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November 19, 2020

Erin Dilworth
Policy & Technical Program Manager
Citizens for a Healthy Bay
535 Dock Street, Suite 213
Tacoma, WA 98402
edilworth@healthbay.org

Re: BPA Tacoma Occidental Sludge Site Draft Periodic Review Report

- **Site Name:** BPA Tacoma Occidental Sludge
- **Site Address:** Taylor Way and E West Road, Tacoma, Washington 98421
- **Facility/Site No:** 1262
- **Cleanup Site No:** 3911

Dear Erin Dilworth:

The Department of Ecology (Ecology) thanks you for your review of Draft periodic review report for the BPA Tacoma Occidental Sludge site, and providing Ecology with your comments (Enclosure-E).

Below are Ecology's responses to Citizens for a Healthy Bay's (CHB) comments:

General Comment 1

In our review of the groundwater sampling report, it appears that the groundwater on site flows from the east toward the containment cell and from the west toward the cell – there does not appear to be any up-down gradient. Based on that observation, Ecology needs to provide an explanation for why Well 1-20 - which is upgradient of the contamination - has the highest concentration of contaminants.

Ecology Response:

Historically the groundwater gradient at the BPA site was to the east or northeast across the site putting wells 1-20 and 7-26 in a downgradient position relative to the mound/containment unit (see Figures in Enclosure A). The November 2019 sampling round did reveal a shift in flows observed across the site (see Enclosure B) and was likely a result of heavy localized precipitation during that period. This gradient will be confirmed during the November 2020, and

future sampling events. For 1, 2-Dichloroethylene (DCE) concentrations in these wells, please see the response to comment 2 below.

General Comment 2

Further, the concentration of 1, 2-Dichloroethane (DCE) in Well 1-10 shows a somewhat downward trend. However, the concentration continues to "jump" back above 100 ppm (parts per million), indicating no real change in concentration since the year 2000.

Ecology Response:

The well number (1-10) and the DCE concentration unit stated in your comment is incorrect; the well number in reference is 1-20 and concentration unit should be ppb [parts per billion i.e., micrograms per liter (µg/l) and not ppm (parts per million)].

There was an error in the 2019 1,2-DCE concentrations used on Figure 4.1 (well 1-20) and Figure 4.2 (well 7-26) in the *Remedial Action Operation and Maintenance and Groundwater Monitoring Annual Report – 2019.* By mistake, a DCE concentration of 110 µg/L was used in the above cited Figures instead of the actual concentrations detected in well 1-20 and 7-26 during the 2019 sampling event.

The corrected versions of Figure 4.1 and 4.2 are enclosed in Enclosure C (Figure 4.1B and 4.2B). The corrected figures present the actual concentrations of DCE detected during the November 2019 sampling event (well 1-20: 23 µg/l and well 7-26: 11 µg/l, Enclosure C: Table 3.4). These revised figures continue to demonstrate the downward trend.

The groundwater cleanup level for DCE is 70 µg/l. The groundwater monitoring results indicates that the DCE concentration has decreased from 250 µg/l to 11 µg/l (2273 percent reduction) in well 7-26 and from 110 µg/l to 23 µg/l (478 percent reduction) in well 1-20 from November 2000, to November 2019.

Also since last four years (from 2015 to 2019), there is an overall concentration reduction of 582 percent (from 64 µg/l to 11 µg/l) in well 7-26 and 352 percent (81 µg/l to 23 µg/l) in well 1-20. (except slight exceedances of DCE concentration in well 1-20 during 2015 (81 µg/l) and 2017 (80 µg/l) sampling events with overall decreasing concentration trend). The results of DCE concentrations were all below the cleanup level of 70 µg/l during all the sampling events in well 7-26.

General Comment 3

Additional work in the next five years should be done to ensure that the groundwater contaminant concentrations are actually decreasing. Currently, it appears that factors other than natural attenuation are at play, causing these fluctuations in groundwater contamination. The conclusion that the remedy is protective is correct as the site is sitting in an industrial area and no one is drinking the groundwater. However, data do not indicate that natural attenuation will bring the groundwater below standards, so Ecology

needs to determine and explain the field conditions that seem to be causing the decline in groundwater contaminant concentration with the use of additional wells and analytes, including those for natural attenuation.

Ecology Response:

As discussed in responses to general comment number 2 above, the data do show an overall significant downward trend in DCE concentrations, and Ecology believes that it is likely the natural attenuation is occurring at the site. Since number of years the DCE concentrations have been below cleanup level in well 7-26, and 1-20 [except two slight exceedances in 2015 (80 µg/l) and 2017 (81 µg/l) to its cleanup level of 70 µg/l]. Currently the natural attenuation parameters are not being analyzed. However, analysis for all the appropriate natural attenuation parameters for the chlorinated solvents will be added to the future analysis. Ecology will evaluate the results of natural attenuation parameters, and contaminant concentrations during the future sampling events, and will determine whether additional wells are needed.

General Comment 4

Lastly, we recommend the EC for the site, which protects the constructed landfill and cap, remain intact indefinitely. We are aware of previous proposals to relocate the nearby rail line, which would have disturbed the landfill and cap, potentially releasing contaminants into both the groundwater and nearby surface water. We are concerned that similar proposals in the future will be introduced, and ask Ecology to ensure the EC remains intact and no leniency is given for development, even on a temporary basis.

Ecology Response:

We are not aware of any proposals to relocate the nearby rail line. The rail line is located completely outside of the containment unit perimeter/footprint (see Google Map in Enclosure D) and it is unlikely that any rail line work will impact the containment unit and/or its cap. However, Ecology will not approve/permit any activity that might potentially affect the containment unit and/or its cap. The Restrictive Covenant will be in place as long as the contaminated soils remain on the Site. Based on Ecology's understanding there are no plans to remove or alter the cap and will continue the maintenance per the O&M.

Contact Information

If you have any questions, please call me at (360) 999-9603.

Sincerely,

Panjini Balaraju. P.E.
Toxics Cleanup Program
Southwest Regional Office

Enclosures: A – Previous Groundwater Flow Direction-2015, 2016 and 2018 Sampling Events
B – Groundwater Flow Direction-2019 Sampling Event
C – Corrected DCE Concentration Figures
D – Google Map-Location of Railroad Tracks in Relation to the Landfill/Containment Unit
E – CHB's Comments on the Draft Periodic Review Report

cc by email: Melissa Malott, CHB, Executive Director, mmalott@healthybay.org
Ecology Site File

ENCLOSURE – A

Previous Groundwater Flow Direction
2015, 2016 and 2018 Sampling Events

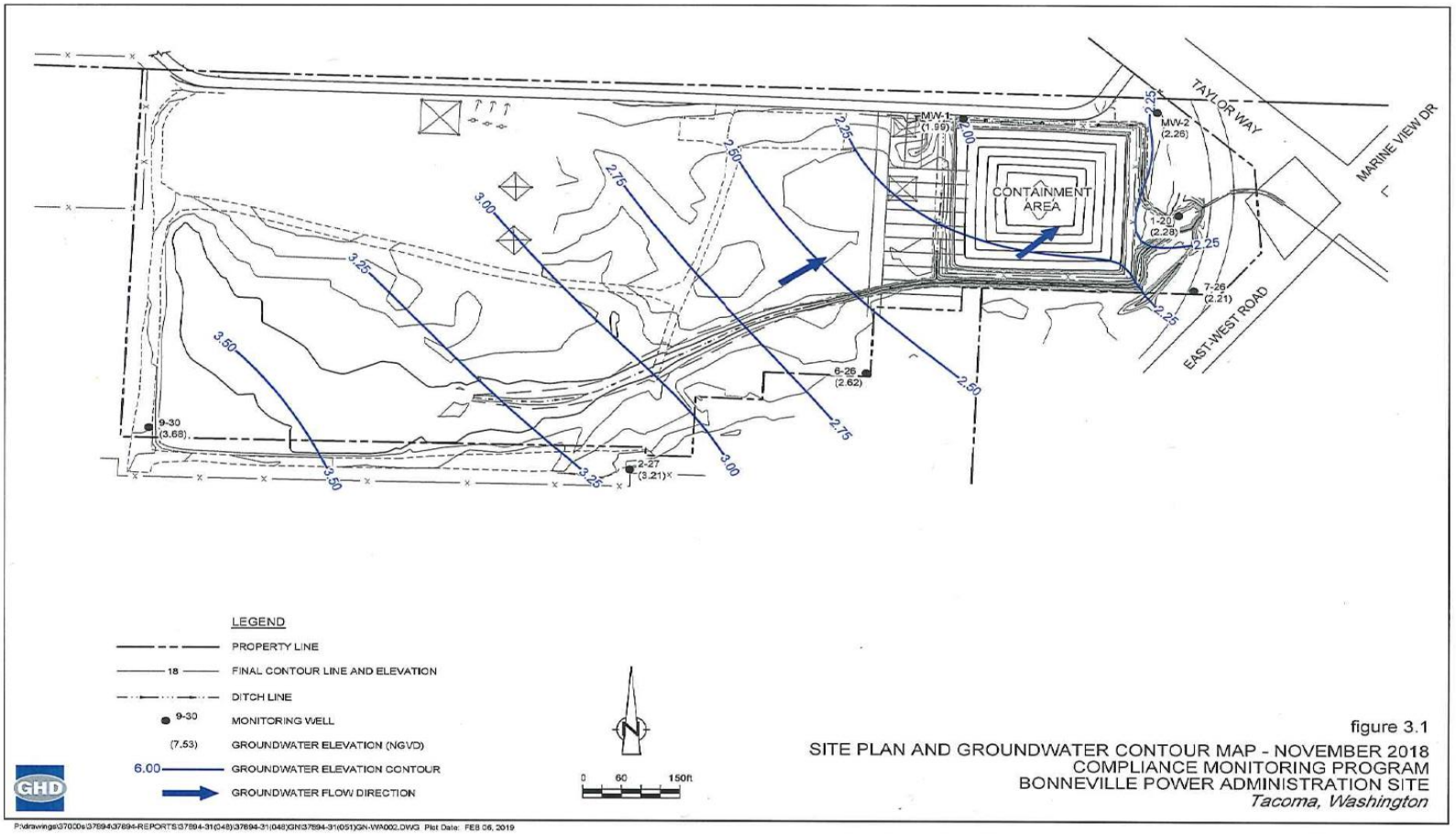

figure 3.1

SITE PLAN AND GROUNDWATER CONTOUR MAP - NOVEMBER 2018
COMPLIANCE MONITORING PROGRAM
BONNEVILLE POWER ADMINISTRATION SITE
Tacoma, Washington

P:\drawings\37000s\37694\37694-REPORTS\37894-31(048)\37894-31(048)GN\37894-31(051)GN-WA002.DWG Plot Date: FEB 06, 2019

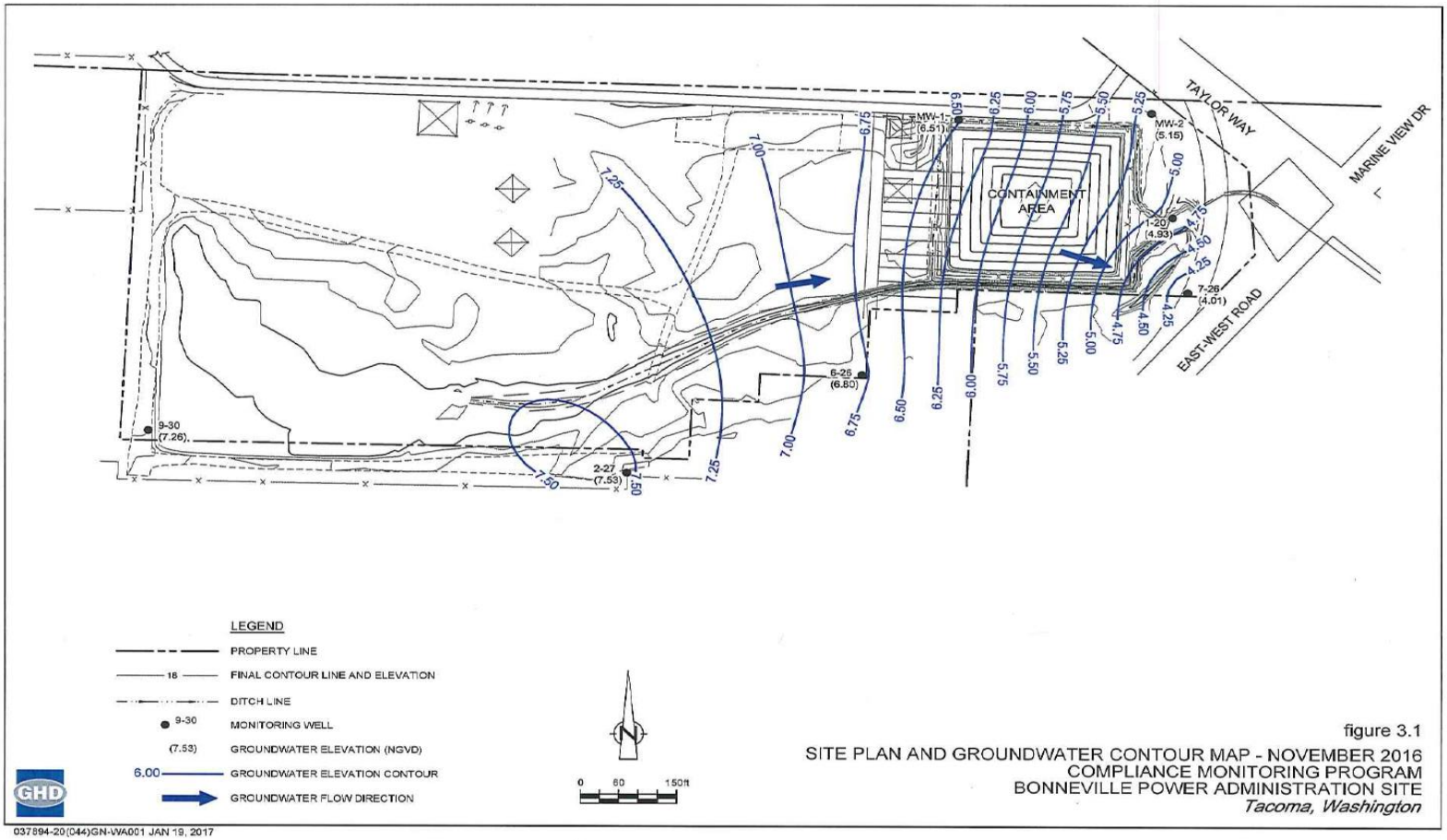

figure 3.1

SITE PLAN AND GROUNDWATER CONTOUR MAP - NOVEMBER 2016
COMPLIANCE MONITORING PROGRAM
BONNEVILLE POWER ADMINISTRATION SITE
Tacoma, Washington

037894-20(044)GN-WA001 JAN 19, 2017

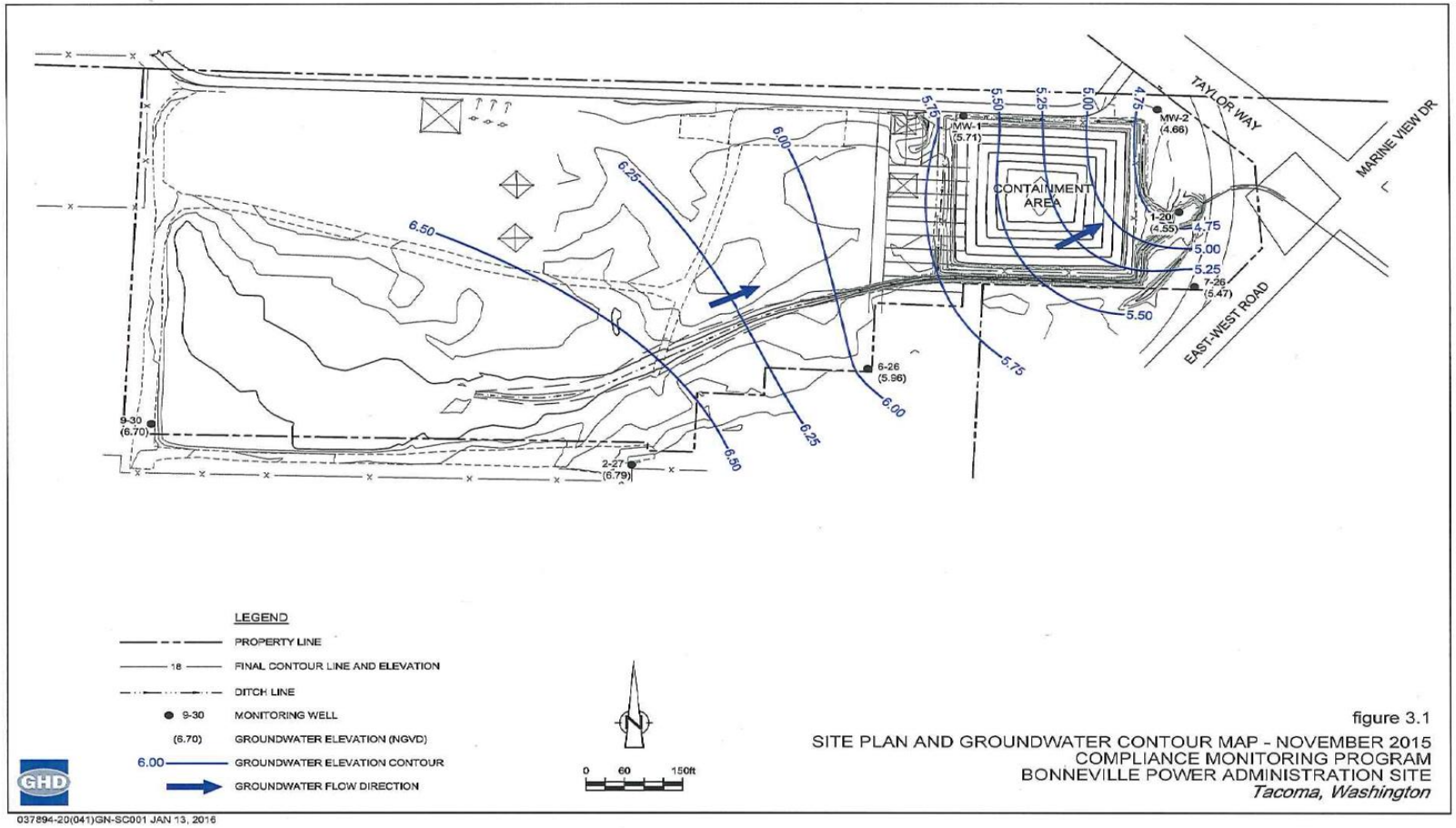

figure 3.1

SITE PLAN AND GROUNDWATER CONTOUR MAP - NOVEMBER 2015
COMPLIANCE MONITORING PROGRAM
BONNEVILLE POWER ADMINISTRATION SITE
Tacoma, Washington

037894-20(041)GN-SC001 JAN 13, 2016

ENCLOSURE – B

Groundwater Flow Direction-2019 Sampling Event

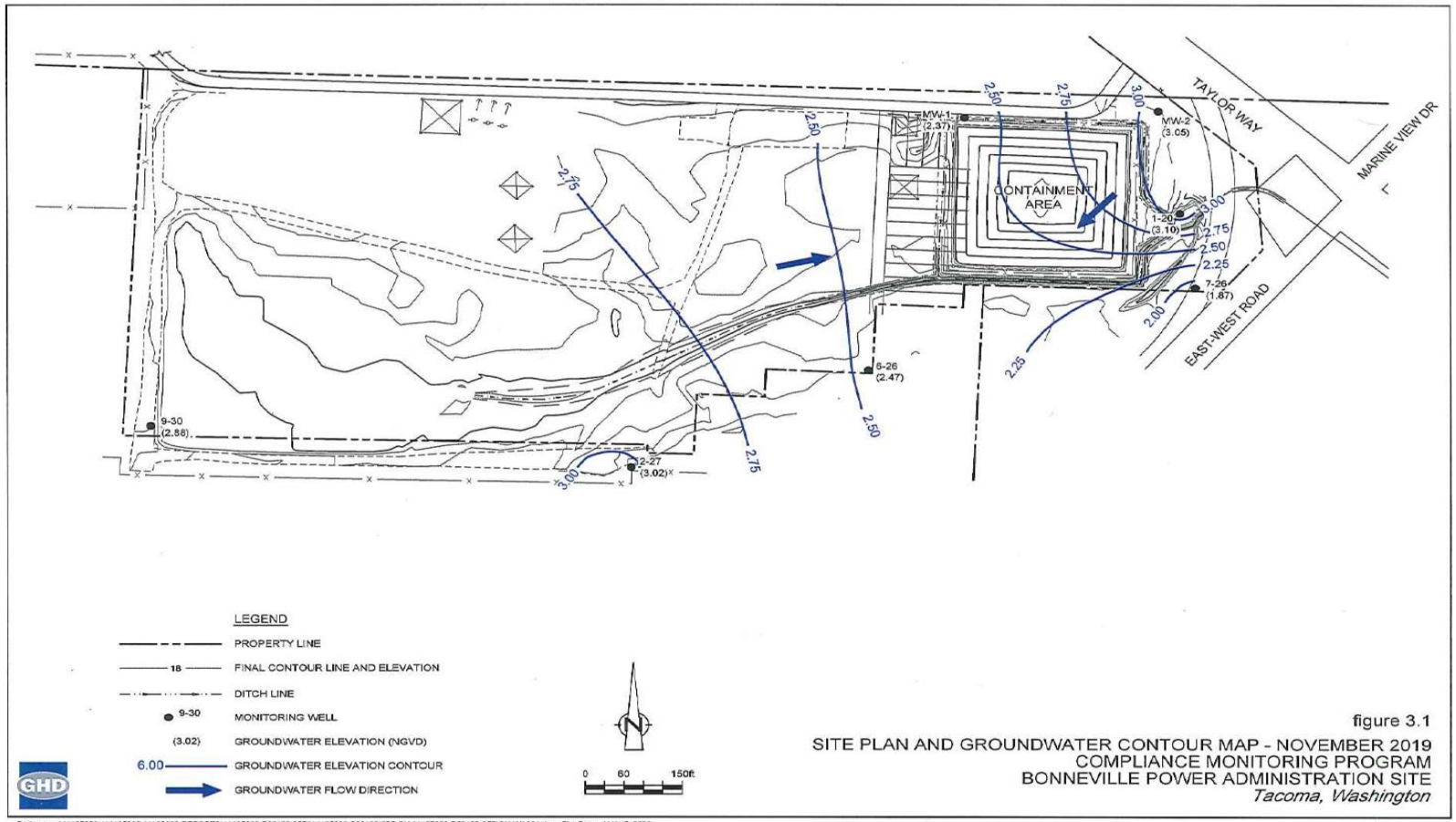

figure 3.1
SITE PLAN AND GROUNDWATER CONTOUR MAP - NOVEMBER 2019
COMPLIANCE MONITORING PROGRAM
BONNEVILLE POWER ADMINISTRATION SITE
Tacoma, Washington

P:\drawings\11195000s\11195900\11195900-REPORTS\11195900-D23102(055)\11195900-D23102(055)GN\11195900-D23102(055)GN-WA001.dwg Plot Date: JAN 17, 2020

ENCLOSURE – C

Corrected DCE Concentrations Graphs and Table of Results

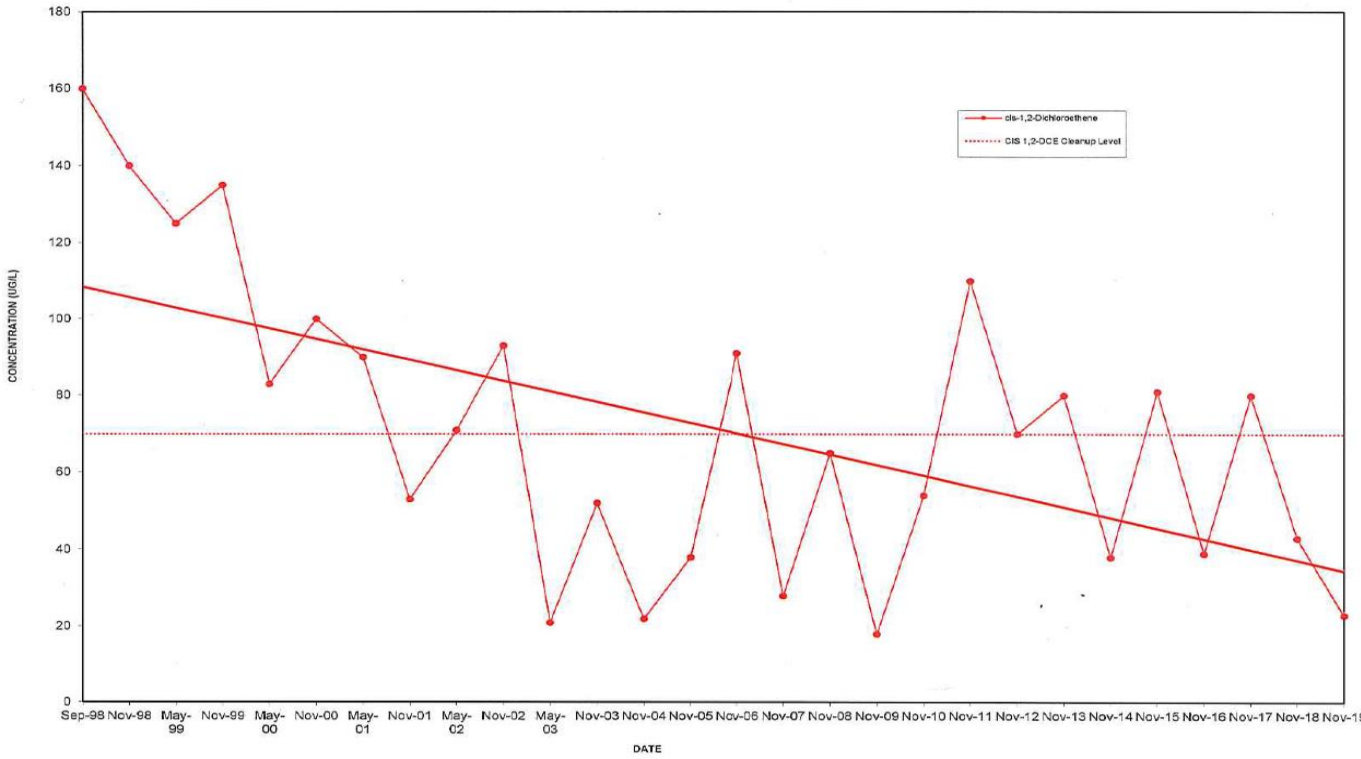

figure 4.1B

CIS 1,2-DICHLOROETHENE CONCENTRATION VS. TIME - 1-20
COMPLIANCE MONITORING PROGRAM
BONNEVILLE POWER ADMINISTRATION
Tacoma, Washington

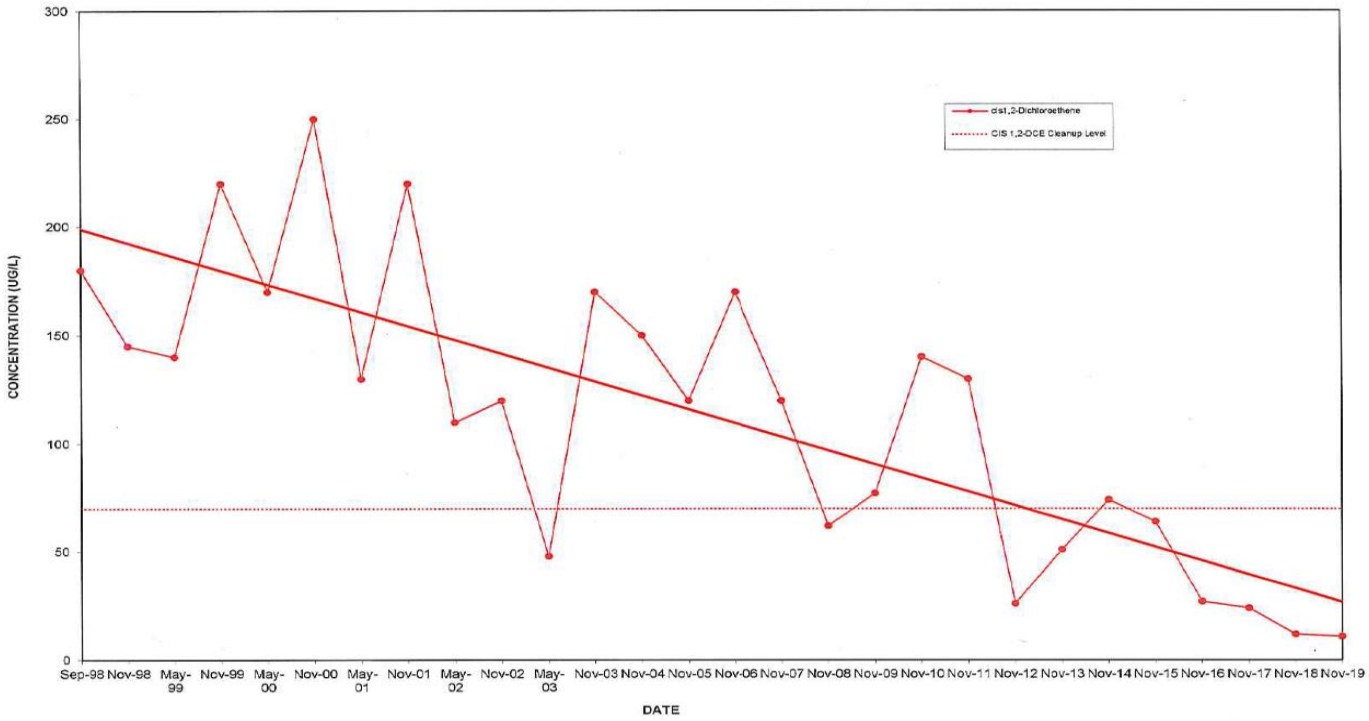

figure 4.2B

CIS 1,2-DCE CONCENTRATION VS. TIME - 7-26
COMPLIANCE MONITORING PROGRAM
BONNEVILLE POWER ADMINISTRATION
Tacoma, Washington

Table 3.4

Analytical Results Summary
Bonneville Power Administration Site
Taylor Way
Tacoma, Washington

	Sample Location:		1-20	7-26	7-26
	Sample ID:		GW-110618-NT-1-20	GW-110618-NT-7-26	GW-110618-NT-FD1
	Sample Date:		11/6/2018	11/6/2018	11/6/2018 (Duplicate)
Parameter	Units	Cleanup Level[1]			
Volatile Organic Compounds					
cis-1,2-Dichloroethene	µg/L	70	43	12	12
Methylene chloride	µg/L	5	2.5 U	2.5 U	2.5 U
Tetrachloroethene	µg/L	5	2.5 U	2.5 U	2.5 U
Trichloroethene	µg/L	5	2.5 U	0.21J	2.5 U
Vinyl chloride	µg/L	10*	0.5 U	0.5 U	0.5 U

Notes:

Standard, Cleanup Levels and Risk Calculations (CLARC), Version 3.1, updated November 2001.

J Estimated.

U Non-detect at associated value.

* Practical quantitation limit.

☐ Concentration exceeds the cleanup standard.

ENCLOSURE – D

Google Map – Location of Railroad Tracks in Relation to the Landfill/Containment Unit

Railroad tracks located east of the landfill.

ENCLOSURE – E

Citizen's for the Healthy Bay Comments on the Draft Periodic Review Report

Citizens for a Healthy Bay

535 Dock Street
Suite 213
Tacoma, WA 98402
Phone (253) 383-2429
chb@healthybay.org
www.healthybay.org

May 21, 2020

WA Department of Ecology
Attn: Panjini Balaraju
PO Box 47775
Olympia, WA 98504-7775
Submitted electronically

Re: BPA Tacoma Occidental sludge cleanup site periodic review

Dear Mr. Balaraju,

Thank you for providing the opportunity to review and comment on the BPA Tacoma Occidental sludge cleanup site periodic review.

Citizens for a Healthy Bay (CHB) is a 30-year-old organization whose mission is to represent and engage people in the cleanup, restoration, and protection of Commencement Bay, its surrounding waters and natural habitat. We are a 501(c)3 nonprofit providing practical, solutions-based environmental leadership in the Puget Sound area. We work side-by-side with residents, businesses, and government to prevent and mitigate pollution and to make our community healthier and more vibrant.

Staff and expert members of CHB's Policy and Technical Advisory Committee have reviewed the cleanup site periodic review. Our comments are outlined below.

The BPA Tacoma Occidental Sludge site was left contaminated with arsenic, lead, and volatile organic compounds (VOCs) above state cleanup levels after the BPA used waste materials from the Occidental Chemical Site (then Hooker Chemical) to fill low-lying areas on their property. Baghouse dust and shot were also disposed of at the site. While the environmental cleanup is considered complete and Ecology has determined the remedy remains effective in protecting public and environmental health, high levels of the above-mentioned contaminants are still found in the groundwater on site. To prevent exposure to contaminated groundwater, the site's Environmental Covenant (EC) prohibits any activity on the site that may undermine the integrity of the cleanup, and continued groundwater monitoring is required.

In our review of the groundwater sampling report, it appears that the groundwater on site flows from the east toward the containment cell and from the west toward the cell – there does not appear to be any up-down gradient. **Based on that observation, Ecology needs to provide an explanation for why Well 1-20 - which is upgradient of the contamination - has the highest concentration of contaminants.** Further, the concentration of 1,2-Dichloroethane (DCE) in Well 1-10 shows a somewhat downward trend. However, the concentration continues to "jump" back above 100 ppm (parts per million), indicating no real change in concentration since the year 2000. **Additional work in the next five years should be done to ensure that the groundwater contaminant concentrations are actually decreasing.** Currently, it appears that factors other than natural attenuation are at play, causing these fluctuations in groundwater contamination. The conclusion that the remedy is protective is correct as the site is sitting in an industrial area and no one is drinking the groundwater. **However, data do not indicate that natural attenuation will bring the groundwater below standards, so Ecology needs to determine and explain the field conditions that seem to be causing the decline in groundwater contaminant concentration with the use of additional wells and analytes, including those for natural attenuation.**

Lastly, we recommend the EC for the site, which protects the constructed landfill and cap, remain intact indefinitely. We are aware of previous proposals to relocate the nearby rail line, which would have disturbed the landfill and cap, potentially releasing contaminants into both the groundwater and nearby surface water. We are concerned that similar proposals in the future will be introduced, and ask Ecology to ensure the EC remains intact and no leniency is given for development, even on a temporary basis.

Thank you for providing the opportunity to review and comment on the BPA Tacoma Occidental sludge cleanup site periodic review. Should you have any questions regarding our comments, please email Erin Dilworth at edilworth@healthybay.org.

Sincerely,

Erin Dilworth
Policy & Technical Program Manager

Melissa Malott
Executive Director