



PETITION FOR CONTROLLED GROUNDWATER AREA

This form can be filed by a state or local public health agency for identified public health risks; a municipality, county, conservation district, or local water quality district formed under Title 7, chapter 13, part 45; or by at least one third of the water right holders in an area proposed for designation of a controlled groundwater area. An incomplete or non-qualifying petition will be returned.

A fee of \$1500 must accompany this petition. Petitioners must also pay reasonable costs of giving notice pursuant to MCA § 85-2-506 and A.R.M. 36.12.103

Make checks payable to "DNRC"

Filing Fee: \$1500.00

FOR DEPARTMENT USE ONLY

Application # 30154868 Basin 76H

Date 02/03/2022

Time 2:13 AM / PM

Rec'd By J. Nave

Fee Rec'd \$ Check #

Deposit Receipt #

Payor

Refund \$ Date

Contact Person: ☒ Contact is Petitioner ☐ Contact is Consultant ☐ Contact is Attorney ☐ Contact is Other

Contact Name Montana Department of Environmental Quality/Matthew Kent

Mailing Address PO Box 200901

City Helena State MT Zip 59620-0901

Phone Numbers: Home Work 406-444-6479 Cell

Email Address mkent@mt.gov

General Location of Proposed Controlled Groundwater Area: This petition is to modify the existing CGWA for

the Bitterroot Valley Sanitary Landfill State Superfund Facility

TYPE OF DESIGNATION OR PROVISIONS REQUESTED: Is the petition for a permanent or temporary designation?

☒ **Permanent.** If permanent, proceed to Section 1.

☐ **Temporary.** If temporary, proceed to Section 2.

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Section 1. PERMANENT DESIGNATION PROPOSED Please provide the following:

A. MCA § 85-2-506 requires that this petition must contain analysis prepared by a hydrogeologist, a qualified scientist, or a qualified licensed professional engineer concluding that one or more of the following criteria:

☐ Current or projected reductions of recharge to the aquifer or aquifers in the proposed controlled ground water area will cause ground water levels to decline to the extent that water right holders cannot reasonably exercise their water rights;

- ☐ Current or projected ground water withdrawals from the aquifer or aquifers in the proposed controlled ground water area have reduced or will reduce ground water levels or surface water availability necessary for water right holders to reasonably exercise their water rights;
- ☐ Current or projected ground water withdrawals from the aquifer or aquifers in the proposed controlled ground water area have induced or altered or will induce or alter contaminant migration exceeding relevant water quality standards;
- ☒ Current or projected ground water withdrawals from the aquifer or aquifers in the proposed controlled ground water area have impaired or will impair ground water quality necessary for water right holders to reasonably exercise their water rights based on relevant water quality standards;
- ☒ Ground water within the proposed controlled ground water area is not suited for beneficial use; or public health, safety, or welfare is or will become at risk.

- B. Please attach all supporting information, including the name, address and qualifications of the person who prepared the analysis.
- C. Explain why the condition occurring or likely to occur cannot be appropriately mitigated.
- D. Describe the kind of corrective controls or provisions you are requesting. A controlled ground water area may include but is not limited to the following control provisions:
 - ☒ A provision closing the controlled ground water area to further appropriation of ground water;
 - ☒ A provision restricting the development of future ground water appropriations in the controlled ground water area by flow, volume, purpose, aquifer, depth, water temperature, water quality, density, or other criteria that the department determines necessary;
 - ☐ A provision requiring measurement of future ground water or surface water appropriations;
 - ☐ A provision requiring the filing of notice on land records within the boundary of a permanent controlled ground water area to inform prospective holders of an interest in the property of the existence of a permanent controlled ground water area.
 - ☐ A provision for well spacing requirements, well construction constraints, and prior department approval before well drilling, unless the well is regulated pursuant to Title 82, chapter 11;
 - ☐ A provision for mitigation of ground water withdrawals;
 - ☐ A provision for water quality testing;
 - ☐ A provision for data reporting to the department

*****Proceed to Section 3.*****

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Section 2. TEMPORARY DESIGNATION PROPOSED Please provide the following:

- A. A study plan that may include measurement, water quality testing, and reporting requirements for new and/or replacement wells during the period of the temporary closure.
- B. Include information on funding for any proposed investigations including any plans for pursuing funding under the renewable resource grant and loan program, and any planned investigation under the ground water investigation program.
- C. Describe how any necessary investigations can be completed in a timely fashion not to exceed 6 years.

*****Proceed to Section 3.*****

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Section 3. PERMANENT OR TEMPORARY DESIGNATION PROPOSED Please provide the following:

- A. **Map:** A U.S. Geological Survey quadrangle map, or one of similar size, scale and detail level **must** accompany the petition. In addition to the information provided on the USGS map, the map **must** also show the following:
- north direction;
 - township and range numbers;
 - section corners and numbers;
 - accurate outline of the proposed controlled area;
 - location of any known groundwater recording equipment;
 - points of diversion of all groundwater users, including wells and developed springs.
- B. **Land Ownership:** Attach a list to this petition of all the landowners within the proposed boundaries of the controlled groundwater area. Land ownership may be found at the county assessors office or at <http://svc.mt.gov/msl/mtcadastral/>. The list must include the name and complete mailing address of the property owner.

SIGNATURES

This form must be filed by a state or local public health agency for identified public health risks; a municipality, county, conservation district, or local water quality district formed under Title 7, chapter 13, part 45; or by at least one third of the water right holders in an area proposed for designation of a controlled groundwater area. **Print or type** the full name of the water user and mailing address and sign on the appropriate line. Attach additional sheets if necessary.

➤ If form being filed by a state or local public health agency sign here.

Jenny Chambers

Printed Name

Signature

Division Administrator

Title

➤ If form is being filed by local water right holders Sign here.

WE THE UNDERSIGNED GROUNDWATER USERS IN THE PROPOSED CONTROLLED AREA PETITION THE DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION FOR A CONTROLLED GROUNDWATER AREA IN ACCORDANCE WITH § 85-2-506, MCA AND THIS PETITION.

Printed Name	Signature
1. _____ Mail Address _____	/ _____ Phone _____
2. _____ Mail Address _____	/ _____ Phone _____
3. _____ Mail Address _____	/ _____ Phone _____
4. _____ Mail Address _____	/ _____ Phone _____

Printed Name	Signature
5. /	
Mail Address	Phone
6. /	
Mail Address	Phone
7. /	
Mail Address	Phone
8. /	
Mail Address	Phone
9. /	
Mail Address	Phone
10. /	
Mail Address	Phone

WATER RESOURCES OFFICES

BILLINGS: AIRPORT INDUSTRIAL PARK, 1371 RIMTOP DR., BILLINGS MT 59105-1978 PHONE: 406-247-4415 FAX: 406-247-4416 SERVING: Big Horn, Carbon, Carter, Custer, Fallon, Powder River, Prairie, Rosebud, Stillwater, Sweet Grass, Treasure, and Yellowstone Counties	HELENA: 1424 9TH AVE., PO BOX 201601, HELENA MT 59620-1601 PHONE: 406-444-6999 FAX: 406-444-9317 SERVING: Beaverhead, Broadwater, Deer Lodge, Jefferson, Lewis and Clark, Powell, and Silver Bow Counties
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MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
Water Resources Division - Water Rights Bureau
1424 9th Avenue, PO Box 201601, Helena, MT 59620-1601
Phone: 406-444-6610 Website: <http://dnrc.mt.gov/wrd/>



Montana Department of Environmental Quality

Petition for Modification of Controlled Groundwater Area

The Bitterroot Valley Sanitary Landfill State Superfund Facility is located approximately one mile south of the town of Victor in Ravalli County on US Highway 93 (see Figure 1). The Montana Department of Environmental Quality (DEQ) is addressing the Facility under the authority of the Comprehensive Environmental Cleanup and Responsibility Act (CECRA). The Facility includes the location of a historic waste disposal pit in the southwest portion of the landfill where chloroform and other wastes originating with laboratories operated by the National Institutes of Health (NIH) and Ribic Immunochem Research, Inc. were disposed, as well as any contamination emanating from that disposal pit. The geology and hydrogeology of the Facility area remains unchanged from when DEQ submitted its original petition for the Controlled Groundwater Area (CGWA) in 2002 with the exception of the decline in contaminant concentrations described below. The Facility has been the subject of soil and groundwater sampling efforts beginning in 1985 when investigations conducted by the United States Environmental Protection Agency (EPA) led to the discovery of volatile organic compound contamination, primarily chloroform, in groundwater beneath the Facility in concentrations exceeding applicable water quality standards. In 1992, investigations conducted by the NIH showed that the groundwater contaminant plume extended from the waste disposal pit located approximately ½ mile west of US Highway 93 (Hwy 93), eastward beneath Hwy 93 to near the Bitterroot River, a total distance of approximately one mile (see Figure 3).

In 1994, Camp, Dresser & McKee Inc. prepared a risk assessment for DEQ to determine the pathways of exposure and risks associated with the contamination. The risk assessment concluded there were unacceptable risks to residents at the facility, through ingestion and inhalation pathways, that warranted action (CDM 1994). Also in 1994, NIH initiated cleanup of the groundwater by removing much of the contamination source (impacted soil in the area of the waste disposal pit) and installing a pump and treat system. Beginning in 1995, nineteen deep replacement wells were installed by NIH to address unacceptable risks for property owners with domestic wells impacted by chloroform. The deep replacement wells were completed in aquifer layers that were not impacted by contamination from the Facility; however, these layers have naturally high concentrations of iron and manganese at levels that can cause mostly aesthetic issues for the property owners. NIH installed treatment systems on these deep replacement wells to mitigate the iron and manganese issues, and DEQ maintains these systems.

DEQ issued a Record of Decision (ROD) in 2002 that documented the remedial alternative selected in the proposed plan and included a community water supply system (CWSS), implementation of institutional controls (ICs), natural attenuation of remaining groundwater contamination, and groundwater monitoring. Eleven contaminants of concern (COCs) were identified in the ROD including: 1,1-dichloroethene; 1,2-dichloroethane; cis-1,2-dichloroethene, benzene, dichlorodifluoromethane; carbon tetrachloride; chloroform; methylene chloride; tetrachloroethene; trichloroethene; and vinyl chloride. The ROD stated that the preferred IC would be a CGWA (DEQ 2002a).

In August 2002, DEQ petitioned the Department of Natural Resources and Conservation for a temporary CGWA (DEQ 2002b). Per the petition, DEQ requested the CGWA for the following reasons:

- “That excessive groundwater withdrawals would cause contaminant migration.”

- “That water quality within the groundwater area is not suited for a specific use defined by MCA § 85-2-102(2)(a).” [Beneficial uses are currently defined at MCA § 85-2-102(5).]

In September 2002, DEQ submitted an addendum to the CGWA petition requesting that wells permitted for installation be constructed in a manner that prohibits the contaminants from using the migration pathway to another aquifer (DEQ 2002c). In January 2003, DEQ submitted another addendum to the CGWA petition requesting that no wells be drilled without a permit or change authorization within the CGWA, additional restrictions for Zones 1 & 2 of the CGWA, and exclusion of monitoring wells from permitting requirements. The addendum also included a new map of the CGWA boundary (DEQ 2003a). In March 2003, DEQ submitted a final Petition for Controlled Groundwater Area to DNRC. This final petition included the two zones of the CGWA and the distinctions between the restrictions which were not included in the original petition (DEQ 2003b). These restrictions based on the two zones are still in place today.

Following significant reduction in the concentrations of contaminants in groundwater, the pump and treatment system was shut down in September 2012, when it no longer provided effective treatment of groundwater contamination (NIH 2012). Per agreement with DEQ, NIH continued to monitor declining contaminant concentrations in the network of monitoring wells at the Facility until September 2017 (NIH 2000). Figure 3 shows the location of the groundwater monitoring wells in relationship to the 1992 plume extent, and Figure 4 is a series of graphs of the chloroform concentration results from these wells from 2012 through 2021 (where available). When NIH’s obligations at the Facility ended in 2017, concentrations of contaminants exceeding Circular DEQ-7 Montana Numeric Water Quality Standards (DEQ-7) (DEQ 2019) had been reduced to only two of the eleven ROD COCs, chloroform and vinyl chloride, and the locations of these exceedances were isolated to the area of three wells near the southeast corner of the original landfill footprint (DEQ 2022). Given the significant reduction in area of the groundwater contamination plume where contaminants exceeded DEQ-7 standards and also because the CWSS component of the selected remedy was never implemented and is no longer needed as a result of the actions described above, DEQ determined that the 2002 ROD for the Facility needed to be amended. DEQ developed a proposed plan for the ROD Amendment and held a 30-day public comment period and a public meeting in Victor near the end of 2018. Part of the proposed amendments to the 2002 ROD was removal of the CGWA.

DEQ has continued to annually monitor the three wells that continue to exhibit exceedances since 2019, and in 2020 and 2021, only two wells contained contamination exceeding DEQ-7 standards: chloroform in well BRGW-36D which remains slightly above the DEQ-7 standard of 70 µg/L and vinyl chloride in well R-8D which remains slightly above the DEQ-7 standard of 0.2 µg/L (see Figure 5). DEQ will continue to perform annual groundwater monitoring at the wells that continue to demonstrate exceedances of DEQ-7 standards. Groundwater monitoring results for all wells in the monitoring program and all 11 ROD COCs are included in the attached Table. While further active treatment of remaining groundwater is not feasible due to the decreased size of the contamination plume and decreased contaminant mass removal rates resulting in decreased performance and cost effectiveness of the pump and treat system, DEQ expects the remaining contamination will continue to naturally attenuate until all locations are below DEQ-7 standards.

Pursuant to a 2019 review of existing ICs on the properties that now comprise the historic landfill footprint where these remaining exceedances exist, DEQ sought to have ICs installed by the owners on

two properties that did not have covenants restricting groundwater and other uses that might impact remaining contamination associated with the CECRA Facility. In July 2019, Waste Connections of Montana, the entity that owns and operates the waste transfer station in the southeast corner of the historic landfill, complied with DEQ's request and signed and recorded an IC that prevents installation of wells without approval of DEQ, restricts groundwater use to sampling purposes, prevents irrigation on the property without DEQ approval, and provides for other restrictions. The owner of the property on which well R-8D is located has not complied with DEQ's request to add restrictive covenants to that parcel. DEQ maintains that monitoring data demonstrates that the CGWA can be removed from all areas except the parcels of the historic landfill footprint. While restrictive covenants are in place on most of the properties where groundwater contamination remains in exceedance of DEQ-7 standards in this area, the entire exceedance area is not covered by property ICs and the additional protection afforded by maintaining a modified version of the existing CGWA is necessary to ensure all affected property is protected. DEQ proposed the reduction of the CGWA as described in the ROD Amendment issued in January 2022. The boundary of the modified (reduced) CGWA proposed by DEQ is shown as a red outline and all known wells are shown in blue on Figure 2. The wells in Figure 2 are former and current DEQ monitoring or treatment wells with the exception of two deep aquifer replacement wells (BRGW-69DD and BRGW-80DD) on the transfer station property. Property owners within the modified CGWA do not use groundwater for drinking or food preparation purposes. DEQ proposes that this modified CGWA have the following restrictions:

1. No wells may be drilled within the boundaries of the CGWA without express prior written approval of DEQ. Groundwater within the CGWA may not be used for any purpose other than sampling without the express prior written approval of DEQ. The integrity of monitoring wells must be maintained and no seals may be removed on any closed wells.

The following landowners are within the proposed boundaries of the modified CGWA:

Brian Thornton
Bitterroot Valley Sanitary Landfill
167 S. Easy St.
Missoula, MT 59802-5485

Jessie Wilson
PO Box 23570
Waco, TX 76702-3570

Waste Connections of Montana Inc./
Victor Transfer Inc.
Jessica Murphy, Operations Manager
211 Humdinger Lane
Victor, MT 59875

Worthing Jackman, President
Waste Connections of Montana Inc.
3 Waterway Square Place, #110
The Woodlands, TX 77380

Form No. 630 R01/2017, Petition for Controlled Groundwater Area, and this associated analysis were completed by Matthew Kent, Environmental Science Specialist, Montana Department of Environmental Quality. Mr. Kent holds a Bachelor of Science degree in Environmental Studies and a Master of Science degree in Environmental Science and Policy. Mr. Kent has 24 years of experience as an environmental professional including work as a contractor policy analyst/staff scientist for the U.S. EPA, inspector for the Virginia Division of Gas and Oil, and environmental scientist for Soils & Materials Engineering, Inc. Mr. Kent has worked as an Environmental Science Specialist for DEQ since 2009, including four years as a

Water Quality Permit Writer for the Water Quality Division and eight years as a Project Officer for the Waste Management and Remediation Division. He has been the Project Officer assigned to the Bitterroot Valley Sanitary Landfill CECRA Facility since 2016.

References

- CDM 1994. *Risk Assessment Bitterroot Valley Sanitary Landfill Site*. Camp, Dresser & McKee Inc. August 22.
- DEQ 2002b. *Petition for Controlled Groundwater Area*, Form No. 630 R5/97. Montana Department of Environmental Quality. August 7.
- DEQ 2002c. *Addendum to Petition for Controlled Groundwater Area*, Form No. 630 R5/97. Montana Department of Environmental Quality. September 23.
- DEQ 2003a. *Addendum to Petition for Controlled Groundwater Area*, Form No. 630 R5/97. Montana Department of Environmental Quality. January 28.
- DEQ 2003b. *Petition for Controlled Groundwater Area*, Form No. 630 R5/97. Montana Department of Environmental Quality. March 3.
- DEQ 2019. *Circular DEQ-7 Montana Numeric Water Quality Standards*. Montana Department of Environmental Quality. June.
- DEQ 2022. *Amendment to the Record of Decision for the Bitterroot Valley Sanitary Landfill State Superfund Facility, Ravalli County, Montana*. Montana Department of Environmental Quality. January.
- NIH 2000. *Settlement Agreement between the United States, on behalf of the National Institute of Health and the State of Montana on behalf of the Montana Department of Environmental Quality*. National Institute of Health and Montana Department of Environmental Quality. November.
- NIH 2012. *RE: BVSL – Pump and Treat Shutdown Notification*. Email. Brian Kim. National Institute of Health. November 20.

Figure 2 - Wells Within the Modified CGWA

● Wells

Modified CGWA



0 0.0375 0.075 0.15 Miles



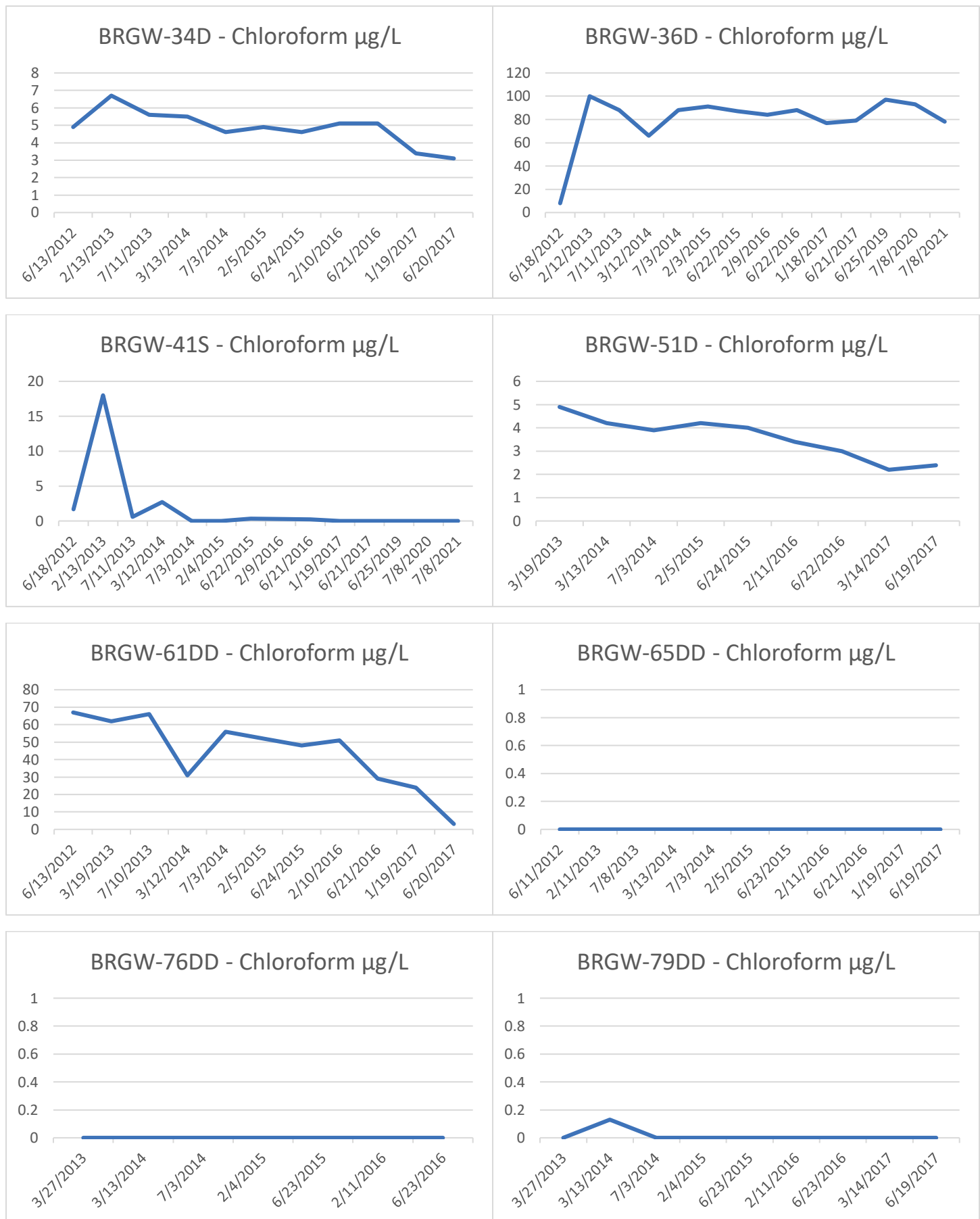
Figure 3 - Groundwater Monitoring Program Wells



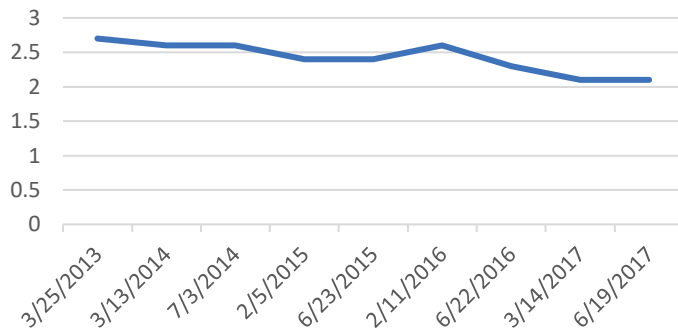
0 0.1 0.2 0.4 Miles



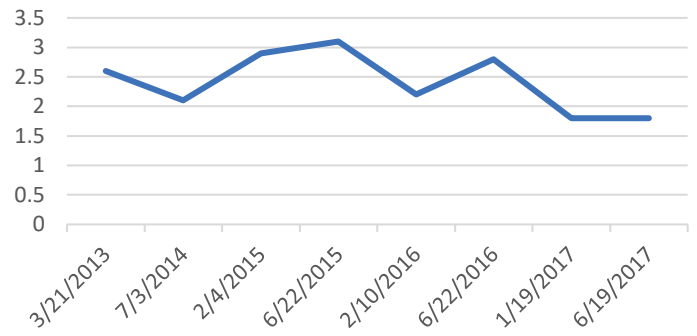
Figure 4 – Groundwater Monitoring Well Chloroform Concentrations 2012 - 2021



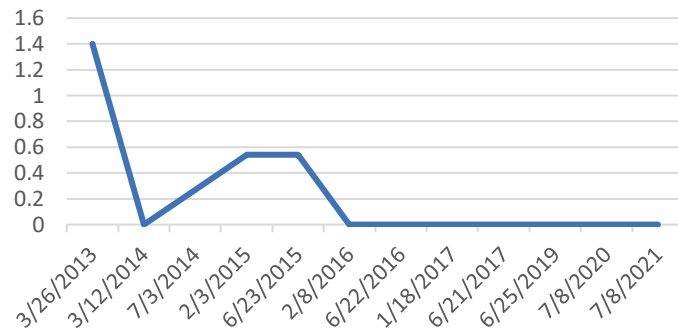
BRGW-90D - Chloroform µg/L



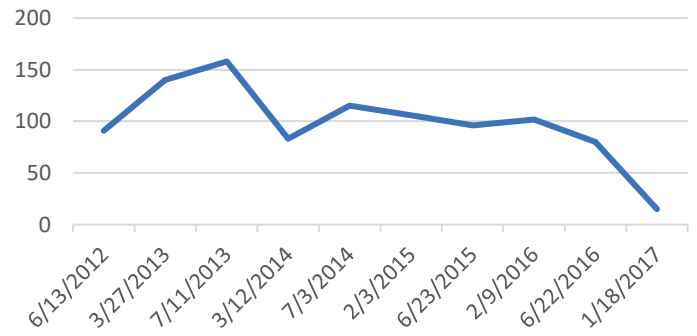
D-101 - Chloroform µg/L



R8-D - Chloroform µg/L



R9-D - Chloroform µg/L



SA-13 - Chloroform µg/L

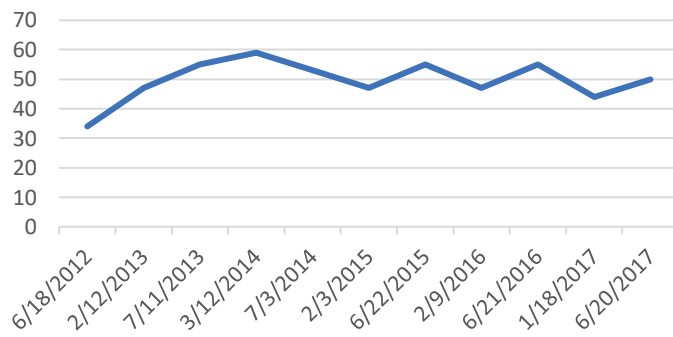


Figure 5 - Remaining Groundwater Contaminant Exceedances
Bitterroot Valley Sanitary Landfill Facility

Well R-8D Vinyl Chloride
 07/08/2021 - 3.3 µg/L
 07/08/2021 - 3.3 µg/L*
 07/08/2020 - 4.1 µg/L
 06/25/2019 - 4.4 µg/L
 06/21/2017 - 5.1 µg/L**
 01/18/2017 - 4.3 µg/L
 06/22/2016 - 6.1 µg/L

Well BRGW-41S Vinyl Chloride
 07/08/2021 - ND
 07/08/2020 - ND
 07/08/2020 - ND*
 06/25/2019 - 0.40J µg/L
 06/21/2017 - 0.39J µg/L
 01/19/2017 - 0.4J µg/L
 06/21/2016 - 0.52 µg/L

Well BRGW-36D Chloroform
 07/08/2021 - 78 µg/L
 07/08/2020 - 93 µg/L
 06/25/2019 - 97 µg/L
 06/25/2019 - 89 µg/L*
 06/21/2017 - 79 µg/L
 01/18/2017 - 77 µg/L
 06/22/2016 - 94 µg/L

● Wells

Est. 2021 Chloroform Plume

Est. 2021 Vinyl Chloride Plume

Modified CGWA Extent

Groundwater Cleanup Levels

Chloroform: 70 µg/L (DEQ-7, 06/2019)

Vinyl Chloride: 0.2 µg/L (DEQ-7, 06/2019)

0 200 400 800 Feet

* Duplicate sample

** Result detected below Practical Quantitation Limit but above Method Detection Limit

J = Estimated Value below reporting limit

ND = Not detected

GROUNDWATER MONITORING DATA (Summer 2012 through Summer 2021)

All values in µg/L

Sample Location	Sample Date	Benzene	Carbon Tetrachloride	Chloroform	cis-1,2-Dichloroethene	1,1 Dichloroethene	1,2 Dichloroethane	Dichlorodifluoromethane	Methylene Chloride	Tetrachloroethene	Trichloroethene	Vinyl Chloride
Groundwater Standard		5	3	70	70	7	4	1,000	5	5	5	0.2
BRGW-34D												
	1/19/2017	<0.5	<0.5	3.4	0.72	<0.5	<0.5	0.28 J	<0.5	0.23 J	0.094 J	<0.5
	6/21/2016	<0.5	<0.5	4.4	0.54	<0.5	<0.5	0.29 J	<0.5	0.29 J	<0.5	<0.5
	2/10/2016	<0.5	<0.5	5.6	0.84	<0.5	<0.5	0.29	<0.5	0.32	0.12	<0.5
	2/10/2016	<0.5	<0.5	4.4	0.64	<0.5	<0.5	0.26	<0.5	<0.5	<0.5	<0.5
	6/24/2015	<0.5	<0.5	4.6	0.46 J	<0.5	<0.5	0.28 J	<0.5	0.33 J	0.11 J	<0.5
	2/5/2015	<0.5	<0.5	4.9	0.34 J	<0.5	<0.5	0.29 J	<0.5	0.28 J	<0.5	<0.5
	7/3/2014	<0.5	<0.5	4.6	<0.5	<0.5	<0.5	0.22 J	<0.5	0.27 J	<0.5	<0.5
	3/13/2014	<0.5	<0.5	5.5	<0.5	<0.5	<0.5	0.27	<0.5	0.25	<0.5	<0.5
	7/11/2013	<0.5	<0.5	5.6	<0.5	<0.5	<0.5	0.28 J	<0.5	0.26 J	<0.5	<0.5
	2/13/2013	<0.5	<0.5	6.7	<0.5	<0.5	<0.5	0.29 J	<0.5	0.28 J	<0.5	<0.5
	6/13/2012	<0.5	<0.5	4.9	<0.5	<0.5	<0.5	0.21 J	<0.5	0.26 J	<0.5	<0.5
BRGW-34DLF												
	6/20/2017	<0.5	<0.5	3.1	0.8	<0.5	<0.5	0.2 J	<0.5	0.2 J	<0.5	<0.5
	6/21/2016	<0.5	<0.5	5.1	0.76	<0.5	<0.5	0.32 J	<0.5	0.23 J	<0.5	<0.5
	2/10/2016	<0.5	<0.5	5.1	0.8	<0.5	<0.5	0.28	<0.5	0.32	0.18	<0.5
BRGW-36D												
	1/18/2017	<0.5	<0.5	77	<0.5	<0.5	<0.5	0.18 J	<0.5	0.26 J	<0.5	<0.5
	6/22/2016	<0.5	<0.5	87	<0.5	<0.5	<0.5	<0.5	<0.5	0.35 J	<0.5	<0.5
	6/22/2016	<0.5	<0.5	94	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2/9/2016	<0.5	<0.5	84	0.15	<0.5	<0.5	0.16	<0.5	0.33	<0.5	<0.5
	6/22/2015	<0.5	<0.5	87	0.14 J	<0.5	<0.5	0.18 J	<0.5	0.43 J	0.11 J	<0.5
	2/3/2015	<0.5	<0.5	91	0.13 J	<0.5	<0.5	0.19 J	<0.5	0.36 J	<0.5	<0.5
	7/3/2014	<0.5	<0.5	88	0.1 J	<0.5	<0.5	0.19 J	<0.5	0.4 J	<0.5	<0.5
	7/3/2014	<0.5	<0.5	86	0.16 J	<0.5	<0.5	0.18 J		0.42 J		
	3/12/2014	<0.5	<0.5	66	0.091	<0.5	<0.5	0.19	<0.5	0.36	0.08	<0.5
	7/11/2013	<0.5	<0.5	88	0.14 J	<0.5	<0.5	0.17 J	<0.5	0.4 J	<0.5	<0.5
	7/11/2013	<0.5	<0.5	85	0.16 J	<0.5	<0.5	0.18 J	<0.5	0.41 J	<0.5	<0.5
	2/12/2013	<0.5	<0.5	100	0.17 J	<0.5	<0.5	0.18 J	<0.5	0.4 J	<0.5	<0.5
	6/18/2012	<0.5	<0.5	8	<0.5	<0.5	<0.5	<0.5	<0.5	0.16 J	<0.5	<0.5
BRGW-36DLF												
	7/8/2021	<0.5	<0.5	78	<0.5	<0.5	<0.5	<0.5	<0.5	0.37 J	<0.5	<0.5
	7/8/2020	<0.5	<0.5	93	<0.5	<0.5	<0.5	<0.5	<0.5	0.31	<0.5	<0.5
	6/25/2019	<0.5	<0.5	97	<0.5	<0.5	<0.5	<0.5	<0.5	0.42 J	<0.5	<0.5
	6/25/2019	<0.5	<0.5	89	<0.5	<0.5	<0.5	<0.5	<0.5	0.38 J	<0.5	<0.5
	6/21/2017	<0.5	<0.5	79	0.1 J	<0.5	<0.5	0.2 J	<0.5	0.3 J	<0.5	<0.5

GROUNDWATER MONITORING DATA (Summer 2012 through Summer 2021)

All values in µg/L

Sample Location	Sample Date	Benzene	Carbon Tetrachloride	Chloroform	cis-1,2-Dichloroethene	1,1 Dichloroethene	1,2 Dichloroethane	Dichlorodifluoromethane	Methylene Chloride	Tetrachloroethene	Trichloroethene	Vinyl Chloride
Groundwater Standard		5	3	70	70	7	4	1,000	5	5	5	0.2
BRGW-36DLF												
	6/22/2016	<0.5	<0.5	88	<0.5	<0.5	<0.5	<0.5	<0.5	0.25 J	<0.5	<0.5
	2/9/2016	<0.5	<0.5	84	<0.5	<0.5	<0.5	0.14	<0.5	0.26	<0.5	<0.5
BRGW-41S												
	1/19/2017	<0.5	<0.5	<0.5	12	<0.5	<0.5	0.31 J	<0.5	<0.5	0.74	0.4 J
	6/21/2016	0.2 J	<0.5	<0.5	15	<0.5	<0.5	0.3 J	<0.5	<0.5	0.8	0.52
	6/22/2015	0.18 J	<0.5	0.32 J	19	<0.5	<0.5	0.36 J	<0.5	<0.5	1.1	0.6
	2/4/2015	0.22 J	<0.5	<0.5	19	<0.5	<0.5	0.22 J	<0.5	<0.5	0.82	0.57
	7/3/2014	0.29 J	<0.5	<0.5	28	<0.5	<0.5	0.49 J	<0.5	<0.5	0.69	0.66
	3/12/2014	0.26	<0.5	2.7	28	<0.5	<0.5	1	<0.5	<0.5	0.84	0.75
	7/11/2013	0.4 J	<0.5	0.58	9.9	<0.5	<0.5	0.43 J	<0.5	0.64	0.45 J	0.86
	2/13/2013	0.46 J	<0.5	18	7.9	<0.5	<0.5	0.39 J	0.3 J	0.66	0.62	1.2
	6/18/2012	<0.5	<0.5	1.7	11	<0.5	<0.5	0.79	<0.5	1	0.29 J	<0.5
BRGW-41SLF												
	7/8/2021	<0.5	<0.5	<0.5	4	<0.5	<0.5	0.21 J	<0.5	<0.5	<0.5	<0.5
	7/8/2020	<0.5	<0.5	<0.5	5.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	7/8/2020	<0.5	<0.5	<0.5	5.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	6/25/2019	<0.5	<0.5	<0.5	19	<0.5	<0.5	0.27 J	<0.5	<0.5	0.47 J	0.4 J
	6/21/2017	0.1 J	<0.5	<0.5	15	<0.5	<0.5	0.3 J	<0.5	<0.5	0.7	0.4 J
	6/21/2016	<0.5	<0.5	0.21 J	17	<0.5	<0.5	0.34 J	<0.5	<0.5	0.68	0.46 J
	2/9/2016	<0.5	<0.5	0.29	18	<0.5	<0.5	0.29	<0.5	<0.5	0.78	0.47
BRGW-51D												
	3/14/2017	<0.5	<0.5	2.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2/11/2016	<0.5	<0.5	3.7	0.49	<0.5	<0.5	0.2	<0.5	0.24	<0.5	<0.5
	6/24/2015	<0.5	<0.5	4	0.19 J	<0.5	<0.5	0.22 J	<0.5	0.27 J	<0.5	<0.5
	2/5/2015	<0.5	<0.5	4.2	0.14 J	<0.5	<0.5	0.22 J	<0.5	0.23 J	<0.5	<0.5
	7/3/2014	<0.5	<0.5	3.9	<0.5	<0.5	<0.5	0.18 J	<0.5	0.19 J	<0.5	<0.5
	3/13/2014	<0.5	<0.5	4.2	<0.5	<0.5	<0.5	0.19	<0.5	0.2	<0.5	<0.5
	3/19/2013	<0.5	<0.5	4.9	<0.5	<0.5	<0.5	0.25 J	<0.5	0.23 J	<0.5	<0.5
BRGW-51DLF												
	6/19/2017	<0.5	<0.5	2.4	0.4 J	<0.5	<0.5	0.2 J	<0.5	0.1 J	<0.5	<0.5
	6/22/2016	<0.5	<0.5	3	0.26 J	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2/11/2016	<0.5	<0.5	3.4	0.25	<0.5	<0.5	0.18	<0.5	0.18	<0.5	<0.5
BRGW-61DD												
	6/20/2017	<0.5	<0.5	3.1	0.2 J	<0.5	<0.5	1.2	<0.5	0.8	<0.5	<0.5

GROUNDWATER MONITORING DATA (Summer 2012 through Summer 2021)

All values in µg/L

Sample Location	Sample Date	Benzene	Carbon Tetrachloride	Chloroform	cis-1,2-Dichloroethene	1,1 Dichloroethene	1,2 Dichloroethane	Dichlorodifluoromethane	Methylene Chloride	Tetrachloroethene	Trichloroethene	Vinyl Chloride
Groundwater Standard		5	3	70	70	7	4	1,000	5	5	5	0.2
BRGW-61DD												
	1/19/2017	<0.5	<0.5	24	<0.5	<0.5	<0.5	1.3	<0.5	0.57	0.16 J	<0.5
	6/21/2016	<0.5	<0.5	48	0.47 J	<0.5	<0.5	1.6	<0.5	1.2	0.23 J	<0.5
	2/10/2016	<0.5	<0.5	51	0.59	<0.5	<0.5	1.2	<0.5	1.3	0.29	<0.5
	6/24/2015	<0.5	<0.5	48	0.51	<0.5	<0.5	1.3	<0.5	1.5	0.32 J	<0.5
	2/5/2015	<0.5	<0.5	52	0.56	<0.5	<0.5	1.4	0.21 J	1.4	0.32 J	<0.5
	7/3/2014	<0.5	<0.5	56	0.61	<0.5	<0.5	1.5	<0.5	1.4	0.26 J	<0.5
	3/12/2014	<0.5	<0.5	31	0.55	<0.5	<0.5	1.5	<0.5	1.4	0.29	<0.5
	7/10/2013	<0.5	<0.5	66	0.71	<0.5	<0.5	1.3	<0.5	1.4	0.35 J	<0.5
	3/19/2013	<0.5	<0.5	62	0.62	<0.5	<0.5	1.5	<0.5	1.4	0.35 J	<0.5
	6/13/2012	<0.5	<0.5	67	0.68	<0.5	<0.5	1.5	<0.5	1.7	0.33 J	<0.5
BRGW-61DDLF												
	6/21/2016	<0.5	<0.5	29	<0.5	<0.5	<0.5	1.3	<0.5	0.61	<0.5	<0.5
BRGW-65DD												
	6/19/2017	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.4 J	<0.5	<0.5	<0.5	<0.5
	1/19/2017	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.46 J	<0.5	<0.5	<0.5	<0.5
	6/21/2016	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.31 J	<0.5	<0.5	<0.5	<0.5
	2/11/2016	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.26	<0.5	<0.5	<0.5	<0.5
	6/23/2015	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.37 J	<0.5	0.14 J	<0.5	<0.5
	2/5/2015	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.4 J	<0.5	0.15 J	<0.5	<0.5
	7/3/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.47 J	<0.5	<0.5	<0.5	<0.5
	3/13/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.34	<0.5	<0.5	<0.5	<0.5
	7/8/2013	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.44 J	<0.5	<0.5	<0.5	<0.5
	2/11/2013	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.39 J	<0.5	<0.5	<0.5	<0.5
	6/11/2012	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.33 J	<0.5	0.14 J	<0.5	<0.5
BRGW-76DD												
	6/23/2016	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2/11/2016	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	6/23/2015	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2/4/2015	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	7/3/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	3/13/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	3/27/2013	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BRGW-79DD												
	6/19/2017	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	3/14/2017	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

GROUNDWATER MONITORING DATA (Summer 2012 through Summer 2021)

All values in µg/L

Sample Location	Sample Date	Benzene	Carbon Tetrachloride	Chloroform	cis-1,2-Dichloroethene	1,1 Dichloroethene	1,2 Dichloroethane	Dichlorodifluoromethane	Methylene Chloride	Tetrachloroethene	Trichloroethene	Vinyl Chloride
Groundwater Standard		5	3	70	70	7	4	1,000	5	5	5	0.2
BRGW-79DD												
	6/23/2016	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2/11/2016	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	6/23/2015	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2/4/2015	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	7/3/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	3/13/2014	<0.5	<0.5	0.13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	3/27/2013	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BRGW-90D												
	3/14/2017	<0.5	<0.5	2.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2/11/2016	<0.5	<0.5	2.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	6/23/2015	<0.5	<0.5	2.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2/5/2015	<0.5	<0.5	2.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	7/3/2014	<0.5	<0.5	2.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	3/13/2014	<0.5	<0.5	2.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	3/25/2013	<0.5	<0.5	2.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BRGW-90DLF												
	6/19/2017	<0.5	<0.5	2.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	6/22/2016	<0.5	<0.5	2.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2/11/2016	<0.5	<0.5	2.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
D-101												
	6/19/2017	<0.5	<0.5	1.8	0.9	<0.5	<0.5	0.3 J	<0.5	0.2 J	<0.5	<0.5
	1/19/2017	<0.5	<0.5	1.8	0.62	<0.5	<0.5	0.29 J	<0.5	0.31 J	<0.5	<0.5
	6/22/2016	<0.5	<0.5	2.8	0.74	<0.5	<0.5	0.31 J	<0.5	0.31 J	<0.5	<0.5
	2/10/2016	<0.5	<0.5	2.2	0.51	<0.5	<0.5	0.24	<0.5	0.32	<0.5	<0.5
	6/22/2015	<0.5	<0.5	3.1	0.56	<0.5	<0.5	0.34 J	<0.5	0.4 J	0.11 J	<0.5
	6/22/2015	<0.5	<0.5	3.1	0.58	<0.5	<0.5	0.32 J	<0.5	0.44 J	0.13 J	<0.5
	2/4/2015	<0.5	<0.5	2.9	0.33 J	<0.5	<0.5	0.29 J	<0.5	0.34 J	<0.5	<0.5
	7/3/2014	<0.5	<0.5	2.1	<0.5	<0.5	<0.5	0.11 J	<0.5	0.15 J	<0.5	<0.5
	3/21/2013	<0.5	<0.5	2.6	<0.5	<0.5	<0.5	0.29 J	<0.5	0.26 J	<0.5	<0.5
R-8D												
	1/18/2017	0.82	<0.5	<0.5	42	<0.5	<0.5	0.4 J	<0.5	<0.5	4.1	4.3
	6/22/2016	0.85	<0.5	<0.5	50	<0.5	0.84	0.31 J	<0.5	<0.5	4.3	6.1
	2/8/2016	0.78	<0.5	0.57	51	<0.5	<0.5	0.35	<0.5	1.3	4.2	4.6
	6/23/2015	0.81	<0.5	0.54	53	0.18 J	1	0.5	<0.5	2	6.2	6.9
	2/3/2015	0.67	<0.5	0.54	63	0.19 J	1.1	0.59	0.28 J	1.5	5.2	5.3

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Sample Location	Sample Date	Benzene	Carbon Tetrachloride	Chloroform	cis-1,2-Dichloroethene	1,1 Dichloroethene	1,2 Dichloroethane	Dichlorodifluoromethane	Methylene Chloride	Tetrachloroethene	Trichloroethene	Vinyl Chloride
Groundwater Standard		5	3	70	70	7	4	1,000	5	5	5	0.2
R-8D												
	7/3/2014	0.59	<0.5	0.27 J	60	<0.5	<0.5	0.55	<0.5	2.2	4.6	4.2
	3/12/2014	0.38	<0.5	<0.5	55	<0.5	0.87	0.53	<0.5	0.41	3.5	3.5
	3/26/2013	0.28 J	<0.5	1.4	22	<0.5	0.58	0.59	<0.5	0.78	1.2	1.3
R-8DLF												
	7/8/2021	1.1	<0.5	<0.5	29	<0.5	0.46 J	<0.5	<0.5	<0.5	2.9	3.3
	7/8/2021	1.1	<0.5	<0.5	28	<0.5	0.47 J	0.21 J	<0.5	<0.5	2.9	3.3
	7/8/2020	1.1	<0.5	<0.5	36	<0.5	0.61	<0.5	<0.5	<0.5	4	4.1
	6/25/2019	1.1	<0.5	<0.5	41	<0.5	0.56	<0.5	<0.5	<0.5	4.2	4.4
	6/21/2017	1	<0.5	<0.5	35	0.1 J	0.9	<0.5	<0.5	<0.5	4.1	5.1
	2/8/2016	0.82	<0.5	<0.5	55	<0.5	<0.5	0.33	<0.5	<0.5	4.6	6.7
R-9D												
	1/18/2017	<0.5	<0.5	15	<0.5	<0.5	<0.5	0.15 J	<0.5	<0.5	<0.5	<0.5
	6/22/2016	<0.5	<0.5	80	<0.5	<0.5	<0.5	<0.5	<0.5	0.36 J	<0.5	<0.5
	2/9/2016	<0.5	<0.5	102	<0.5	<0.5	<0.5	0.15	<0.5	0.52	<0.5	<0.5
	6/23/2015	<0.5	<0.5	96	0.28 J	<0.5	<0.5	0.18 J	<0.5	0.47 J	0.13 J	<0.5
	2/3/2015	<0.5	<0.5	106	0.12 J	<0.5	<0.5	0.18 J	<0.5	0.41 J	<0.5	<0.5
	7/3/2014	<0.5	<0.5	115	0.11 J	<0.5	<0.5	0.2 J	<0.5	0.4 J	<0.5	<0.5
	3/12/2014	<0.5	<0.5	83	<0.5	<0.5	<0.5	0.19	<0.5	0.37	0.1	<0.5
	7/11/2013	<0.5	<0.5	158	<0.5	<0.5	<0.5	0.19 J	<0.5	0.46 J	<0.5	<0.5
	3/27/2013	<0.5	<0.5	149	0.16 J	<0.5	<0.5	0.2 J	<0.5	0.47 J	<0.5	<0.5
	3/27/2013	<0.5	<0.5	140	0.16 J	<0.5	<0.5	0.2 J	<0.5	0.48 J	<0.5	<0.5
	6/13/2012	<0.5	<0.5	91	<0.5	<0.5	<0.5	<0.5	<0.5	0.38 J	<0.5	<0.5
SA-13												
	1/18/2017	<0.5	<0.5	44	<0.5	<0.5	<0.5	0.18 J	<0.5	0.24 J	<0.5	<0.5
	6/21/2016	<0.5	<0.5	59	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2/9/2016	<0.5	<0.5	42	<0.5	<0.5	<0.5	<0.5	<0.5	0.28	<0.5	<0.5
	6/22/2015	<0.5	<0.5	55	<0.5	<0.5	<0.5	0.11 J	<0.5	0.35 J	<0.5	<0.5
	2/3/2015	<0.5	<0.5	47	<0.5	<0.5	<0.5	<0.5	<0.5	0.27 J	<0.5	<0.5
	7/3/2014	<0.5	<0.5	53	<0.5	<0.5	<0.5	0.089 J	<0.5	0.34 J	<0.5	<0.5
	3/12/2014	<0.5	<0.5	59	<0.5	<0.5	<0.5	0.11	<0.5	0.32	<0.5	<0.5
	7/11/2013	<0.5	<0.5	55	0.18 J	<0.5	<0.5	<0.5	<0.5	0.36 J	<0.5	<0.5
	2/12/2013	<0.5	<0.5	47	0.16 J	<0.5	<0.5	0.16 J	<0.5	0.32 J	<0.5	<0.5
	6/18/2012	<0.5	<0.5	34	<0.5	<0.5	<0.5	<0.5	<0.5	0.29 J	<0.5	<0.5
SA-13LF												
	6/20/2017	<0.5	<0.5	49	0.1 J	<0.5	<0.5	0.1 J	<0.5	0.2 J	<0.5	<0.5

GROUNDWATER MONITORING DATA (Summer 2012 through Summer 2021)

All values in µg/L

Sample Location	Sample Date	Benzene	Carbon Tetrachloride	Chloroform	cis-1,2-Dichloroethene	1,1 Dichloroethene	1,2 Dichloroethane	Dichlorodifluoromethane	Methylene Chloride	Tetrachloroethene	Trichloroethene	Vinyl Chloride
Groundwater Standard		5	3	70	70	7	4	1,000	5	5	5	0.2
SA-13LF												
	6/20/2017	<0.5	<0.5	50	0.1 J	<0.5	<0.5	0.1 J	<0.5	0.2 J	<0.5	<0.5
	6/21/2016	<0.5	<0.5	55	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2/9/2016	<0.5	<0.5	47	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

"LF" appendix on sample location indicates sampling using low flow techniques.
< - Concentration was not detected above the specified method detection limit.
J - Concentration is an estimated value below the reporting limit and above the method detection limit.
E - The reported amount was over the 40 µg/L upper calibration point of the instrument and there was no additional sample for dilution. Although "E" qualified, the result for Chloroform is known to be within the linear range for the instrument.