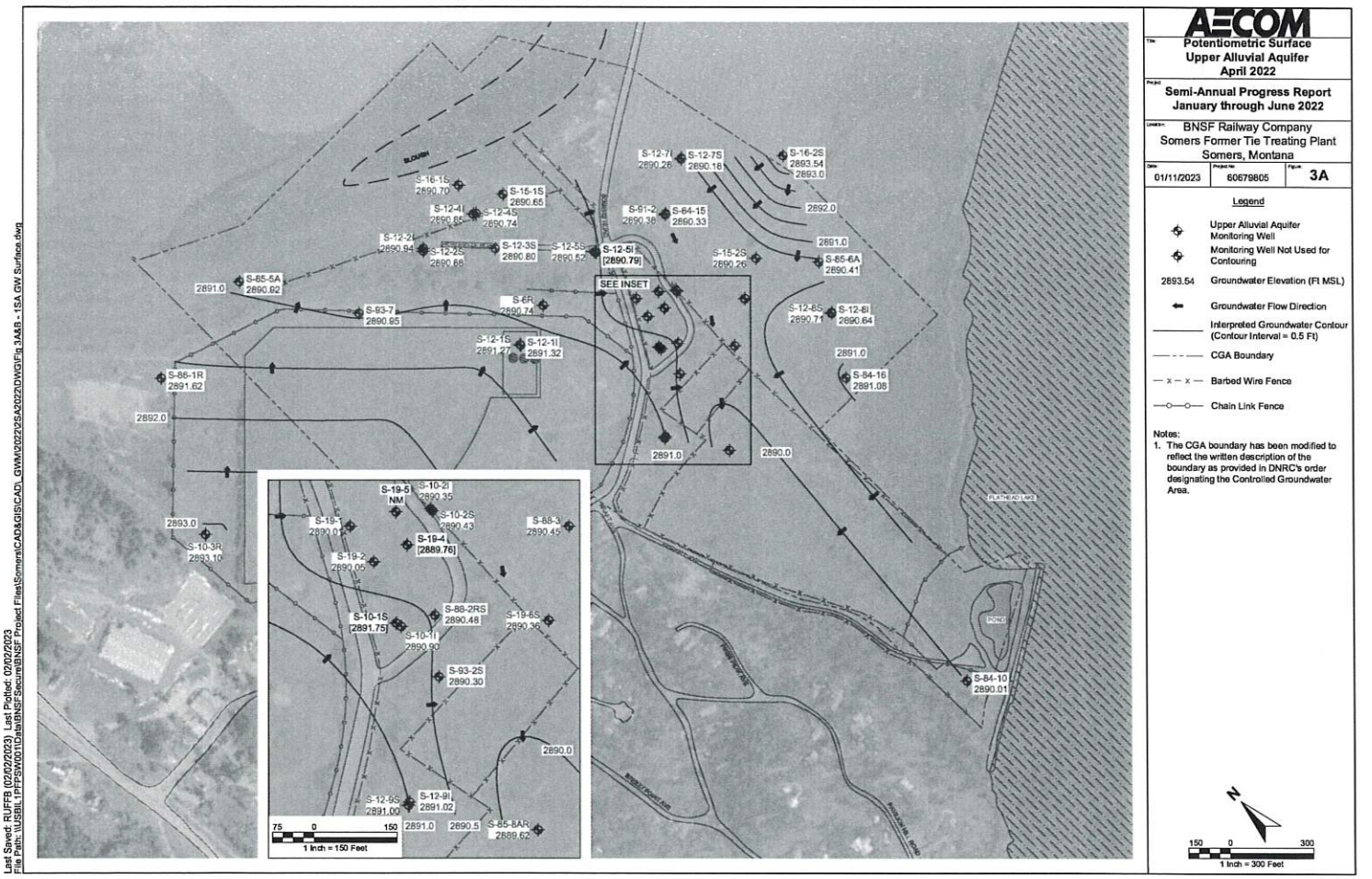

AECOM

Title: Potentiometric Surface Upper Alluvial Aquifer April 2022

Project: Semi-Annual Progress Report January through June 2022

Location: BNSF Railway Company Somers Former Tie Treating Plant Somers, Montana

Date	Project No.	Figure
01/11/2023	60679805	3A

Legend

- Upper Alluvial Aquifer Monitoring Well
- Monitoring Well Not Used for Contouring
- 2893.54 Groundwater Elevation (Ft MSL)
- Groundwater Flow Direction
- Interpreted Groundwater Contour (Contour Interval = 0.5 Ft)
- CGA Boundary
- Barbed Wire Fence
- Chain Link Fence

Notes:
1. The CGA boundary has been modified to reflect the written description of the boundary as provided in DNRC's order designating the Controlled Groundwater Area.

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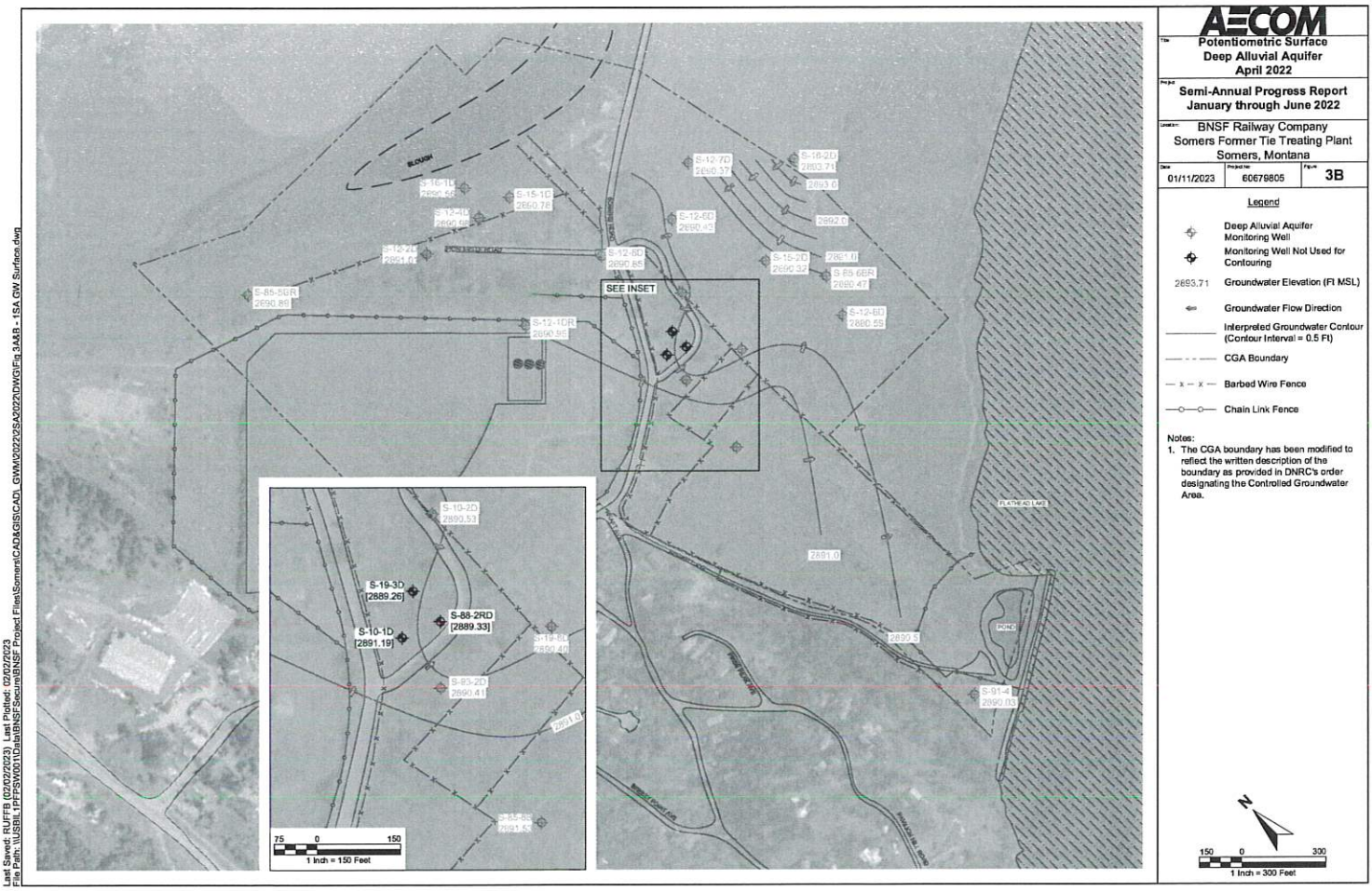

AECOM

Potentiometric Surface
Deep Alluvial Aquifer
April 2022

Semi-Annual Progress Report
January through June 2022

BNSF Railway Company
Somers Former Tie Treating Plant
Somers, Montana

Date	Project No.	Figure
01/11/2023	60679805	3B

Legend

- Deep Alluvial Aquifer Monitoring Well
- Monitoring Well Not Used for Contouring
- 2693.71 Groundwater Elevation (Ft MSL)
- Groundwater Flow Direction
- Interpreted Groundwater Contour (Contour Interval = 0.5 Ft)
- CGA Boundary
- Barbed Wire Fence
- Chain Link Fence

Notes:
1. The CGA boundary has been modified to reflect the written description of the boundary as provided in DNRC's order designating the Controlled Groundwater Area.

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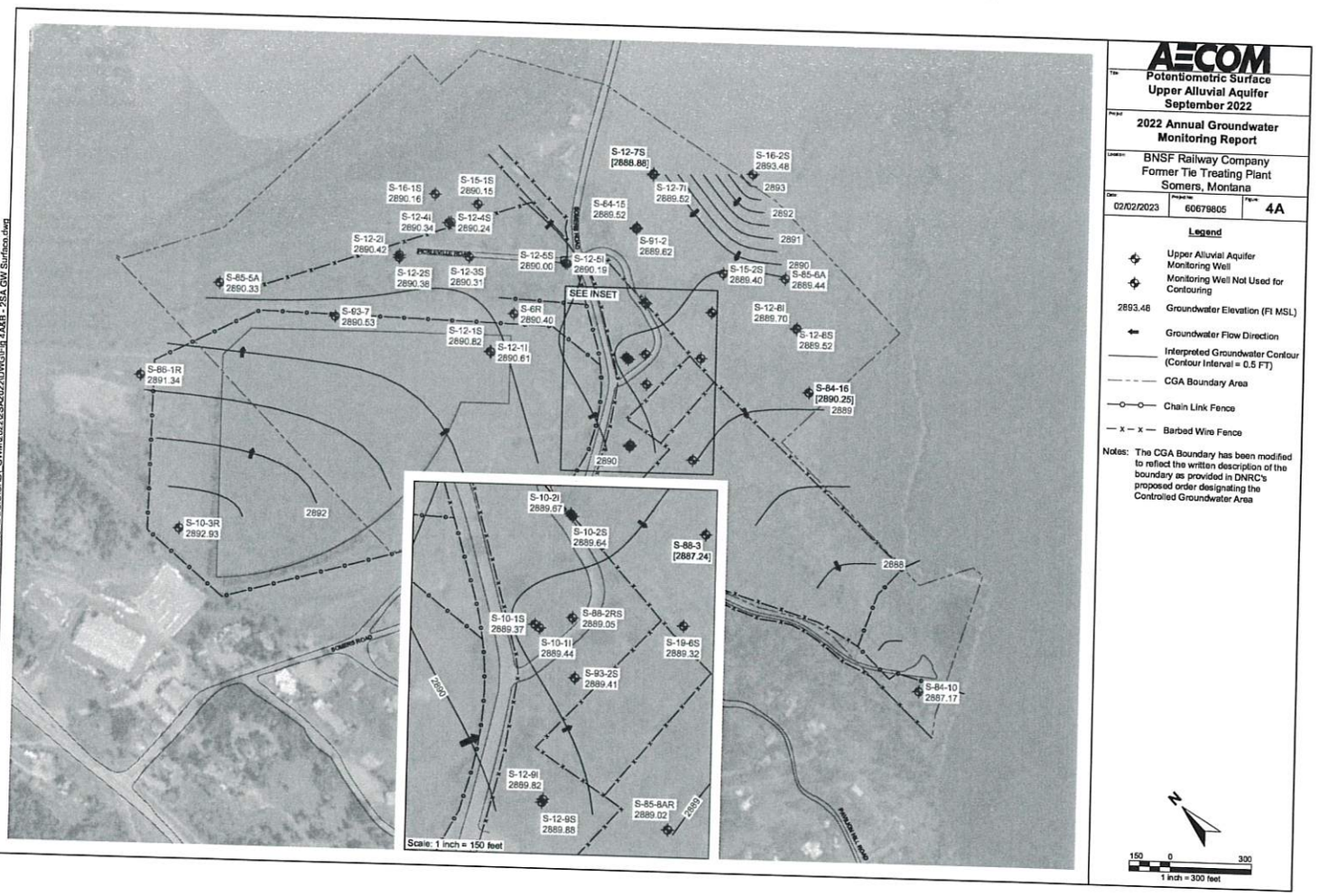

AECOM

Potentiometric Surface
Upper Alluvial Aquifer
September 2022

2022 Annual Groundwater Monitoring Report

BNSF Railway Company
Former Tie Treating Plant
Somers, Montana

Date	Project No.	Figure
02/02/2023	60679805	4A

Legend

- Upper Alluvial Aquifer Monitoring Well
- Monitoring Well Not Used for Contouring
- 2893.48 Groundwater Elevation (Ft MSL)
- Groundwater Flow Direction
- Interpreted Groundwater Contour (Contour Interval = 0.5 FT)
- CGA Boundary Area
- Chain Link Fence
- Barbed Wire Fence

Notes: The CGA Boundary has been modified to reflect the written description of the boundary as provided in DNRC's proposed order designating the Controlled Groundwater Area

N

150 0 300
1 inch = 300 feet

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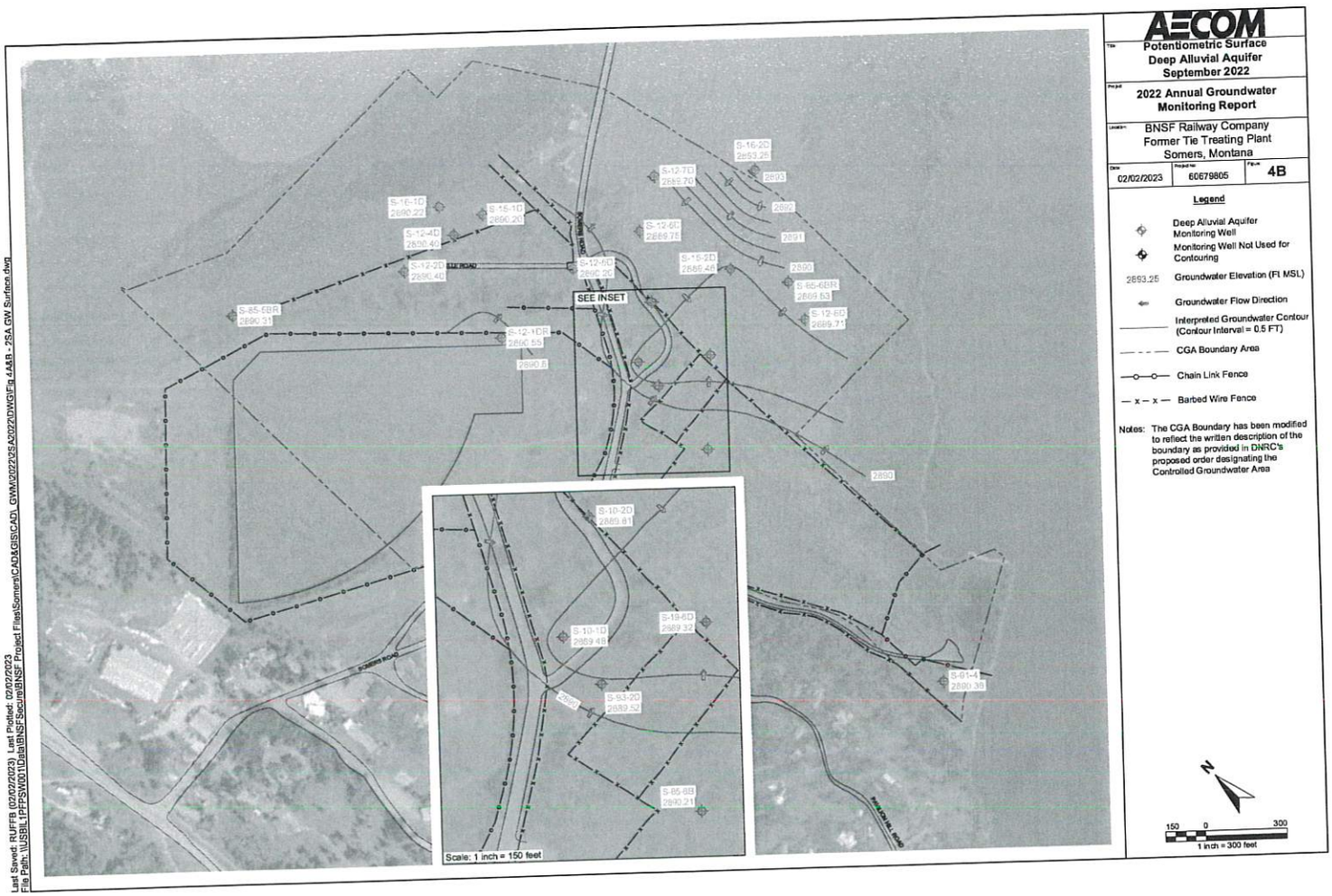

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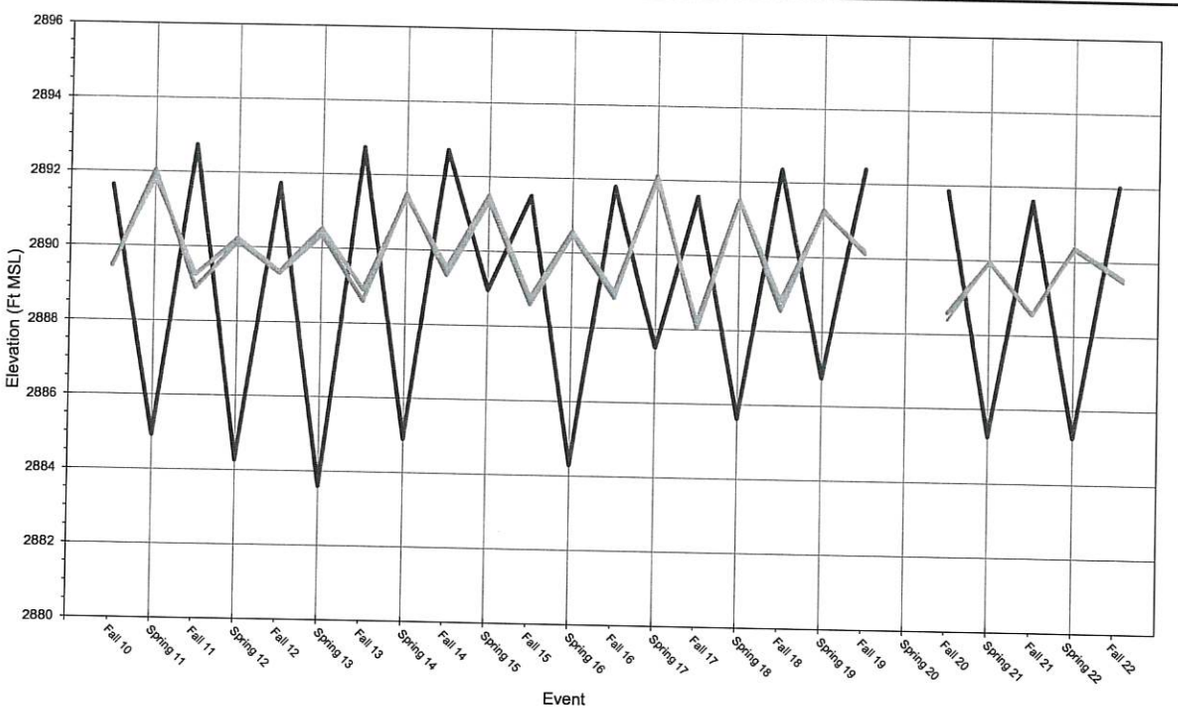

Legend

- S-85-6A Surficial Aquifer
- S-85-6BR Surficial Aquifer
- Flathead Lake

Notes:
Flathead Lake elevation in Polson, MT obtained from the United States Geological Website:
https://waterdata.usgs.gov/monitoring-location/12371550

AECOM

Title: **Flathead Lake Elevation and Surficial Aquifer Hydrograph**

Project: **2022 Annual Groundwater Monitoring Report**

Location: BNSF Railway Company
Former Tie Treating Plant
Somers, Montana

Date:	Project No:	Figure:
01/18/2023	60679805	5

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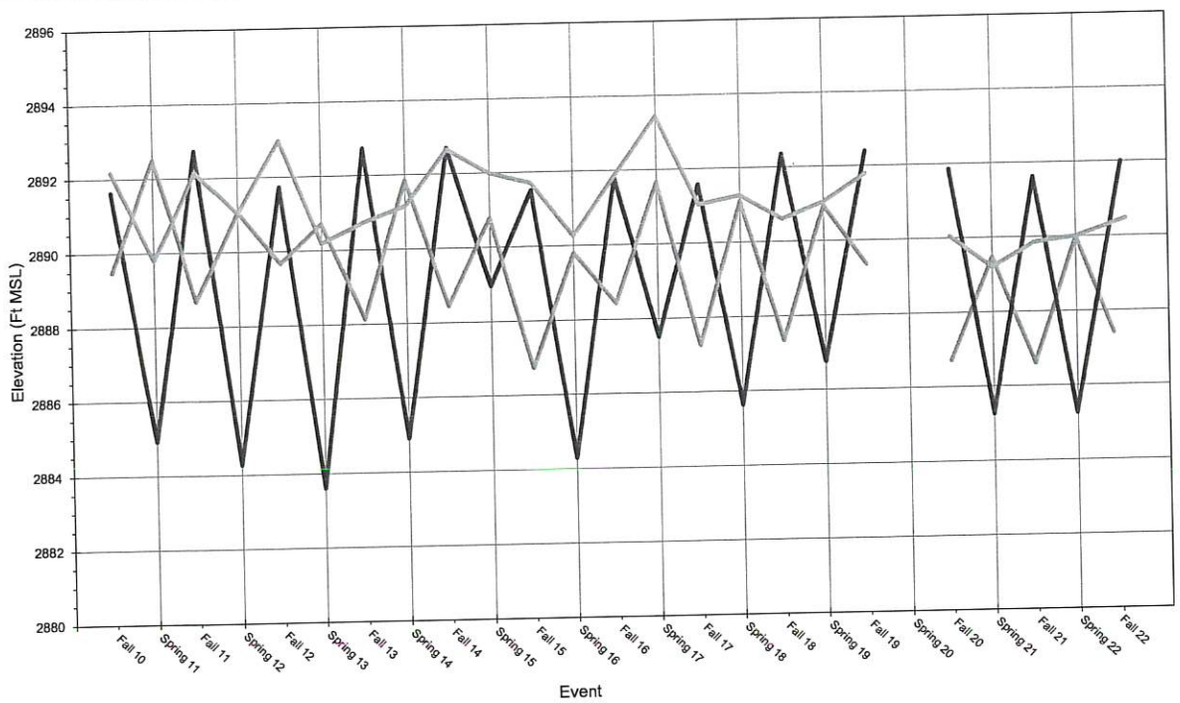


Legend

S-84-10 Surficial Aquifer

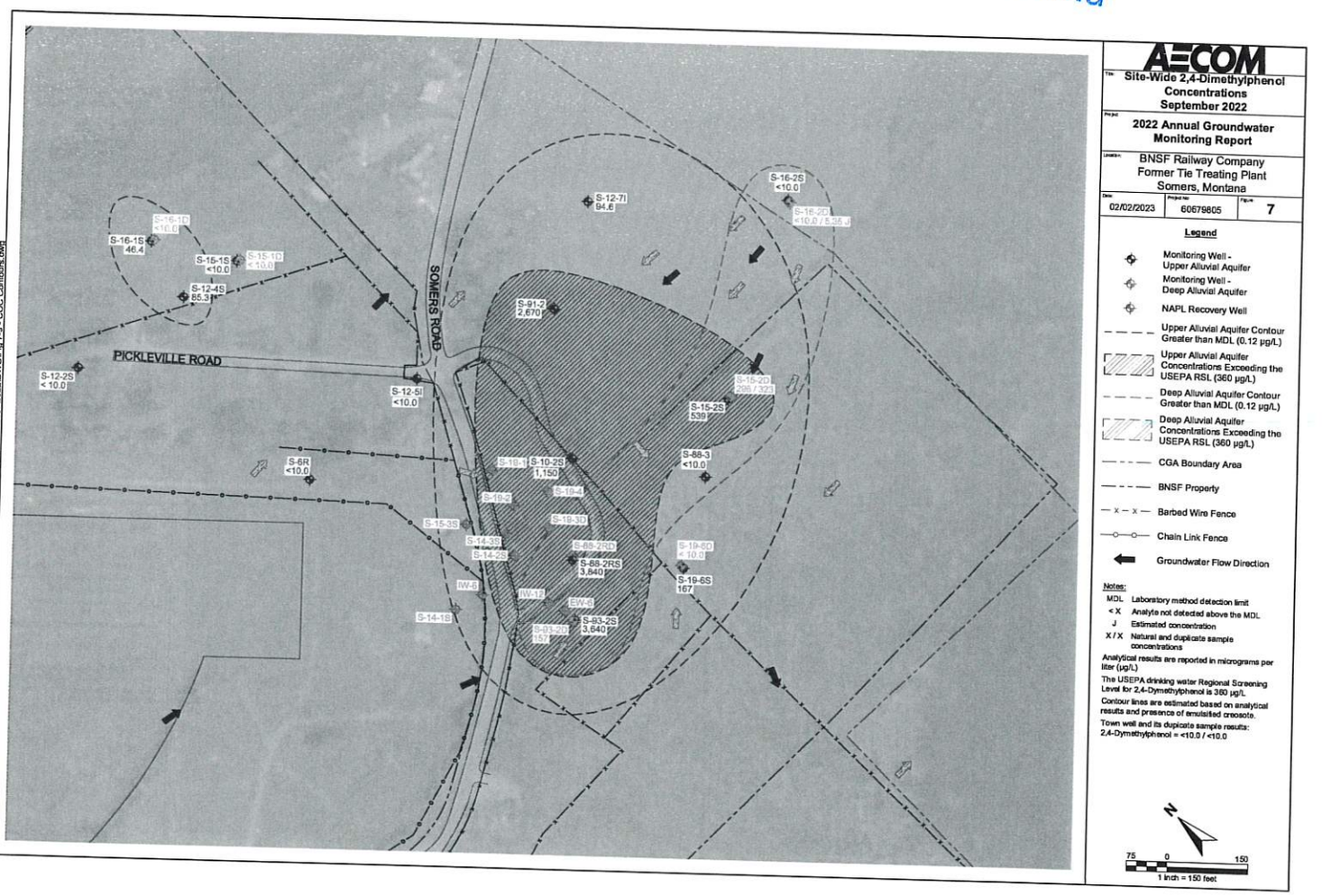
S-91-4 Bedrock Aquifer

Flathead Lake

Notes:
Flathead Lake elevation in Polson, MT obtained from the United States Geological Website:
https://waterdata.usgs.gov/monitoring-location/12371550

AECOM

Title:	**Flathead Lake Elevation Surficial and Bedrock Aquifer Hydrograph**
Project:	**2022 Annual Groundwater Monitoring Report**
Location:	BNSF Railway Company Former Tie Treating Plant Somers, Montana
Date: 01/18/2023	Project No: 60679805
Figure:	**6**



AECOM

Site-Wide 2,4-Dimethylphenol Concentrations September 2022

2022 Annual Groundwater Monitoring Report

BNSF Railway Company
Former Tie Treating Plant
Somers, Montana

Date	Project No.	Figure
02/02/2023	60679805	7

Legend

- Monitoring Well - Upper Alluvial Aquifer
- Monitoring Well - Deep Alluvial Aquifer
- NAPL Recovery Well
- Upper Alluvial Aquifer Contour Greater than MDL (0.12 µg/L)
- Upper Alluvial Aquifer Concentrations Exceeding the USEPA RSL (360 µg/L)
- Deep Alluvial Aquifer Contour Greater than MDL (0.12 µg/L)
- Deep Alluvial Aquifer Concentrations Exceeding the USEPA RSL (360 µg/L)
- CGA Boundary Area
- BNSF Property
- Barbed Wire Fence
- Chain Link Fence
- Groundwater Flow Direction

Notes:

MDL	Laboratory method detection limit
< X	Analyte not detected above the MDL
J	Estimated concentration
X / X	Natural and duplicate sample concentrations

Analytical results are reported in micrograms per liter (µg/L)

The USEPA drinking water Regional Screening Level for 2,4-Dimethylphenol is 360 µg/L

Contour lines are estimated based on analytical results and presence of emulsified creosote.

Town well and its duplicate sample results: 2,4-Dimethylphenol = <10.0 / <10.0

N

75 0 150
1 inch = 150 feet

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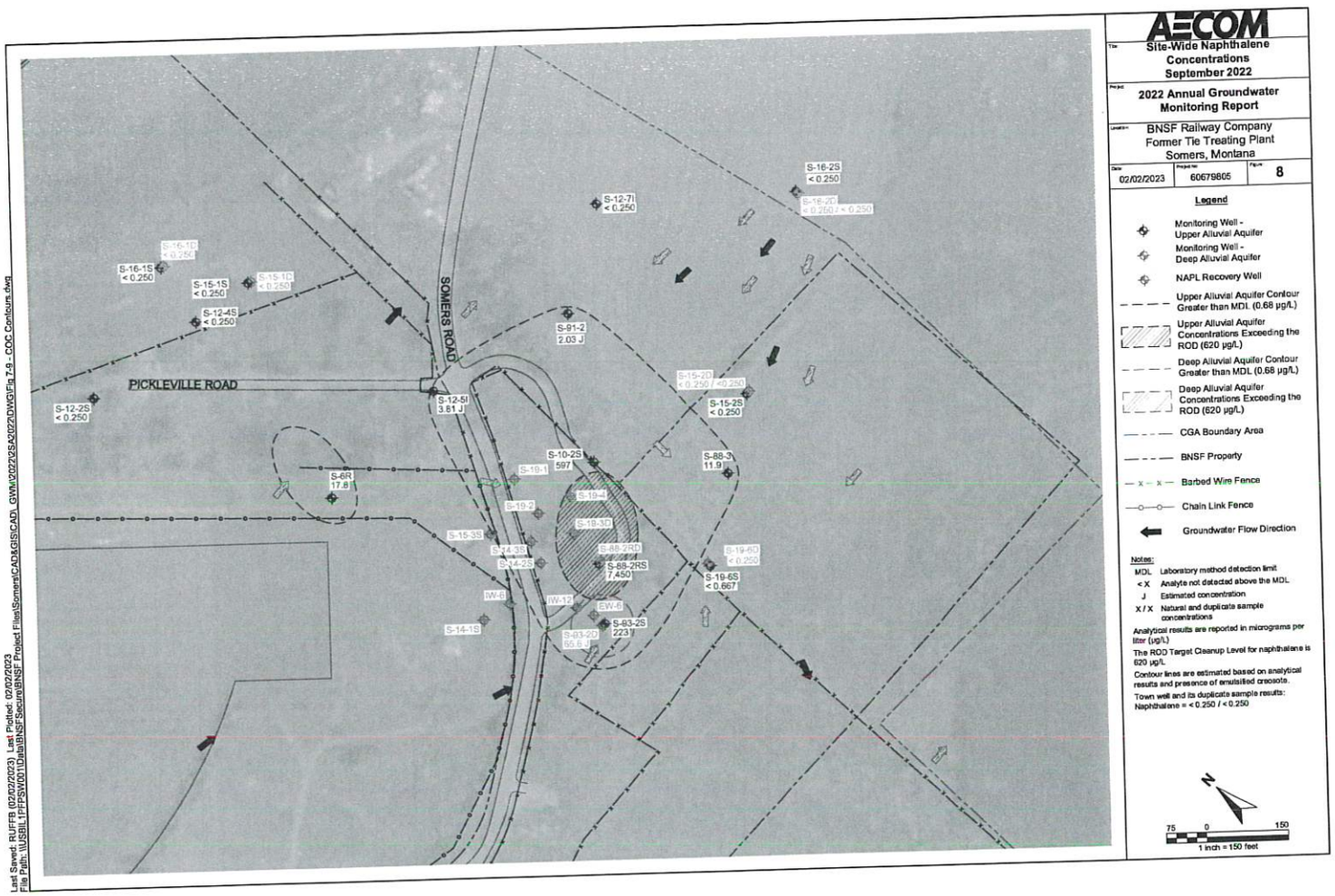
File Path: \\USBIL1PFPSW001\Data\BNSFSecure\BNSF Project Files\Somers\CAD&GIS\CADD_GWM\2022\05A\2022DWG\Fig 7-9 - COC Contours.dwg



AECOM

Title: Site-Wide Naphthalene Concentrations September 2022

Project: 2022 Annual Groundwater Monitoring Report

Location: BNSF Railway Company Former Tie Treating Plant Somers, Montana

Date	Project No	Figure
02/02/2023	60679865	8

Legend

- Monitoring Well - Upper Alluvial Aquifer
- Monitoring Well - Deep Alluvial Aquifer
- NAPL Recovery Well
- Upper Alluvial Aquifer Contour Greater than MDL (0.68 µg/L)
- Upper Alluvial Aquifer Concentrations Exceeding the ROD (620 µg/L)
- Deep Alluvial Aquifer Contour Greater than MDL (0.68 µg/L)
- Deep Alluvial Aquifer Concentrations Exceeding the ROD (620 µg/L)
- CGA Boundary Area
- BNSF Property
- Barbed Wire Fence
- Chain Link Fence
- Groundwater Flow Direction

Notes:

MDL	Laboratory method detection limit
< X	Analyte not detected above the MDL
J	Estimated concentration
X / X	Natural and duplicate sample concentrations

Analytical results are reported in micrograms per liter (µg/L)

The ROD Target Cleanup Level for naphthalene is 620 µg/L

Contour lines are estimated based on analytical results and presence of emulsified creosote.

Town well and its duplicate sample results: Naphthalene = < 0.250 / < 0.250

N

75 0 150

1 inch = 150 feet

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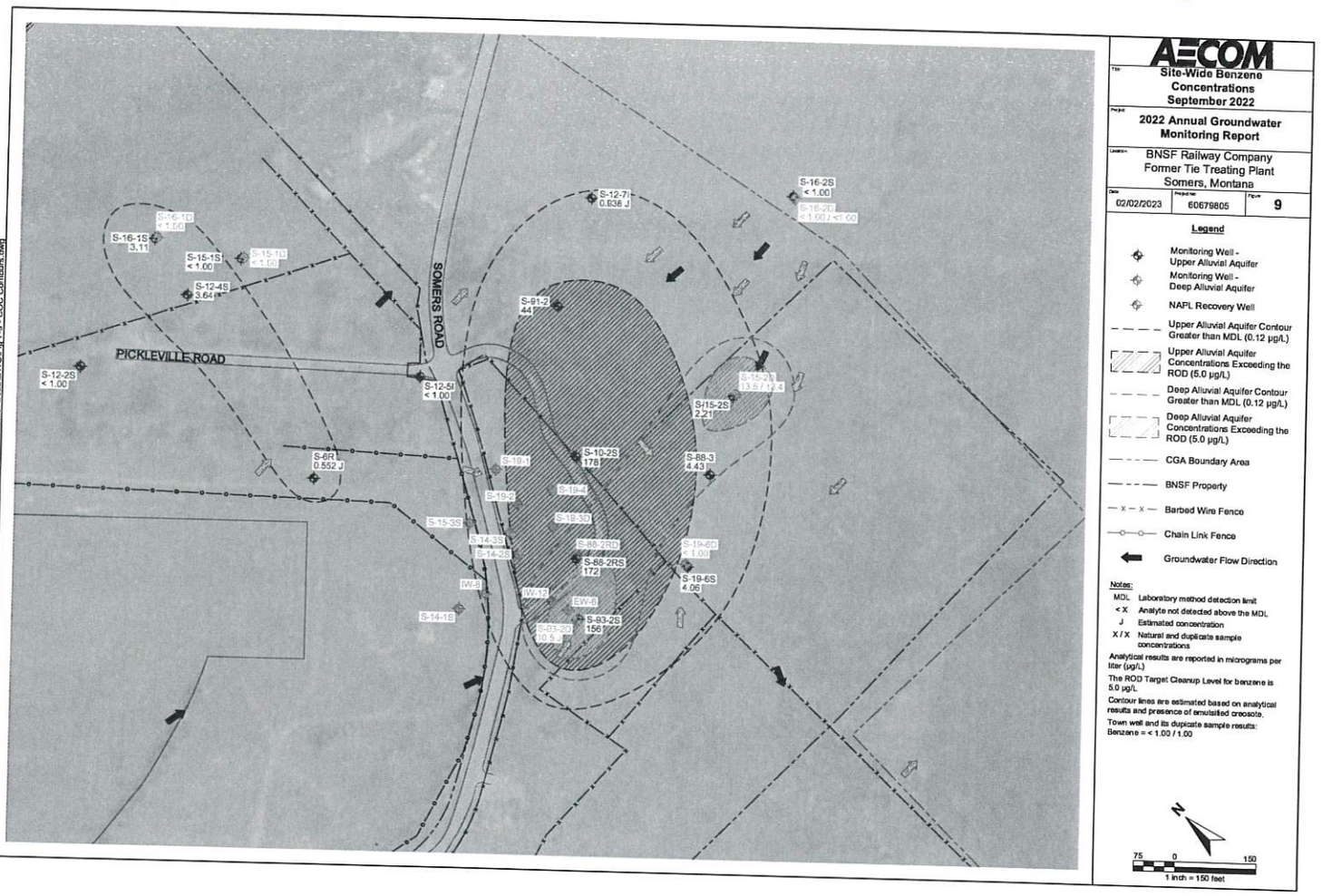

AECOM

Site-Wide Benzene Concentrations September 2022

2022 Annual Groundwater Monitoring Report

BNSF Railway Company
Former Tie Treating Plant
Somers, Montana

Date	Project No.	Figure
02/02/2023	60679805	9

Legend

- Monitoring Well - Upper Alluvial Aquifer
- Monitoring Well - Deep Alluvial Aquifer
- NAPL Recovery Well
- Upper Alluvial Aquifer Contour Greater than MDL (0.12 µg/L)
- Upper Alluvial Aquifer Concentrations Exceeding the ROD (5.0 µg/L)
- Deep Alluvial Aquifer Contour Greater than MDL (0.12 µg/L)
- Deep Alluvial Aquifer Concentrations Exceeding the ROD (5.0 µg/L)
- CGA Boundary Area
- BNSF Property
- Barbed Wire Fence
- Chain Link Fence
- Groundwater Flow Direction

Notes:

MDL	Laboratory method detection limit
< X	Analyte not detected above the MDL
J	Estimated concentration
X / X	Natural and duplicate sample concentrations

Analytical results are reported in micrograms per liter (µg/L)

The ROD Target Cleanup Level for benzene is 5.0 µg/L

Contour lines are estimated based on analytical results and presence of emulsified creosote.

Town well and its duplicate sample results: Benzene = < 1.00 / 1.00

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Appendix A
BNSF Certification Letter

Lauren Knickrehm
Manager
Environmental Remediation

BNSF Railway Company
500 Depot St.
Whitefish MT 59937
Phone 406-256-4048
lauren.knickrehm@bnsf.com

February 3, 2023

Roger Hoogerheide
Project Manager
U.S. Environmental Protection Agency
Region 8, Montana Office – Federal Building
10 West 15th Street, Suite 3200
Helena, MT 59626

Subject: Certification of the 2022 Annual Groundwater Monitoring Report
BNSF Former Tie Treatment Plant, Somers, Montana

Dear Mr. Hoogerheide,

I certify that the information contained in or accompanying the subject document is true, accurate, and complete. As to any portions of this submittal for which I cannot personally verify is true and accurate, I certify as the company official having supervisory responsibility for the person(s) who, acting under my direct instructions, made the verification that this information is true, accurate, and complete.

Sincerely,

Lauren Knickrehm
Manager Environmental Remediation

Appendix B
Field Notes, Analytical Reports, Data Validation Report – September 2021

Limited Data Validation Report

BNSF Somers 2SA GWM
Groundwater with Water QC Samples
Pace Analytical Services Laboratory Data
September 2022 Sampling

Prepared by Jamie Herman
Environmental Chemist

Overview

The samples analyzed for the BNSF Somers 2SA GWM sampling event in September 2022 are listed in the Table of Samples Analyzed (page 4). Data validation was performed on twenty-two groundwater samples, three field duplicate groundwater samples, two field blank samples, and eight trip blank sample.

Limited data validation was performed on the following analyses: Volatile Organic Compounds (VOCs) by SW-846 GC/MS Method 8260; Semivolatile Organic Compounds (SVOCs) by SW-846 GC/MS Method 8270; and Polycyclic Aromatic Hydrocarbons (PAHs) by SW-846 GC/MS Method 8270 with selective ion monitoring (SIM). The samples were analyzed by Pace Analytical National (Pace) of Mt. Juliet, TN.

The Analytical Limited Data Validation Checklist is presented as pages 5-10. Data were evaluated using the guidance from the validation criteria set forth in the *USEPA National Functional Guidelines for Organic Superfund Methods Data Review, (USEPA-540-R-2017-002)*, dated January 2017, as they applied to the reported methodology. Field duplicate Relative Percent Difference (RPD) evaluation processes were taken from the E*PA New England Environmental Data Review Supplement For Regional Data Review Elements and Superfund Specific Guidance/Procedures* April 22, 2013, document number EQADR-Supplement.

The following data components were reviewed during the limited data validation procedure:

- Chain-of-Custody form(s) and sample integrity
- Sample results, reporting detection limits, method detection limits, dilution factors
- Holding times
- Method blank results
- Trip blank results
- Laboratory Control Sample (LCS) results
- Matrix Spike / Matrix Spike Duplicate (MS/MSD) results
- Laboratory duplicate results
- Blind field duplicate results
- Organic surrogate recoveries
- Electronic data deliverables (EDDs)
- Sample results, reporting detection limits, method detection limits, dilution factors

Data Validation Qualifiers Assigned During this Review

J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J-	The result is an estimated quantity, but the result may be biased low.
J+	The result is an estimated quantity, but the result may be biased high.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected above the level of the adjusted detection limit or quantitation limit, as appropriate.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Refer to the Table of Qualified Analytical Results for a listing of the samples, analytes, and concentrations qualified (pages 11-14).

Overall Data Assessment

Field and laboratory precision, field and laboratory accuracy, method compliance, and data set completeness have been determined to be acceptable, based on the data submitted. Though results were qualified as unusable, no data were missing as analytes were reported by multiple methods. All reported data are suitable for their intended use with the qualifications and clarifications noted.

Table of Samples Analyzed
BNSF Somers 2SA GWM
September 2022

Sample ID	Sample Type	Lab ID	Matrix	VOCs (8260B)	SVOCs (8270E)	PAHs (8270E SIM)
S-19-6S	N	L1540990-01	Water	X	X	X
S-19-6D	N	L1540990-02	Water	X	X	X
S-88-3	N	L1540990-03	Water	X	X	X
S-15-2S	N	L1540990-04	Water	X	X	X
S-15-2D	N	L1540990-05	Water	X	X	X
S-12-7I	N	L1540990-06	Water	X	X	X
S-91-2	N	L1540990-07	Water	X	X	X
S-16-1D	N	L1540990-08	Water	X	X	X
S-16-1S	N	L1540990-09	Water	X	X	X
S-15-1D	N	L1540990-10	Water	X	X	X
S-15-1S	N	L1540990-11	Water	X	X	X
TW-1	N	L1540990-12	Water	X	X	X
TW-2	N	L1540990-13	Water	X	X	X
S-12-2S	N	L1540990-14	Water	X	X	X
S-12-4S	N	L1540990-15	Water	X	---	---
DUP-1	FD	L1540990-16	Water	X	X	X
FB-1	FB	L1540990-17	Water	X	X	X
S-6R	N	L1540990-18	Water	X	X	X
S-16-2S	N	L1540990-19	Water	X	X	X
S-16-2D	N	L1540990-20	Water	X	X	X
S-93-2D	N	L1540990-21	Water	X	X	X
S-93-2S	N	L1540990-22	Water	X	X	X
S-12-5I	N	L1540990-23	Water	X	X	X
S-10-2S	N	L1540990-24	Water	X	X	X
S-88-2RS	N	L1540990-25	Water	X	X	X
DUP-2	FD	L1540990-26	Water	X	X	X
FB-2	FB	L1540990-27	Water	X	X	X
TB-1	TB	L1540990-28	Water	X	X	X
TB-2	TB	L1540990-29	Water	X	X	X
TB-3	TB	L1540990-30	Water	X	X	X
TB-4	TB	L1540990-31	Water	X	X	X
TB-5	TB	L1540990-32	Water	X	---	---
TB-6	TB	L1540990-33	Water	X	---	---
TB-7	TB	L1540990-34	Water	X	---	---
TB-8	TB	L1540990-35	Water	X	---	---

ID – Identification

Sample Type:

FB – Field blank
FD – Field duplicate
N – Normal sample
TB – Trip Blank

Analyses:

--- – Not analyzed for this parameter
PAHs – Polyaromatic Hydrocarbons
SIM – Selective Ion Monitoring
VOCs – Volatile Organic Compounds

Project Name: BNSF Somers	Laboratory: Pace Analytical National
Project Reference: 2SA GWM Event September 2022	Sample Matrix: Groundwater and Water QC Samples
AECOM Project No.: 60679805	Sample Start Date: 9/26/2022
Validator/Date Validated: Jamie Herman / 1/9/2023	Sample End Date: 9/27/2022
Secondary Review by: Brian Rothmeyer	Secondary Review Date: 1/19/2023
Samples Analyzed: see Table of Samples Analyzed (page 4).	
Laboratory Project ID/Sample Delivery Groups (SDGs): 1540990	

PRECISION, ACCURACY, METHOD COMPLIANCE, AND COMPLETENESS ASSESSMENT

Precision:	X	Acceptable		Unacceptable	JH	Initials

Comments: Precision is the measure of variability of individual sample measurements. Field precision was determined by comparing field duplicate sample results. Laboratory precision was determined by examination of laboratory duplicate results, including MS/MSD pairs. Evaluation of field and laboratory duplicates for precision was done using the Relative Percent Difference (RPD). The RPD is defined as the difference between two duplicate samples divided by the mean and expressed as a percent. The RPD precision measurements were compared to laboratory QC limits included in the laboratory reports or limits provided in the QAPP. Overall field and laboratory precision is acceptable since majority of the data are unqualified and no data are rejected based on the reviewed parameters. Precision measurements are reviewed in items 17 and 21.

Accuracy:	X	Acceptable		Unacceptable	JH	Initials

Comments: Field accuracy, a measure of the sampling bias, was determined by reviewing field blank results for evidence of contamination stemming from field/sampling activities. Laboratory accuracy, a measure of the system bias, was measured by evaluating LCS, MS/MSD, and organic system monitoring compound (surrogate) percent recoveries (%Rs). LCS %Rs demonstrated the overall performance of the extraction/analysis. MS and MSD %Rs provided information on sample matrix interferences. System monitoring compound or surrogate recoveries measured system performance and efficiency during organic analysis. The %Rs were compared to laboratory QC limits included in the laboratory reports. Overall field and laboratory accuracy is acceptable based on the data reported since a majority of the data are unqualified and no data are rejected. Accuracy measurements are reviewed in items 12, 14, 15, 16, 19, and 20.

Method Compliance:	X	Acceptable		Unacceptable	JH	Initials

Comments: For this data set, method compliance was determined by evaluating sample integrity, holding time, reporting limits, and laboratory blanks against method specified requirements. Although some data require qualification based on estimated quantitation (see item 6), overall method compliance is acceptable based on the data reported since a majority of the data are unqualified and no data are rejected. Method compliance measurements are reviewed in items 4, 6, 8, 11, 13, 18, 19, 20, and 22.

Completeness:	X	Acceptable		Unacceptable	JH	Initials

Comments: Completeness is the overall ratio of the number of samples planned versus the number of samples with valid analyses. Review completeness goals were set at 90-100%. Determination of completeness included a review of chain of custody records, laboratory analytical methods, and reporting limits. Completeness also included 100% review of the laboratory sample data results, QC summary reports, and EQuIS electronic data deliverables (EDDs). Any EDD modifications were made as documented in item 23.

All of the reported data are usable, some with qualification. Though results were qualified as unusable, no data were missing as analytes were reported by multiple methods. Completeness of the data set is calculated to be 100% and is acceptable.

VALIDATION CRITERIA CHECK

Data validation qualifiers potentially assigned during this review:

- J — The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
- J- — The result is an estimated quantity, but the result may be biased low.
- J+ — The result is an estimated quantity, but the result may be biased high.
- R — The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
- U — The analyte was analyzed for, but was not detected above the level of the adjusted detection limit or quantitation limit, as appropriate.
- UJ — The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

The following comments identifying sample results requiring qualification are in bold type. The other comments are of interest, but qualification of the sample results is not necessary.

Refer to the Table of Qualified Analytical Results for a listing of the samples, analytes, and concentrations qualified (pages 11-14).

1. Did the laboratory identify any non-conformances related to the analytical results?	**X**	Yes		No	JH	Initials
Comments: Several non-conformances were noted. Data qualification, if any, related to the narrative comments and/or assigned laboratory flags contained in the analytical reports are discussed in the following sections.						
2. Were sample Chain-of-Custody forms complete?	**X**	Yes		No	JH	Initials
Comments: The COC records from field to laboratory were complete, and custody was maintained as evidenced by field and laboratory personnel signatures, date, and time of receipt.						
3. Were all the analyses requested for the samples on the COCs completed by the laboratory?	**X**	Yes		No	JH	Initials
Comments: All requested analyses as documented on the original COCs were completed for the samples reported in this data set.						
4. Were samples received in good condition and at the appropriate temperature?	**X**	Yes		No	JH	Initials
Comments: Samples were received on ice, intact, and in good condition. Cooler temperatures were within the 4° C ± 2° C acceptance range.						
5. Were the reported analytical methods in compliance with WP/QAPP, permit, or COC?	**X**	Yes		No	JH	Initials
Comments: Reported methods met those requested on the COCs and are compliant with the requested analytes and matrix for the reported samples, with the following exceptions.						
6. Were detection limits in accordance with WP/QAPP, permit, or method?		Yes	**X**	No	JH	Initials
Comments: With the exceptions noted below, no results were reported as non-detect at elevated reporting limits. Several results were reported as non-detect at elevated reporting limits due to high concentrations of target and non-target analytes. These results should be evaluated by the end user of the data with respect to project objectives. Detected results between the method detection limit (MDL) and reporting limit (RL) were qualified as estimated (J lq). **Refer to the Table of Qualified Analytical Results for a listing of the samples, analytes, and concentrations qualified (pages 11-14).**						
7. Do the laboratory reports include only those constituents requested to be reported for a specific analytical method?	**X**	Yes		No	JH	Initials
Comments: Only the requested target analytes were reported.						

8. Were sample holding times met?	X	Yes		No	JH	Initials
Comments: Analytical holding times were met for all samples and analyses.						
9. Were correct concentration units reported?	X	Yes		No	JH	Initials
Comments: The analytes were reported in units of µg/L (ppb).						
10. Were the reporting requirements for flagged data met?	X	Yes		No	JH	Initials
Comments: Any assigned laboratory flags were reviewed and evaluated during the limited validation process. Data validation qualifiers override any assigned laboratory data flags.						
11. Were laboratory blank samples free of target analyte contamination?		Yes	X	No	JH	Initials

Comments: With the exceptions summarized in the following table, the laboratory blanks were free of target analyte contamination.

Laboratory Blank/ Associated Samples	Method	Analyte	Concentration (µg/L)	Qualification
MB R3846303-3 S-19-6S S-19-6D S-88-3 S-15-2S S-15-2D S-12-7I S-91-2 S-16-1D S-16-1S S-15-1D S-15-1S TW-1 TW-2 S-12-2S S-12-4S DUP-1 FB-1	8260B	1,2,3-Trichlorobenzene	0.318	As the associated sample results were reported as non-detect, data qualification was not considered necessary.
		Trichloroethene	0.291	

µg/L – Micrograms per Liter
MB – Method Blank

12. Were trip blank, field blank, and/or equipment rinse blank samples free of target analyte contamination?		Yes	X	No	JH	Initials

Comments: With the exceptions summarized in the following table, the target analytes were not detected in the trip blank or field blank. An equipment rinse blank was not submitted with the samples in this data package.

Blank/ Associated Samples	Method	Analyte	Concentration (µg/L)	Qualification
FB-1 All samples	8260B	Acetone	22.6	As the associated sample results were reported as non-detect, data qualification was not considered necessary.
		Chloroform	0.146	The associated sample results reported at concentrations <5x the concentration of the blank contamination were qualified as non-detect (U bf).
	8270E	Naphthalene	0.168	
	8270E SIM	Naphthalene	0.255	
		2-Methylnaphthalene	0.0780	
FB-2 All samples	8270E	2,4-Dimethylphenol	0.814	
		Naphthalene	0.946	
	8270E SIM	Naphthalene	0.277	
		2-Methylnaphthalene	0.0934	
TB-1 All samples	8260B	Methylene chloride	1.11	As the associated sample results were reported as non-detect, data qualification was not considered necessary.
TB-2 All samples			0.992	
TB-3 All samples			1.03	
TB-4 All samples			1.28	
TB-5 All samples			1.14	
TB-6 All samples			1.17	

Blank/ Associated Samples	Method	Analyte	Concentration (µg/L)	Qualification
TB-7 All samples	8260B	Methylene chloride	1.39	As the associated sample results were reported as non-detect, data qualification was not considered necessary.
TB-8 All samples			1.17	

< - Less Than
> - Greater Than
µg/L – Micrograms per Liter
bf – Field Blank contamination
FB – Field Blank
TB – Trip Blank
U – Non-Detect

Refer to the Table of Qualified Analytical Results for a listing of the samples, analytes, and concentrations qualified (pages 11-14).

13. Were instrument calibrations within method or data validation control limits?	**NA**	Yes	**NA**	No	JH	Initials

Comments: Not applicable for this level of limited data validation – Instrument calibration data were not supplied in analytical laboratory reports and were therefore not included in this data review.

14. Were surrogate recoveries within control limits?		Yes	**X**	No	JH	Initials

Comments: With the excepctions summarized in the following table, the reported method surrogate % recoveries were within laboratory QC limits for all project samples.

Several SVOC samples were diluted beyond the laboratory's ability to quantitate surrogate recoveries. The laboratory qualified the surrogate results outside the acceptance limits for the impacted samples. However, further action was not required, and data qualification was not considered necessary.

Sample Identification	Method	Surrogate	%R (Limits)	Qualification
S-16-2D	8260B	Toluene-d8	**122** (80-120)	As the potential bias was considered to be high and as the associated sample results were reported as non-detect, data qualification was not considered necessary.
S-12-5I			**122** (80-120)	
DUP-2			**122** (80-120)	
FB-2			**122** (80-120)	
S-93-2D			**126** (80-120)	As the potential bias was considered to be high, the associated detected sample results were qualified as estimated (J+ s).
TB-6			**121** (80-120)	
TB-7			**123** (80-120)	
TB-8			**121** (80-120)	
S-12-4S	8270E SIM	Nitrobenzene-d5	**171** (31-160)	As the potential bias was considered to be high and as the associated sample results were reported as non-detect, data qualification was not considered necessary.
DUP-1			**192** (31-160)	As the potential bias was considered to be high, the associated detected sample results were qualified as estimated (J+ s).
S-93-2S			**218** (31-160)	
S-10-2S (1x)			**0** (31-160)	As the potential bias was considered to be low and the %R was <10%, the associated non-detect results were qualified as unusable (R s) and the detected results were qualified as estimated (J- s).
S-88-2RS (1x)			**0** (31-160)	
S-12-5I		p-Terphenyl-d14	**36.3** (37-146)	As the potential bias was considered to be low, the associated sample results were qualified as estimated (UJ/J- s).

Bold – Outside control limits.
%R – Percent Recovery
J+ – Estimated, High Bias
J- – Estimated, Low Bias
R – Unusable
s – Surrogate Recovery
SIM – Selective Ion Monitoring
UJ – Esitmated, Non-detect

Refer to the Table of Qualified Analytical Results for a listing of the samples, analytes, and concentrations qualified (pages 11-14).

15. Were laboratory control sample recoveries within control limits?		Yes	**X**	No	JH	Initials

Comments: With the exceptions summarized in the following table, the LCS and LCSD percent recoveries and RPDs were within laboratory control limits.

Associated Samples	Method	Analyte	%R (Limits)	RPD (Limit)	Qualification
LCS 3846303-1 **LCSD 3846303-2** S-19-6S S-19-6D S-88-3 S-15-2S S-15-2D S-12-7I S-91-2 S-16-1D S-16-1S S-15-1D S-15-1S TW-1 TW-2 S-12-2S S-12-4S DUP-1 FB-1	8260B	Acetone	**173/184** (19-160)	6.49 (27)	As the potential bias was considered to be high, the associated detected result for sample FB-1 was qualified as estimated J+ I).
LCS 3846080-1 **LCSD 3846080-2** DUP-2 FB-2	8270E SIM	Benzo(a,h)anthracene	117/91 (61-140)	**25** (20)	As the RPD was outside the control limit, and as the associated sample result was reported as non-detect, qualification was not considered necessary
		Benzo(a)pyrene	123/90.5 (60-143)	**30.8** (20)	
		Benzo(b)fluoranthene	115/86.5 (58-141)	**28.7** (20)	
		Benzo(g,h,i)perylene	111/78.5 (52-153)	**24.7** (20)	
		Benzo(k)fluoranthene	114/83 (58-148)	**31.5** (20)	
		Chrysene	121/92.5 (64-144)	**26.7** (20)	
		Dibenz(a,h)anthracene	107/72.5 (52-155)	**38.4** (20)	
		Indeo(1,2,3-cd)pyrene	114/82.5 (54-153)	**31.6** (20)	

Bold – Outside control limits
%R – Percent recovery
J+ - Estimated, High bias
I – LCS recovery
LCS – Laboratory control spike sample
LCSD – Laboratory control duplicate sample
RPD – Relative percent difference

Refer to the Table of Qualified Analytical Results for a listing of the samples, analytes, and concentrations qualified (pages 11-14).

16. Were matrix spike recoveries within control limits?		Yes	**X**	No	JH	Initials

Comments: With the exceptions summarize in the following table, the MS and MSD percent recoveries and RPDs were within laboratory control limits.

Results in the native sample greater than four times the concentration of the spike added during digestions/extractions are not considered to be a representative measure of accuracy. Further action with respect to spike recovery evaluation or qualification of data was not considered necessary for these samples.

Associated Samples	Method	Analyte	%R (Limits)	RPD (Limit)	Qualification
S-19-6D	8260B	Acetone	**212/174** (10-160)	19.9 (35)	As the potential bias was considered to be high, and as the associated sample results were reported as non-detect, qualificaiton was not considered necessary.
		Acrolein	**254/256** (10-160)	0.63 (39)	
		Acrylonitrile	**162**/156 (21-160)	3.52 (32)	
S-12-5I		Hexachloro-1,3-butadiene	140/**160** (20-154)	13.7 (34)	
		Naphthalene	**4190/697** (12-156)	**134** (35)	The analytical result exceeded the calibration range. The laboratory re-analyzed the sample and results for the MS/MSD are not applicable to the reported result; therefore, data qualification was not considered necessary.

Associated Samples	Method	Analyte	%R (Limits)	RPD (Limit)	Qualification
S-19-6D	8270E	Benzidine	10.8/20.9 (10-120)	**63.7** (37)	As the RPD was outside the control limit, and as the associated sample result was reported as non-detect, qualification was not considered necessary.
S-12-5I	8270E SIM	Dibenz(a,h)anthracene	**34**/44.5 (37-151)	**26.7** (20)	As the potential bias was considered to be low, the associated sample result was qualified as estimated (UJ m). As the RPD was outside the control limit, and as the associated sample result was reported as non-detect, qualification was not considered necessary.
		Indeno(1,2,3-cd)pyrene	45.9/56.3 (41-148)	**20.3** (20)	As the RPD was outside the control limit, and as the associated sample result was reported as non-detect, qualification was not considered necessary.
		Naphthalene	**0/0** (10-160)	**21** (20)	As the potential bias was considered to be low, the RPD was outside the control limits, and as the percent recovery was less than the rejection limit of 10%; the associated detected result was qualified as estimated (J- m,Id).

Bold – outside control limits
%R – Percent recovery
J- - Esimtaed, Low bias
Id – Laboratory duplicate imprecision
m - Matrix spike recovery outlier; indicated or confirmed matrix interference
MS – Matrix spike sample
MSD – Matrix spike duplicate sample
RPD – Relative percent difference
UJ – Undetected, reporting limit is estimated

The laboratory noted sample matrix interferences associated with the naphthalene results for sample S-12-5I for Methods 8260B and 8270E SIM.

Refer to the Table of Qualified Analytical Results for a listing of the samples, analytes, and concentrations qualified (pages 11-14).

17. Were duplicate RPDs and/or serial dilution %Ds within control limits?	**NA**	Yes	**NA**	No	JH	Initials
Comments: Laboratory duplicates were not performed. Serial dilution review is not applicable for this level of limited data validation or for the methods reported.						
18. Were organic system performance criteria met?	**NA**	Yes	**NA**	No	JH	Initials
Comments: Not evaluated for this level of data validation.						
19. Were internal standards within method criteria for GC/MS and ICP/MS sample analyses?	**NA**	Yes	**NA**	No	JH	Initials
Comments: GC/MS internal standard data were not supplied in the analytical laboratory reports and are not typically included in this data review.						
20. Were inorganic system performance criteria met?	**NA**	Yes	**NA**	No	JH	Initials
Comments: Not applicable for the methods included in this data review.						
21. Were blind field duplicates collected? If so, discuss the precision (RPD) of the results.	**X**	Yes		No	JH	Initials

Duplicate Sample No.	DUP-1	Primary Sample No.	S-15-2D
Duplicate Sample No.	DUP-2	Primary Sample No.	S-16-2D
Duplicate Sample No.	TW-2	Primary Sample No.	TW-1

The Comments: The comparison between results of the field duplicate pair met the criteria listed below.

- When both the sample and duplicate values are >5xRL, acceptable sampling and analytical precision is indicated by an RPD between the results of ≤30% for water samples.
- Where the result for one or both analytes of the field duplicate pair is <5xRL, satisfactory precision is indicated if the absolute difference between the field duplicate results is <2xRL for water samples.

22. Were qualitative criteria for organic target analyte identification met?	**NA**	Yes	**NA**	No	JH	Initials
Comments: Not applicable for this level of limited data validation – Chromatograms, library searches, and quantitation reports were not supplied in analytical laboratory reports and were therefore not included in this data review.						
23. Were 10% of the EDD concentrations and reporting limits compared to the hardcopy data reports?	**X**	Yes		No	JH	Initials
Comments: Yes. The data validator made sure that RDLs were entered into the correct EDD fields and qualification flags were added. Sample results less than the RDL associated to blank detections that were less than the RDL were U qualified and are considered not detected at the reporting detection limit. For these results the "detect flag" was changed from "Y" to "N" and the "results text" field was reported as null. The "sys_sample_code" column in the EDD presents the sample identifier. This did not match the identifier in the hard copy, the sample date was added to the identifier so the identifier would be unique in the database. Data users should be aware of the elevated reporting limits.						
24. General Comments						
With the exception of 1-methylnaphthalene and 2-methylnaphthalene, the PAH analytes (8270 and 8270E SIM), 1,2,4-trichlorobenzene and hexachlorobutadiene (8260 and 8270), and naphthalene (8260, 8270, and 8270E SIM) were analyzed by multiple methods. Results were selected for reporting using the following criteria: • If both results were non-detect, the non-detect result with the lower reporting limit was selected. • If both results were reported as detected, the higher detected result was selected for reporting. • If one result was reported as non-detect and the other result was reported as detected, the detected result was selected for reporting. • If one result was qualified as unusable (R), then the result from the alternate method was selected for reporting with consideration of the criteria above. Results not selected for reporting were qualified as "Not Reportable" (NR).						

Table of Qualified Analytical Results
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Sample ID	Matrix	Sample Type	Lab Sample ID	Analytical Method	Analyte	Qualifier	Reason Code
S-19-6S	WG	N	L1540990-01	8260B	1,2,3-Trimethylbenzene	J	lq
S-19-6S	WG	N	L1540990-01	8260B	1,3-Dichlorobenzene	J	lq
S-19-6S	WG	N	L1540990-01	8260B	Ethylbenzene	J	lq
S-19-6S	WG	N	L1540990-01	8260B	Xylenes, total	J	lq
S-19-6S	WG	N	L1540990-01	8270E SIM	Naphthalene	U	bf
S-19-6D	WG	N	L1540990-02	8260B	1,3-Dichlorobenzene	J	lq
S-19-6D	WG	N	L1540990-02	8270E SIM	Phenanthrene	J	lq
S-88-3	WG	N	L1540990-03	8260B	1,2,3-Trimethylbenzene	J	lq
S-88-3	WG	N	L1540990-03	8260B	1,3,5-Trimethylbenzene	J	lq
S-88-3	WG	N	L1540990-03	8260B	1,3-Dichlorobenzene	J	lq
S-88-3	WG	N	L1540990-03	8260B	Ethylbenzene	J	lq
S-88-3	WG	N	L1540990-03	8260B	Toluene	J	lq
S-88-3	WG	N	L1540990-03	8260B	Xylenes, total	J	lq
S-88-3	WG	N	L1540990-03	8270E SIM	Fluorene	J	lq
S-88-3	WG	N	L1540990-03	8270E SIM	Phenanthrene	J	lq
S-15-2S	WG	N	L1540990-04	8260B	1,2,3-Trimethylbenzene	J	lq
S-15-2S	WG	N	L1540990-04	8260B	1,3-Dichlorobenzene	J	lq
S-15-2S	WG	N	L1540990-04	8260B	Xylenes, total	J	lq
S-15-2D	WG	N	L1540990-05	8260B	1,3-Dichlorobenzene	J	lq
S-15-2D	WG	N	L1540990-05	8260B	Ethylbenzene	J	lq
S-15-2D	WG	N	L1540990-05	8260B	Xylenes, total	J	lq
S-15-2D	WG	N	L1540990-05	8270E SIM	2-Methylnaphthalene	U	bf
S-15-2D	WG	N	L1540990-05	8270E SIM	Anthracene	J	lq
S-15-2D	WG	N	L1540990-05	8270E SIM	Naphthalene	U	bf
S-15-2D	WG	N	L1540990-05	8270E SIM	Phenanthrene	J	lq
S-12-7I	WG	N	L1540990-06	8260B	Benzene	J	lq
S-91-2	WG	N	L1540990-07	8260B	1,2,3-Trimethylbenzene	J	lq
S-91-2	WG	N	L1540990-07	8260B	1,3,5-Trimethylbenzene	J	lq
S-91-2	WG	N	L1540990-07	8260B	1,3-Dichlorobenzene	J	lq
S-91-2	WG	N	L1540990-07	8260B	Isopropylbenzene	J	lq
S-91-2	WG	N	L1540990-07	8260B	Naphthalene	J	lq
S-91-2	WG	N	L1540990-07	8270E SIM	2-Chloronaphthalene	J	lq
S-91-2	WG	N	L1540990-07	8270E SIM	2-Methylnaphthalene	U	bf
S-91-2	WG	N	L1540990-07	8270E SIM	Phenanthrene	J	lq
S-16-1D	WG	N	L1540990-08	8270E	2,4-Dimethylphenol	U	bf
S-16-1D	WG	N	L1540990-08	8270E SIM	Fluorene	J	lq
S-16-1D	WG	N	L1540990-08	8270E SIM	Phenanthrene	J	lq
S-16-1S	WG	N	L1540990-09	8260B	Ethylbenzene	J	lq
S-16-1S	WG	N	L1540990-09	8260B	Xylenes, total	J	lq
S-16-1S	WG	N	L1540990-09	8270E SIM	Acenaphthene	J	lq
S-16-1S	WG	N	L1540990-09	8270E SIM	Fluorene	J	lq
S-16-1S	WG	N	L1540990-09	8270E SIM	Naphthalene	U	bf
S-16-1S	WG	N	L1540990-09	8270E SIM	Phenanthrene	J	lq
S1-15-1S	WG	N	L1540990-11	8260B	1,1-Dichloroethane	J	lq
S1-15-1S	WG	N	L1540990-11	8270E	2,4-Dimethylphenol	U	bf
TW-1	WG	N	L1540990-12	8260B	Chloroform	U	bf
TW-1	WG	N	L1540990-12	8270E	2,4-Dimethylphenol	U	bf
TW-2	WG	N	L1540990-13	8260B	Chloroform	U	bf
DUP-1	WG	FD	L1540990-16	8260B	1,3-Dichlorobenzene	J	lq
DUP-1	WG	FD	L1540990-16	8260B	Ethylbenzene	J	lq
DUP-1	WG	FD	L1540990-16	8260B	Xylenes, total	J	lq
DUP-1	WG	FD	L1540990-16	8270E SIM	1-Methylnaphthalene	J+	s,lq
DUP-1	WG	FD	L1540990-16	8270E SIM	2-Methylnaphthalene	U	bf
DUP-1	WG	FD	L1540990-16	8270E SIM	Naphthalene	U	bf

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Sample ID	Matrix	Sample Type	Lab Sample ID	Analytical Method	Analyte	Qualifier	Reason Code
FB-1	WG	FB	L1540990-17	8260B	Acetone	J+	l,lq
FB-1	WG	FB	L1540990-17	8260B	Chloroform	J	lq
FB-1	WG	FB	L1540990-17	8270E SIM	2-Methylnaphthalene	U	bf
S-6R	WG	N	L1540990-18	8260B	1,2,3-Trimethylbenzene	J	lq
S-6R	WG	N	L1540990-18	8260B	1,2,4-Trimethylbenzene	J	lq
S-6R	WG	N	L1540990-18	8260B	1,3,5-Trimethylbenzene	J	lq
S-6R	WG	N	L1540990-18	8260B	Benzene	J	lq
S-6R	WG	N	L1540990-18	8260B	cis-1,2-Dichloroethene	J	lq
S-6R	WG	N	L1540990-18	8260B	Toluene	J	lq
S-6R	WG	N	L1540990-18	8260B	Xylenes, total	J	lq
S-6R	WG	N	L1540990-18	8270E	2,4-Dimethylphenol	U	bf
S-6R	WG	N	L1540990-18	8270E	Benzo(a)pyrene	J	lq
S-6R	WG	N	L1540990-18	8270E	Benzo(b)fluoranthene	J	lq
S-6R	WG	N	L1540990-18	8270E	Benzo(g,h,i)perylene	J	lq
S-6R	WG	N	L1540990-18	8270E	Benzo(k)fluoranthene	J	lq
S-6R	WG	N	L1540990-18	8270E	Dibenz(a,h)anthracene	J	lq
S-6R	WG	N	L1540990-18	8270E SIM	Anthracene	J	lq
S-16-2S	WG	N	L1540990-19	8270E	2,4-Dimethylphenol	U	bf
S-16-2D	WG	N	L1540990-20	8270E	2,4-Dimethylphenol	U	bf
S-93-2D	WG	N	L1540990-21	8260B	1,2,3-Trimethylbenzene	J+	s,lq
S-93-2D	WG	N	L1540990-21	8260B	1,2,4-Trimethylbenzene	J+	s
S-93-2D	WG	N	L1540990-21	8260B	Benzene	J+	s
S-93-2D	WG	N	L1540990-21	8260B	Ethylbenzene	J+	s
S-93-2D	WG	N	L1540990-21	8260B	Naphthalene	J+	s
S-93-2D	WG	N	L1540990-21	8260B	Toluene	J+	s,lq
S-93-2D	WG	N	L1540990-21	8260B	Xylenes, total	J+	s
S-93-2D	WG	N	L1540990-21	8270E SIM	Acenaphthylene	J	lq
S-93-2D	WG	N	L1540990-21	8270E SIM	Benzo(a)anthracene	J	lq
S-93-2D	WG	N	L1540990-21	8270E SIM	Chrysene	J	lq
S-93-2S	WG	N	L1540990-22	8260B	n-Propylbenzene	J	lq
S-93-2S	WG	N	L1540990-22	8270E SIM	1-Methylnaphthalene	J+	s
S-93-2S	WG	N	L1540990-22	8270E SIM	2-Methylnaphthalene	U	bf
S-93-2S	WG	N	L1540990-22	8270E SIM	Acenaphthylene	J+	s
S-93-2S	WG	N	L1540990-22	8270E SIM	Anthracene	J+	s
S-93-2S	WG	N	L1540990-22	8270E SIM	Benzo(a)anthracene	J+	s
S-93-2S	WG	N	L1540990-22	8270E SIM	Benzo(a)pyrene	J+	s
S-93-2S	WG	N	L1540990-22	8270E SIM	Benzo(b)fluoranthene	J+	s
S-93-2S	WG	N	L1540990-22	8270E SIM	Benzo(g,h,i)perylene	J+	s,lq
S-93-2S	WG	N	L1540990-22	8270E SIM	Benzo(k)fluoranthene	J+	s,lq
S-93-2S	WG	N	L1540990-22	8270E SIM	Chrysene	J+	s
S-93-2S	WG	N	L1540990-22	8270E SIM	Fluoranthene	J+	s
S-93-2S	WG	N	L1540990-22	8270E SIM	Fluorene	J+	s
S-93-2S	WG	N	L1540990-22	8270E SIM	Indeno(1,2,3-cd)pyrene	J+	s,lq
S-93-2S	WG	N	L1540990-22	8270E SIM	Phenanthrene	J+	s
S-93-2S	WG	N	L1540990-22	8270E SIM	Pyrene	J+	s
S-12-5I	WG	N	L1540990-23	8270E	2,4-Dimethylphenol	U	bf
S-12-5I	WG	N	L1540990-23	8270E	Fluoranthene	J	lq
S-12-5I	WG	N	L1540990-23	8270E	Phenanthrene	J	lq
S-12-5I	WG	N	L1540990-23	8270E SIM	1-Methylnaphthalene	J-	s,lq
S-12-5I	WG	N	L1540990-23	8270E SIM	2-Chloronaphthalene	UJ	s
S-12-5I	WG	N	L1540990-23	8270E SIM	2-Methylnaphthalene	UJ	bf,s
S-12-5I	WG	N	L1540990-23	8270E SIM	Acenaphthene	J-	s,lq
S-12-5I	WG	N	L1540990-23	8270E SIM	Acenaphthylene	UJ	s
S-12-5I	WG	N	L1540990-23	8270E SIM	Anthracene	UJ	s

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Sample ID	Matrix	Sample Type	Lab Sample ID	Analytical Method	Analyte	Qualifier	Reason Code
S-12-5I	WG	N	L1540990-23	8270E SIM	Benzo(a)anthracene	UJ	s
S-12-5I	WG	N	L1540990-23	8270E SIM	Benzo(a)pyrene	UJ	s
S-12-5I	WG	N	L1540990-23	8270E SIM	Benzo(b)fluoranthene	UJ	s
S-12-5I	WG	N	L1540990-23	8270E SIM	Benzo(g,h,i)perylene	UJ	s
S-12-5I	WG	N	L1540990-23	8270E SIM	Benzo(k)fluoranthene	UJ	s
S-12-5I	WG	N	L1540990-23	8270E SIM	Chrysene	UJ	s
S-12-5I	WG	N	L1540990-23	8270E SIM	Dibenz(a,h)anthracene	UJ	s,m
S-12-5I	WG	N	L1540990-23	8270E SIM	Fluorene	UJ	s
S-12-5I	WG	N	L1540990-23	8270E SIM	Indeno(1,2,3-cd)pyrene	UJ	s
S-12-5I	WG	N	L1540990-23	8270E SIM	Naphthalene	J-	s,m,ld
S-12-5I	WG	N	L1540990-23	8270E SIM	Pyrene	UJ	s
S-10-2S	WG	N	L1540990-24	8260B	1,1-Dichloroethane	J	lq
S-10-2S	WG	N	L1540990-24	8260B	1,4-Dichlorobenzene	J	lq
S-10-2S	WG	N	L1540990-24	8260B	n-Propylbenzene	J	lq
S-10-2S	WG	N	L1540990-24	8270E SIM	2-Chloronaphthalene	R	s
S-10-2S	WG	N	L1540990-24	8270E SIM	Acenaphthene	R	s
S-10-2S	WG	N	L1540990-24	8270E SIM	Acenaphthylene	J-	s
S-10-2S	WG	N	L1540990-24	8270E SIM	Anthracene	J-	s,lq
S-10-2S	WG	N	L1540990-24	8270E SIM	Benzo(a)anthracene	R	s
S-10-2S	WG	N	L1540990-24	8270E SIM	Benzo(a)pyrene	R	s
S-10-2S	WG	N	L1540990-24	8270E SIM	Benzo(b)fluoranthene	R	s
S-10-2S	WG	N	L1540990-24	8270E SIM	Benzo(g,h,i)perylene	R	s
S-10-2S	WG	N	L1540990-24	8270E SIM	Benzo(k)fluoranthene	R	s
S-10-2S	WG	N	L1540990-24	8270E SIM	Chrysene	R	s
S-10-2S	WG	N	L1540990-24	8270E SIM	Dibenz(a,h)anthracene	R	s
S-10-2S	WG	N	L1540990-24	8270E SIM	Fluoranthene	R	s
S-10-2S	WG	N	L1540990-24	8270E SIM	Fluorene	J-	s
S-10-2S	WG	N	L1540990-24	8270E SIM	Indeno(1,2,3-cd)pyrene	R	s
S-10-2S	WG	N	L1540990-24	8270E SIM	Phenanthrene	J-	s,lq
S-10-2S	WG	N	L1540990-24	8270E SIM	Pyrene	R	s
S-88-2RS	WG	N	L1540990-25	8260B	1,1-Dichloroethane	J	lq
S-88-2RS	WG	N	L1540990-25	8260B	4-Methyl-2-pentanone	J	lq
S-88-2RS	WG	N	L1540990-25	8260B	sec-Butylbenzene	J	lq
S-88-2RS	WG	N	L1540990-25	8270E	Anthracene	J	lq
S-88-2RS	WG	N	L1540990-25	8270E	Fluoranthene	J	lq
S-88-2RS	WG	N	L1540990-25	8270E	Pyrene	J	lq
S-88-2RS	WG	N	L1540990-25	8270E SIM	2-Chloronaphthalene	J-	s
S-88-2RS	WG	N	L1540990-25	8270E SIM	Acenaphthylene	J-	s
S-88-2RS	WG	N	L1540990-25	8270E SIM	Benzo(a)anthracene	J-	s
S-88-2RS	WG	N	L1540990-25	8270E SIM	Benzo(a)pyrene	J-	s,lq
S-88-2RS	WG	N	L1540990-25	8270E SIM	Benzo(b)fluoranthene	J-	s,lq
S-88-2RS	WG	N	L1540990-25	8270E SIM	Benzo(g,h,i)perylene	R	s
S-88-2RS	WG	N	L1540990-25	8270E SIM	Benzo(k)fluoranthene	R	s
S-88-2RS	WG	N	L1540990-25	8270E SIM	Chrysene	J-	s
S-88-2RS	WG	N	L1540990-25	8270E SIM	Dibenz(a,h)anthracene	R	s
S-88-2RS	WG	N	L1540990-25	8270E SIM	Fluorene	J-	s
S-88-2RS	WG	N	L1540990-25	8270E SIM	Indeno(1,2,3-cd)pyrene	R	s
DUP-2	WG	FD	L1540990-26	8270E	2,4-Dimethylphenol	J	lq
DUP-2	WG	FD	L1540990-26	8270E	Acenaphthene	J	lq
FB-2	WQ	FB	L1540990-27	8270E	2,4-Dimethylphenol	J	lq
FB-2	WQ	FB	L1540990-27	8270E	Naphthalene	J	lq
FB-2	WQ	FB	L1540990-27	8270E SIM	2-Methylnaphthalene	J	lq
TB-1	WQ	TB	L1540990-28	8260B	Methylene chloride	J	lq
TB-2	WQ	TB	L1540990-29	8260B	Methylene chloride	J	lq

Table of Qualified Analytical Results
BNSF Somers 2SA GWM
September 2022

Sample ID	Matrix	Sample Type	Lab Sample ID	Analytical Method	Analyte	Qualifier	Reason Code
TB-3	WQ	TB	L1540990-30	8260B	Methylene chloride	J	lq
TB-4	WQ	TB	L1540990-31	8260B	Methylene chloride	J	lq
TB-5	WQ	TB	L1540990-32	8260B	Methylene chloride	J	lq
TB-6	WQ	TB	L1540990-33	8260B	Methylene chloride	J+	s,lq
TB-7	WQ	TB	L1540990-34	8260B	Methylene chloride	J+	s,lq
TB-8	WQ	TB	L1540990-35	8260B	Methylene chloride	J+	s,lq

Definitions:
FB – Field Blank
FD – Field Duplicate
ID – Identification
SIM – Selective Ion Monitoring
TB – Trip Blank
WG – Groundwater
WQ – Water Quality Control sample

Reason Codes:
bf – Field blank contamination
fd – Field duplicate imprecision
l – LCS recovery
ld – Laboratory duplicate imprecision
lq – Trace value
m – Matrix spike recovery
s – Surrogate Recovery

Qualifiers
J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J- - The result is an estimated quantity, but the result may be biased low.
J+ - The result is an estimated quantity, but the result may be biased high.
R – The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
U - The analyte was analyzed for, but was not detected above the level of the adjusted detection limit or quantitation limit, as appropriate.
UJ - The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

RECEIVED
AT PUBLIC HEARING

Fluid Level Monitoring Form

Date Measured: 9-26-2022

Measuring Device: GEOTech Interface Probe

Measured By: Andrew Gonzalez, Crystal Nielsen

Flathead Lake Elev (ft msl)[1] = _____

Well Number	Measuring Point Description	Measuring Point Elevation (MSL)	Installed Total Well Depth (ft below TIC)	Depth to Water (ft)	Depth to NAPL (ft)	Water Level Elevation (ft MSL)[2]	Measured Total Well Depth (ft below TIC)	Notes
Upper Alluvial Aquifer								
S-8R	TIC	2919.87	39.08	29.47		2919.87	39.60	
S-84-10	TIC	2894.59	19.71	7.42		2894.59	18.01	
S-84-15	TIC	2900.68	17.16	11.16		2900.68	17.34	
S-84-16	TIC	2894.07	12.97	3.87		2894.07	13.62	
S-85-5A	TIC	2899.71	22.01	9.38		2899.71	20.90	
S-85-6A	TIC	2894.25	32.50	4.81		2894.25	32.45	
S-85-8AR	TIC	2897.52	31.03	8.50		2897.52	31.91	31.91
S-86-1R	TIC	2920.03	42.12	28.69		2920.03	44.00	
	TIC	2900.94	39.01			2900.94		
S-88-3	TIC	2895.81	54.00	8.57		2895.81	36.24	
S-91-2	TIC	2900.83	36.28	11.21		2900.83	35.59	
S-93-2S	TIC	2901.00	31.85	11.59		2901.00	31.86	
* S-93-5S	TIC	2904.36	31.36	—	—	2904.36	—	DAMAGED During Building Demo
S-93-7	TIC	2918.19	31.76	27.66		2918.19	32.30	
S-10-2S	TIC	2899.80	15.50	10.16		2899.80	15.85	
S-10-1S	TIC	2900.65	20.89	11.28		2900.65	20.00	NO SAMPLE NAPL Present
S-10-1I	TIC	2900.26	39.90	10.82		2900.26	40.20	NO SAMPLE NAPL Present
S-10-2I	TIC	2899.75	30.50	10.08		2899.75	31.14	
S-10-3R	TIC	2913.29	28.86	20.36		2913.29	22.14	
S-12-1S	TIC	2921.17	37.64	30.36		2921.17	37.10	NO SAMPLE NAPL Present
S-12-1I	TIC	2921.12	67.60	30.51		2921.12	67.56	
S-12-2S	TIC	2910.79	27.89	20.41		2910.79	28.20	
S-12-2I	TIC	2910.63	60.80	20.21		2910.63	60.88	
S-12-3S	TIC	2907.04	23.70	16.73		2907.04	24.02	
S-12-4S	TIC	2908.12	27.56	17.88		2908.12	27.98	
S-12-4I	TIC	2907.88	67.42	17.541		2907.88	67.64	
S-12-5S	TIC	2905.77	23.73	15.77		2905.77	23.78	
S-12-5I	TIC	2905.81	64.75	15.62		2905.81	64.54	
S-12-7S	TIC	2900.36	21.68	11.48		2900.36	21.81	
S-12-7I	TIC	2900.49	47.81	10.97		2900.49	47.38	
S-12-8S	TIC	2895.16	21.60	5.64		2895.16	21.82	
S-12-8I	TIC	2895.11	40.62	5.41		2895.11	39.80	
S-12-9S	TIC	2903.19	21.58	13.31		2903.19	21.98	
S-12-9I	TIC	2903.29	47.73	13.47		2903.29	47.78	
S-15-1S	TIC	2902.60	22.90	12.45		2902.60	22.57	
S-15-2S	TIC	2896.37	40.51	6.97		2896.37	40.24	
S-16-1S	TIC	2895.34	21.76	5.18		2895.34	22.28	
S-16-2S	TIC	2898.61	15.43	5.13		2898.61	15.77	
Deep Alluvial Aquifer								
S-85-5BR	TIC	2899.87	38.38	9.56		2899.87	40.50	
S-85-6BR	TIC	2894.98	51.95	5.45		2894.98	51.80	
S-85-8B	TIC	2896.93	98.51	6.72		2896.93	97.32	
S-91-4	TIC	2895.74	102.46	5.36		2895.74	99.41	
S-93-2D	TIC	2901.21	61.94	11.69		2901.21	51.61	
* S-10-1D	TIC	2900.24	64.53	10.76		2900.24	58.35	
S-10-2D	TIC	2899.74	59.36	9.93		2899.74	60.34	
S-12-1DR	TIC	2919.31	27.95	28.76		2919.31	82.20	
S-12-2D	TIC	2910.75	87.87	20.35		2910.75	87.83	
S-12-4D	TIC	2908.12	87.87	17.72		2908.12	84.22	
S-12-5D	TIC	2905.78	84.71	15.58		2905.78	83.70	
S-12-6D	TIC	2902.02	67.65	12.27		2902.02	65.74	165.74
S-12-7D	TIC	2900.41	82.73	10.71		2900.41	82.09	
S-12-8D	TIC	2895.19	62.65	5.48		2895.19	62.36	
S-15-1D	TIC	2902.66	73.32	12.46		2902.66	72.30	
S-15-2D	TIC	2896.35	73.15	6.89		2896.35	71.60	
S-16-1D	TIC	2895.67	52.09	5.45		2895.67	51.64	
S-16-2D	TIC	2899.07	61.05	5.82		2899.07	58.28	
S-88-2RS				12.82			17.15	
S-19-6S				8.67			34.89	
S-19-6D				8.52			54.95	

Monitoring Well Sampling Information Sheet

AECOM

Client: BNSF Railway Company **Field Personnel:** CRYSTAL NIELSEN

Site: Somers – 2SA2022 GWM **Project/Task:** 60679805 Task 100 **Well ID:** S-15-2D

Casing: ☒ Stickup ☐ Flush **Equipment ID(s):** YSI : 18G103289 PROBE : 5277

General Condition of Wellhead Assembly: ☐ Excellent ☒ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☒ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

RECEIVED

Sample Type:	X	MNA / Low Flow		3 CV Purge
Purging Equipment:		Disposable Bailer		Bladder Pump
	X	Peristaltic Pump		Other (specify)

AT PUBLIC HEARING

Initial Measurement

Time: 1325
Total Well Depth (ft): 71.60
Depth to Water (ft): 6.89
Water Column Height (ft): 64.71

Sample Information

Start Purge: 1335
End Purge: 1400

Purging Information

Screen Range (ft): 60-70
Appx. Sample Depth (ft): 65
Purge Volume (L): 3.00 L

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
1340	7.54	11.3	6.75	1732	-89.8	0.20	--	150	0.75
1345	7.64	11.3	6.74	1737	-95.6	0.22	--	150	1.50
1350	7.52	11.9	6.73	1741	-99.8	0.09	--	100	2.00
1355	7.49	12.0	6.72	1757	-102.0	0.08	--	100	2.50
1400	7.49	12.1	6.71	1766	-104.1	0.09	--	100	3.00
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Total (Fe) (mg/L): N/A **Ferrous (Fe^{2+}) (mg/L):** N/A *(If "+++", then ">3.00")* **Meter Tare Time:** N/A

Sample Appearance: CLEAR, ODOR PRESENT **QC Samples Collected:** ~~DUPLICATE-1~~ CV DUP-1 @ 1335, FB-1 @ 1350

Sample Date: 9.26.22 **Sample Time:** 1400

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3x3	☐ Y ☒ N	HCl
Phenols via ~~8270C~~ 8270E	1L ~~100 mL~~ Amber	2x3	☐ Y ☒ N	—
PAH via ~~8270 SIM HVI~~	40 mL Amber	2x3	☐ Y ☒ N	—
8270E SIM HVI			☐ Y ☐ N	
			☐ Y ☐ N	
			☐ Y ☐ N	

Notes: FLOW RATE REDUCED DUE TO DRAWDOWN

Signature: [signature] **Review:**

Monitoring Well Sampling Information Sheet

AECOM

Client: BNSF Railway Company **Field Personnel:** CRYSTAL NIELSEN

Site: Somers – 2SA2022 GWM **Project/Task:** 60679805 Task 100 **Well ID:** S-19-6S

Casing: ☒ Stickup ☐ Flush **Equipment ID(s):** YSI: 18G103289 PROBE: 5277

General Condition of Wellhead Assembly: ☒ Excellent ☐ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☒ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

RECEIVED
MAY 08 2024
AT PUBLIC HEARING

Sample Type:	X	MNA / Low Flow		3 CV Purge
Purging Equipment:		Disposable Bailer		Bladder Pump
	X	Peristaltic Pump		Other (specify)

Initial Measurement

Time: 0905
Total Well Depth (ft): 34.89
Depth to Water (ft): 8.67
Water Column Height (ft): 26.22

Sample Information

Start Purge: 0910
End Purge: 0935

Purging Information

Screen Range (ft): 19.3 - 34.3
Appx. Sample Depth (ft): 27
Purge Volume (L): 3.00L

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
0915	9.23	9.3	6.70	14116	-60.7	0.25	--	150	0.75
0920	9.71	9.2	6.79	1389	-106.2	0.16	--	150	1.50
0925	9.96	9.4	6.80	1380	-121.9	0.18	--	100	2.00
0930	10.12	9.4	6.80	1387	-129.8	0.24	--	100	2.50
0935	10.31	9.3	6.80	13810	-134.2	0.26	--	100	3.00
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Total (Fe) (mg/L): N/A **Ferrous (Fe^{2+}) (mg/L):** N/A *(If "+++", then ">3.00")* **Meter Tare Time:** N/A

Sample Appearance: CLEAR, NO ODOR **QC Samples Collected:** —

Sample Date: 9.26.22 **Sample Time:** 0935

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3	☐ Y ☒ N	HCl
Phenols via ~~8270C~~ 8270E	1L ~~100 mL~~ Amber	2	☐ Y ☒ N	—
PAH via ~~8270 SIM HVI~~	40 mL Amber	2	☐ Y ☒ N	—
8270E SIM HVI			☐ Y ☐ N	
			☐ Y ☐ N	
			☐ Y ☐ N	

Notes: FLOW RATE REDUCED DUE TO DRAWDOWN

Signature: [signature] **Review:**

Monitoring Well Sampling Information Sheet

AECOM

Client: BNSF Railway Company **Field Personnel:** CRYSTAL NIELSEN

Site: Somers – 2SA2022 GWM **Project/Task:** 60679805 Task 100 **Well ID:** S-19-6D

Casing: ☒ Stickup ☐ Flush **Equipment ID(s):** YSI: 18G103289 PROBE: 5277

General Condition of Wellhead Assembly: ☒ Excellent ☐ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☒ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

RECEIVED
MAY 08 2024
AT PUBLIC HEARING

Sample Type:	X	MNA / Low Flow		3 CV Purge
Purging Equipment:		Disposable Bailer		Bladder Pump
	X	Peristaltic Pump		Other (specify)

Initial Measurement

Time: 0955
Total Well Depth (ft): 54.95
Depth to Water (ft): 8.53
Water Column Height (ft): 46.42

Sample Information

Start Purge: 1015
End Purge: 1030

Purging Information

Screen Range (ft): 44.1 - 59.1
Appx. Sample Depth (ft): 50
Purge Volume (L): 1.5 L

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
1020	9.63	10.4	7.21	724	-117.8	0.21	--	100	0.5
1025	10.22	10.8	7.20	712	-128.6	0.16	--	100	1.0
1030	10.87	10.5	7.21	718	-135.7	0.16	--	100	1.5
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Total (Fe) (mg/L): N/A **Ferrous (Fe^{2+}) (mg/L):** N/A *(If "+++", then ">3.00")* **Meter Tare Time:** N/A

Sample Appearance: SLIGHT CLOUDY BROWN, NO ODOR **QC Samples Collected:** MS/MSD

Sample Date: 9.26.22 **Sample Time:** 1030

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3 x 3	☐ Y ☒ N	HCl
Phenols via ~~8270C~~ 8270E	1L ~~100 mL~~ Amber	2 x 3	☐ Y ☒ N	—
PAH via ~~8270 SIM HVI~~	40 mL Amber	2 x 3	☐ Y ☒ N	—
8270E SIM HVI			☐ Y ☐ N	
			☐ Y ☐ N	
			☐ Y ☐ N	

Notes: DRAWDOWN IN THIS WELL IS PERSISTENT

Signature: [signature] **Review:**

Monitoring Well Sampling Information Sheet

AECOM

Client: BNSF Railway Company **Field Personnel:** CRYSTAL NIELSEN

Site: Somers – 2SA2022 GWM **Project/Task:** 60679805 Task 100 **Well ID:** S-88-3

Casing: ☒ Stickup ☐ Flush **Equipment ID(s):** YSI: 18G103289 PROBE: 5277

General Condition of Wellhead Assembly: ☐ Excellent ☒ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☒ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

RECEIVED
MAY 08 2024
AT PUBLIC HEARING

Sample Type:	X	MNA / Low Flow		3 CV Purge	
Purging Equipment:		Disposable Bailer		Bladder Pump	
	X	Peristaltic Pump		Other (specify)	

Initial Measurement

Time: 1130
Total Well Depth (ft): 36.24
Depth to Water (ft): 8.57
Water Column Height (ft): 27.67

Sample Information

Start Purge: 1145
End Purge: 1205

Purging Information

Screen Range (ft): 38.5-53.5 *
Appx. Sample Depth (ft): 29
Purge Volume (L): 2.0L

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
1150	9.94	11.9	7.25	1826	-112.2	0.65	--	100	0.5
1155	10.37	13.0	7.26	1838	-128.0	0.27	--	100	1.0
1200	10.72	11.8	7.22	1848	-136.0	0.15	--	100	1.5
1205	11.05	11.6	7.21	1839	-140.4	0.10	--	100	2.0
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Total (Fe) (mg/L): N/A **Ferrous (Fe^{2+}) (mg/L):** N/A *(If "+++", then ">3.00")* **Meter Tare Time:** N/A

Sample Appearance: CLOUDY GRAY, ODOR PRESENT **QC Samples Collected:** —

Sample Date: 9.26.22 **Sample Time:** 1205

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3	☐ Y ☒ N	HCl
Phenols via ~~8270C~~ 8270E	1L ~~100 mL~~ Amber	2	☐ Y ☒ N	—
PAH via ~~8270 SIM HVI~~ 8270E SIM HVI	40 mL Amber	2	☐ Y ☒ N	—
			☐ Y ☐ N	
			☐ Y ☐ N	
			☐ Y ☐ N	

Notes: * TD SHALLOWER THAN LISTED SCREEN - ASSUME 15' SCREEN FROM TD
↳ ASSUMED SCREEN: 21.24 - 36.24

Signature: [signature] **Review:**

AECOM

Monitoring Well Sampling Information Sheet

Client: BNSF Railway Company | Field Personnel: CRYSTAL NIELSEN

Site: Somers – 2SA2022 GWM | Project/Task: 60679805 Task 100 | Well ID: S-15-25

Casing: ☒ Stickup ☐ Flush | Equipment ID(s): YSI: 18G103289 PROBE: 5277

General Condition of Wellhead Assembly: ☐ Excellent ☒ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☒ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

RECEIVED
MAY 08 2024
AT PUBLIC HEARING

Sample Type:	X	MNA / Low Flow		3 CV Purge	
Purging Equipment:		Disposable Bailer		Bladder Pump	
	X	Peristaltic Pump		Other (specify)	

Initial Measurement

Time: 1235
Total Well Depth (ft): 40.24
Depth to Water (ft): 6.97
Water Column Height (ft): 33.27

Sample Information

Start Purge: 1240
End Purge: 1300

Purging Information

Screen Range (ft): 28-38
Appx. Sample Depth (ft): 33
Purge Volume (L): 2.0L

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
1245	7.13	12.5	6.86	1196	-88.2	0.23	--	100	0.5
1250	7.14	12.3	6.85	1189	-98.8	0.18	--	100	1.0
1255	7.15	11.9	6.85	1184	-104.1	0.20	--	100	1.5
1300	7.15	11.8	6.85	1177	-107.8	0.11	--	100	2.0
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Total (Fe) (mg/L): N/A | Ferrous (Fe^{2+}) (mg/L): N/A *(If "+++", then ">3.00")* | Meter Tare Time: N/A

Sample Appearance: CLEAR, ODOR PRESENT | QC Samples Collected: —

Sample Date: 9.26.22 | Sample Time: 1300

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3	☐ Y ☒ N	HCl
Phenols via ~~8270C~~ 8270E	1L ~~100 mL~~ Amber	2	☐ Y ☒ N	—
PAH via ~~8270 SIM HVI~~	40 mL Amber	2	☐ Y ☒ N	—
8270E SIM HVI			☐ Y ☐ N	
			☐ Y ☐ N	
			☐ Y ☐ N	

Notes:

Signature: [signature] | Review:

Monitoring Well Sampling Information Sheet

AECOM

Client: BNSF Railway Company Field Personnel: CRYSTAL NIELSEN

Site: Somers – 2SA2022 GWM Project/Task: 60679805 Task 100 Well ID: S-12-7I

Casing: ☒ Stickup ☐ Flush Equipment ID(s): YSI: 18G103289 PROBE: 5277

General Condition of Wellhead Assembly: ☐ Excellent ☒ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☒ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

RECEIVED
MAY 08 2024
AT PUBLIC HEARING

Sample Type:	X	MNA / Low Flow		3 CV Purge
Purging Equipment:		Disposable Bailer		Bladder Pump
	X	Peristaltic Pump		Other (specify)

Initial Measurement

Time: 1515
Total Well Depth (ft): 47.38
Depth to Water (ft): 10.97
Water Column Height (ft): 36.41

Sample Information

Start Purge: 1525
End Purge: 1550

Purging Information

Screen Range (ft): 35-45
Appx. Sample Depth (ft): 40
Purge Volume (L): 3.00L

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
1530	11.60	12.9	6.88	1379	-75.7	0.33	--	150	0.75
1535	11.70	12.7	6.88	1379	-88.3	0.17	--	150	1.50
1540	11.64	13.2	6.88	1388	-94.7	0.14	--	100	2.00
1545	11.60	13.1	6.88	1395	-98.6	0.14	--	100	2.50
1550	11.60	13.0	6.88	1400	-101.3	0.12	--	100	3.00
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Total (Fe) (mg/L): N/A Ferrous (Fe^{2+}) (mg/L): N/A *(If "+++", then ">3.00")* Meter Tare Time: N/A

Sample Appearance: CLEAR, NO ODOR QC Samples Collected: —

Sample Date: 9.26.22 Sample Time: 1550

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3	☐ Y ☒ N	HCl
Phenols via ~~8270C~~ 8270E	1L ~~100 mL~~ Amber	2	☐ Y ☒ N	—
PAH via ~~8270 SIM HVI~~ 8270E SIM HVI	40 mL Amber	2	☐ Y ☒ N	—
			☐ Y ☐ N	
			☐ Y ☐ N	
			☐ Y ☐ N	

Notes: FLOW RATE REDUCED DUE TO DRAWDOWN

Signature: [signature] Review:

AECOM

Monitoring Well Sampling Information Sheet

Client: BNSF Railway Company Field Personnel: CRYSTAL NIELSEN

Site: Somers – 2SA2022 GWM Project/Task: 60679805 Task 100 Well ID: S-91-2

Casing: ☒ Stickup ☐ Flush Equipment ID(s): YSI: 18G103289 PROBE: 5277

General Condition of Wellhead Assembly: ☐ Excellent ☒ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☒ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

RECEIVED
MAY 08 2024

Sample Type:	X	MNA / Low Flow		3 CV Purge
Purging Equipment:		Disposable Bailer		Bladder Pump
	X	Peristaltic Pump		Other (specify)

AT PUBLIC HEARING

Initial Measurement

Time: 1620
Total Well Depth (ft): 35.59
Depth to Water (ft): 11.21
Water Column Height (ft): 24.38

Sample Information

Start Purge: 1625
End Purge: 1650

Purging Information

Screen Range (ft): 25-35
Appx. Sample Depth (ft): 30
Purge Volume (L): 2.5 L

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
1630	11.77	13.0	6.80	1493	-75.1	0.21	--	100	0.5
1635	11.70	13.5	6.80	1493	-89.4	0.22	--	100	1.0
1640	11.68	13.6	6.80	1494	-96.5	0.14	--	100	1.5
1645	11.68	13.4	6.80	1492	-100.8	0.12	--	100	2.0
1650	11.68	13.3	6.80	1490	-103.8	0.11	--	100	2.5
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Total (Fe) (mg/L): N/A Ferrous (Fe^{2+}) (mg/L): N/A *(If "+++", then ">3.00")* Meter Tare Time: N/A

Sample Appearance: CLEAR, ODOR PRESENT QC Samples Collected: —

Sample Date: 9.26.22 Sample Time: 1650

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3	☐ Y ☒ N	HCl
Phenols via ~~8270C~~ 8270E	1L ~~100 mL~~ Amber	2	☐ Y ☒ N	—
PAH via ~~8270 SIM HVI~~ 8270E SIM HVI	40 mL Amber	2	☐ Y ☒ N	—
			☐ Y ☐ N	
			☐ Y ☐ N	
			☐ Y ☐ N	

Notes:

Signature: [signature] Review:

Monitoring Well Sampling Information Sheet

AECOM

Client: BNSF Railway Company **Field Personnel:** Andy Gonzalez

Site: Somers – 2SA2022 GWM **Project/Task:** 60679805 Task 100 **Well ID:** S-16-1D

Casing: ☒ Stickup ☐ Flush **Equipment ID(s):** YSI PDe 15E101205

General Condition of Wellhead Assembly: ☐ Excellent ☒ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☒ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

Sample Type: X MNA / Low Flow ____ 3 CV Purge

Purging Equipment: ____ Disposable Bailer ____ Bladder Pump

X Peristaltic Pump ____ Other (specify)

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MAY 08 2024
AT PUBLIC HEARING

Initial Measurement

Time: 09:00
Total Well Depth (ft): 51.64
Depth to Water (ft): 5.45
Water Column Height (ft): 46

Sample Information

Start Purge: 09:05
End Purge: 09:40

Purging Information

Screen Range (ft): 5'
Appx. Sample Depth (ft): 48'
Purge Volume (L): 8

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
09:10	4.65	9.0	8.41	2239	-134.6	205.3	--	200	1
09:14	4.50	9.0	8.30	2218	-135.9	216.8	--	200	2
09:18	4.91	9.0	8.20	2182	-138-3	212.1	--	200	3
09:22	4.85	9.0	8.19	2180	-137.9	213.2	--	200	4
09:26	5.10	9.2	8.18	2181	-137.8	214.1	--	200	5
09:30	5.05	9.3	8.17	2181	-137.7	214.3	--	200	6
09:34	4.99	9.4	8.17	2180	-137.5	214.4	--	200	7
09:38	4.98	9.5	8.16	2182	-137.6	214.6	--	200	8
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Total (Fe) (mg/L): N/A **Ferrous (Fe^{2+}) (mg/L):** N/A *(If "+++", then ">3.00")* **Meter Tare Time:** N/A

Sample Appearance: Clear **QC Samples Collected:** NO

Sample Date: 9-26-22 **Sample Time:** 09:44

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3	☐ Y ☒ N	HCl
Phenols via ~~8270C~~ 8270E	1L ~~100 mL~~ Amber	2	☐ Y ☒ N	—
PAH via ~~8270 SIM HVI~~ 8270E SIM HVI	40 mL Amber	2	☐ Y ☒ N	—
			☐ Y ☐ N	
			☐ Y ☐ N	
			☐ Y ☐ N	

Notes:

Signature: [signature] **Review:** ____

AECOM

Monitoring Well Sampling Information Sheet

Client: BNSF Railway Company **Field Personnel:** Andrew Gonzalez

Site: Somers – 2SA2022 GWM **Project/Task:** 60679805 Task 100 **Well ID:** S-16-15

Casing: ☒ Stickup ☐ Flush **Equipment ID(s):** YSI Pro 15E101205

General Condition of Wellhead Assembly: ☐ Excellent ☒ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☒ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

RECEIVED
MAY 08 2024
AT PUBLIC HEARING

Sample Type:	X	MNA / Low Flow		3 CV Purge
Purging Equipment:		Disposable Bailer		Bladder Pump
	X	Peristaltic Pump		Other (specify)

Initial Measurement

Time: 10:05
Total Well Depth (ft): 22.28
Depth to Water (ft): 5.18
Water Column Height (ft): 17.1

Sample Information

Start Purge: 10:10
End Purge: 10:46

Purging Information

Screen Range (ft): 15'
Appx. Sample Depth (ft): 18'
Purge Volume (L): 8

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
10:15	4.25	10.0	8.00	1911	-118.1	281.1	--	200	1
10:20	4.35	9.9	8.02	1906	-122.6	270.9	--	200	2
10:24	4.30	10.1	8.01	1901	-123.3	275.1	--	200	3
10:28	4.45	10.6	8.00	1902	-124.6	280.1	--	200	4
10:33	4.65	10.8	8.00	1899	-124.7	281.3	--	200	5
10:37	4.80	10.7	8.00	1898	-124.8	283.0	--	200	6
10:41	4.85	10.8	7.99	1895	-124.9	284.1	--	200	7
10:45	4.81	10.8	8.00	1895	-124.8	284.2	--	200	8
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Total (Fe) (mg/L): N/A **Ferrous (Fe^{2+}) (mg/L):** N/A *(If "+++", then ">3.00")* **Meter Tare Time:** N/A

Sample Appearance: Clear **QC Samples Collected:** NO

Sample Date: 9-26-2022 **Sample Time:** 10:50

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3	☐ Y ☒ N	HCl
Phenols via ~~8270C~~ 8270E	1L ~~100 mL~~ Amber	2	☐ Y ☒ N	—
PAH via ~~8270 SIM HVI~~ 8270E SIM HVI	40 mL Amber	2	☐ Y ☒ N	—
			☐ Y ☐ N	
			☐ Y ☐ N	
			☐ Y ☐ N	

Notes:

Signature: [signature] **Review:**

Monitoring Well Sampling Information Sheet

AECOM

Client: BNSF Railway Company **Field Personnel:** Andrew Gonzalez

Site: Somers – 2SA2022 GWM **Project/Task:** 60679805 Task 100 **Well ID:** S-15-1D

Casing: ☒Stickup ☐Flush **Equipment ID(s):** YSI Pro 15E101205

General Condition of Wellhead Assembly: ☐ Excellent ☒Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☒2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

RECEIVED MAY 08 2024 AT PUBLIC HEARING

Sample Type:	X	MNA / Low Flow		3 CV Purge
Purging Equipment:		Disposable Bailer		Bladder Pump
	X	Peristaltic Pump		Other (specify)

Initial Measurement

Time: 11:10
Total Well Depth (ft): 72.30
Depth to Water (ft): 12.46
Water Column Height (ft): 59.8

Sample Information

Start Purge: 11:15
End Purge: 11:51

Purging Information

Screen Range (ft): 10
Appx. Sample Depth (ft): 65'
Purge Volume (L): 7

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
11:30	11.21	10.8	7.57	3355	-78.6	341.2	--	200	1
11:25	11.38	10.9	7.58	3444	-81.7	349.9	--	200	2
11:30	11.90	10.8	7.61	3461	-84.7	351.2	--	200	3
11:35	11.99	10.9	7.63	3461	-90.0	355.0	--	200	4
11:40	12.12	11.0	7.65	3463	-91.0	356.1	--	200	5
11:45	12.01	11.1	7.65	3464	-91.2	357.0	--	200	6
11:50	11.89	11.0	7.65	3464	-91.3	357.1	--	200	7
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Total (Fe) (mg/L): N/A **Ferrous (Fe^{2+}) (mg/L):** N/A *(If "+++", then ">3.00")* **Meter Tare Time:** N/A

Sample Appearance: Slight Yellow **QC Samples Collected:** No

Sample Date: 9-26-22 **Sample Time:** 11:55

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3	☐Y ☒N	HCl
Phenols via ~~8270C~~ 8270E	1L ~~100 mL~~ Amber	2	☐Y ☒N	—
PAH via ~~8270 SIM HVI~~	40 mL Amber	2	☐Y ☒N	—
8270E SIM HVI			☐Y ☐N	
			☐Y ☐N	
			☐Y ☐N	

Notes:

Signature: [signature] **Review:**

Monitoring Well Sampling Information Sheet

AECOM

Client: BNSF Railway Company **Field Personnel:** Andrew Gonzalez

Site: Somers – 2SA2022 GWM **Project/Task:** 60679805 Task 100 **Well ID:** S-15-15

Casing: ☒ Stickup ☐ Flush **Equipment ID(s):** YSI PRO 15E101205

General Condition of Wellhead Assembly: ☐ Excellent ☒ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☒ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

RECEIVED
MAY 08 2024
AT PUBLIC HEARING

Sample Type:	X	MNA / Low Flow		3 CV Purge	
Purging Equipment:		Disposable Bailer		Bladder Pump	
	X	Peristaltic Pump		Other (specify)	

Initial Measurement

Time: 12:15
Total Well Depth (ft): 22.57
Depth to Water (ft): 12.45
Water Column Height (ft): 10.12

Sample Information

Start Purge: 12:18
End Purge: 12:45

Purging Information

Screen Range (ft): 15
Appx. Sample Depth (ft): 18'
Purge Volume (L): 6

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
12:22	11.55	10.3	8.05	1099	-72.4	283.1	--	200	1
12:26	11.48	11.0	8.10	1093	-75.7	289.7	--	200	2
12:30	11.60	11.5	8.09	1101	-75.8	296.0	--	200	3
12:35	11.61	16.0	8.08	1101	-75.9	291.0	--	200	4
12:40	11.40	16.0	8.07	1100	-75.8	291.1	--	200	5
12:44	11.44	11.1	8.07	1101	-75.9	291.2	--	200	6
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Total (Fe) (mg/L): N/A **Ferrous (Fe^{2+}) (mg/L):** N/A *(If "+++", then ">3.00")* **Meter Tare Time:** N/A

Sample Appearance: Slight Brown **QC Samples Collected:** No

Sample Date: 9-26-2022 **Sample Time:** 12:46

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3	☐ Y ☒ N	HCl
Phenols via ~~8270C~~ 8270E	1L ~~100 mL~~ Amber	2	☐ Y ☒ N	—
PAH via ~~8270 SIM HVI~~	40 mL Amber	2	☐ Y ☒ N	—
8270E SIM HVI			☐ Y ☐ N	
			☐ Y ☐ N	
			☐ Y ☐ N	

Notes:

Signature: [signature] **Review:**

Monitoring Well Sampling Information Sheet

AECOM

Client: BNSF Railway Company **Field Personnel:** Andrew Gonzalez

Site: Somers – 2SA2022 GWM **Project/Task:** 60679805 Task 100 **Well ID:** TW-1

Casing: ☐Stickup ☐Flush **Equipment ID(s):**

General Condition of Wellhead Assembly: ☒Excellent ☐ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☐ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

RECEIVED
MAY 08 2024
AT PUBLIC HEARING

Sample Type: X MNA / Low Flow ____ 3 CV Purge

Purging Equipment: ____ Disposable Bailer ____ Bladder Pump

X Peristaltic Pump ____ Other (specify)

Initial Measurement

Time:

Total Well Depth (ft):

Depth to Water (ft):

Water Column Height (ft):

Sample Information

Start Purge:

End Purge:

Purging Information

Screen Range (ft):

Appx. Sample Depth (ft):

Purge Volume (L):

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
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Total (Fe) (mg/L): N/A **Ferrous (Fe^{2+}) (mg/L):** N/A *(If "+++", then ">3.00")* **Meter Tare Time:** N/A

Sample Appearance: Clear **QC Samples Collected:** YES / Dup-2

Sample Date: 9-26-2022 **Sample Time:** 14:50

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3	☐Y ☒N	HCl
Phenols via ~~8270C~~ 8270E	1L ~~100 mL~~ Amber	2	☐Y ☒N	—
PAH via ~~8270 SIM HVI~~ 8270E SIM HVI	40 mL Amber	2	☐Y ☒N	—
			☐Y ☐N	
			☐Y ☐N	
			☐Y ☐N	

Notes: Town Well

Signature: [signature] **Review:**

Monitoring Well Sampling Information Sheet

AECOM

Client: BNSF Railway Company **Field Personnel:** Andrew Gonzalez

Site: Somers – 2SA2022 GWM **Project/Task:** 60679805 Task 100 **Well ID:** TW-2 Dup-3

Casing: ☐Stickup ☐Flush **Equipment ID(s):**

General Condition of Wellhead Assembly: ☐ Excellent ☐ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☐ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

RECEIVED
MAY 08 2024
AT PUBLIC HEARING

Sample Type:	X	MNA / Low Flow		3 CV Purge
Purging Equipment:		Disposable Bailer		Bladder Pump
	X	Peristaltic Pump		Other (specify)

Initial Measurement

Time:
Total Well Depth (ft):
Depth to Water (ft):
Water Column Height (ft):

Sample Information

Start Purge:
End Purge:

Purging Information

Screen Range (ft):
Appx. Sample Depth (ft):
Purge Volume (L):

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
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Total (Fe) (mg/L): N/A **Ferrous (Fe^{2+}) (mg/L):** N/A *(If "+++", then ">3.00")* **Meter Tare Time:** N/A

Sample Appearance: CLEAR **QC Samples Collected:** — Dup-3

Sample Date: 9-26-2022 **Sample Time:** 14:55

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3	☐ Y ☒ N	HCl
Phenols via ~~8270C~~ 8270E	1L ~~100 mL~~ Amber	2	☐ Y ☒ N	—
PAH via ~~8270 SIM HVI~~ 8270E SIM HVI	40 mL Amber	2	☐ Y ☒ N	—
			☐ Y ☐ N	
			☐ Y ☐ N	
			☐ Y ☐ N	

Notes: Town well

Signature: [signature] **Review:**

Monitoring Well Sampling Information Sheet

AECOM

Client: BNSF Railway Company **Field Personnel:** Andrew Gonzalez

Site: Somers – 2SA2022 GWM **Project/Task:** 60679805 Task 100 **Well ID:** S-12-25

Casing: ☒ Stickup ☐ Flush **Equipment ID(s):** YSI Pro 15E101205

General Condition of Wellhead Assembly: ☐ Excellent ☒ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☒ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

RECEIVED
MAY 08 2024
AT PUBLIC HEARING

Sample Type:	X	MNA / Low Flow		3 CV Purge	
Purging Equipment:		Disposable Bailer		Bladder Pump	
	X	Peristaltic Pump		Other (specify)	

Initial Measurement

Time: 15:20
Total Well Depth (ft): 28.20
Depth to Water (ft): 20.41
Water Column Height (ft): 7.79

Sample Information

Start Purge: 15:25
End Purge: 16:15

Purging Information

Screen Range (ft): 15
Appx. Sample Depth (ft): 23'
Purge Volume (L): 10

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
15:30	19.40	11.1	8.04	2016	-39.7	951.3	--	200	1
15:35	19.30	11.8	8.03	2028	-38.5	954.1	--	200	2
15:40	19.25	10.9	7.99	2020	-46.1	953.1	--	200	3
15:45	19.30	10.9	7.98	2019	-48.2	954.2	--	200	4
15:50	19.55	11.0	7.96	2018	-49.0	953.7	--	200	5
15:55	19.59	10.9	7.96	2019	-49.1	953.8	--	200	6
16:00	19.31	11.0	7.95	2020	-49.3	953.7	--	200	7
16:05	19.20	11.0	7.95	2020	-49.4	953.8	--	200	8
16:10	19.36	11.0	7.95	2021	-49.5	953.7	--	200	9
16:19	19.10	11.0	7.97	2020	-49.6	953.8	--	200	10
							--		
							--		

Total (Fe) (mg/L): N/A **Ferrous (Fe^{2+}) (mg/L):** N/A *(If "+++", then ">3.00")* **Meter Tare Time:** N/A

Sample Appearance: Clear **QC Samples Collected:** No

Sample Date: 9-26-2022 **Sample Time:** 16:15

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3	☐ Y ☒ N	HCl
Phenols via ~~8270C~~ 8270E	1L ~~100 mL~~ Amber	2	☐ Y ☒ N	—
PAH via ~~8270 SIM HVI~~	40 mL Amber	2	☐ Y ☒ N	—
8270E SIM HVI			☐ Y ☐ N	
			☐ Y ☐ N	
			☐ Y ☐ N	

Notes:

Signature: Andrew Gonzalez **Review:**

Monitoring Well Sampling Information Sheet

AECOM

Client: BNSF Railway Company **Field Personnel:** Andrew Gonzalez

Site: Somers – 2SA2022 GWM **Project/Task:** 60679805 Task 100 **Well ID:** S-12-4S

Casing: ☒ Stickup ☐ Flush **Equipment ID(s):** YSI Pro 15E101205

General Condition of Wellhead Assembly: ☐ Excellent ☐ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☒ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

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Sample Type:	X	MNA / Low Flow		3 CV Purge	
Purging Equipment:		Disposable Bailer		Bladder Pump	
	X	Peristaltic Pump		Other (specify)	

Initial Measurement

Time: 16:40
Total Well Depth (ft): 27.98
Depth to Water (ft): 17.88
Water Column Height (ft): 10.1

Sample Information

Start Purge: 16:46
End Purge: 17:21

Purging Information

Screen Range (ft): 15
Appx. Sample Depth (ft): 22'
Purge Volume (L):

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
16:50	17.01	10.1	8.40	1365	-37.3	916.5	--	200	1
16:54	16.97	10.0	8.36	1364	-41.2	916.7	--	200	2
17:00	16.91	10.2	8.29	1363	-41.3	918.9	--	200	3
17:05	16.85	10.3	8.28	1362	-41.4	918.8	--	200	4
17:10	16.93	10.2	8.27	1362	-41.3	918.1	--	200	5
17:15	16.99	10.7	8.26	1363	-41.5	918.7	--	200	6
17:20	16.88	10.6	8.25	1363	-41.7	918.9	--	200	7
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Total (Fe) (mg/L): N/A **Ferrous (Fe^{2+}) (mg/L):** N/A *(If "+++", then ">3.00")* **Meter Tare Time:** N/A

Sample Appearance: Clear **QC Samples Collected:** NO

Sample Date: 9-26-22 **Sample Time:** 17:25

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3	☐ Y ☒ N	HCl
Phenols via ~~8270C~~ 8270E	1L ~~100 mL~~ Amber	2	☐ Y ☒ N	—
PAH via ~~8270 SIM HVI~~	40 mL Amber	2	☐ Y ☒ N	—
8270E SIM HVI			☐ Y ☐ N	
			☐ Y ☐ N	
			☐ Y ☐ N	

Notes:

Signature: [signature] **Review:**

Monitoring Well Sampling Information Sheet

AECOM

Client: BNSF Railway Company **Field Personnel:** CRYSTAL NIELSEN

Site: Somers – 2SA2022 GWM **Project/Task:** 60679805 Task 100 **Well ID:** S-6R

Casing: ☒ Stickup ☐ Flush **Equipment ID(s):** YSI: 18G103289 PROBE: 5277

General Condition of Wellhead Assembly: ☐ Excellent ☒ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☒ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

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AT PUBLIC HEARING

Sample Type: ~~X~~ CN MNA / Low Flow X 3 CV Purge

Purging Equipment: X Disposable Bailer ____ Bladder Pump

~~X~~ CN Peristaltic Pump ____ Other (specify)

Initial Measurement

Time: 0850

Total Well Depth (ft): 39.60

Depth to Water (ft): 29.47

Water Column Height (ft): 10.13 → 3 WELL VOL = 4.95

Sample Information

Start Purge: 0900

End Purge: 0925

Purging Information

Screen Range (ft): 22-37

Appx. Sample Depth (ft): —

Purge Volume (L): 5 GAL

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	~~Liter~~ GAL
0902	30.02	9.8	6.99	4249	171.2	3.32	--	—	1
0907	30.58	9.8	7.06	4270	184.8	2.72	--	—	2
0912	30.~~35~~	9.7	7.10	4240	180.6	3.99	--	—	3
0919	30.~~5~~68	9.7	7.13	4236	176.4	4.47	--	—	4
0925	30.55	9.7	7.11	4241	173.0	4.16	--	—	5
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Total (Fe) (mg/L): N/A **Ferrous (Fe^{2+}) (mg/L):** N/A *(If "+++", then ">3.00")* **Meter Tare Time:** N/A

Sample Appearance: CLOUDY BROWN, NO ODOR **QC Samples Collected:** —

Sample Date: 9.27.22 **Sample Time:** 0925

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3	☐ Y ☒ N	HCl
Phenols via ~~8270C~~ 8270E	1L ~~100 mL~~ Amber	2	☐ Y ☒ N	—
PAH via ~~8270 SIM HVI~~	40 mL Amber	2	☐ Y ☒ N	—
8270E SIM HVI			☐ Y ☐ N	
			☐ Y ☐ N	
			☐ Y ☐ N	

Notes:

Signature: [signature] **Review:** ____

AECOM

Monitoring Well Sampling Information Sheet

Client: BNSF Railway Company **Field Personnel:** CRYSTAL NIELSEN

Site: Somers – 2SA2022 GWM **Project/Task:** 60679805 Task 100 **Well ID:** S-16-25

Casing: ☒ Stickup ☐ Flush **Equipment ID(s):** YSI: 18G103289 PROBE: 5277

General Condition of Wellhead Assembly: ☐ Excellent ☒ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☒ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

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MAY 08 2024
AT PUBLIC HEARING

Sample Type:	X	MNA / Low Flow		3 CV Purge	
Purging Equipment:		Disposable Bailer		Bladder Pump	
	X	Peristaltic Pump		Other (specify)	

Initial Measurement

Time: 1015
Total Well Depth (ft): 15.77
Depth to Water (ft): 5.13
Water Column Height (ft): 10.64

Sample Information

Start Purge: 1025
End Purge: 1055

Purging Information

Screen Range (ft): 5-15
Appx. Sample Depth (ft): 10
Purge Volume (L): 4.50 L

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
1030	5.21	12.1	7.44	2070	-40.1	0.29	--	150	0.75
1035	5.20	12.2	7.43	2154	-50.2	0.16	--	150	1.50
1040	5.20	12.2	7.42	2308	-67.2	0.13	--	150	2.25
1045	5.20	12.3	7.42	2416	-75.3	0.10	--	150	3.00
1050	5.21	12.2	7.42	2486	-80.9	0.10	--	150	3.75
1055	5.21	12.3	7.42	2522	-85.3	0.10	--	150	4.50
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Total (Fe) (mg/L): N/A **Ferrous (Fe^{2+}) (mg/L):** N/A *(If "+++", then ">3.00")* **Meter Tare Time:** N/A

Sample Appearance: CLEAR, NO ODOR **QC Samples Collected:** —

Sample Date: 9.27.22 **Sample Time:** 1055

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3	☐ Y ☒ N	HCl
Phenols via ~~8270C~~ 8270E	1L ~~100 mL~~ Amber	2	☐ Y ☒ N	—
PAH via ~~8270 SIM HVI~~	40 mL Amber	2	☐ Y ☒ N	—
8270E SIM HVI			☐ Y ☐ N	
			☐ Y ☐ N	
			☐ Y ☐ N	

Notes:

Signature: [signature] **Review:**

Monitoring Well Sampling Information Sheet

AECOM

Client: BNSF Railway Company **Field Personnel:** CRYSTAL NIELSEN

Site: Somers – 2SA2022 GWM **Project/Task:** 60679805 Task 100 **Well ID:** S-93-2S

Casing: ☒ Stickup ☐ Flush **Equipment ID(s):** YSI: 18G103289 PROBE: 5277

General Condition of Wellhead Assembly: ☐ Excellent ☒ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☒ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

Sample Type: X MNA / Low Flow ____ 3 CV Purge

Purging Equipment: ____ Disposable Bailer ____ Bladder Pump

X Peristaltic Pump ____ Other (specify)

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Initial Measurement

Time: 1430
Total Well Depth (ft): 31.86
Depth to Water (ft): 11.59
Water Column Height (ft): 20.27

Sample Information

Start Purge: 1445
End Purge: 1510

Purging Information

Screen Range (ft): 10 - 30
Appx. Sample Depth (ft): 21
Purge Volume (L): 3.00L

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
1450	11.90	12.9	6.84	3852	6.4	0.20	--	150	0.75
1455	12.02	13.4	6.85	3824	-13.2	0.23	--	150	1.50
1500	12.11	13.6	6.85	3849	-23.1	0.16	--	100	2.00
1505	12.20	13.7	6.86	3839	-28.9	0.13	--	100	2.50
1510	12.29	13.4	6.86	3841	-32.7	0.12	--	100	3.00
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Total (Fe) (mg/L): N/A **Ferrous (Fe^{2+}) (mg/L):** N/A *(If "+++", then ">3.00")* **Meter Tare Time:** N/A

Sample Appearance: CLEAR W/ PARTICULATES, STRONG ODOR **QC Samples Collected:** —

Sample Date: 9-27-22 **Sample Time:** 1510

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3	☐ Y ☒ N	HCl
Phenols via ~~8270C~~ 8270E	1L ~~100 mL~~ Amber	2	☐ Y ☒ N	—
PAH via ~~8270 SIM HVI~~ 8270E SIM HVI	40 mL Amber	2	☐ Y ☒ N	—
			☐ Y ☐ N	
			☐ Y ☐ N	
			☐ Y ☐ N	

Notes:

Signature: [signature] **Review:** ____

AECOM

Monitoring Well Sampling Information Sheet

Client: BNSF Railway Company Field Personnel: CRYSTAL NIELSEN

Site: Somers – 2SA2022 GWM Project/Task: 60679805 Task 100 Well ID: S-16-2D

Casing: ☒ Stickup ☐ Flush Equipment ID(s): YSI: 18G103289 PROBE: 5277

General Condition of Wellhead Assembly: ☐ Excellent ☒ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☒ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

RECEIVED
MAY 08 2024
AT PUBLIC HEARING

Sample Type:	X	MNA / Low Flow		3 CV Purge
Purging Equipment:		Disposable Bailer		Bladder Pump
	X	Peristaltic Pump		Other (specify)

Initial Measurement

Time: 1120
Total Well Depth (ft): 58.28
Depth to Water (ft): 5.82
Water Column Height (ft): 52.46

Sample Information

Start Purge: 1130
End Purge: 1155

Purging Information

Screen Range (ft): 44-59
Appx. Sample Depth (ft): 51
Purge Volume (L): 3.75L

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
1135	6.26	11.8	6.92	3488	-4.7	0.23	--	150	0.75
1140	6.28	12.2	6.91	3499	-27.6	0.24	--	150	1.50
1145	6.29	12.3	6.90	3488	-35.6	0.15	--	150	2.25
1150	6.30	12.3	6.90	3479	-40.1	0.13	--	150	3.00
1155	6.32	11.9	6.89	3488	-42.3	0.12	--	150	3.75
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Total (Fe) (mg/L): N/A Ferrous (Fe^{2+}) (mg/L): N/A *(If "+++", then ">3.00")* Meter Tare Time: N/A

Sample Appearance: CLEAR, NO ODOR QC Samples Collected: DUP-2 @ 1130, ~~FB-2~~ CN

Sample Date: 9.27.22 Sample Time: 1155

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	2 x 3 ~~x3~~	☐ Y ☒ N	HCl
Phenols via ~~8270C~~ 8270E	1L ~~100 mL~~ Amber	2 x 2 ~~x3~~	☐ Y ☒ N	—
PAH via ~~8270 SIM HVI~~	40 mL Amber	2 x 2 ~~x3~~	☐ Y ☒ N	—
8270E SIM HVI			☐ Y ☐ N	
			☐ Y ☐ N	
			☐ Y ☐ N	

Notes:

Signature: [signature] Review:

Monitoring Well Sampling Information Sheet

AECOM

Client: BNSF Railway Company **Field Personnel:** CRYSTAL NIELSEN

Site: Somers – 2SA2022 GWM **Project/Task:** 60679805 Task 100 **Well ID:** S-93-2D

Casing: ☒ Stickup ☐ Flush **Equipment ID(s):** YSI: 18G103289 PROBE: 5277

General Condition of Wellhead Assembly: ☐ Excellent ☒ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☒ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

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MAY 10 2023
AT PUBLIC HEARING

Sample Type:	X	MNA / Low Flow		3 CV Purge	
Purging Equipment:		Disposable Bailer		Bladder Pump	
	X	Peristaltic Pump		Other (specify)	

Initial Measurement

Time: 1330
Total Well Depth (ft): 51.61
Depth to Water (ft): 11.69
Water Column Height (ft): 39.92

Sample Information

Start Purge: 1340
End Purge: 1405

Purging Information

Screen Range (ft): 40 - 60
Appx. Sample Depth (ft): 46
Purge Volume (L): 3.00L

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
1345	12.26	13.3	7.06	2008	-16.3	0.20	--	150	0.75
1350	12.43	12.8	7.06	1995	-33.1	0.14	--	150	1.50
1355	12.46	13.5	7.05	1985	-41.2	0.13	--	100	2.00
1400	12.49	13.6	7.05	1994	-46.9	0.12	--	100	2.50
1405	12.51	13.4	7.04	2000	-50.7	0.11	--	100	3.00
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Total (Fe) (mg/L): N/A **Ferrous (Fe^{2+}) (mg/L):** N/A *(If "+++", then ">3.00")* **Meter Tare Time:** N/A

Sample Appearance: CLOUDY GRAY, STRONG ODOR **QC Samples Collected:** FB-2 @ 1400

Sample Date: 9.27.22 **Sample Time:** 1405

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3x2	☐ Y ☒ N	HCl
Phenols via ~~8270C~~ 8270E	1L ~~100 mL~~ Amber	2x2	☐ Y ☒ N	—
PAH via ~~8270 SIM HVI~~	40 mL Amber	2x2	☐ Y ☒ N	—
8270E SIM HVI			☐ Y ☐ N	
			☐ Y ☐ N	
			☐ Y ☐ N	

Notes: FLOW REDUCED DUE TO DRAWDOWN

Signature: [signature] **Review:**

Monitoring Well Sampling Information Sheet

AECOM

Client: BNSF Railway Company **Field Personnel:** Andrew Gonzalez

Site: Somers – 2SA2022 GWM **Project/Task:** 60679805 Task 100 **Well ID:** S-12-5I

Casing: ☐Stickup ☒Flush **Equipment ID(s):** YSI Pro 15E101205

General Condition of Wellhead Assembly: ☐ Excellent ☐ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☒ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

Sample Type:	X	MNA / Low Flow		3 CV Purge	
Purging Equipment:		Disposable Bailer		Bladder Pump	
	X	Peristaltic Pump		Other (specify)	

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AT PUBLIC HEARING

Initial Measurement

Time: 08:35
Total Well Depth (ft): 64.54
Depth to Water (ft): 15.62
Water Column Height (ft): 48.9

Sample Information

Start Purge: 08:40
End Purge: 09:27

Purging Information

Screen Range (ft): 10
Appx. Sample Depth (ft): 62'
Purge Volume (L): 9

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
08:45	17.82	9.8	7.99	208.7	-147.9	30.7	--	200	1
08:50	17.91	9.8	7.98	208.7	-143.9	31.2	--	200	2
08:55	18.51	10.3	7.88	208.1	-140.7	23.1	--	200	3
09:00	18.98	9.9	7.79	208.3	-143.3	20.2	--	200	4
09:05	19.18	10.0	7.75	208.4	-144.3	18.7	--	200	5
0910	19.30	10.0	7.72	208.5	-144.4	18.5	--	200	6
09:15	19.43	10.1	7.71	208.4	-144.2	17.9	--	200	7
09:20	19.52	10.1	7.70	208.3	-144.1	17.0	--	200	8
09:25	19.62	10.2	7.70	208.3	-144.0	17.1	--	200	9
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Total (Fe) (mg/L): N/A **Ferrous (Fe^{2+}) (mg/L):** N/A *(If "+++", then ">3.00")* **Meter Tare Time:** N/A

Sample Appearance: Slight Yellow **QC Samples Collected:** YES / MS / MSD

Sample Date: 9-27-2022 **Sample Time:** 09:30

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3	☐ Y ☒ N	HCl
Phenols via ~~8270C~~ 8270E	1L ~~100 mL~~ Amber	2	☐ Y ☒ N	—
PAH via ~~8270 SIM HVI~~	40 mL Amber	2	☐ Y ☒ N	—
8270E SIM HVI			☐ Y ☐ N	
			☐ Y ☐ N	
			☐ Y ☐ N	

Notes:

Signature: Andrew Gonzalez **Review:**

Monitoring Well Sampling Information Sheet

AECOM

Client: BNSF Railway Company **Field Personnel:** Andy Gonzalez

Site: Somers – 2SA2022 GWM **Project/Task:** 60679805 Task 100 **Well ID:** S-12-5T MS

Casing: ☐ Stickup ☒ Flush **Equipment ID(s):**

General Condition of Wellhead Assembly: ☐ Excellent ☐ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☒ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

RECEIVED
MAY 08 2024
AT PUBLIC HEARING

Sample Type:	X	MNA / Low Flow		3 CV Purge
Purging Equipment:		Disposable Bailer		Bladder Pump
	X	Peristaltic Pump		Other (specify)

Initial Measurement

Time:
Total Well Depth (ft):
Depth to Water (ft):
Water Column Height (ft):

Sample Information

Start Purge:
End Purge:

Purging Information

Screen Range (ft):
Appx. Sample Depth (ft):
Purge Volume (L):

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
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5' MW AG
5-12-5T

Total (Fe) (mg/L): N/A **Ferrous (Fe^{2+}) (mg/L):** N/A *(If "+++", then ">3.00")* **Meter Tare Time:** N/A

Sample Appearance: **QC Samples Collected:** MS

Sample Date: 9-27-22 **Sample Time:** 09:30

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3	☐ Y ☒ N	HCl
Phenols via ~~8270C~~ 8270E	1L ~~100 mL~~ Amber	2	☐ Y ☒ N	—
PAH via ~~8270 SIM HVI~~	40 mL Amber	2	☐ Y ☒ N	—
8270E SIM HVI			☐ Y ☐ N	
			☐ Y ☐ N	
			☐ Y ☐ N	

Notes:

Signature: **Review:**

AECOM

Monitoring Well Sampling Information Sheet

Client: BNSF Railway Company **Field Personnel:** Andy Gonzalez

Site: Somers – 2SA2022 GWM **Project/Task:** 60679805 Task 100 **Well ID:** S-12-5I MSD

Casing: ☐Stickup ☒Flush **Equipment ID(s):**

General Condition of Wellhead Assembly: ☐ Excellent ☐ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☒ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

RECEIVED
MAY 08 2024
AT PUBLIC HEARING

Sample Type:	X	MNA / Low Flow		3 CV Purge	
Purging Equipment:		Disposable Bailer		Bladder Pump	
	X	Peristaltic Pump		Other (specify)	

Initial Measurement

Time:
Total Well Depth (ft):
Depth to Water (ft):
Water Column Height (ft):

Sample Information

Start Purge:
End Purge:

Purging Information

Screen Range (ft):
Appx. Sample Depth (ft):
Purge Volume (L):

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
							--		
							--		
							--		
							--		
							--		
							--		
							--		
							--		
							--		
							--		
							--		
							--		

S-12-5I MS

Total (Fe) (mg/L): N/A **Ferrous (Fe^{2+}) (mg/L):** N/A *(If "+++", then ">3.00")* **Meter Tare Time:** N/A

Sample Appearance: **QC Samples Collected:** MSD

Sample Date: 9-27-22 **Sample Time:** 09:40

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3	☐Y ☒N	HCl
Phenols via ~~8270C~~ 8270E	1L ~~100 mL~~ Amber	2	☐Y ☒N	—
PAH via ~~8270 SIM HVI~~	40 mL Amber	2	☐Y ☒N	—
8270E SIM HVI			☐Y ☐N	
			☐Y ☐N	
			☐Y ☐N	

Notes:

Signature: **Review:**

Monitoring Well Sampling Information Sheet

AECOM

Client: BNSF Railway Company **Field Personnel:** Andy Gonzalez

Site: Somers – 2SA2022 GWM **Project/Task:** 60679805 Task 100 **Well ID:** S-10-2S

Casing: ☐ Stickup ☒ Flush **Equipment ID(s):** YSI Pro 15E101205

General Condition of Wellhead Assembly: ☐ Excellent ☐ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☐ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

Sample Type:	X	MNA / Low Flow		3 CV Purge
Purging Equipment:		Disposable Bailer		Bladder Pump
	X	Peristaltic Pump		Other (specify)

RECEIVED
AT PUBLIC HEARING

Initial Measurement

Time: 10:55
Total Well Depth (ft): 15.85
Depth to Water (ft): 10.16
Water Column Height (ft): 5.69

Sample Information

Start Purge: 11:00
End Purge: 11:35

Purging Information

Screen Range (ft): 10
Appx. Sample Depth (ft): 14
Purge Volume (L): 6 L

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
11:05	10.37	12.1	7.27	1561	-87.7	49.3	--	150	.75
11:09	10.45	12.0	7.38	1549	-102.6	55.9	--	150	1.5
11:13	10.46	12.1	7.38	1552	-104.0	59.3	--	150	2.25
11:17	10.44	12.3	7.37	1552	-105.1	61.0	--	150	3.0
11:21	10.47	12.2	7.36	1551	-105.3	60.1	--	150	3.7
11:25	10.48	12.0	7.35	1552	-105.5	61.3	--	150	4.5
11:29	10.46	12.0	7.35	1551	-105.4	61.4	--	150	5.25
11:33	10.49	12.0	7.35	1551	-105.5	61.5	--	150	6
							--		
							--		
							--		
							--		

Total (Fe) (mg/L): N/A **Ferrous (Fe^{2+}) (mg/L):** N/A *(If "+++", then ">3.00")* **Meter Tare Time:** N/A

Sample Appearance: CLEAR / STRONG SMELL **QC Samples Collected:** NO

Sample Date: 9-27-2022 **Sample Time:** 11:40

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3	☐ Y ☒ N	HCl
Phenols via ~~8270C~~ 8270E	1L ~~100 mL~~ Amber	2	☐ Y ☒ N	—
PAH via ~~8270 SIM HVI~~	40 mL Amber	2	☐ Y ☒ N	—
8270E SIM HVI			☐ Y ☐ N	
			☐ Y ☐ N	
			☐ Y ☐ N	

Notes: Purge water collected

Signature: [signature] **Review:**

AECOM

Monitoring Well Sampling Information Sheet

Client: BNSF Railway Company **Field Personnel:** Andrew Gonzalez

Site: Somers – 2SA2022 GWM **Project/Task:** 60679805 Task 100 **Well ID:** S-88-2RS

Casing: ☒ Stickup ☐ Flush **Equipment ID(s):** YSI Pro 15E101205

General Condition of Wellhead Assembly: ☐ Excellent ☐ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☒ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

RECEIVED

Sample Type:	X	MNA / Low Flow		3 CV Purge	
Purging Equipment:		Disposable Bailer		Bladder Pump	
	X	Peristaltic Pump		Other (specify)	

AT PUBLIC HEARING

Initial Measurement

Time: 15:00
Total Well Depth (ft): 17.15
Depth to Water (ft): 12.82
Water Column Height (ft): 4.33

Sample Information

Start Purge: 15:10
End Purge: 15:30

Purging Information

Screen Range (ft): 10
Appx. Sample Depth (ft): 15'
Purge Volume (L): 5

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
15:14	12.85						--	150	1
15:18	12.89						--	150	2
15:22	12.95						--	150	3
15:26	13.00						--	150	4
15:30	13.29						--	150	5
							--		
							--		
							--		
		NO Parameters					--		
							--		
							--		
							--		
							--		

Total (Fe) (mg/L): N/A **Ferrous (Fe^{2+}) (mg/L):** N/A *(If "+++", then ">3.00")* **Meter Tare Time:** N/A

Sample Appearance: Slight Yellow / Sheen **QC Samples Collected:** NO

Sample Date: 9-27-22 **Sample Time:** 15:35

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3	☐ Y ☒ N	HCl
Phenols via ~~8270C~~ 8270 E	1L ~~100 mL~~ Amber	2	☐ Y ☒ N	—
PAH via ~~8270 SIM HVI~~	40 mL Amber	2	☐ Y ☒ N	—
8270E SIM HVI			☐ Y ☐ N	
			☐ Y ☐ N	
			☐ Y ☐ N	

Notes: NO Parameters Slight Sheen on water

Signature: Andrew Gonzalez **Review:**

Monitoring Well Sampling Information Sheet

AECOM

Client: BNSF Railway Company **Field Personnel:** Andrew Gonzalez

Site: Somers – 2SA2022 GWM **Project/Task:** 60679805 Task 100 **Well ID:** S-12-15

Casing: ☒ Stickup ☐ Flush **Equipment ID(s):**

General Condition of Wellhead Assembly: ☐ Excellent ☐ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☒ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

RECEIVED
MAY 13 2024
AT PUBLIC HEARING

Sample Type:	X	MNA / Low Flow		3 CV Purge
Purging Equipment:		Disposable Bailer		Bladder Pump
	X	Peristaltic Pump		Other (specify)

Initial Measurement

Time: 14:00
Total Well Depth (ft):
Depth to Water (ft): 30.35
Water Column Height (ft):

Sample Information

Start Purge:
End Purge:

Purging Information

Screen Range (ft):
Appx. Sample Depth (ft):
Purge Volume (L):

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
							--		
							--		
							--		
			NO SAMPLE				--		
							--		
							--		
							--		
			NAPL				--		
							--		
							--		
							--		
							--		

Total (Fe) (mg/L): N/A **Ferrous (Fe^{2+}) (mg/L):** N/A *(If "+++", then ">3.00")* **Meter Tare Time:** N/A

Sample Appearance: **QC Samples Collected:**

Sample Date: **Sample Time:**

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3	☐ Y ☒ N	
Phenols via 8270C	100 mL Amber	2	☐ Y ☒ N	
PAH via 8270 SIM HVI	40 mL Amber	2	☐ Y ☒ N	
			☐ Y ☐ N	
			☐ Y ☐ N	
			☐ Y ☐ N	

Notes: NAPL Present (A lot) At surface and all the way down to Bottom.
MAY WANT to consider Pumping this well next Time During NAPL Recovery

Signature: Andrew Gonzalez **Review:**

AECOM

Monitoring Well Sampling Information Sheet

Client: BNSF Railway Company **Field Personnel:** Andrew Gonzalez

Site: Somers – 2SA2022 GWM **Project/Task:** 60679805 Task 100 **Well ID:** S-10-II

Casing: ☐ Stickup ☒ Flush **Equipment ID(s):**

General Condition of Wellhead Assembly: ☐ Excellent ☐ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☒ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

RECEIVED
MAY 0 8 2024
AT PUBLIC HEARING

Sample Type:	X	MNA / Low Flow		3 CV Purge
Purging Equipment:		Disposable Bailer		Bladder Pump
	X	Peristaltic Pump		Other (specify)

Initial Measurement

Time: 13:00
Total Well Depth (ft): 40.20
Depth to Water (ft): 10.82
Water Column Height (ft):

Sample Information

Start Purge:
End Purge:

Purging Information

Screen Range (ft):
Appx. Sample Depth (ft):
Purge Volume (L):

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
							--		
							--		
							--		
							--		
							--		
							--		
							--		
							--		
							--		
							--		
							--		
							--		

Total (Fe) (mg/L): N/A **Ferrous (Fe^{2+}) (mg/L):** N/A *(If "+++", then ">3.00")* **Meter Tare Time:** N/A

Sample Appearance: **QC Samples Collected:**

Sample Date: **Sample Time:**

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3	☐ Y ☒ N	
Phenols via 8270C	100 mL Amber	2	☐ Y ☒ N	
PAH via 8270 SIM HVI	40 mL Amber	2	☐ Y ☒ N	
			☐ Y ☐ N	
			☐ Y ☐ N	
			☐ Y ☐ N	

Notes: No Sample NAPL Present 7-27-22

Signature: **Review:**

Monitoring Well Sampling Information Sheet

AECOM

Client: BNSF Railway Company **Field Personnel:** Andrew Gonzalez

Site: Somers – 2SA2022 GWM **Project/Task:** 60679805 Task 100 **Well ID:** S-10-15

Casing: ☐ Stickup ☒ Flush **Equipment ID(s):**

General Condition of Wellhead Assembly: ☐ Excellent ☐ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☒ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

RECEIVED
AT PUBLIC HEARING

Sample Type:	X	MNA / Low Flow		3 CV Purge	
Purging Equipment:		Disposable Bailer		Bladder Pump	
	X	Peristaltic Pump		Other (specify)	

Initial Measurement

Time: 12:50
Total Well Depth (ft): 20.00
Depth to Water (ft): 11.28
Water Column Height (ft):

Sample Information

Start Purge:
End Purge:

Purging Information

Screen Range (ft):
Appx. Sample Depth (ft):
Purge Volume (L):

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
							--		
							--		
							--		
							--		
							--		
							--		
							--		
							--		
							--		
							--		
							--		
							--		
							--		

Total (Fe) (mg/L): N/A **Ferrous (Fe^{2+}) (mg/L):** N/A *(If "+++", then ~~">3.00"~~)* **Meter Tare Time:** N/A

Sample Appearance: **QC Samples Collected:**

Sample Date: **Sample Time:**

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3	☐ Y ☒ N	
Phenols via 8270C	100 mL Amber	2	☐ Y ☒ N	
PAH via 8270 SIM HVI	40 mL Amber	2	☐ Y ☒ N	
			☐ Y ☐ N	
			☐ Y ☐ N	
			☐ Y ☐ N	

Notes: NO Sample / NAPL Present 9-27-22

Signature: **Review:**

Monitoring Well Sampling Information Sheet

AECOM

Client: BNSF Railway Company **Field Personnel:** CRYSTAL NIELSEN

Site: Somers – 2SA2022 GWM **Project/Task:** 60679805 Task 100 **Well ID:** S-93-SS

Casing: ☐Stickup ☐Flush **Equipment ID(s):**

General Condition of Wellhead Assembly: ☐ Excellent ☐ Good ☐ Fair ☐ Poor (If poor, note below)

Well Diameter:	☐ 1"	☐ 2"	☐ 3"	☐ 4"	☐ 6"	☐ 8"
Purge Vol. Multiplier (gal/ft):	0.04	0.17	0.38	0.66	1.50	2.60

RECEIVED
AT PUBLIC HEARING

Sample Type:	X	MNA / Low Flow		3 CV Purge
Purging Equipment:		Disposable Bailer		Bladder Pump
	X	Peristaltic Pump		Other (specify)

Initial Measurement

Time:
Total Well Depth (ft):
Depth to Water (ft):
Water Column Height (ft):

Sample Information

Start Purge:
End Purge:

Purging Information

Screen Range (ft):
Appx. Sample Depth (ft):
Purge Volume (L):

*3 CV Purge (gal) = (Water Column Height) * Multiplier * 3*

Field Parameters

Time	DTW	Temp	pH	E.C.	ORP	DO	Turbidity	Flow Rate	Volume
24-hour	ft BTOC	°C	s.u.	µS/cm	mV	mg/L	FAU	mL/min	Liter
							--		
							--		
							--		
							--		
							--		
							--		
							--		
							--		
							--		
							--		
							--		
							--		

Total (Fe) (mg/L): N/A **Ferrous (Fe^{2+}) (mg/L):** N/A *(If "+++", then ">3.00")* **Meter Tare Time:** N/A

Sample Appearance: **QC Samples Collected:**

Sample Date: 9.27.22 **Sample Time:**

Sample Information

Analysis	Bottle Type	# of Bottles	Filtered	Preservative
VOCs via 8260B	40 mL VOA	3	☐ Y ☒ N	
Phenols via 8270C	100 mL Amber	2	☐ Y ☒ N	
PAH via 8270 SIM HVI	40 mL Amber	2	☐ Y ☒ N	
			☐ Y ☐ N	
			☐ Y ☐ N	
			☐ Y ☐ N	

Notes: DAMAGED - UNABLE TO SAMPLE

Signature: **Review:**

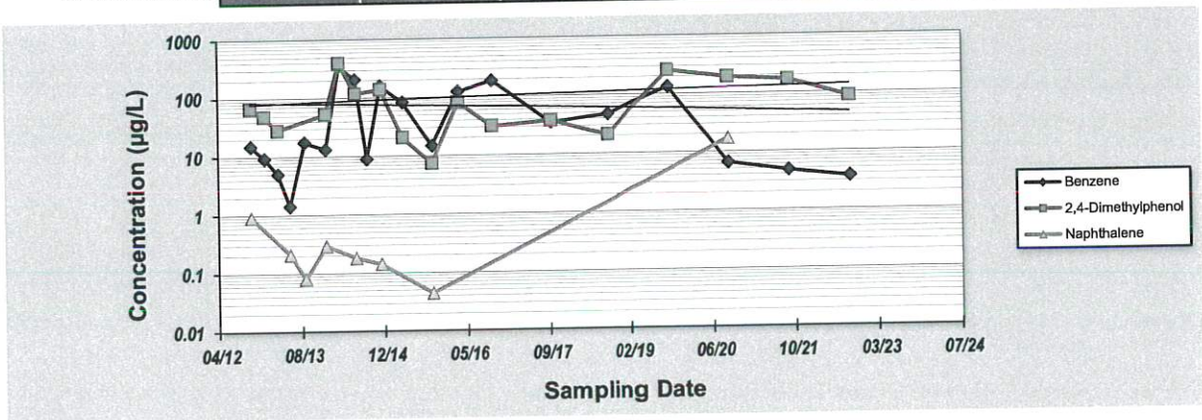
Appendix C
Mann-Kendall Analysis

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 20-Jan-22
Facility Name: BNSF Somers
Conducted By: David Behrens

Job ID: 60626211
Constituent: S-12-4S: Various Constituents
Concentration Units: µg/L

Sampling Point ID:	Benzene	2,4-Dimethylphenol	Naphthalene				
Sampling Event	Sampling Date	S-12-4S: VARIOUS CONSTITUENTS CONCENTRATION (µg/L)						
1	10/14/2012	15	66	0.91				
2	1/4/2013	9.3	48					
3	3/24/2013	5	28.3					
4	6/5/2013	1.4		0.21				
5	9/3/2013	17.4		0.08				
6	1/8/2014	13.1	52.4	0.29				
7	4/3/2014	349	392					
8	7/9/2014	206	117	0.18				
9	9/16/2014	8.9						
10	12/9/2014	158	136	0.14				
11	4/21/2015	82.5	20.5					
12	10/15/2015	14.7	7.3	0.044				
13	3/21/2016	122	79.7					
14	10/13/2016	187	30.8					
15	10/3/2017	34.6	37.4					
16	9/11/2018	46.7	20.7					
17	9/17/2019	133	253					
18	9/21/2020	6.5	190	16.9				
19	9/23/2021	4.7	168					
20	9/26/2022	3.64	85.3					
21								
22								
23								
24								
25								
Coefficient of Variation:		1.32	1.00	2.51				
Mann-Kendall Statistic (S):		-4	16	-6				
Confidence Factor:		53.8%	72.9%	72.6%				
Concentration Trend:		No Trend	No Trend	No Trend				



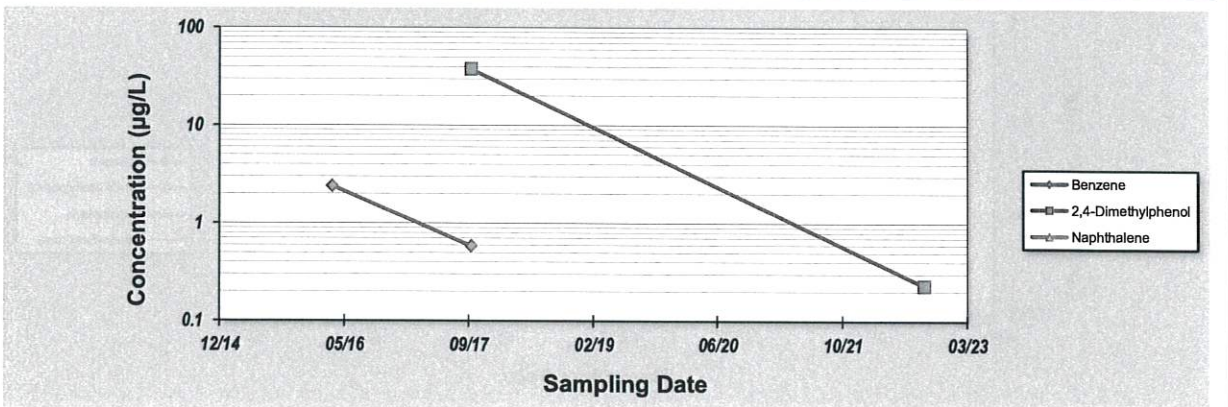
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.
4. Yellow = Constituent not detected above Laboratory Method Detection Limits (MDL)

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	20-Jan-22	**Job ID:**	60626211
Facility Name:	BNSF Somers	**Constituent:**	S-15-1S: Various Constituents
Conducted By:	David Behrens	**Concentration Units:**	µg/L

Sampling Point ID:	Benzene	2,4-Dimethylphenol	Naphthalene				
Sampling Event	**Sampling Date**	**S-15-1S: VARIOUS CONSTITUENTS CONCENTRATION (µg/L)**						
1	10/15/2015							
2	3/21/2016	2.4						
3	10/12/2016							
4	10/3/2017	0.58	37.5					
5	9/10/2018							
6	9/17/2019							
7	9/22/2020							
8	9/23/2021							
9	9/26/2022		0.229					
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.86	1.40					
Mann-Kendall Statistic (S):		-1	-1					
Confidence Factor:								
Concentration Trend:								



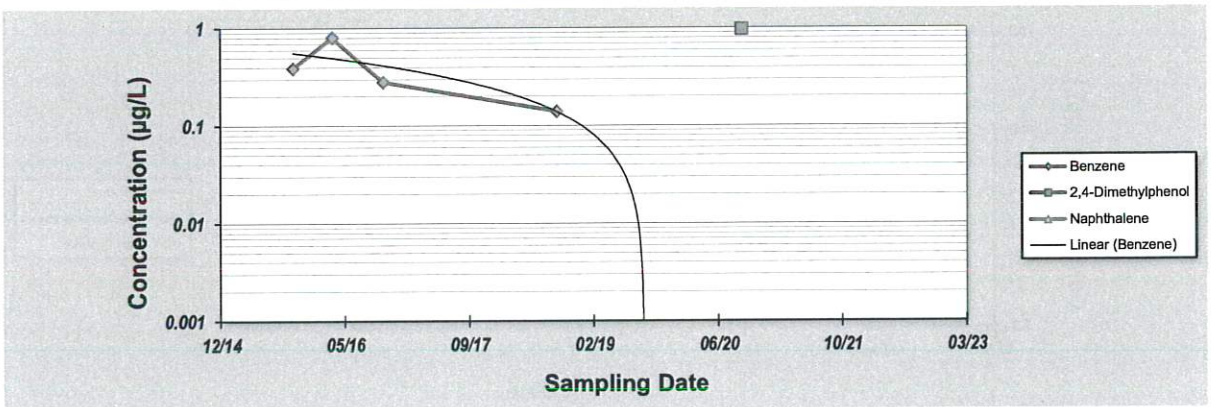
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.
4. Yellow = Constituent not detected above Laboratory Method Detection Limits (MDL)

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	20-Jan-22	Job ID:	60626211
Facility Name:	BNSF Somers	Constituent:	S-15-1D: Various Constituents
Conducted By:	David Behrens	Concentration Units:	µg/L

Sampling Point ID:	Benzene	2,4-Dimethylphenol	Naphthalene				
Sampling Event	Sampling Date	S-15-1D: VARIOUS CONSTITUENTS CONCENTRATION (µg/L)						
1	10/15/2015	0.39						
2	3/21/2016	0.8						
3	10/12/2016	0.28						
4	10/3/2017							
5	9/10/2018	0.14						
6	9/17/2019							
7	9/22/2020		0.96					
8	9/23/2021							
9	9/26/2022							
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.71						
Mann-Kendall Statistic (S):		-4						
Confidence Factor:		83.3%						
Concentration Trend:		Stable						



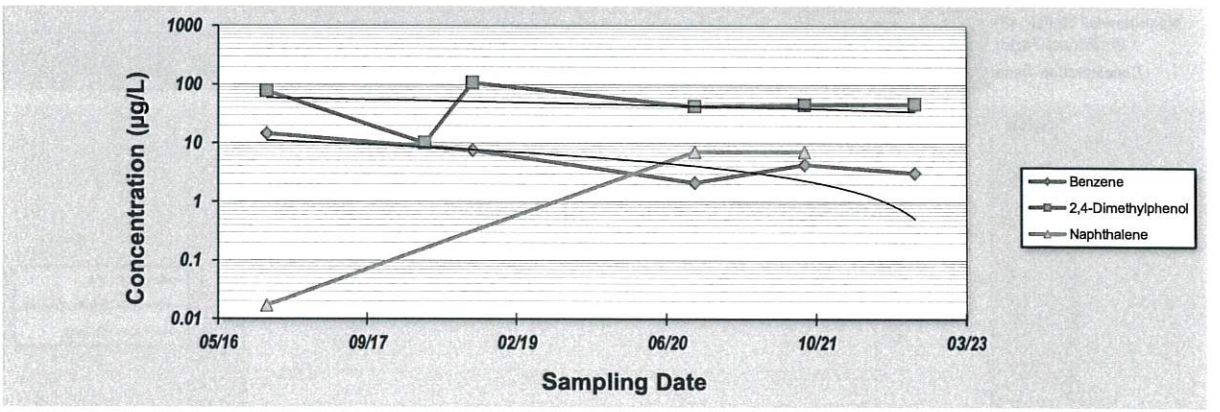
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.
4. Yellow = Constituent not detected above Laboratory Method Detection Limits (MDL)

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	20-Jan-22	Job ID:	60626211
Facility Name:	BNSF Somers	Constituent:	S-16-1S: Various Constituents
Conducted By:	David Behrens	Concentration Units:	µg/L

Sampling Point ID:	Benzene	2,4-Dimethylphenol	Naphthalene				
Sampling Event	Sampling Date	S-16-1S: VARIOUS CONSTITUENTS CONCENTRATION (µg/L)						
1	10/19/2016	14.5	77.3	0.017				
2	4/20/2017							
3	10/3/2017							
4	4/4/2018		10					
5	9/11/2018	7.5	106					
6	4/24/2019							
7	9/17/2019	1.7	49.6					
8	9/21/2020	2.1	42.2	7.1				
9	9/23/2021	4.3	44.9	7.1				
10	9/26/2022	3.11	46.4					
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.80	0.61	0.86				
Mann-Kendall Statistic (S):		-7	1	2				
Confidence Factor:		92.1%	50.0%					
Concentration Trend:		Prob. Decreasing	No Trend					



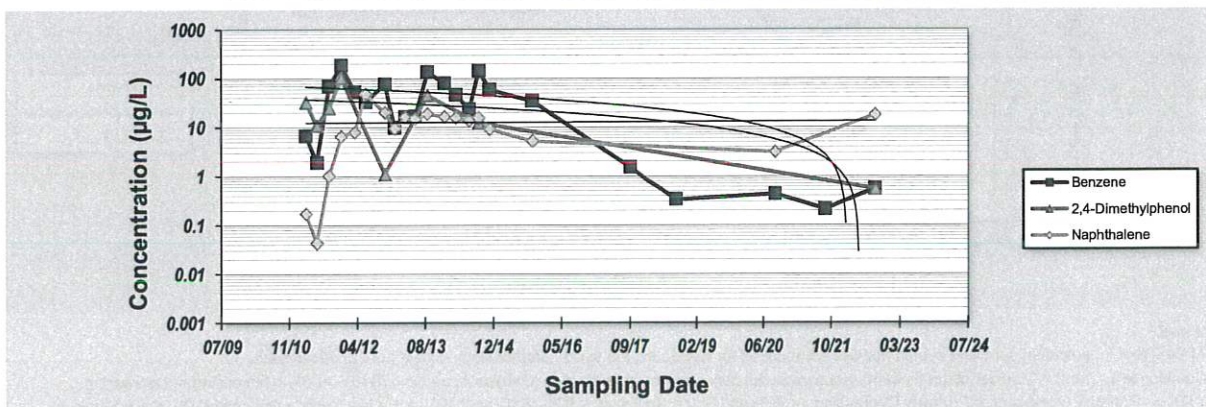
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.
4. Yellow = Constituent not detected above Laboratory Method Detection Limits (MDL)

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	20-Jan-22	Job ID:	60626211
Facility Name:	BNSF Somers	Constituent:	S-6R: Various Constituents
Conducted By:	David Behrens	Concentration Units:	µg/L

Sampling Point ID:	Benzene	2,4-Dimethylphenol	Naphthalene				
Sampling Event	Sampling Date	S-6R: VARIOUS CONSTITUENTS CONCENTRATION (µg/L)						
1	3/21/2011	6.7	32.4	0.17				
2	6/10/2011	1.9	10.8	0.043				
3	9/6/2011	69.5	25	1				
4	12/5/2011	185	103	6.5				
5	3/14/2012	53		7.9				
6	6/2/2012	33		48				
7	10/22/2012	76	1.1	20				
8	1/2/2013	9.8		9.4				
9	3/21/2013	16.1		16.2				
10	6/3/2013	16.7		14.7				
11	9/3/2013	133	45.1	18.7				
12	1/6/2014	79.8		16.3				
13	4/3/2014	45.9		15.6				
14	7/8/2014	23.1		13.6				
15	9/15/2014	143	12.3	15.7				
16	12/4/2014	58.5		9.1				
17	10/13/2015	34.2		5.2				
18	10/2/2017	1.5						
19	9/9/2018	0.33						
20	9/17/2019							
21	9/21/2020	0.43		3.1				
22	9/23/2021	0.21						
23	9/27/2022	0.552	0.546	17.8				
24								
25								
Coefficient of Variation:		1.16	1.17	0.86				
Mann-Kendall Statistic (S):		-61	-8	29				
Confidence Factor:		95.5%	80.1%	83.4%				
Concentration Trend:		Decreasing	No Trend	No Trend				



Notes:

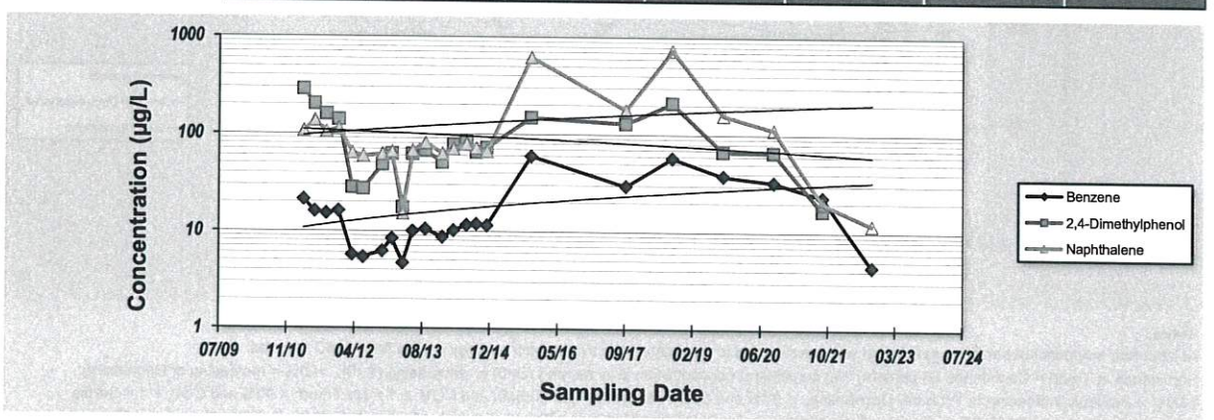
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.
4. Yellow = Constituent not detected above Laboratory Method Detection Limits (MDL)

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 20-Jan-22
Facility Name: BNSF Somers
Conducted By: David Behrens

Job ID: 60626211
Constituent: S-88-3: Various Constituents
Concentration Units: µg/L

Sampling Point ID:	Benzene	2,4-Dimethylphenol	Naphthalene				
Sampling Event	Sampling Date	S-88-3: VARIOUS CONSTITUENTS CONCENTRATION (µg/L)						
1	3/21/2011	21.1	286	107				
2	6/12/2011	15.9	201	137				
3	9/7/2011	15.2	159	105				
4	12/5/2011	16.1	139	112				
5	3/15/2012	5.7	28	64				
6	6/2/2012	5.4	27	59				
7	10/23/2012	6.2	48	62				
8	1/2/2013	8.4	62	65				
9	3/22/2013	4.7	17.5	15.2				
10	6/3/2013	10	61.8	67.3				
11	9/5/2013	10.5	66.9	81.3				
12	1/7/2014	8.7	50.8	62.8				
13	4/3/2014	10.2	77.1	69.8				
14	7/8/2014	11.6	83.7	78.2				
15	9/17/2014	11.9	64.6	71.9				
16	12/5/2014	11.5	72.6	66.5				
17	10/28/2015	59.6	148	620				
18	10/2/2017	29.5	130	179				
19	9/10/2018	57.5	211	736				
20	9/19/2019	37.7	67	159				
21	9/22/2020	32.6	65.7	113				
22	9/23/2021	23.0	16.6	20				
23	9/26/2022	4.43		11.9				
24								
25								
Coefficient of Variation:		0.86	0.74	1.33				
Mann-Kendall Statistic (S):		61	-9	11				
Confidence Factor:		94.3%	58.8%	60.3%				
Concentration Trend:		Prob. Increasing	Stable	No Trend				



Notes:

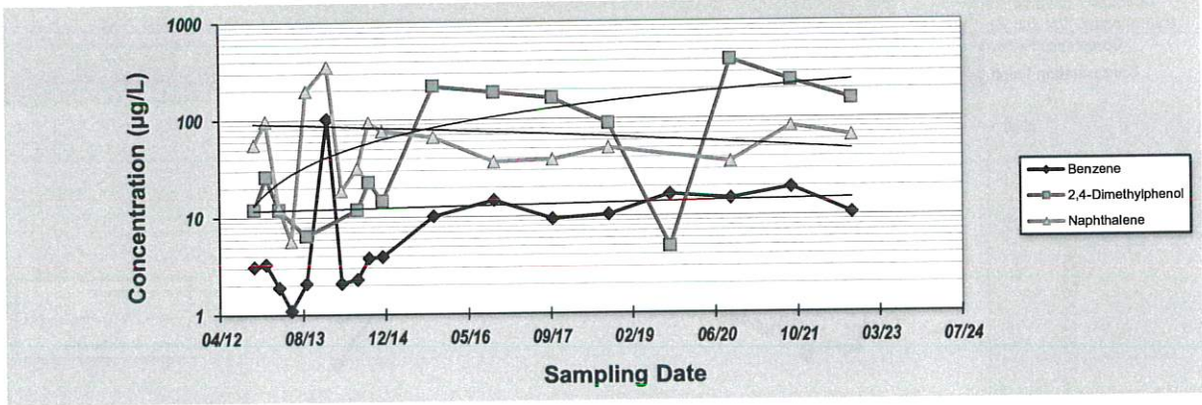
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.
4. Yellow = Constituent not detected above Laboratory Method Detection Limits (MDL)

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 20-Jan-22
Facility Name: BNSF Somers
Conducted By: David Behrens

Job ID: 60626211
Constituent: S-93-2D: Various Constituents
Concentration Units: µg/L

Sampling Point ID:	Benzene	2,4-Dimethylphenol	Naphthalene				
Sampling Event	**Sampling Date**	**S-93-2D: VARIOUS CONSTITUENTS CONCENTRATION (µg/L)**						
1	10/24/2012	3.1	12	56				
2	1/3/2013	3.3	26	97				
3	3/24/2013	1.9	12	12.5				
4	6/4/2013	1.1		5.7				
5	9/4/2013	2.1	6.4	199				
6	1/9/2014	102		353				
7	4/4/2014	2.1		18.7				
8	7/10/2014	2.3	11.9	31.7				
9	9/18/2014	3.8	22.8	93.7				
10	12/9/2014	3.9	14.6	76.6				
11	10/14/2015	10.1	220	66				
12	10/13/2016	14.7	189	36.5				
13	10/3/2017	9.4	164	38.4				
14	9/11/2018	10.3	89.6	50.2				
15	9/20/2019	16.5	4.8					
16	9/23/2020	14.9	400	35.8				
17	9/24/2021	19.3	244	82.5				
18	9/27/2022	10.5	157	65.6				
19								
20								
Coefficient of Variation:		1.79	1.14	1.08				
Mann-Kendall Statistic (S):		90	38	2				
Confidence Factor:		>99.9%	96.7%	51.6%				
Concentration Trend:		Increasing	Increasing	No Trend				



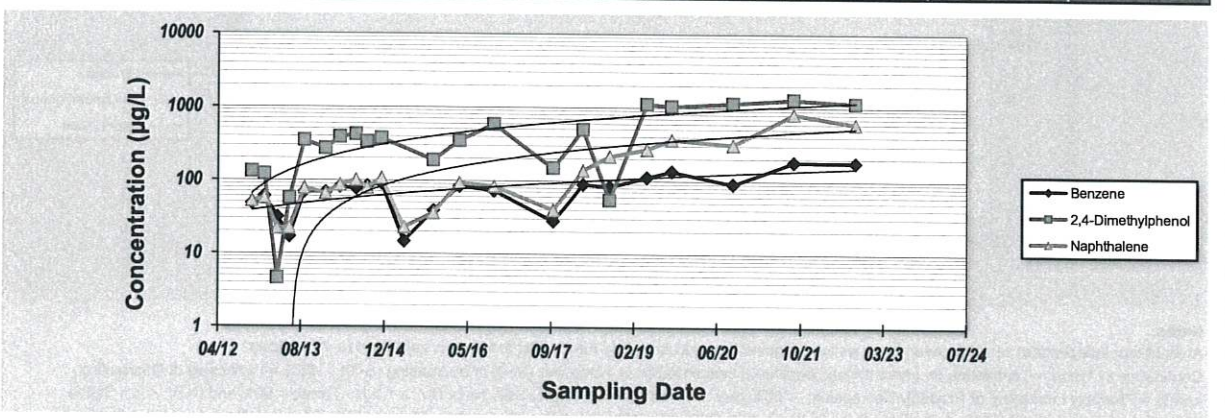
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.
4. Yellow = Constituent not detected above Laboratory Method Detection Limits (MDL)

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	20-Jan-22	Job ID:	60626211
Facility Name:	BNSF Somers	Constituent:	S-10-2S: Various Constituents
Conducted By:	David Behrens	Concentration Units:	µg/L

Sampling Point ID:	Benzene	2,4-Dimethylphenol	Naphthalene				
Sampling Event	Sampling Date	S-10-2S: VARIOUS CONSTITUENTS CONCENTRATION (µg/L)						
1	10/23/2012	48	130	52				
2	1/6/2013	60	120	57				
3	3/24/2013	31.3	4.6	22.1				
4	6/4/2013	16.9	56.4	22.3				
5	9/4/2013	69.2	346	78.2				
6	1/9/2014	67.9	270	65.7				
7	4/4/2014	80.7	386	86.4				
8	7/10/2014	76.3	418	101				
9	9/16/2014	83.3	332	78.8				
10	12/9/2014	90.7	370	107				
11	4/21/2015	14.6		22.9				
12	10/16/2015	38.7	188	35.9				
13	3/21/2016	83.5	348	92.7				
14	10/13/2016	72.3	585	83.2				
15	10/3/2017	27.9	148	39.9				
16	4/4/2018	88.9	502	138				
17	9/10/2018	82.3	54.3	215				
18	4/24/2019	111	1120	268				
19	9/20/2019	135	1040	364				
20	9/23/2020	90.3	1150	311				
21	9/21/2021	180	1300	819				
22	9/27/2022	178	1150	597				
23								
24								
25								
Coefficient of Variation:		0.56	0.87	1.22				
Mann-Kendall Statistic (S):		127	117	149				
Confidence Factor:		>99.9%	>99.9%	>99.9%				
Concentration Trend:		Increasing	Increasing	Increasing				



Notes:

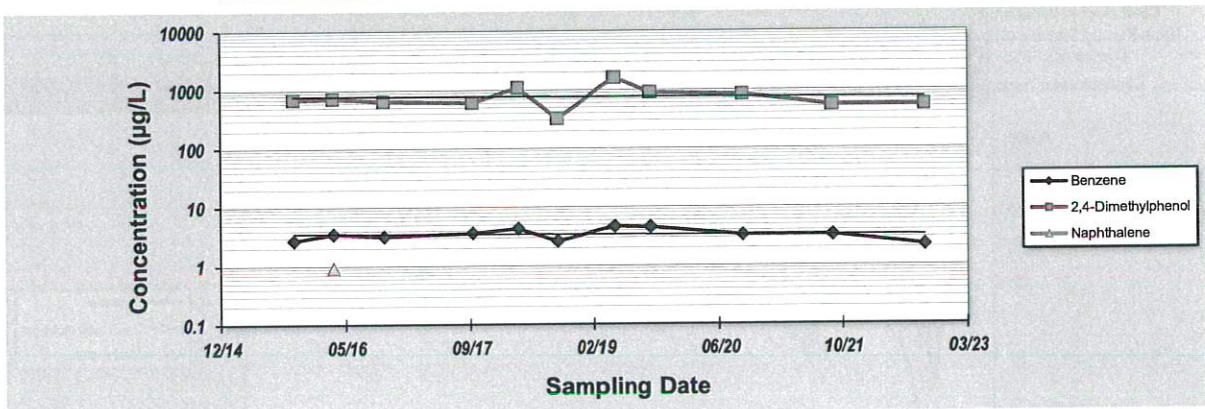
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.
4. Yellow = Constituent not detected above Laboratory Method Detection Limits (MDL)

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 20-Jan-22
Facility Name: BNSF Somers
Conducted By: David Behrens

Job ID: 60626211
Constituent: S-15-2S: Various Constituents
Concentration Units: µg/L

Sampling Point ID:	Benzene	2,4-Dimethylphenol	Naphthalene				
Sampling Event	Sampling Date	S-15-2S: VARIOUS CONSTITUENTS CONCENTRATION (µg/L)						
1	10/15/2015	2.7	682					
2	3/21/2016	3.5	717	0.94				
3	10/11/2016	3.2	641					
4	10/3/2017	3.6	600					
5	4/4/2018	4.3	1080					
6	9/10/2018	2.6	322					
7	4/24/2019	4.6	1580					
8	9/18/2019	4.5	887					
9	9/22/2020	3.3	827					
10	9/22/2021	3.3	537					
11	9/26/2022	2.21	539					
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.23	0.44					
Mann-Kendall Statistic (S):		0	-7					
Confidence Factor:		45.1%	67.6%					
Concentration Trend:		Stable	Stable					



Notes:

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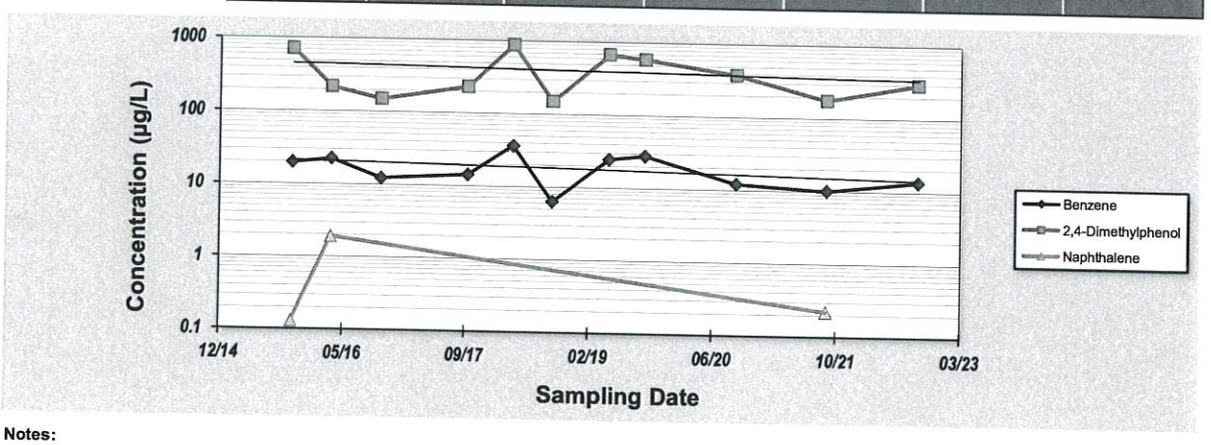
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.
4. Yellow = Constituent not detected above Laboratory Method Detection Limits (MDL)

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 20-Jan-22
Facility Name: BNSF Somers
Conducted By: David Behrens

Job ID: 60626211
Constituent: S-15-2D: Various Constituents
Concentration Units: µg/L

Sampling Point ID:	Benzene	2,4-Dimethylphenol	Naphthalene				
Sampling Event	Sampling Date	S-15-2D: VARIOUS CONSTITUENTS CONCENTRATION (µg/L)						
1	10/15/2015	19.6	714	0.13				
2	3/21/2016	22.3	217	1.9				
3	10/11/2016	12.2	149					
4	10/2/2017	14.2	229					
5	4/4/2018	35.9	877					
6	9/10/2018	6.3	151					
7	4/24/2019	24.7	675					
8	9/18/2019	27.7	589					
9	9/22/2020	12.1	381					
10	9/22/2021	10.1	177	0.22				
11	9/26/2022	13.5	296					
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.49	0.65	1.33				
Mann-Kendall Statistic (S):		-9	-3	1				
Confidence Factor:		72.9%	56.0%					
Concentration Trend:		Stable	Stable					



Notes:

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4. Yellow = Constituent not detected above Laboratory Method Detection Limits (MDL)

Appendix D
NAPL Gauging Table and Graph

BNSF Somers - NAPL Gauging Sheet

Date: 1-26-22 Field Personnel: Andrew Gonzalez

Measuring Device: Depth to Water - Solinst, NAPL Mottling - Cotton String

Well Name	Casing Diameter (in)	Total Depth (ft)	Screen Infeval (ft)	Gauging/Recovery Frequency	Time	Depth To Water (ft btoc)	Length of Mottling (ft)[1]	Length of Staining (ft)[2]	Calculated NAPL Volume in Well (gal)	Removed Sock Weight (oz)	Volume Removed (gal)	Depth to Water After Recovery (ft)	NAPL Staining After Recovery (ft)	Time Spent Recovering NAPL (min)	Additional Field Notes and Observations
Method	--	--	--	--	--	Interface Probe	Cotton String/Tape Measure	Cotton String/Tape Measure	Calculation	Scale	Sock Mass/Volume or Graduated Bucket	Interface Probe	Cotton String/Tape Measure		
S-88-2RD	4	42.5	32.5-37.5	Monthly per SAP	8:25	12.65	26	0.33	0.5	-	0.5	-	-	20	sock/ small amount of napl
S-14-1S	4	24	7-22	Monthly per SAP	9:00	15.19	0	0	-	-	-	-	-	10	clean well
S-19-1	4	32.6	17.6-27.6	Monthly per SAP	10:05	14.78	11	3.5	2	-	2	-	-	45	
S-19-2	4	52.8	42.8-47.8	Monthly per SAP	9:15	13.58	0	0	-	-	-	-	-	10	
IW-6	6	60	10-60	Monthly per SAP	8:00	15.14	33	0.5	0.73	-	1.75	-	-	20	NAPL/sock, top and bottom
S-19-3D	4	49	39-44	Monthly per SAP	11:00	13.62	36	0	-	-	-	-	-	10	NAPL/sock
IW-12	6	60	10-60	Monthly per SAP	11:20	13.18	1.5	0	-	-	-	-	-	15	sock/no napl
S-10-1S	2	21	6-21	Monthly per SAP	4:50	11.20	3	0.58	0.25	-	0.25	-	-	55	see note below
S-14-2S	4	22	6-21	Monthly per SAP	2:15	14.10	5	6	3.9	-	4.5	-	-	65	
S-14-3S	4	22	6-21	Monthly per SAP	1:20	13.86	6	4	2.6	-	3.5	-	-	55	
S-15-3S	4	25	11-21	Monthly per SAP	3:45	16.98	0	8	5.2	-	5.5	-	-	50	NAPL/sock
S-19-4	4	54.2	44.2-49.2	Monthly per SAP	9:30	11.75	31	0.58	0.5	-	0.5	-	-	20	sock / napl

Notes:

[1] Indicated by visual observation of dark spots or globules on cotton string.

[2] Indicated by visual observation of SOLID staining on cotton string.

Per the SAP, NAPL will be recovered from wells with discharge rates greater than 1 gallon per quarter regardless of in-well NAPL thickness.

An absorbant sock will be placed in wells with discharge rates less than 1 gallon per quarter.

Well recovery methods will be evaluated by the project team each month and modified as appropriate.

btoc: below top of casing

ft: feet

gal: gallons

in: inch

NAPL: Non-aqueous Phase Liquid

Calculations: Volume in gallons = Length of Staining X (factor below)

Casing (in)	Gal. per Ft.
2	0.163
4	0.653
6	1.469

S-10-1s is a flush mount. Had about 2in. snow and 2in. ice. Took some work to get it uncovered (about 45min.)

BNSF Somers - NAPL Gauging Sheet

Date: 2-24-22 Field Personnel: Andrew Gonzalez

Measuring Device: Depth to Water - Solinst, NAPL Mottling - Cotton String

Well Name	Casing Diameter (in)	Total Depth (ft)	Screen Infeval (ft)	Gauging/Recovery Frequency	Time	Depth To Water (ft btoc)	Length of Mottling (ft)[1]	Length of Staining (ft)[2]	Calculated NAPL Volume in Well (gal)	Removed Sock Weight (oz)	Volume Removed (gal)	Depth to Water After Recovery (ft)	NAPL Staining After Recovery (ft)	Time Spent Recovering NAPL (min)	Additional Field Notes and Observations
Method	–	–	–	--	–	Interface Probe	Cotton String/Tape Measure	Cotton String/Tape Measure	Calculation	Scale	Sock Mass/Volume or Graduated Bucket	Interface Probe	Cotton String/Tape Measure		
S-88-2RD	4	42.5	32.5-37.5	Monthly per SAP	10:10	13.08	20	0	-	-	-			15	sock/ small amount of napl
S-14-1S	4	24	7-22	Monthly per SAP	8:20	15.42	0	0	-	-	-	-	-	15	clean well
S-19-1	4	32.6	17.6-27.6	Monthly per SAP	9:35	15.02	10	2	1.3	-	2	-	-	30	
S-19-2	4	52.8	42.8-47.8	Monthly per SAP	9:15	13.81	0	0	-	-	-	-	-	15	
IW-6	6	60	10-60	Monthly per SAP	8:00	15.38	34	0	-	-	-	-	-	15	NAPL/sock, top and bottom
S-19-3D	4	49	39-44	Monthly per SAP	9:00	13.86	36	0	-	-	-	-	-	10	NAPL/sock
IW-12	6	60	10-60	Monthly per SAP	8:40	13.42	1.5	0	-	-	-	-	-	15	sock/no napl
S-10-1S	2	21	6-21	Monthly per SAP	1:45	11.00	2	0	-	-	-	-	-	45	Lid frozen, see note below
S-14-2S	4	22	6-21	Monthly per SAP	12:45	13.92	5.5	5	3.2	-	3.5	-	-	50	
S-14-3S	4	22	6-21	Monthly per SAP	10:55	13.65	6	3.5	2.8	-	2.5	-	-	45	
S-15-3S	4	25	11-21	Monthly per SAP	3:00	16.41	0	7	4.5	-	5	-	-	50	NAPL/sock
S-19-4	4	54.2	44.2-49.2	Monthly per SAP	10:30	11.99	25	0	-	-	-	-	-	15	sock / napl

S-10-1s is a flush mount. Frozen with ICE. Took some work to get it uncovered (about 45min.)

Notes:

[1] Indicated by visual observation of dark spots or globules on cotton string.

[2] Indicated by visual observation of SOLID staining on cotton string.

Per the SAP, NAPL will be recovered from wells with discharge rates greater than 1 gallon per quarter regardless of in-well NAPL thickness.

An absorbant sock will be placed in wells with discharge rates less than 1 gallon per quarter.

Well recovery methods will be evaluated by the project team each month and modified as appropriate.

btoc: below top of casing
ft: feet
gal: gallons
in: inch
NAPL: Non-aqueous Phase Liquid

Calculations: Volume in gallons = Length of Staining X (factor below)

Casing (in)	Gal. per Ft.
2	0.163
4	0.653
6	1.469
4	0.653
6	1.469

BNSF Somers - NAPL Gauging Sheet

Date: 3-31-22 Field Personnel: Andrew Gonzalez

Measuring Device: Depth to Water - Solinst, NAPL Mottling - Cotton String

Well Name	Casing Diameter (in)	Total Depth (ft)	Screen Infeval (ft)	Gauging/Recovery Frequency	Time	Depth To Water (ft btoc)	Length of Mottling (ft)[1]	Length of Staining (ft)[2]	Calculated NAPL Volume in Well (gal)	Removed Sock Weight (oz)	Volume Removed (gal)	Depth to Water After Recovery (ft)	NAPL Staining After Recovery (ft)	Time Spent Recovering NAPL (min)	Additional Field Notes and Observations
Method	--	--	--	--	--	Interface Probe	Cotton String/Tape Measure	Cotton String/Tape Measure	Calculation	Scale	Sock Mass/Volume or Graduated Bucket	Interface Probe	Cotton String/Tape Measure		
S-88-2RD	4	42.5	32.5-37.5	Monthly per SAP	8:55	12.31	0	0	-	-	-	-	-	10	sock/ small amount of napl
S-14-1S	4	24	7-22	Monthly per SAP	8:25	15.13	0	0	-	-	-	-	-	10	clean well
S-19-1	4	32.6	17.6-27.6	Monthly per SAP	1:00	14.28	12	6	3.9	-	3.5	-	-	20	
S-19-2	4	52.8	42.8-47.8	Monthly per SAP	9:15	13.09	0	0	-	-	-	-	-	10	clean well
IW-6	6	60	10-60	Monthly per SAP	8:00	14.64	31	0	-	-	-	-	-	20	NAPL/sock, top and bottom
S-19-3D	4	49	39-44	Monthly per SAP	12:45	12.98	36	0	-	-	-	-	-	10	NAPL/sock
IW-12	6	60	10-60	Monthly per SAP	8:40	12.38	2	0	-	-	-	-	-	10	sock/no napl
S-10-1S	2	21	6-21	Monthly per SAP	4:10	10.55	3	4	0.65	-	0.65	-	-	10	
S-14-2S	4	22	6-21	Monthly per SAP	3:25	13.45	4	7	4.5	-	4.5	-	-	60	
S-14-3S	4	22	6-21	Monthly per SAP	2:25	13.25	5	6	3.9	-	4	-	-	30	
S-15-3S	4	25	11-21	Monthly per SAP	5:00	16.22	1	7	4.5	-	4.5	-	-	55	NAPL/sock
S-19-4	4	54.2	44.2-49.2	Monthly per SAP	9:30	11.35	5	6	3.9	-	4	-	-	60	sock / napl, see note below

Notes:

[1] Indicated by visual observation of dark spots or globules on cotton string.

[2] Indicated by visual observation of SOLID staining on cotton string.

Per the SAP, NAPL will be recovered from wells with discharge rates greater than 1 gallon per quarter regardless of in-well NAPL thickness.

An absorbant sock will be placed in wells with discharge rates less than 1 gallon per quarter.

Well recovery methods will be evaluated by the project team each month and modified as appropriate.

S-19-4 , 45min. Removing old air lift pump. 15 min. installing new pump tubing

btoc: below top of casing
ft: feet
gal: gallons
in: inch
NAPL: Non-aqueous Phase Liquid

Calculations: Volume in gallons = Length of Staining X (factor below)

Casing (in)	Gal. per Ft.
2	0.163
4	0.653
6	1.469

BNSF Somers - NAPL Gauging Sheet

Date: 4-23-22 Field Personnel: Andrew Gonzalez

Measuring Device: Depth to Water - Solinst, NAPL Mottling - Cotton String

Well Name	Casing Diameter (in)	Total Depth (ft)	Screen Infeval (ft)	Gauging/Recovery Frequency	Time	Depth To Water (ft btoc)	Length of Mottling (ft)[1]	Length of Staining (ft)[2]	Calculated NAPL Volume In Well (gal)	Removed Sock Weight (oz)	Volume Removed (gal)	Depth to Water After Recovery (ft)	NAPL Staining After Recovery (ft)	Time Spent Recovering NAPL (min)	Additional Field Notes and Observations
Method	–	–	–	–	–	Interface Probe	Cotton String/Tape Measure	Cotton String/Tape Measure	Calculation	Scale	Sock Mass/Volume or Graduated Bucket	Interface Probe	Cotton String/Tape Measure		
S-88-2RD	4	42.5	32.5-37.5	Monthly per SAP	10:40	12.35	0	0	-	-	-	-	-	10	sock/ small amount of napl
S-14-1S	4	24	7-22	Monthly per SAP	9:55	15.16	0	0	-	-	-	-	-	10	clean well
S-19-1	4	32.6	17.6-27.6	Monthly per SAP	12:30	14.32	12	6	3.9	-	4	-	-	30	
S-19-2	4	52.8	42.8-47.8	Monthly per SAP	11:00	13.14	0	0	-	-	-	-	-	10	clean well
IW-6	6	60	10-60	Monthly per SAP	9:30	14.68	31	0	-	-	-	-	-	15	NAPL/sock, top and bottom
S-19-3D	4	49	39-44	Monthly per SAP	11:30	12.98	35	0	-	-	-	-	-	10	NAPL/sock
IW-12	6	60	10-60	Monthly per SAP	10:20	12.43	2	0	-	-	-	-	-	10	sock/no napl
S-10-1S	2	21	6-21	Monthly per SAP	4:50	10.56	2.5	4	0.65	-	0.65	-	-	10	
S-14-2S	4	22	6-21	Monthly per SAP	3:40	13.48	4	7	4.5	-	4.5	-	-	50	
S-14-3S	4	22	6-21	Monthly per SAP	2:45	13.30	5	6	3.9	-	4	-	-	40	
S-15-3S	4	25	11-21	Monthly per SAP	5:20	16.26	1.5	7	4.5	-	4.5	-	-	50	NAPL/sock
S-19-4	4	54.2	44.2-49.2	Monthly per SAP	1:35	11.39	5	6	3.9	-	4	-	-	50	sock / napl

Notes:

[1] Indicated by visual observation of dark spots or globules on cotton string.

[2] Indicated by visual observation of SOLID staining on cotton string.

Per the SAP, NAPL will be recovered from wells with discharge rates greater than 1 gallon per quarter regardless of in-well NAPL thickness.

An absorbant sock will be placed in wells with discharge rates less than 1 gallon per quarter.

Well recovery methods will be evaluated by the project team each month and modified as appropriate.

btoc: below top of casing
ft: feet
gal: gallons
in: inch
NAPL: Non-aqueous Phase Liquid

Calculations: Volume in gallons = Length of Staining X (factor below)

Casing (in)	Gal. per Ft.
2	0.163
4	0.653
6	1.469

BNSF Somers - NAPL Gauging Sheet

Date: 5-20-2022 Field Personnel: Andrew Gonzalez

Measuring Device: Depth to Water - Solinst, NAPL Mottling - Cotton String

Well Name	Casing Diameter (in)	Total Depth (ft)	Screen Infeval (ft)	Gauging/Recovery Frequency	Time	Depth To Water (ft btoc)	Length of Mottling (ft)[1]	Length of Staining (ft)[2]	Calculated NAPL Volume in Well (gal)	Removed Sock Weight (oz)	Volume Removed (gal)	Depth to Water After Recovery (ft)	NAPL Staining After Recovery (ft)	Time Spent Recovering NAPL (min)	Additional Field Notes and Observations
Method	--	--	--	--	--	Interface Probe	Cotton String/Tape Measure	Cotton String/Tape Measure	Calculation	Scale	Sock Mass/Volume or Graduated Bucket	Interface Probe	Cotton String/Tape Measure		
S-88-2RD	4	42.5	32.5-37.5	Monthly per SAP	8:25	11.98	0	0	-	-	-	-	-	10	sock/ small amount of napl
S-14-1S	4	24	7-22	Monthly per SAP	7:50	15.11	0	0	-	-	-	-	-	10	clean well
S-19-1	4	32.6	17.6-27.6	Monthly per SAP	9:20	14.35	15ft.	1.5ft.	0.97	-	1 gal	-	-	10	
S-19-2	4	52.8	42.8-47.8	Monthly per SAP	8:45	12.76	0	0	-	-	-	-	-	10	clean well
IW-6	6	60	10-60	Monthly per SAP	7:30	14.67	30ft.	1in.	-	-	-	-	-	15	NAPL/sock, top and bottom
S-19-3D	4	49	39-44	Monthly per SAP	9:05	12.56	35ft.	0	-	-	-	-	-	10	NAPL/sock
IW-12	6	60	10-60	Monthly per SAP	8:10	12.05	2ft.	0	-	-	-	-	-	10	sock/no napl
S-10-1S	2	21	6-21	Monthly per SAP	12:50	10.43	7ft.	4ft.	0.65	-	0.65	-	-	10	
S-14-2S	4	22	6-21	Monthly per SAP	10:30	13.39	4ft.	6.5ft.	4.25gal	-	4 gal	-	-	30	
S-14-3S	4	22	6-21	Monthly per SAP	9:45	13.22	2 ft.	7.5 ft.	4.89 gal	-	5.25 gal	-	-	35	
S-15-3S	4	25	11-21	Monthly per SAP	14:55	16.32	2 ft.	5 ft.	3.2 gal	-	4 gal	-	-	45	NAPL/sock
S-19-4	4	54.2	44.2-49.2	Monthly per SAP	13:10	11.98	3 ft.	4 ft.	2.6 gal	-	2.5 gal	-	-	50	sock / napl

Notes:

[1] Indicated by visual observation of dark spots or globules on cotton string.

[2] Indicated by visual observation of SOLID staining on cotton string.

Per the SAP, NAPL will be recovered from wells with discharge rates greater than 1 gallon per quarter regardless of in-well NAPL thickness.

An absorbant sock will be placed in wells with discharge rates less than 1 gallon per quarter.

Well recovery methods will be evaluated by the project team each month and modified as appropriate.

btoc: below top of casing

ft: feet

gal: gallons

in: inch

NAPL: Non-aqueous Phase Liquid

Calculations: Volume in gallons = Length of Staining X (factor below)

Casing (in)	Gal. per Ft.
2	0.163
4	0.653
6	1.469

BNSF Somers - NAPL Gauging Sheet

Date: 6-23-2022 Field Personnel: Andrew Gonzalez

Measuring Device: Depth to Water - Solinst, NAPL Mottling - Cotton String

Well Name	Casing Diameter (in)	Total Depth (ft)	Screen Infeval (ft)	Gauging/Recovery Frequency	Time	Depth To Water (ft btoc)	Length of Mottling (ft)[1]	Length of Staining (ft)[2]	Calculated NAPL Volume in Well (gal)	Removed Sock Weight (oz)	Volume Removed (gal)	Depth to Water After Recovery (ft)	NAPL Staining After Recovery (ft)	Time Spent Recovering NAPL (min)	Additional Field Notes and Observations
Method	--	--	--	--	--	Interface Probe	Cotton String/Tape Measure	Cotton String/Tape Measure	Calculation	Scale	Sock Mass/Volume or Graduated Bucket	Interface Probe	Cotton String/Tape Measure		
S-88-2RD	4	42.5	32.5-37.5	Monthly per SAP	8:10	12.05	0	0	-	-	-	-	-	10	sock/ small amount of napl
S-14-1S	4	24	7-22	Monthly per SAP	7:50	15.16	0	0	-	-	-	-	-	10	clean well
S-19-1	4	32.6	17.6-27.6	Monthly per SAP	13:55	14.43	14 ft.	1.5 ft.	0.97 gal.	-	1 gal.	-	-	10	
S-19-2	4	52.8	42.8-47.8	Monthly per SAP	8:30	12.84	0	0	-	-	-	-	-	10	clean well
IW-6	6	60	10-60	Monthly per SAP	7:30	14.73	29 ft.	1 in.	-	-	-	-	-	15	NAPL/sock, top and bottom
S-19-3D	4	49	39-44	Monthly per SAP	8:45	12.61	33	0	-	-	-	-	-	10	NAPL/sock
IW-12	6	60	10-60	Monthly per SAP	9:00	12.12	2 Ft.	0	-	-	-	-	-	10	sock/no napl
S-10-1S	2	21	6-21	Monthly per SAP	12:15	10.49	7 ft.	4 ft.	0.65 gal.	-	0.65 gal.	-	-	10	
S-14-2S	4	22	6-21	Monthly per SAP	10:20	13.45	4 ft.	6.5 ft.	4.25 gal.	-	4 gal.	-	-	30	
S-14-3S	4	22	6-21	Monthly per SAP	9:35	13.30	2 ft.	7 ft.	4.5 gal.	-	5 gal.	-	-	40	
S-15-3S	4	25	11-21	Monthly per SAP	14:25	16.41	2 ft.	5 ft.	3.2 gal.	-	3 gal.	-	-	40	NAPL/sock
S-19-4	4	54.2	44.2-49.2	Monthly per SAP	12:50	12.05	3 ft.	4.5 ft.	2.9 gal.	-	3 gal.	-	-	55	sock / napl

Notes:

[1] Indicated by visual observation of dark spots or globules on cotton string.

[2] Indicated by visual observation of SOLID staining on cotton string.

Per the SAP, NAPL will be recovered from wells with discharge rates greater than 1 gallon per quarter regardless of in-well NAPL thickness.

An absorbant sock will be placed in wells with discharge rates less than 1 gallon per quarter.

Well recovery methods will be evaluated by the project team each month and modified as appropriate.

btoc: below top of casing
ft: feet
gal: gallons
in: inch
NAPL: Non-aqueous Phase Liquid

Calculations: Volume in gallons = Length of Staining X (factor below)

Casing (in)	Gal. per Ft.
2	0.163
4	0.653
6	1.469

BNSF Somers - NAPL Gauging Sheet

Date:7-26-2022 Field Personnel: Andrew Gonzalez

Measuring Device: Depth to Water - Solinst, NAPL Mottling - Cotton String

Well Name	Casing Diameter (in)	Total Depth (ft)	Screen Infeval (ft)	Gauging/Recovery Frequency	Time	Depth To Water (ft btoc)	Length of Mottling (ft)[1]	Length of Staining (ft)[2]	Calculated NAPL Volume in Well (gal)	Removed Sock Weight (oz)	Volume Removed (gal)	Depth to Water After Recovery (ft)	NAPL Staining After Recovery (ft)	Time Spent Recovering NAPL (min)	Additional Field Notes and Observations
Method	--	--	--	--	--	Interface Probe	Cotton String/Tape Measure	Cotton String/Tape Measure	Calculation	Scale	Sock Mass/Volume or Graduated Bucket	Interface Probe	Cotton String/Tape Measure		
S-88-2RD	4	42.5	32.5-37.5	Monthly per SAP	15:10	11.96	0	0	-	-	-	-	-	10	sock/ small amount of napl
S-14-1S	4	24	7-22	Monthly per SAP	8:05	15.08	0	0	-	-	-	-	-	10	clean well
S-19-1	4	32.6	17.6-27.6	Monthly per SAP	14:45	14.36	13	2	1.3	-	1	-	-	10	
S-19-2	4	52.8	42.8-47.8	Monthly per SAP	14:20	12.77	0	0	-	-	-	-	-	10	clean well
IW-6	6	60	10-60	Monthly per SAP	7:45	14.69	28	0.08	-	-	-	-	-	15	NAPL/sock, top and bottom
S-19-3D	4	49	39-44	Monthly per SAP	14:00	12.54	33	0	-	-	-	-	-	10	NAPL/sock
IW-12	6	60	10-60	Monthly per SAP	8:20	12.06	2	0	-	-	-	-	-	10	sock/no napl
S-10-1S	2	21	6-21	Monthly per SAP	11:25	10.51	6	4	0.65	-	0.5	-	-	10	
S-14-2S	4	22	6-21	Monthly per SAP	10:30	13.35	6	5	3.2	-	3	-	-	40	
S-14-3S	4	22	6-21	Monthly per SAP	9:30	13.26	5	6	3.9	-	4.5	-	-	55	
S-15-3S	4	25	11-21	Monthly per SAP	11:50	16.42	3	4	2.6	-	3	-	-	50	NAPL/sock
S-19-4	4	54.2	44.2-49.2	Monthly per SAP	8:30	11.24	3	0.17	-	-	-	-	-	15	sock / napl

Notes:

[1] Indicated by visual observation of dark spots or globules on cotton string.

[2] Indicated by visual observation of SOLID staining on cotton string.

Per the SAP, NAPL will be recovered from wells with discharge rates greater than 1 gallon per quarter regardless of in-well NAPL thickness.
An absorbant sock will be placed in wells with discharge rates less than 1 gallon per quarter.
Well recovery methods will be evaluated by the project team each month and modified as appropriate.

btoc: below top of casing
ft: feet
gal: gallons
in: inch
NAPL: Non-aqueous Phase Liquid

Calculations: Volume in gallons = Length of Staining X (factor below)

Casing (in)	Gal. per Ft.
2	0.163
4	0.653
6	1.469

BNSF Somers - NAPL Gauging Sheet

Date:8-24-2022 Field Personnel: Andrew Gonzalez

Measuring Device: Depth to Water - Solinst, NAPL Mottling - Cotton String

Well Name	Casing Diameter (in)	Total Depth (ft)	Screen Infeval (ft)	Gauging/Recovery Frequency	Time	Depth To Water (ft btoc)	Length of Mottling (ft)[1]	Length of Staining (ft)[2]	Calculated NAPL Volume in Well (gal)	Removed Sock Weight (oz)	Volume Removed (gal)	Depth to Water After Recovery (ft)	NAPL Staining After Recovery (ft)	Time Spent Recovering NAPL (min)	Additional Field Notes and Observations
Method	--	--	--	--	--	Interface Probe	Cotton String/Tape Measure	Cotton String/Tape Measure	Calculation	Scale	Sock Mass/Volume or Graduated Bucket	Interface Probe	Cotton String/Tape Measure		
S-88-2RD	4	42.5	32.5-37.5	Monthly per SAP	7:30	12.86	0.00	0.00	-	-	-	-	-	10	sock/ small amount of napl
S-14-1S	4	24	7-22	Monthly per SAP	6:55	15.25	0.00	0.00	-	-	-	-	-	10	clean well
S-19-1	4	32.6	17.6-27.6	Monthly per SAP	7:50	14.71	13.00	2.00	1.3	-	1	-	-	20	
S-19-2	4	52.8	42.8-47.8	Monthly per SAP	8:15	13.49	0.00	0.00	-	-	-	-	-	10	clean well
IW-6	6	60	10-60	Monthly per SAP	14:15	15.07	26.00	0.08	-	-	-	-	-	15	NAPL/sock, top and bottom
S-19-3D	4	49	39-44	Monthly per SAP	15:05	12.92	33.00	0.00	-	-	-	-	-	10	NAPL/sock
IW-12	6	60	10-60	Monthly per SAP	7:15	13.01	2.00	0.00	-	-	-	-	-	10	sock/no napl
S-10-1S	2	21	6-21	Monthly per SAP	13:50	10.88	6.00	2.00	0.35	-	0.5	-	-	15	
S-14-2S	4	22	6-21	Monthly per SAP	10:45	13.75	6.00	5.00	3.2	-	4	-	-	45	
S-14-3S	4	22	6-21	Monthly per SAP	8:30	13.61	5.00	6.00	3.9	-	7	-	-	45	
S-15-3S	4	25	11-21	Monthly per SAP	9:45	16.75	3.00	4.00	2.6	-	4	-	-	35	NAPL/sock
S-19-4	4	54.2	44.2-49.2	Monthly per SAP			3.00	0.17	-	-	-	-	-	15	sock / napl

Notes:

[1] Indicated by visual observation of dark spots or globules on cotton string.

[2] Indicated by visual observation of SOLID staining on cotton string.

Per the SAP, NAPL will be recovered from wells with discharge rates greater than 1 gallon per quarter regardless of in-well NAPL thickness.

An absorbant sock will be placed in wells with discharge rates less than 1 gallon per quarter.

Well recovery methods will be evaluated by the project team each month and modified as appropriate.

btoc: below top of casing

ft: feet

gal: gallons

in: inch

NAPL: Non-aqueous Phase Liquid

Calculations: Volume in gallons = Length of Staining X (factor below)

Casing (in)	Gal. per Ft.
2	0.163
4	0.653
6	1.469

BNSF Somers - NAPL Gauging Sheet

Date:9-15-2022 Field Personnel: Andrew Gonzalez

Measuring Device: Depth to Water - Solinst, NAPL Mottling - Cotton String

Well Name	Casing Diameter (in)	Total Depth (ft)	Screen Infeval (ft)	Gauging/Recovery Frequency	Time	Depth To Water (ft btoc)	Length of Mottling (ft)[1]	Length of Staining (ft)[2]	Calculated NAPL Volume in Well (gal)	Removed Sock Weight (oz)	Volume Removed (gal)	Depth to Water After Recovery (ft)	NAPL Staining After Recovery (ft)	Time Spent Recovering NAPL (min)	Additional Field Notes and Observations
Method	--	--	--	--	--	Interface Probe	Cotton String/Tape Measure	Cotton String/Tape Measure	Calculation	Scale	Sock Mass/Volume or Graduated Bucket	Interface Probe	Cotton String/Tape Measure		
S-88-2RD	4	42.5	32.5-37.5	Monthly per SAP	8:15	12.88	0	0	-	-	-	-	-	10	sock/ small amount of napl
S-14-1S	4	24	7-22	Monthly per SAP	7:40	15.37	0	0	-	-	-	-	-	10	clean well
S-19-1	4	32.6	17.6-27.6	Monthly per SAP	9:20	14.88	13	2	1.3	-	2	-	-	30	
S-19-2	4	52.8	42.8-47.8	Monthly per SAP	10:00	13.66	0	0	-	-	-	-	-	10	clean well
IW-6	6	60	10-60	Monthly per SAP	7:00	15.28	35	3	4	-	4	-	-	35	NAPL/sock, top
S-19-3D	4	49	39-44	Monthly per SAP	8:50	13.69	32	0.17	-	-	-	-	-	10	NAPL/sock
IW-12	6	60	10-60	Monthly per SAP	7:55	12.61	2	0	-	-	-	-	-	15	sock/no napl
S-10-1S	2	21	6-21	Monthly per SAP	13:50	10.65	6	2	0.3	-	0.3	-	-	20	
S-14-2S	4	22	6-21	Monthly per SAP	12:15	13.82	6	5	3.2	-	3	-	-	20	
S-14-3S	4	22	6-21	Monthly per SAP	10:20	13.82	5	6	3.9	-	6	-	-	40	
S-15-3S	4	25	11-21	Monthly per SAP	12:50	16.54	3	4	2.6	-	3.5	-	-	35	NAPL/sock
S-19-4	4	54.2	44.2-49.2	Monthly per SAP	8:30	12.32	3	0.17	-	-	-	-	-	10	sock / napl

Notes:

[1] Indicated by visual observation of dark spots or globules on cotton string.

[2] Indicated by visual observation of SOLID staining on cotton string.

Per the SAP, NAPL will be recovered from wells with discharge rates greater than 1 gallon per quarter regardless of in-well NAPL thickness.

An absorbant sock will be placed in wells with discharge rates less than 1 gallon per quarter.

Well recovery methods will be evaluated by the project team each month and modified as appropriate.

btoc: below top of casing

ft: feet

gal: gallons

in: inch

NAPL: Non-aqueous Phase Liquid

Calculations: Volume in gallons = Length of Staining X (factor below)

Casing (in)	Gal. per Ft.
2	0.163
4	0.653
6	1.469

BNSF Somers - NAPL Gauging Sheet

Date:10-20-2022 Field Personnel: Andrew Gonzalez

Measuring Device: Depth to Water - Solinst, NAPL Mottling - Cotton String

Well Name	Casing Diameter (in)	Total Depth (ft)	Screen Infeval (ft)	Gauging/Recovery Frequency	Time	Depth To Water (ft btoc)	Length of Mottling (ft)[1]	Length of Staining (ft)[2]	Calculated NAPL Volume in Well (gal)	Removed Sock Weight (oz)	Volume Removed (gal)	Depth to Water After Recovery (ft)	NAPL Staining After Recovery (ft)	Time Spent Recovering NAPL (min)	Additional Field Notes and Observations
Method	--	--	--	--	--	Interface Probe	Cotton String/Tape Measure	Cotton String/Tape Measure	Calculation	Scale	Sock Mass/Volume or Graduated Bucket	Interface Probe	Cotton String/Tape Measure		
S-88-2RD	4	42.5	32.5-37.5	Monthly per SAP	8:45	12.95	0	0	-	-	-	-	-	10	sock/ small amount of napl
S-14-1S	4	24	7-22	Monthly per SAP	8:20	15.46	0	0	-	-	-	-	-	10	clean well
S-19-1	4	32.6	17.6-27.6	Monthly per SAP	10:00	14.83	14	2.5	1.63	-	2	-	-	15	
S-19-2	4	52.8	42.8-47.8	Monthly per SAP	9:40	13.64	0	0	-	-	-	-	-	10	clean well
IW-6	6	60	10-60	Monthly per SAP	8:00	15.37	25	0.25	-	-		-	-	15	NAPL/sock, top
S-19-3D	4	49	39-44	Monthly per SAP	8:58	13.77	30	0.17	-	-	-	-	-	10	NAPL/sock
IW-12	6	60	10-60	Monthly per SAP	8:35	12.69	2	0	-	-	-	-	-	10	sock/no napl
S-10-1S	2	21	6-21	Monthly per SAP	9:15	11.25	6	4	0.65	-	0.75	-	-	20	
S-14-2S	4	22	6-21	Monthly per SAP	12:45	14.05	4	2.5	1.65	-	2.5	-	-	20	
S-14-3S	4	22	6-21	Monthly per SAP	12:05	13.84	3	6.5	4.2	-	4.75	-	-	25	
S-15-3S	4	25	11-21	Monthly per SAP	13:20	16.99	3	4	2.6	-	3	-	-	30	NAPL/sock
S-19-4	4	54.2	44.2-49.2	Monthly per SAP	9:05	12.40	3	0.17	-	-	-	-	-	10	sock / napl

Notes:

[1] Indicated by visual observation of dark spots or globules on cotton string.

[2] Indicated by visual observation of SOLID staining on cotton string.

Per the SAP, NAPL will be recovered from wells with discharge rates greater than 1 gallon per quarter regardless of in-well NAPL thickness.

An absorbant sock will be placed in wells with discharge rates less than 1 gallon per quarter.

Well recovery methods will be evaluated by the project team each month and modified as appropriate.

btoc: below top of casing
ft: feet
gal: gallons
in: inch
NAPL: Non-aqueous Phase Liquid

Calculations: Volume in gallons = Length of Staining X (factor below)

Casing (in)	Gal. per Ft.
2	0.163
4	0.653
6	1.469

BNSF Somers - NAPL Gauging Sheet

Date: 11-15-2022 Field Personnel: Andrew Gonzalez

Measuring Device: Depth to Water - Solinst, NAPL Mottling - Cotton String

Well Name	Casing Diameter (in)	Total Depth (ft)	Screen Infeval (ft)	Gauging/Recovery Frequency	Time	Depth To Water (ft btoc)	Length of Mottling (ft)[1]	Length of Staining (ft)[2]	Calculated NAPL Volume In Well (gal)	Removed Sock Weight (oz)	Volume Removed (gal)	Depth to Water After Recovery (ft)	NAPL Staining After Recovery (ft)	Time Spent Recovering NAPL (min)	Additional Field Notes and Observations
Method	--	--	--	--	--	Interface Probe	Cotton String/Tape Measure	Cotton String/Tape Measure	Calculation	Scale	Sock Mass/Volume or Graduated Bucket	Interface Probe	Cotton String/Tape Measure		
S-88-2RD	4	42.5	32.5-37.5	Monthly per SAP	8:15	12.65	0	0	-	-	-	-	-	10	sock/ small amount of napl
S-14-1S	4	24	7-22	Monthly per SAP	8:50	15.65	0	0	-	-	-	-	-	10	clean well
S-19-1	4	32.6	17.6-27.6	Monthly per SAP	10:10	14.93	14	1.5	0.97	-	1	-	-	15	
S-19-2	4	52.8	42.8-47.8	Monthly per SAP	10:30	13.72	0	0	-	-	-	-	-	10	clean well
IW-6	6	60	10-60	Monthly per SAP	9:30	15.50	26	0.17	-	-		-	-	15	NAPL/sock, top
S-19-3D	4	49	39-44	Monthly per SAP	10:50	13.88	30	0.25	-	-	-	-	-	10	NAPL/sock
IW-12	6	60	10-60	Monthly per SAP	8:30	12.80	2	0	-	-	-	-	-	10	sock/no napl
S-10-1S	2	21	6-21	Monthly per SAP	11:10					-		-	-	25	
S-14-2S	4	22	6-21	Monthly per SAP	12:50	14.11	4	2	1.3	-	1.5	-	-	50	slow going due to very cold weather
S-14-3S	4	22	6-21	Monthly per SAP	11:45	13.89	3	6	3.9	-	4	-	-	55	slow going due to very cold weather
S-15-3S	4	25	11-21	Monthly per SAP	14:00					-		-	-	25	NAPL/sock
S-19-4	4	54.2	44.2-49.2	Monthly per SAP	9:50	12.55	3	0.25	-	-	-	-	-	10	sock / napl

NO recovery made due to Snow/Ice. S-10-1S lid frozen with 1" of ice. S-15-3S no access due to gate being frozen onto ground.

Notes:

[1] Indicated by visual observation of dark spots or globules on cotton string.

[2] Indicated by visual observation of SOLID staining on cotton string.

Per the SAP, NAPL will be recovered from wells with discharge rates greater than 1 gallon per quarter regardless of in-well NAPL thickness.

An absorbant sock will be placed in wells with discharge rates less than 1 gallon per quarter.

Well recovery methods will be evaluated by the project team each month and modified as appropriate.

btoc: below top of casing

ft: feet

gal: gallons

in: inch

NAPL: Non-aqueous Phase Liquid

Calculations: Volume in gallons = Length of Staining X (factor below)

Casing (in)	Gal. per Ft.
2	0.163
4	0.653
6	1.469

BNSF Somers - NAPL Gauging Sheet

Date: 12-15-2022 Field Personnel: Andrew Gonzalez

Measuring Device: Depth to Water - Solinst, NAPL Mottling - Cotton String

Well Name	Casing Diameter (in)	Total Depth (ft)	Screen Infeval (ft)	Gauging/Recovery Frequency	Time	Depth To Water (ft btoc)	Length of Mottling (ft)[1]	Length of Staining (ft)[2]	Calculated NAPL Volume in Well (gal)	Removed Sock Weight (oz)	Volume Removed (gal)	Depth to Water After Recovery (ft)	NAPL Staining After Recovery (ft)	Time Spent Recovering NAPL (min)	Additional Field Notes and Observations
Method	--	--	--	--	--	Interface Probe	Cotton String/Tape Measure	Cotton String/Tape Measure	Calculation	Scale	Sock Mass/Volume or Graduated Bucket	Interface Probe	Cotton String/Tape Measure		
S-88-2RD	4	42.5	32.5-37.5	Monthly per SAP	10:30	12.64	0	0	-	-	-	-	-	10	sock/ small amount of napl
S-14-1S	4	24	7-22	Monthly per SAP	9:50	15.62	0	0	-	-	-	-	-	10	clean well
S-19-1	4	32.6	17.6-27.6	Monthly per SAP	10:45	14.91	10	2 *		-		-	-	15	
S-19-2	4	52.8	42.8-47.8	Monthly per SAP	11:10	13.70	0	0	-	-	-	-	-	15	clean well
IW-6	6	60	10-60	Monthly per SAP	9:30	15.48	25	2"	-	-		-	-	20	NAPL/sock, top
S-19-3D	4	49	39-44	Monthly per SAP	13:55	13.85	30	3"	-	-	-	-	-	10	NAPL/sock
IW-12	6	60	10-60	Monthly per SAP	10:10	12.78	2	0	-	-	-	-	-	10	sock/no napl
S-10-1S	2	21	6-21	Monthly per SAP	13:40					-		-	-	5	
S-14-2S	4	22	6-21	Monthly per SAP	12:40	14.31	4	2.5	1.6	-	5	-	-	55	slow going due to very cold weather
S-14-3S	4	22	6-21	Monthly per SAP	11:30	13.86	3	6	3.9	-	6	-	-	45	slow going due to very cold weather
S-15-3S	4	25	11-21	Monthly per SAP	14:00					-		-	-	5	NAPL/sock
S-19-4	4	54.2	44.2-49.2	Monthly per SAP	14:35	12.50	3	1"	-	-	-	-	-	10	sock / napl

NO recovery made due to Snow/ice. S-10-1S lid frozen with 1" of ice. S-15-3S no access due to gate being frozen onto ground.

Notes:

[1] Indicated by visual observation of dark spots or globules on cotton string.

[2] Indicated by visual observation of SOLID staining on cotton string.

Per the SAP, NAPL will be recovered from wells with discharge rates greater than 1 gallon per quarter regardless of in-well NAPL thickness.

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Well recovery methods will be evaluated by the project team each month and modified as appropriate.

btoc: below top of casing
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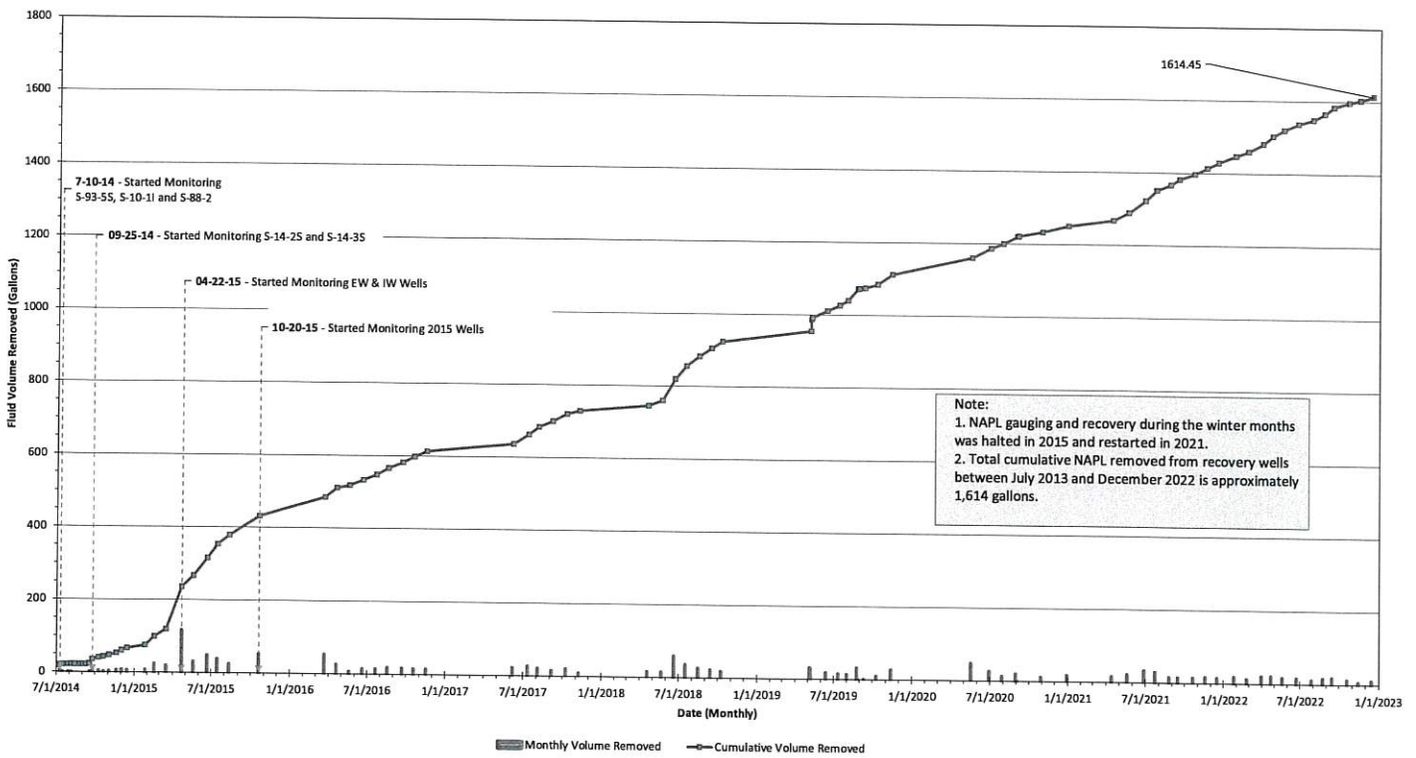
NAPL: Non-aqueous Phase Liquid

Calculations: Volume in gallons = Length of Staining X (factor below)

Casing (in)	Gal. per Ft.
2	0.163
4	0.653
6	1.469

NAPL RECOVERY July 2014 - December 2022



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MEMORANDUM

To: Flathead County Planning Board
From: Katherine P. Maxwell
Date: March 26, 2008
Subject: North Shore Flood Easements

Introduction

The Planning Department report on the proposed North Shore Ranch development raises significant concerns as to the impact of the development on public health and safety. Among those concerns is the possibility of the area being subject to flooding. Flooding could happen in the event of extreme rainfall (such as occurred in 1933, 1948, 1950, 1964 and 1972), a failure of Hungry Horse dam, or in an earthquake.

The Planning Department report finds that Kerr Dam is mandated by the terms of its license to not allow Flathead Lake to go higher than 2893'. However, Montana Power Company (and its successors, including PPL) have the absolute right to allow the lake level to go considerably higher than 2893.' In fact, they have the right to flood the land upon which the developer plans to build 290 residences. PPL *et al* own easements giving them the right to flood the entirety of the north shore property, in perpetuity. Thus, whatever the license says about the

maximum level of Flathead Lake, the level can be whatever the power company wants or needs it to be. In this Memorandum I will address the existence of the easements, the Court's interpretation of the easements, and finally, the implications of flood easements for the proposed North Shore Ranch development.

The Flood Easements

During the early years of the operation of Kerr Dam, Montana Power (or its predecessor, Rocky Mountain Power Company) obtained flood easements from the owners of real property on the shoreline of Flathead Lake and the Flathead River. The dam's operator was required by the terms of its Federal Power Commission (now Federal Energy Regulatory Commission) license to obtain easements on all lands impacted by the operation of the dam. Easements were obtained by RMPC and MPC over all the land included in the proposed North Shore Ranch development. The easements were obtained from the predecessors in title at different times, but the wording of the easements is similar. Attached as Exhibits A through E are copies of the five easements encumbering the property owned or being purchased by Kleinhans Farms, LLC, obtained from the records of Flathead County.

The preamble to the grant of easement in Exhibits A, B, C and D notes that:

> "Whereas, in many years during the natural high water season the elevation of the natural water of Flathead Lake has exceeded 2893 feet, USGS datum and in future years the elevation of the natural high water of Flathead Lake may exceed 2893 feet..."

The actual grant of easement in Exhibits A, B, C and D grants to MPC:

> "the perpetual right and easement for flooding, subirrigating, draining or otherwise affecting with the waters of Flathead Lake, and its tributaries, all or any part of the hereinafter described lands which will or may be affected by the regulation and control of the waters of Flathead Lake by the construction,

maintenance and operation of said dam and hydroelectric development in the Flathead River below said lake..."

The grant of easement in Exhibits E is worded slightly differently:

> "the perpetual right and easement for flooding, subirrigating, draining or otherwise affecting with the waters of Flathead Lake, and its tributaries, all or any part of the hereinafter described lands which will or may be affected by the regulation and control of the waters of Flathead Lake by the construction, maintenance and operation of said dam and hydroelectric development in the Flathead River below said lake, which dam is designed to control and regulate at varying elevations, not exceeding a maximum controlled water level of 2893 feet, USGS datum..."

Thus, all of North Shore Ranch is subject to the right of Montana Power (and its current successor PPL) to "flood, subirrigate, drain or otherwise affect the waters of Flathead Lake." Easement "E" has additional language stating that Kerr Dam is designed to control and regulate the lake level to a maximum of 2,893 feet.

The *Mattson* Decision

As noted already, MPC obtained easements in substantially the same form from all the landowners around the shoreline of Flathead Lake. On November 8, 1999 a group of the landowners filed an action in Flathead County District Court, on behalf of themselves and a class of similarly situated landowners, against MPC. The Plaintiffs alleged that MPC owned, operated and managed Kerr Dam in a manner that resulted in continuous erosion, property damage and loss of shoreline on the lakefront and riverfront properties. Shortly after the suit was filed, MPC sold its interest in Kerr Dam to PP&L Global, Inc., which assigned its interest to its subsidiary PPL Montana, LLC. PPL was added as an additional defendant. MPC then underwent a series of corporate changes, resulting in the addition of three additional defendants: Touch America Holdings, Inc, Montana Power LLC, a/k/a/ NorthWestern Energy LLC, and

Northwestern Corporation.

In May and June 2003 the Plaintiffs filed a motion for summary judgment asking the Court to decide the legal effect of easements that were obtained by the power company in the early years of the dam's operation. PPL filed a cross motion on the same issue. On April 25, 2007, the District Court rendered its decision on the cross motions for summary judgment, denying plaintiff's motion and granting PPL's motion. A copy of the decision is attached as Exhibit F.

The decision notes that the parties agreed that:

- the flood easements were properly created prior to the purchase of their respective properties
- the flood easements burden their respective properties
- the flood easements are unambiguous
- all of the named plaintiff's easements were obtained after Kerr dam began operating in 1938. ***Mattson***, ¶¶ 11-12

The Court addressed the Plaintiffs arguments as to the scope of the flood easements. The Court determined "the easement allowing MPC to flood the Plaintiff's land also allows submersion of that same land." ***Mattson***, ¶ 22. The Court further held that consequential damage, the wave erosion, was also permitted by the grant. ***Mattson***, ¶ ¶ 23-29.

Plaintiffs further argued that PPL owed them a duty not to damage their property. The Court rejected that argument as well. The scope of the easement is specifically defined. Therefore, PPL has the right to use the easement to the full extent of the grant, and can cause "such damage as is reasonably necessary to accomplish the purposes of the servitude."

Mattson, ¶ ¶ 43-45.

Finally, the Court rejected the Plaintiff's contention that PPL is liable for damage to Plaintiff's property over 2,893 feet above sea level (fasl). The Court noted the two forms of the easement, dividing them into "Type A" easements (which includes no reference to 2893 fasl) and "Type B" easements (which states that the dam is designed to control to the water to a maximum of 2893 fasl). The Court found that there was "no argument" that there could be any limitation to 2893 fasl with Type A easements. The flood easement encumbers "all or any part of the hereinabove described land." It is not limited to any particular contour - it covers the entire parcel. ***Mattson,*** ¶ ¶ 54-55. The Court went further and found that the language in the Type B easements simply referred to the design of Kerr Dam, and was not a contour line. ***Mattson,*** ¶ ¶ 58-59. Even with a Type B easement, PPL has the right to use the entirety of the property.

The decision of the District Court is the current law with regard to the interpretation of the Montana Power flood easements. The decision has been appealed to the Montana Supreme Court. As it stands, the appeal has been briefed and a decision will be forthcoming, likely later this year. The appellate briefs in Case Number DA 07-353 are available online at: www.montanacourts.org/supreme. The appellants argue (1) that the District Court misconstrued the language in the "Type B" easements and that PPL was limited to using only the portion of the land below 2893 feet, (2) that PPL had a duty not to unreasonably damage their property and not to interfere unreasonably with their enjoyment of it, and the District Court erred in not so finding, and (3) that the District Court erred in interpreting the language of the easements to permit erosion.

Conclusion

Whatever the outcome of the Supreme Court appeal, it is highly unlikely to affect the right of PPL *et al* to flood the north shore of Flathead Lake, at its own discretion or whenever required in an emergency, with the waters of Flathead Lake. The issues presented for review primarily address the consequential erosion which occurs as a result of the use of the easement to "flood, subirrigate, drain or otherwise affect." And four of the five easements are of the "Type A" variety which do not include any reference to 2,893 fasl. The plain language of the easement is to "flood." And as stated by the Court in ***Mattson*** at ¶ 32 "It is well established law in Montana that a holder of an easement may make full use of that easement, and land for the full exercise of that easement."

While it may not often happen that PPL takes advantage of its easement, the truth is it has the right to do so at any time. While an occasional flooding may not matter when the subject property is farmland, the consequences are far more dire when the homes of 290 families are subject to the same flooding. While it is true that an easement can be released, it is highly unlikely that PPL *et al*, or their successors would sell their easement for any amount of money. The liability issues are too great, particularly given that the north shore is the most low lying part of the lakeshore and the most likely area to be subject to flooding in any foreseeable or unforeseeable natural disaster. Land which can legally be flooded, inundated, submerged (and has been in the past) is not the appropriate place to build 290 new homes.

THIS IS PAGE 2 OF 7
A. A. Potmore
CAPT. CORPS ENGRS, U.S.A.

Capt. Inf. U.S.A.
Commanding Post

Filed for record at the request of Selmer Oscar Johnson, May 31, 1938, at 3:00 o'clock P.M.
A. J. Shaw, County Clerk & Recorder. By Lucille G. Moe, Deputy. [illegible] No. 1942.

300K Page 231-297.

RECEIVED
MAY 03 2021
AT PUBLIC HEARING

##########

EASEMENT

KNOW ALL MEN BY THESE PRESENTS, That

WHEREAS, Rocky Mountain Power Company is engaged in the construction of a high dam and hydro-electric power development located in the Flathead River below Flathead Lake, which dam is being designed to control and regulate the waters of Flathead Lake at varying elevations, not exceeding a maximum controlled water level of 2893 feet, U. S. G. S. datum,

WHEREAS, in many years during the natural high water season the elevation of the natural water of Flathead Lake has exceeded 2893 feet, U. S. G. S. datum and in future years the elevation of the natural high water of Flathead Lake may exceed 2893 feet;

NOW, THEREFORE,

The undersigned, Clara Fenner and Thomas Fenner, her husband, of Kalispell, Montana, in consideration of the sum of One Dollar ($1.00), and other good and valuable considerations, in hand paid by ROCKY MOUNTAIN POWER COMPANY, the receipt of which is hereby acknowledged, grant, bargain, convey and warrant to Rocky Mountain Power Company, a corporation, with post office address at 40 East Broadway, Butte, Montana, its successors and assigns, the perpetual right and easement for flooding, subirrigating, draining, or otherwise affecting with the waters of Flathead Lake, and its tributaries, all or any part of the hereinafter described lands which will or may be affected by the regulation and control of the waters of Flathead Lake by the construction, maintenance and operation of said dam and hydroelectric power development in the Flathead River below said Lake, which lands lie in the State of Montana, County, Montana, and particularly described as follows, to-wit:

The Northeast Quarter of the Northwest Quarter (NE¼NW¼) of Section Twenty (20); and the West Forty-four (44) rods in width of the Northwest Quarter of the Northeast Quarter (NW¼NE¼) of said Section Twenty (20); All in Township Twenty-seven (27) North of Range Twenty (20) West.

IN WITNESS WHEREOF, the parties hereto have hereunto set their hands and seals this 31st day of May, 1938.

Clara Fenner (Seal)

Thos. Fenner (Seal)

NENW – Section 20
West 44 rods NWNE of 20

STATE OF MONTANA)
(SS.
County of Flathead)

On this 31st day of May, 1938, before me, the undersigned, a Notary Public in and for the State of Montana, personally appeared Clara Fenner and Thomas Fenner, her husband, known to me to be the persons whose names are subscribed to the within and foregoing instrument and acknowledged to me that they executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Notarial Seal the day and year in this certificate first above written.

Hans Waichil
Notary Public for the State of Montana
Residing at Kalispell, Montana,
My Commisson expires May 21, 1941

(Hans Waichil)
(Notarial Seal)
(State of Montana)

Filed for record June 1, 1938, at 4:53 P. M.

A. J. Shaw, County Recorder. By C. K. Dickey, Deputy. Reception No. 1603.

##########

E A S E M E N T

THIS INDENTURE, Made the 1st day of June, 1938, between CLARA FENNER, of the County of Flathead, State of Montana, as the party of the first part, and ROCKY MOUNTAIN POWER COMPANY, a Delaware corporation, whose principal place of business and Post Office address is Butte,

That he also knows of his own knowledge that said Elmer L. Geddes, so known as aforesaid, is the same Elmer L. Geddes who, as husband of N. Anna Geddes, conveyed the property hereinbefore described to the said N. Anna Geddes, by a warranty deed dated the 1st day of October, 1923, and filed for record in the office of the County Clerk and Recorder of Flathead County, Montana, on the 5th day of December, 1923, at 4:30 o'clock P. M., and recorded in Book 184 of Deeds on Page 344;

That this affidavit is made for the purpose of establishing the fact under oath that E. L. Geddes and Elmer L. Geddes was the same person.

H E Wells

Subscribed and sworn to before me this 10th day of December 1941.

(C. W. Gribble)
(Notarial Seal)
(State of Montana)

C W Gribble
Notary Public for the State of Montana
Residing at Whitefish, Montana
My commission expires December 17, 1943.

Filed for record December 22, 1941 at 3:40 o'clock P. M.

A. J. Shaw, County Clerk & Recorder. By C. K. Dickey, Deputy. Reception No. 4798.
Fee $1.00 Paid.

##################

EASEMENT

KNOW ALL MEN BY THESE PRESENTS, That

WHEREAS, The Montana Power Company is engaged in the operation of a dam and hydro-electric power development located in the Flathead River below Flathead Lake, which dam is designed to control and regulate the waters of Flathead Lake at varying elevations, not exceeding a maximum controlled water level of 2893 feet, U. S. G. S. datum.

WHEREAS, in many years during the natural high water season the elevation of the natural water of Flathead Lake has exceeded 2893 feet, U. S. G. S. datum and in future years the elevation of the natural high water of Flathead Lake may exceed 2893 feet;

NOW, THEREFORE,

The undersigned, ANNA KELLER of Somers, Montana, in consideration of the sum of One Dollar ($1.00), and other good and valuable considerations, in hand paid by THE MONTANA POWER COMPANY, the receipt of which is hereby acknowledged, grants, bargains, conveys and warrants to The Montana Power Company, a corporation, with post office address at 40 East Broadway, Butte, Montana, its successors and assigns, the perpetual right and easement for flooding, subirrigating, draining, or otherwise affecting with the waters of Flathead Lake, and its tributaries, all or any part of the hereinafter described lands which will or may be affected by the regulation and control of the waters of Flathead Lake by the construction, maintenance and operation of said dam and hydroelectric power development in the Flathead River below said Lake, which land is located in Flathead County, Montana, and particularly described as follows, to-wit:

...E COUNTY, MONTANA

AT PUBLIC HEARING

The Southwest Quarter of the Northeast Quarter (SW¼NE¼), the Southeast Quarter of the Northeast Quarter (SE¼NE¼), excepting the South 15-acres thereof, all in Section Nineteen (19); and the West Half of the Northwest Quarter (W½NW¼) of Section Twenty (20), excepting the South 15 acres thereof; all in Township Twenty-seven (27) North of Range Twenty (20) West, M. M.

Hereby also releasing and discharging the said The Montana Power Company and its predecessors from any and all damages whatsoever, suffered to date by reason of overflowing or affecting any of the above described lands with the waters of Flathead Lake.

IN WITNESS WHEREOF, the party hereto has hereunto set her hand and seal this 1st day of November, 1941.

Anna Keller (Seal)

..... (Seal)

STATE OF MONTANA)
(ss.
County of Flathead)

On this 1st day of November, 1941, before me, the undersigned, a Notary Public in and for the State of Montana, personally appeared Anna Keller known to me to be the persons whose names are subscribed to the within and foregoing instrument and acknowledged to me that they executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Notarial Seal the day and year in this certificate first above written.

Hans Walchli
Notary Public for the State of Montana
Residing at Kalispell, Montana
My Commission expires May 21, 1944.

(Hans Walchli)
(Notarial Seal)
(State of Montana)

Filed for record at the request of Hans Walchli, December 22, 1941 at 4:26 o'clock P. M.

A. J. Shaw, County Recorder. By Lucille G. Moe, Deputy. Reception No. 4806. Fee $1.25 Paid.

8
36

##########

IN THE DISTRICT COURT OF THE ELEVENTH JUDICIAL DISTRICT OF THE STATE OF MONTANA, IN AND FOR THE COUNTY OF FLATHEAD

3712

In the Matter of the Estate of CHARLES E. SPENCER, Deceased.

ORDER SETTLING FIRST AND FINAL ACCOUNT AND DECREE OF DISTRIBUTION.

Walter Conner, administrator with the will annexed of the estate of Charles E. Spencer, deceased, having on the 11th day of December, 1941, rendered and filed herein a first and final account and report of his administration of said estate, which said account was for final settlement; and having with said account filed a petition for the final distribution of said estate; and said account and petition, this day, coming on regularly to be heard, proof having been made to the satisfaction of the Court that notice of the hearing and settlement of said account and petition has been given in the manner

##################

EASEMENT

KNOW ALL MEN BY THESE PRESENTS, That

WHEREAS, The Montana Power Company is engaged in the operation of a dam and hydro-electric power development located in the Flathead River below Flathead Lake, which dam is designed to control and regulate the waters of Flathead Lake at varying elevations, not exceeding a maximum controlled water level of 2893 feet, U. S. G. S. datum.

WHEREAS, in many years during the natural high water season the elevation of the natural water of Flathead Lake has exceeded 2893 feet, U. S. G. S. datum and in future years the elevation of the natural high water of Flathead Lake may exceed 2893 feet;

NOW, THEREFORE,

The undersigned, ANNA KELLER of Somers, Montana, in consideration of the sum of One Dollar ($1.00), and other good and valuable considerations, in hand paid by THE MONTANA POWER COMPANY, the receipt of which is hereby acknowledged, grants, bargains, conveys and warrants to The Montana Power Company, a corporation, with post office address at 40 East Broadway, Butte, Montana, its successors and assigns, the perpetual right and easement for flooding, subirrigating, draining, or otherwise affecting with the waters of Flathead Lake, and its tributaries, all or any part of the hereinafter described lands which will or may be affected by the regulation and control of the waters of Flathead Lake by the construction, maintenance and operation of said dam and hydroelectric power development in the Flathead River below said Lake, which land is located in Flathead County, Montana, and particularly described as follows, to-wit:

The Southwest Quarter of the Northeast Quarter (SW¼NE¼), the Southeast Quarter of the Northeast Quarter (SE¼NE¼), excepting the South 15-acres thereof, all in Section Nineteen (19); and the West Half of the Northwest Quarter (W½NW¼) of Section Twenty (20), excepting the South 15 acres thereof; all in Township Twenty-seven (27) North of Range Twenty (20) West, M. M.

Hereby also releasing and discharging the said The Montana Power Company and its predecessors from any and all damages whatsoever, suffered to date by reason of overflowing or affecting any of the above described lands with the waters of Flathead Lake.

IN WITNESS WHEREOF, the party hereto has hereunto set her hand and seal this 1st day of November, 1941.

Anna Keller (Seal)

..... (Seal)

STATE OF MONTANA)
(ss.
County of Flathead)

On this 1st day of November, 1941, before me, the undersigned, a Notary Public in and for the State of Montana, personally appeared Anna Keller known to me to be the persons whose names are subscribed to the within and foregoing instrument and acknowledged to me that they executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Notarial Seal the day and year in this certificate first above written.

Hans Walchli
Notary Public for the State of Montana
Residing at Kalispell, Montana
My Commission expires May 21, 1944.

(Hans Walchli)
(Notarial Seal)
(State of Montana)

Filed for record at the request of Hans Walchli, December 22, 1941 at 4:26 o'clock P. M.

A. J. Shaw, County Recorder. By Lucille G. Moe, Deputy. Reception No. 4806. Fee $1.25 Paid.

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INDIVIDUAL FORM.

EASEMENT

KNOW ALL MEN BY THESE PRESENTS, That

WHEREAS, The Montana Power Company is engaged in the operation of a dam and hydroelectric power development located in the Flathead River below Flathead Lake, which dam is designed to control and regulate the waters of Flathead Lake at varying elevations, not exceeding a maximum controlled water level of 2893 feet, U. S. G. S. datum.

WHEREAS, in many years during the natural high water season the elevation of the natural water of Flathead Lake has exceeded 2893 feet, U. S. G. S. datum and in future years the elevation of the natural high water of Flathead Lake may exceed 2893 feet;

NOW, THEREFORE,

The undersigned, HENRY KLEINHANS and who acquired title as Lula Lorece Kleinhans LORECE L. KLEINHANS, his wife, of SOMERS, Montana, in consideration of the sum of One Dollar ($1.00), and other good and valuable considerations, in hand paid by THE MONTANA POWER COMPANY, the receipt of which is hereby acknowledged, grant, bargain, convey and warrant to The Montana Power Company, a corporation, with post office address at 40 East Broadway, Butte, Montana, its successors and assigns, the perpetual right and easement for flooding, subirrigating, draining, or otherwise affecting with the waters of Flathead Lake, and its tributaries, all or any part of the hereinafter described lands which will or may be affected by the regulation and control of the waters of Flathead Lake by the construction, maintenance and operation of said dam and hydroelectric power development in the Flathead River below said Lake, which land is located in FLATHEAD County, Montana, and particularly described as follow, to-wit:

N½ NW¼, NW¼NE¼, SECTION 19; T. 27N. R. 20W.;
NE¼NE¼, SECTION 24; T. 27N. R. 21W.

RECEIVED
AT PUBLIC HEARING

7915

IN WITNESS WHEREOF, the parties hereto have hereunto set their hands and seals this 14th day of NOVEMBER, 1967.

Henry Kleinhans (Seal)

Lorece L. Kleinhans (Seal)

492-650 1967 - #7915

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STATE OF *MONTANA* } ss.
County of *FLATHEAD* }

On this *14th* day of *NOVEMBER*, 19*67*, before me, the undersigned, a Notary Public in and for the State of *MONTANA*, personally appeared *HENRY KLEINHANS* and *LORECE L. KLEINHANS*, his wife, known to me to be the persons whose names are subscribed to the within and foregoing instrument and acknowledged to me that they executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Notarial Seal the day and year in this certificate first above written.

(Seal)

James W. Couture
Notary Public for the State of *Montana*
Residing at *Butte, Montana*
My Commission expires *Jan. 2, 1968*

7915

EASEMENT

TO

STATE OF MONTANA, } ss.
County of *Flathead*

Filed for Record at Request of [illegible]

On the *4th* day of *December*, 19[illegible] at [illegible] minutes past [illegible] [illegible] M., and recorded in Volume [illegible] of Deeds, Pages [illegible] inclusive, Records of [illegible] County.

[illegible]
County Recorder.

By [illegible]
Deputy.

Indexed	
Recorded	
Compared	
Paged	

ret Karn Warden & Wallechensch[illegible], Kalispell, [illegible]

RECEIVED

AT PUBLIC HEARING

248-21

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GRANT DEED

THIS INDENTURE, Made and entered into this 5th day of December, 1941, by and between THE MONTANA POWER COMPANY, a corporation, party of the first part, and ANNA KELLER, whose Post Office Address is Somers, Montana, party of the second part,

W I T N E S S E T H :

That the said party of the first part, for and in consideration of the sum of One Dollar ($1.00), and other good and valuable consideration to it in hand paid by the party of the second part, the receipt of which is hereby acknowledged, has granted, bargained, sold and conveyed, and by these presents does grant, bargain, sell and convey unto the said party of the second part, the following described property located in the County of Flathead, State of Montana, to-wit:

The Southeast Quarter of the Northwest Quarter (SE¼NW¼) of Section Nineteen (19), in Township Twenty-seven (27) North of Range Twenty (20) West, M. M., containing 40 acres more or less,

EXCEPTING AND RESERVING, however, from the above described premises to the party of the first part, its successors and assigns, the perpetual right and easement for flooding, submerging, draining, or otherwise affecting with the waters of Flathead Lake and its tributaries, all or any part of the hereinabove described lands which will or may be affected by the regulation and control of the waters of Flathead Lake by the construction, maintenance and operation of a dam and hydroelectric power development in the Flathead River below said Lake, which dam is designed to control and regulate the waters of Flathead Lake at varying elevations, not exceeding a maximum controlled water level of 2893 feet, U. S. C. S. datum.

SUBJECT, further, to any mineral, oil or gas rights not exceeding a two- and one-half per cent (2½) royalty heretofore conveyed by Clark W. Beauchamp and wife to Robert E. O'Keefe; and reserving herefrom the right to the free use by E. J. Rawlinson to the end of the crop season of 1942 of approximately 6 acres of said land now planted to winter wheat, and the right in him to grow, harvest and retain said wheat crop.

SENW of 19

TOGETHER WITH all and singular, the tenements, hereditaments and appurtenances thereunto belonging or in anywise appertaining, and also all the estate, right, title, interest, right of possession, claim and demand whatsoever, as well in law as in equity, of the party of the first part of, in or to said premises and every part thereof, subject, however, to the above exceptions and reservations.

TO HAVE AND TO HOLD, all and singular, the above described premises unto the said party of the second part, her successors and assigns, forever.

IN WITNESS WHEREOF, the party of the first part has caused this instrument to be executed and its corporate seal to be hereunto affixed by its officers thereunto duly authorized, the day and year first above written.

(The Montana Power Co.)
(New Jersey)

THE MONTANA POWER COMPANY
By F W Bird
President.

ATTEST:
By S P Hogan
Secretary.

($2.75 in Revenue Stamps attached and canceled.)

STATE OF MONTANA)
) ss.
COUNTY OF SILVER BOW)

On this 5th day of December, 1941, before me, the undersigned, a Notary Public for the State of Montana, personally appeared F. W. Bird, known to me to be the President of The Montana Power Company, the corporation that executed the foregoing instrument, and acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official Notarial Seal, the day and year in this Certificate first above written.

(Janet Cassidy
Notarial Seal
(State of Montana)

Janet Cassidy
Notary Public for the State of Montana
Residing at Butte, Montana
My Commission Expires Aug. 23, 1944

Filed for record December 16, 1941 at 10:40 o'clock A. M.

A. J. Shaw, County Clerk & Recorder. By O. K. Dickey, Deputy. Reception No. 4599.
Fee $1.50 Paid.

REBECCA E. MATTSON, SLITERS, NORTH FLATHEAD LAKE YACHT CLUB, J. MICHAEL DOCKSTADER, RAY J. HABEL, GREG R. HABEL, WILLIAM G. BOWD, PAUL & MARY SULLIVAN, RANDA J. MCALPIN NEIL R. MCALPIN, PETE C. WOLL, LOYD FOSTER, G.W. INGHAM II, BENJAMIN W. LOUDEN, L. HARRY WOLL, KENNETH D. LOUDEN, MICHAEL O. SPECKERT, STEVEN SPECKERT, SUSIE SPECKERT, HECTOR SPECKERT, JOHN DOES 1-500, JANE DOES 1-500, ABC CORPORATIONS 1-500, XYZ PARTNERSHIPS 1-500, DEF LIMITED LIABILITY COMPANIES 1-500, and all other parties similarly situated, et al., Plaintiffs, -vs- MONTANA POWER COMPANY, a Montana Corporation, and PPL MONTANA, LLC, a Delaware Limited Liability Company, TOUCH AMERICA HOLDINGS, INC., a Delaware Corporation, MONTANA POWER, LLC a/k/a NORTHWESTERN ENERGY, a South Dakota Limited Liability Company, and NORTHWESTERN CORPORATION, a South Dakota Corporation, Defendants.

Cause No. DV-99-548(A)

ELEVENTH JUDICIAL DISTRICT COURT OF MONTANA, FLATHEAD COUNTY

2007 Mont. Dist. LEXIS 337

April 25, 2007, Decided

PRIOR HISTORY: *Mattson v. Mont. Power Co., 2001 Mont. Dist. LEXIS 3717, 2001 ML 3853 (2001).*

JUDGES: [*1] Ted O. Lympus, District Judge.

OPINION BY: Ted O. Lympus

OPINION

ORDER AND RATIONALE ON PLAINTIFFS' MOTION FOR PARTIAL SUMMARY JUDGMENT AND ON MOTION FOR SUMMARY JUDGMENT BY PPL MONTANA. LLC.

P1. This matter is before the Court on Plaintiffs' Motion for Partial Summary Judgment, to dismiss the defense raised by PPL Montana, LLC, that the action is barred due to easements held by the various defendants, and PPL Montana's Motion for Summary Judgment on that same issue. The matters are fully briefed and the Court held argument on the motions on August 27, 2003. At the hearing, Plaintiffs were represented by Calvin T. Christian, Edward Janecek, III, Larry M. Elison, Thomas R. Meites, Michael M. Mulder, and Jamie Franklin. Northwestern Energy, Northwestern Corporation, and Montana Power Company ("MPC") were represented by Terry MacDonald. PPL Montana, LLC ("PPLM") was represented by Martin King and Sean Morris. The matters are now ready for ruling. The Court, having reviewed all prior pleadings and orders entered herein, together with the present motions, supporting and opposing briefs, affidavits, and documentation, and supplemental argument and affidavits, and thereby being advised in the premises, now enters [*2] the following:

ORDER

P2. 1. PPL Montana's Motion for Summary Judgment is Granted.

P3. 2. Plaintiffs' Motion for Partial Summary Judgment is Denied.

P4. 3. Based on the Court's ruling herein, PPL Montana's Motion for Partial Summary Judgment for Successor Liability is rendered moot.

P5. 4. As Plaintiffs' claims against the other Defendants is predicated on the same theories as Plaintiffs' claims against PPL Montana, the Court grants summary judgment to all Defendants.

RATIONALE

I. FACTUAL BACKGROUND

P6. Plaintiffs filed the present suit on November 8, 1999. On March 26, 2001, the Court granted Plaintiffs' motion to certify the class as to MPC. On July 9, 2003, the Court granted Plaintiffs' motion to certify the class against PPL Montana, (hereinafter PPLM), and on August 27, 2003, the Court granted Plaintiffs' motion to

certify the class against the remaining Defendants. The Plaintiff Class consists of landowners who own riparian property on Flathead Lake or the Flathead River in Flathead County.

P7. In their Second Amended Complaint, Plaintiffs allege Defendants damaged their riparian properties through the operation of Kerr Dam. The Plaintiffs contend that Defendants, by their operation of [*3] Kerr Dam, have caused and continue to cause erosion damages to their land by causing the lake level to remain higher, than if no dam were in place, for a longer period of the year. Plaintiffs argue that essentially, by virtue of the higher lake level, the storms occurring in the Fall cause more wave action to affect a larger amount of riparian land than if no dam existed.

P8. All parties agree that Flathead Lake's water elevation is mandated by Kerr Dam's Federal Energy Regulatory Commission ("FERC") License ("the License"). The License, which incorporates a Memorandum of Understanding with the United States Corps of Engineers, requires that the level of the Lake reach certain water elevations at certain specific times of the year. Conditions permitting, the Lake will annually be drawn down to elevation 2883 feet above sea level (fasl), the minimum level under the license, by April 15th and will be raised to elevation 2890 fasl by Memorial Day and to elevation 2893 fasl, (the maximum level under license) by June 15th. Further, at certain times and under certain conditions, the outflow of Kerr Dam is regulated by the Department of Interior. Defendants have operated Kerr Dam in substantially [*4] this method since 1937 and under the specific terms of the Memorandum of Understanding since 1962.

P9. In the Second Amended Complaint, Plaintiffs allege four causes of action: (1) trespass, (2) nuisance, (3) inverse condemnation, and (4) breach of the flood easements. Based on these causes of action, Plaintiffs have claimed damages due to "irreparable wave, flooding, subirrigation, and other action eroding and otherwise damaging, destroying and taking this property."

P10. All Defendants in this action have asserted an affirmative defense that Plaintiffs' claims for damages to their properties as a result of the Defendants' respective operations of Kerr Dam are precluded by easements obtained by Defendants and their predecessors ("the Flood Easements"). The parties agree that these easements come in a variety of forms including reservations in deeds, specific easement grants, state forms, and the like. However, all of the forms have the same general grant of flood right allowing Defendants:

> the perpetual right and easement for flooding, sub-irrigating, draining or otherwise affecting with the waters of Flathead Lake and its tributaries. all or any part of the hereinabove described land. [*5] ...

P11. At oral argument, Plaintiffs agreed that the Flood Easements were properly created prior to the purchase of their respective properties, and, where necessary, the easements were recorded, that the Flood Easements burden their respective properties, and that the benefits of the Flood Easements run with Kerr Dam. Kerr Dam was formerly owned by MPC and, since 1999, is owned by PPLM. Moreover, significant to ruling on the cross-motions for summary judgment, Plaintiffs do not contend that the Flood Easements are ambiguous.

P12. The parties also agree that the Flood Easements were obtained by PPLM's predecessors in title, Rocky Mountain Power Company ("RMPC") and MPC. RMPC and MPC obtained the Flood Easements from 1936 through 1955 as a result of either voluntary conveyance or condemnation actions. There is unrefuted evidence that RMPC and MPC paid significant amounts of money to the respective previous landowners when condemning or obtaining the properties. Defendants sold those various parcels subject to the flood easements. PPLM notes that Kerr Dam began operating in 1938, i.e., before the majority of Flood Easements were conveyed. In fact, all of the named Plaintiffs' easements [*6] were obtained after the dam began operating. Thus, at the time the majority of the Flood Easements were executed, the dam had been operating and allegedly causing damage to properties on Flathead Lake and the Flathead River.

II. SUMMARY JUDGMENT

P13. Pursuant to Rule 56, M.R.Civ.P., summary judgment is proper if there are no issues of material fact and the party requesting summary judgment is entitled to judgment as a matter of law. *Groshelle v. Reid (1995), 270 Mont. 443, 893 P.2d 314.* With the exception of Plaintiffs' reliance on extrinsic evidence, the parties do not contend there are any disputes of fact. In addition, the scope of an easement is a question of law. *Mularoni v. Bing, 2001 MT 215, P32, 306 Mont. 405, 34 P.3d 497.* As an issue of law, it is proper to decide these issues at summary judgment.

III. SERVITUDES AND THE FLOOD EASEMENTS

P14. It is well settled law in Montana that servitudes attach to the land. *Section 70-17-101, M.C.A.* A servitude or burden that attaches to other land as an incident or appurtenance is called an easement. Id. Montana, by statute, specifically recognizes and authorizes easements granting the right to flood the lands of another. *Section 70-17-101(10), M.C.A.* [*7] In Montana, an easement is a nonpossessory interest in land imposing a burden upon the land which grants one person the right to use the land of another for a specific purpose, such as flooding. *Ruana v. Grigonis (1996), 275 Mont. 441, 913 P.2d 1247.*

P15. It is equally well settled law that the dominant estate enjoys the rights and privileges granted by an easement and the servient estate permits the exercise of those rights and privileges. *Section 70-17-103, M.C.A., Burleson v. Kinsey-Cartwright, 2000 MT 278, P16, 302 Mont. 141, 13 P.3d 384.* The owner of the dominant estate has the right to use the servient estate pursuant to the scope of the easement grant.

P16. In determining what rights were conveyed by the easement, the Court looks to the terms of the grant. *Section 70-17-106, M.C.A., Van Hook v. Jennings, 1999 MT 198, 295 Mont. 409, 983 P.2d 995.* "Where an easement is specific in nature, the breadth and scope of the easement are strictly determined by the actual terms of the grant." *Mason v. Garrison, 2000 MT 78, 299 Mont. 142, 998 P.2d 531.*

P17. In the present case, while in varying forms, each Flood Easement grants broad rights to Defendants to "flood, sub-irrigate, drain or otherwise [*8] affect with the waters of Flathead Lake" "all or any part" of the Plaintiffs' properties. The specific pertinent language of the grant of easement is:

> the perpetual right and easement for flooding, sub-irrigating, draining, or otherwise affecting with the waters of Flathead Lake and its tributaries, all or any part of the hereinabove described land which [are,] will or may be affected by the regulation and control of the waters of Flathead Lake by the construction, maintenance and operation of a dam and hydroelectric power development in the Flathead River below said Lake, which dam is designed to control and regulate the waters of Flathead Lake at varying elevations, not exceeding a maximum controlled water level of 2893 feet, U.S.G.S. datum, at said dam.

P18. At oral argument, Plaintiffs agreed that, by purchasing property encumbered by these easements, they purchased their properties subject to the terms of the Flood Easements. *Section 70-20-308, M.C.A., Ludwig v. Spoklie (1996), 280 Mont. 315, 930 P.2d 56.*

IV. EFFECT OF THE FLOOD EASEMENTS

P19. While Plaintiffs agree that the alleged damage to their properties was a result of the operation of Kerr Dam and the water of Flathead Lake, [*9] Plaintiffs present four arguments as to why the Flood Easements do not preclude their claims. First, the Plaintiffs argue that the submersion and erosion occurring on their respective properties by virtue of the water of Flathead Lake exceeds the scope of the easement, burdening their land beyond that which the parties anticipated at the time the easements were drafted. Second, the Plaintiffs argue that the absence of damage waivers in the easements (in contrast to the easements which allow the Defendants to construct and repair dikes on certain properties) result in liability on the part of the Defendants for any damage to the Plaintiffs' land. Third, the Plaintiffs argue generally that the Defendants, as holders of the easements, have the duty not to damage the servient estate. Thus, contend Plaintiffs, the Defendants are liable for any damage to the land. Fourth, the Plaintiffs argue that since the easements specifically refer to 2893 feet above sea level as the farthest reach of the easement, that damage to land above the 2893 feet point is outside the easement and therefore compensable. For the reasons set forth below, the Court determines that no material facts are in issue, [*10] and that Defendants are entitled to judgment as a matter of law.

A. THE SCOPE OF THE FLOOD EASEMENTS

P20. Plaintiffs contend that Defendants have acted outside the scope of the Flood Easements by submerging and eroding their respective properties. Thus, the salient question is whether the Flood Easements allow Defendants to submerge and/or erode the servient tenement. As noted before, the Flood Easements grant Defendants the "perpetual right .. .for flooding, sub-irrigating, draining, or otherwise affecting with the waters of Flathead Lake and its tributaries all or any part. .." of the land of the various Plaintiffs. The easement is to facilitate ".. .the regulation and control of the waters of Flathead Lake by the operation of the Kerr Dam." The terms of the easement itself set 2893 feet as the maximum level of the lake.

P21. Plaintiffs do not dispute that the Flood Easements grant Defendants at least the right to engage in the "three specified activities - flooding, sub-irrigating, and draining. "However, Plaintiffs contend that the actions permitted by the terms of the easement are limited to only things similar to flooding, sub-irrigating, and draining, such as the movement of water [*11] onto, under, and off the land. Plaintiffs maintain that damage from erosion (such as permanently undercutting a bank, removing shoreline or otherwise damaging or permanently taking the property) is not within the ambit of "the transportation of water on and off (and under) land."

P22. Webster's 3rd New International Dictionary defines "flood" as "[t]o cover or overwhelm with a flood, inundate, deluge; to cover or cause to be covered with water." Similarly, "submerge" is defined as "[t]o cover or overflow with water: inundate." These definitions are substantially similar, and thus the Court determines that the easement allowing MPC to flood the Plaintiffs' land also allows submersion of that same land.

P23. The second question is whether the Flood Easements grant Defendants the right to erode Plaintiffs' properties. Webster's 3rd International Dictionary defines "erosion" as "land desecration and simultaneous removal of particles (as of soil) by running water, waves and

currents, moving ice or wind." While erosion is not specifically listed in the Flood Easement, PPLM argues that erosion is a consequence of the listed activities and that easements do not and could not list every consequence [*12] of approved activities.

P24. An easement creates an interest in property that authorizes the dominant tenement to use the servient tenement property. Therefore, the easement grant is defined in terms of actions allowed by the dominant tenement, and not the impact to the servient tenement. "Where an easement is specific in nature, the breadth and scope of the easement are strictly determined by the actual terms of the grant." *Mason, supra*, cases omitted. In *Laden v. Atkeson (1941), 112 Mont. 302, 116 P.2d 881*, a case involving ditch easements, the Montana Supreme Court reiterated basic maxims of property law, "that when the use of a thing is granted, everything is granted by which the grantees may reasonably enjoy such use, that is, rights that are incident to something else granted. . . "

P25. It is apparent that the Flood Easements do not need to specifically mention every type of damage that may occur to Plaintiffs' properties; it would be impossible to list all of the specific consequences resulting from use of the easement. The dominant tenement cannot be liable for the consequences of actions permitted by the Easement. Plaintiffs do not dispute that erosion is a consequence of the [*13] listed activities. As Plaintiffs purchased their properties subject to Defendants' rights in the Flood Easement, Plaintiffs cannot now claim damage to their properties for consequences of the activities permitted by the Flood Easements.

P26. The Court finds additional support for its conclusion in the holdings of *Carvin v. Arkansas Power and Light Company, 14 F.3d 399 (8th Cir. 1993)*, and *Jeffers v. Montana Power Co. (1923), 68 Mont. 114, 217 Pac. 652*. Both of these cases concerned landowner's claims of damages as a result of flooding from dams and the power companies' corresponding defenses. In *Carvin*, the Eighth Circuit held that the flood easements absolved the power company of liability for "massive damage to the landowners' real estate" as a result of flooding from a dam. *14 F.3d at 402*. The Eighth Circuit did not make any detailed analysis of the affects of the flooding. Instead, the Eighth Circuit reviewed whether the actions taken were within the scope of the flood easement. The Court noted that the right which the company purchased was the capacity to store excess water in an emergency. The Court noted that right ".. .inevitably means flooding the land surrounding the lake, [*14] and doing so under emergency conditions--that is, suddenly." The Court opined that the kind of flooding which occasioned the lawsuit was ". .not an unnecessary collateral result of the privilege granted by the easement, but was instead the very privilege granted by the easement." Having determined that the power company was within the scope of the easement, the Eighth Circuit granted the power company summary judgment.

P27. In *Jeffers* the Montana Supreme Court affirmed a directed verdict for the power company when water released from Hebgen Dam allegedly caused fluctuations in the flow downriver, and flooded over the banks onto the plaintiff's land, due to ice dams having formed, also allegedly as a result of the fluctuations in the water flow as a result of the dam. The Court held that "... persons impounding waters are not insurers against damage caused thereby, but are held only to the exercise of ordinary care in the operation of their plants." The Court reiterated long standing law that such dam operators are liable only for negligent operations, and not for damages occasioned by the ordinary operation of the dam. Further, "..an easement holder does not commit negligence in doing [*15] exactly what the easement permits. Some additional negligence must be shown..." *Carvin,* citing *Griffeth v. Utah Power & Light Co., 226 F.2d 661, (9th Cir. 1955), Satterwhite v. West Central Texas Mun. Water Dist., 737 S.W.2d 98. (Tex. Ct. App. 1987).*

P28. The Flood Easements at issue herein allow for "flooding, sub-irrigating, draining, or otherwise affecting with the waters of Flathead Lake. "The additional language "otherwise affecting," contemplates all the "effects" of flooding, sub-irrigating, or draining, including erosion. It is not disputed that one of the main "effects" of flooding property and subsequently draining the property is erosion.

P29. Plaintiffs contend that wave action at a higher than normal elevation is the cause of the erosion, and the Court notes that the affidavit of Plaintiffs' expert, Dr. Paul Komar, acknowledges that the reason the erosion is at a higher elevation is a consequence of the level of water at which Kerr Dam is operated. As noted elsewhere, the operation of Kerr Dam is dictated by federal regulations: the elevation of Flathead Lake is strictly controlled by the licenses under which Kerr Dam operates. The level of the lake is not subject to Defendants' [*16] volitional control. The Defendants are "doing exactly what the easement permits." That is, operating the dam at the lake level mandated by its licenses. There is no allegation nor evidence that Defendants are "additional[ly] negligent." *Carvin, supra.* Thus, wave action erosion is also within the scope of the Flood Easements.

B. DAMAGE WAIVERS IN EASEMENTS

P30. Plaintiffs next argue that because the Flood Easements do not contain a damage waiver, Defendants are liable for any damage to the servient estate. At oral argument, Plaintiffs' counsel noted that there are two grants of easement contained in the Flood Easements.

The first grant is the one in dispute and grants Defendants the right to flood sub-irrigate, drain, or otherwise affect Plaintiffs' properties. The second conveyance allows Defendants to enter Plaintiffs' properties to construct dikes. These second grants contains and express waiver of damages as a result of the construction of dikes. Therefore, Plaintiffs contend, because the second conveyance contains a damage waiver, the Flood Easement drafters "knew how to draft damage waivers" and, since the first easements do not contain a damage waiver, it is "implied" that the [*17] parties did not anticipate any damage from the flooding. Plaintiffs rely on *Guthrie v. Hardy, 2001 MT 122, 305 Mont. 367, 28 P.3d 467*, and cases preceding *Guthrie* for support.

P31. Plaintiffs, in both their briefs and at oral argument, have not contended that the Flood Easements are ambiguous and, in fact, have argued that the Flood Easements are specific in the grant of use. Following that argument, then, and applying the law that "the breadth and scope of the easement are strictly determined by the actual terms of the grant", the Court may not go beyond the terms of the easement and attempt to imply any expectations of the parties. *Mason v. Garrison, supra.*

P32. The absence of any exculpatory language in the easements is not fatal to Defendants' defenses. It is well established law in Montana that a holder of an easement may make full use of that easement, and land for the full exercise of that easement. For example, in *Laden v. Atkeson, supra*, a case involving access for ingress, egress and repair of a ditch on the land of another, the Montana Supreme Court held, *inter alia*, that "A person having an easement in a ditch running through the land of another may go upon the servient land [*18] and use as much thereof on either side of the ditch as may be required to make all necessary repairs and to clean out the ditch at all reasonable times." Similarly, in the instant case, the Defendants have the right to flood, inundate, etc., the Plaintiffs' land. Exercise of such right will result in permanently flooding land, and, due to wave action of the lake, cause erosion. It appears that part of Plaintiffs' claim is that the 'artificial' level of the lake, which is arguably at a higher elevation than before the dam, causes more damage in the Fall than it did before the dam was built. As noted above, the level of the lake is dictated by FERC, not Defendants.

P33. The Eighth Circuit in *Carvin* specifically rejected an argument similar to Plaintiffs' contention in the case at bar. There, a variety of deed reservations and grants of an easement gave AP&L "the right and privilege of overflowing said lands with water impounded by said dam..." The plaintiffs contended that AP&L was negligent in operating the flood gates on two lakes in a manner which caused the water level to rise dramatically in a third lake, the banks of which were developed by the plaintiffs. The Federal District Court [*19] entered partial summary judgment for AP&L, holding: "Since the sole purpose for having the easements was to allow AP&L to flood the property, plaintiffs cannot complain that the exercise of this right constitutes an illegal interference with their rights of utilization and enjoyment." The District Court stated that it had "difficulty accepting plaintiffs' general assertion that a party can act negligently in using an easement for the precise purpose for which it is obtained." (Emphasis added.) The Circuit Court noted that the use of the easement was consistent with the terms of the easement, and that the sole purpose for having the easement was to allow AP&L to flood the property.

P34. In *Carvin, supra*, the Court gave little weight to the damage waiver in affirming the grant of partial summary judgment to AP&L. The Court noted that the easements were written to convey a property interest and to protect AP&L from liability. In rejecting the argument that the damage waivers were impermissible exculpatory contracts, the Court noted that the easements were not limited to an exculpatory purpose, as they conveyed a property interest. Since the easements were not exculpatory contracts, the [*20] Court noted that any deficiency in the exculpatory language did not invalidate the underlying property interest.

P35. The Circuit Court considered the case pursuant to Arkansas law, and noted that "the obvious purpose of the flood and flowage rights is to protect AP&L from liability." In *Carvin*, the Court found no negligence on the part of AP&L, as under Arkansas law, the easement holder was entitled to flood or submerge the land of the servient estate. Under Montana law, persons impounding water, such as in the instant case, "... are not insurers against damage caused thereby, but are held only to the exercise of ordinary care. .." *Jeffers v. Montana Power Co., et al. (1923), 68 Mont. 114, 217 Pac. 652*. Montana law recognizes the right of an easement holder to use the land as necessary for the full exercise of the easement. *Laden, supra.* The Court determines that the holding of *Carvin*, although from the Eighth Circuit and based on Arkansas law, is applicable to this case, as the premises on which *Carvin* was decided are similar to Montana law.

P36. The Court notes that the same result can be achieved by reviewing the effect of the Flood Easement on Plaintiffs' three tort claims: (1) trespass, [*21] (2) nuisance, and (3) inverse condemnation. As explained below, under Montana law, all three tort claims are invalid against the holder of an easement.

P37. First, Plaintiffs agree that a valid easement precludes their claim for trespass. This is consistent with Montana law. "Conduct which otherwise would constitute an intentional trespass is not unlawful if it is privileged conduct pursuant to an easement." *Ducham v.*

Tuma (1994), 265 Mont. 436, 877 P.2d 1002. ". . . plaintiff landowner could not maintain an action for trespass because the trespass necessarily results from the imposition of the easement. " *Riddock v. City of Helena (1986), 212 Mont. 390, 687 P.2d 1386.*

P38. Similarly, a holder of an easement cannot be liable for nuisance. *George v. Fish Creek Irr. Ditch Co. (1959), 135 Mont. 490, 342 P.2d 738.* (In an action to abate a dam as a nuisance, the Court found that defendants had an easement for the construction of the dam and, as a result, no claim for nuisance existed); *Northwestern Improvement Co. v. Lowry (1937),104 Mont. 289, 66 P.2d 792* ("An [*22] 'affirmative easement' is one which authorizes the doing of acts which, if no easement existed, would give rise to a right of action.")

P39. Third, the servient tenement has no claim against a dominant tenement for inverse condemnation. *Riddock v. City of Helena (1984), 212 Mont. 390, 687 P.2d 1386*("We hold that plaintiff Riddock may not maintain an action for inverse condemnation, trespass or injunctive relief against the City for construction of a water pipeline" for which the City had obtained a prescriptive easement against the predecessor). Therefore, the lack of a damage waiver in the Flood Easements has no effect and cannot create liability on the part of Defendants.

C. DUTY OF A DOMINANT TENEMENT TO A SERVIENT TENEMENT

P40. Plaintiffs' third argument is that the holder of a dominant tenement owes a duty to the servient tenement to refrain from damaging the servient property. Plaintiffs do not allege that Defendants were negligent in the operation of Kerr Dam, but base their argument on the *Restatement (Third) of Property - Servitudes § 4.13* which, in full, states:

Unless the terms of a servitude determined under *§ 4.1* provide otherwise, duties to repair and maintain the servient [*23] estate and the improvements in the enjoyment of a servitude are as follows:

(1) The beneficiary of an easement for profit has a duty to the holder of the servient estate to repair and maintain the portions of the servient estate and the improvements used in the enjoyment of the servitude that are under the beneficiary's control, to the extent necessary to (a) prevent unreasonable interference with the enjoyment of the servient estate, or (b) avoid liability of the servient estate owner to third-parties.

P41. Plaintiffs maintain that there were other reasonable courses of action Defendants could have taken to mitigate the damage to their properties and the propriety of these alternative courses of action is a question of fact precluding summary judgment. Plaintiffs cite no cases interpreting the particular section of the Restatement.

P42. In response, PPLM argues that the issue turns on whether the scope of the easement is specifically defined. If the Flood Easements are specifically defined, "the breadth and scope of the easement are strictly determined by the actual terms of the grant." *Mason, 2000 MT 78, P21, 299 Mont. 142, 998 P.2d 531.* PPLM contends if the easements are to be determined by the actual terms of [*24] the grant, extrinsic evidence is irrelevant, and it appears to the Court that hypothetical, alternative courses of action are immaterial. Id.; see also *Van Hook v. Jennings, 1999 MT 198, P11, 295 Mont. 409, 983 P.2d 995.*

P43. PPLM's position is consistent with Montana law. As discussed above, Plaintiffs agree that the Flood Easements are specifically defined. Therefore, Defendants have the right to use the Flood Easements to the full extent of the grant. Plaintiffs' allegation of "other reasonable courses of action" constitutes extrinsic evidence. Pursuant to *Mason*, *Van Hook*, and established Montana law on the interpretation of unambiguous easements, extrinsic evidence is irrelevant when the scope of the easement is specifically defined. Likewise, inadmissible or irrelevant facts cannot preclude summary judgment. *State Medical Oxygen and Supply, Inc. v. American Medical Oxygen Co. (1994), 267 Mont. 340, 883 P.2d 1241.*

P44. Second, PPLM contends that the duty under the Restatement only arises "to the extent necessary to (a) prevent unreasonable interference with the enjoyment of the servient estate. " *Restatement (Third) of Property - Servitudes § 4.13(1).* However, the Restatement also [*25] clearly states that the dominant tenement has the ability to use the easement. The comments to the Restatement note that the dominant tenement can cause such damage as is "reasonably necessary to accomplish the purposes of the servitude." *Restatement (Third) of Property - Servitudes § 4.10, Comment g.* Thus, PPLM, relying on *Carvin, supra*, argues that the duty from the Restatement only concerns unnecessary damage to the servient tenement unrelated to the use of the easement.

P45. The Court agrees and finds the holding from *Carvin* directly on point. There, the Eighth Circuit specifically evaluated whether the flooding and erosion caused by the power company was necessary in the use of the easement. In making this evaluation, the Eighth Circuit found that the dominant tenement had only a duty not to cause *"unnecessary* collateral damage to the servient estate, which did not follow inevitably from the purpose for which he procured the easement." Id. (emphasis in original). Thus, the Eighth Circuit found no liability for the power company as a result of "massive damage" from flooding because the power company was "exercising rights retained by it or granted to it in the

documents creating [*26] the property interest of the landowners." Supra.

P46. In the instant case, PPLM has been operating Kerr Dam within the scope of the Flood Easements. Consequently, under the Restatement and other applicable law, PPLM, and before it MPC, had no duty to repair or maintain the Plaintiffs' servient property.

D. THE FLOOD EASEMENTS' REFERENCE TO 2893 FEET ABOVE SEA LEVEL

P47. In their final argument, Plaintiffs contend that PPLM is liable for damage to Plaintiffs' properties over 2893 feet above sea level, (fasl). Plaintiffs, citing to a letter stating that MPC decided not to obtain Flood Easements to 2896 fasl, contend the 2893 fasl designation is a "contour" line. Id. As a result of this letter, Plaintiffs contend there are fact issues as to the meaning of the Flood Easements' reference to 2893 fasl.

P48. However, the extrinsic evidence discussed by Plaintiffs is irrelevant in determining the scope of the easement. As discussed above, extrinsic evidence is only relevant if the Flood Easements are ambiguous. *Van Hook, supra.*

P49. The interpretation of an unambiguous easement is a question of law. *Mularoni, supra.* As such, in order to interpret the Flood Easements, it is again necessary to review [*27] the language of the Flood Easements focusing on the property affected and the 2893 fasl designation.

P50. There are two types of Flood Easement on Plaintiffs' properties, and the difference between the two easements are important. The first easement grants Defendants:

> the perpetual right and easement for flooding, sub-irrigating, draining, or otherwise affecting with the waters of Flathead Lake and its tributaries, *all or any part of the hereinabove described land which [are,] will or may be affected by the regulation and control of the waters of Flathead Lake* by the construction, maintenance and operation of a dam and hydroelectric power development in the Flathead River below said Lake, which *dam is designed to control and regulate the waters of Flathead Lake at varying elevations, not exceeding a maximum controlled water level of 2893 feet, U.S.G.S. datum, at said dam.*

P51. Plaintiffs' Statement of Material Fact, document # 28 (emphasis added) (Plaintiffs call this a "Type B easement").

P52. The second easement is similar in language, but does not contain any description concerning 2893 fasl in the granting language:

> The undersigned [name] grant, bargain, convey and warrant to Rocky [*28] Mountain Power Company ... the perpetual right and easement for flooding, sub-irrigating, draining, or otherwise affecting with the waters of Flathead Lake, and its tributaries, *all or any part of the hereinafter described lands which will or may be affected by the regulation and control of the waters of Flathead Lake* by the construction, maintenance and operation of said dam and hydroelectric power development in the Flathead River below said Lake, which land is located in Lake County, Montana, and particularly described as follows [legal description of parcel].

P53. Plaintiffs' Statement of Material Facts, document # 24 (emphasis added) (Plaintiffs call this a "Type A easement").

P54. The second easement does not contain any description limiting water level to 2893 fasl, yet has the same language concerning the scope of the conveyance ("flooding, sub-irrigating, draining, or otherwise affecting with the waters"). As the conveyance in the second easement does not contain reference to 2893 fasl, there can be no argument that the rights are limited to 2893 fasl for these easements.

P55. Further, and clearly dispositive of this aspect of Plaintiffs' argument, the Flood Easement encumbers "**all** [*29] **or any part** of the herein above described land" as may be "affected **by regulation and control** of the waters of Flathead Lake." (Emphasis added.) Thus, by the plain language of the documents, the Flood Easements are not limited to any contour but cover entire parcels. Similarly, the description of the specific parcel to be encumbered does not list any contour.

P56. Likewise, the only mention of 2893 fasl in the first easement ("Type B easement") is in connection with the water level which the Dam will be restricting. The easement states that Defendants have the right to flood or otherwise affect any part of Plaintiffs' properties by operation of a dam "which dam is designed to control and regulate the waters of Flathead Lake at varying elevations, not exceeding a maximum controlled water level of 2893 feet, U.S.G.S. datum, at said dam." As the 2893 feet designation refers to a water level "at said dam," the Court must necessarily reject Plaintiffs' contention that the designation is a contour line on their properties.

P57. Instead, the Court finds that the designation of 2893 feet describes the design of Kerr Dam. A case interpreting a similar flood easement provision is *Rutledge v. Union Electric Company, 280 S.W.2d 670, 674 (Miss. 1955).* [*30] In *Rutledge,* the power company obtained a flood easement to "flood" and "affect [] by said waters" the plaintiffs' lands. *Id., 280 S.W.2d at 671.* The easement language included a description of the dam strikingly similar to the description of Kerr Dam in this

case:

Said dam, power house and works appurtenant thereto shall be designed to hold the water level at the dam at approximately 660 feet above mean sea level. Id. The *Rutledge* Court rejected plaintiffs' argument that the 660 fasl designation limited the right to flood to "either the 'approximately' 660 foot contour or to any other contour." *280 S.W.2d at 673*. The *Rutledge* Court held that the "approximately 660 feet" designation was a description of the dam. *Id., 280 S.W.2d at 674*. Thus, the Court found that the power company had the right to submerge all or any part of the plaintiffs' lands from the operation of the dam. Id.

P58. Plaintiffs contend that *Rutledge* supports their argument; they focus on the language in the easement "approximately 660 feet", compared to the Flood Easements' "maximum controlled water level" language. However, Plaintiffs ignore the holding from *Rutledge* that the "approximately 660 feet" designation is [*31] irrelevant because it is a description of the dam. The Court applies such rule to the present case and determines that the 2893 fasl designation is irrelevant because it is a description of Kerr Dam, not the amount of land subject to the Flood Easement.

P59. Accordingly, based on the language of the Flood Easements themselves and the *Rutledge* holding, the Court holds that the 2893 fasl designation in the Flood Easements is a description of water level as it relates to Kerr Darn and not a contour line. There are no disputed material facts, Defendants are entitled to judgment as a matter of law, and, as a result thereof, the Court determines that summary judgment in favor of Defendants is appropriate.

DATED this 25th day of April, 2007.

Ted O. Lympus,

District Judge

COMMISSIONERS' AGENDA
CLICK ON BLUE MEETING DAYS FOR DETAILED INFORMATION
AGENDA ITEMS ARE SUBJECT TO CHANGE WITHOUT NOTICE

Tuesday, May 7, 2024

8:45 a.m.	**Public comment on matters within the Commission's jurisdiction**
9:00 a.m.	Budget Review: Finance Dept.
9:15 a.m.	Budget Review: Weed, Parks, & Recreation Dept.
9:30 a.m.	Budget Review: Commissioner's Office / Intrafund
9:45 a.m.	Budget Review: County Attorney's Office
10:00 a.m.	Budget Review: Superintendent of Schools
10:15 a.m.	Budget Review: FECC
10:45 a.m.	Budget Review: Extension Services
11:00 a.m.	a) **Public Hearing**: Annexation to Smith Valley Rural Fire District / Markee (Resolution No. 2610)
	b) **Public Hearing**: DeLong Accommodation Request / Flathead County Zoning Regulations
	c) Document for Signature: Adult Drug Treatment Court Letter of Support
11:15 a.m.	a) Preliminary Plat: Retiro Ridge Subdivision
	b) Document for Signature: Lyman Dust Control Services of Montana 2024 Dust Cost Share Program Agreement / Road Dept.
	c) Document for Signature: DEQ Consent Order Opencut Mining Busch Site

Wednesday, May 8, 2024

9:00 a.m.	**PAM:** Local Government Subcommittee Meeting via Zoom
5:30 p.m.	**PAM**: Commemorative Path Brick Laying @ Southend of Grandstands

Thursday, May 9, 2024

1:00 p.m.	**PAM:** State of Montana Revenue Interim Committee Meeting via Zoom
2:00 p.m.	**PAM**: AOA Board Meeting @ S. Campus Conf. Room
6:30 p.m.	**PAM**: Fair Board Meeting @ Fairgrounds 4-H Bldg.

Friday, May 10, 2024

8:00 a.m.	**PAM**: State of Montana Revenue Interim Committee Meeting via Zoom

Monday, May 13, 2024

8:45 a.m.	**Public comment on matters within the Commission's jurisdiction**
9:00 a.m.	Budget Review: Clerk of Court
9:15 a.m.	Budget Review: Transportation Dept.
9:30 a.m.	Budget Review: Treasurer
9:45 a.m.	Budget Review: Maintenance
10:00 a.m.	a) Document for Signature: Flathead County Animal Advisory Committee Amended By-Laws / Animal Shelter
	b) Document for Signature: DPHHS Public Health Emergency Preparedness Contract #25-07-6-11-020-0 / Health Dept.
	c) Budget Review: Health Dept. / Mosquito Control / Animal Shelter
10:45 a.m.	a) **Public Hearing:** Foley & Seaman Zone Change / Evergreen Zoning District
	b) Consideration of Authorization to Publish RFQ: Examining Land / Field Surveyor(s)
11:00 a.m.	a) Preliminary Plat: Big Mountain Basecamp
	b) COS Review: Gaver