



STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

1250 W Alder St • Union Gap, WA 98903-0009 • (509) 575-2490

July 31, 2018

Mr. Keith Woodburne  
TRC  
19874 141<sup>st</sup> Place NE  
Woodinville, WA 98072

**Re: Work Plan Review Comments:**

- Site Name: Michael Irrigation (aka John Michael Lease Site)
- Address: 5640 Sunset Highway, Cashmere
- Facility/Site No.: 3154383
- Cleanup Site ID No.: 2149
- Agreed Order No.: DE 15684

Dear Mr. Woodburne:

Thank you for submitting your proposed work plan titled "*Draft Supplemental Groundwater Data Collection Work Plan*," for review by the Washington State Department of Ecology (Ecology). Ecology appreciates your initiative in pursuing and independent remedial action under the Model Toxics Control Act (MTCA).

Based on Washington Administrative Code (WAC) 173-340-515, which outlines Independent Remedial Actions, I have reviewed the proposed work plan for the above-referenced site submitted by TRC and dated July 23, 2018 and have the following comments:

1. Monitoring Well Locations. As we have previously discussed, Ecology's greatest concern for the site pertains to whether or not there is potential discharge of contaminated groundwater to the Wenatchee River. BNSF Railway Company (BNSF) has presented a case that the soil contamination at the site is not mobile (i.e. no active soil to groundwater pathway). To date, data to support this case has been groundwater analytical data from monitoring well MW-1, which is in an area of contaminated soil in the northern part of the site, and bench scale testing conducted to assess potential mobility of site contamination.



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2. The first groundwater sampling round of MW-1 in 2008 had an exceedance of diesel range organics (DRO); however, subsequent sampling rounds have been below cleanup levels for all consecutive sampling rounds conducted between 2012 and 2015. Ecology has requested additional monitoring locations in order to further assess the potential for discharge of contaminated groundwater to the Wenatchee River.

As discussed during our July 10, 2018 site visit, there does not appear to be sufficient room at the site to install three monitoring wells on the east side of the railroad tracks south of MW-1, as stipulated in the Agreed Order Scope of Work. The SOW stated "BNSF will not be held in breach by Ecology if BNSF provides a reasonable basis for why all three monitoring wells cannot be installed in this area." Based on the above finding, only two monitoring wells will be required in the area south of MW-1 and east of the railroad tracks.

Proposed Monitoring Well MW-6. Groundwater flows generally to the east beneath the site. Proposed monitoring well MW-6 (see Figure 2 in the work plan) is located appropriately, as far as possible to the south on the east side of the railroad tracks.

Proposed Monitoring Well MW-5. Monitoring well MW-5 is currently located on Figure 2 roughly half way between MW-1 and MW-6, consistent with discussion during our site meeting. However, further review of the provided map and previous data suggest that it would be appropriate to shift MW-5 slightly to the north to be along the east-west line comprised of TP-34, FB-2, and TP-30. This shift is suggested due to the following data suggesting potential for finding groundwater contamination along this line:

- Heavy oil range organics (HRO) exceeded the Method A cleanup level in a soil sample from TP-34 and TP-30
- Gasoline range organics exceeded the cleanup level in a soil sample from TP-34
- Sheen and a photoionization detector (PID) reading of 1,163 ppm were observed in soil at TP-34
- Odor was noted in soil at TP-30.

Potential Monitoring Well in the South Part of the site. During our site walkthrough on July 10, 2018, we looked at the possibility of installing a monitoring well in the vicinity of "MW-5" proposed in the December 31, 2013 Revised Cleanup Action Work Plan. The site walkthrough indicated challenges with placing a monitoring well in this area both with respect to setback from railroad tracks and overhead lines considerations. The location of MW-5 (between TP-28 and TP-29) was appropriate from a contamination perspective, since soil in this area has significant contamination and since there is no room east of the tracks and downgradient of this location.

Evidence of soil contamination in this area upgradient of TP-28 and TP-29 included:

- Free product and tar visual observations in test pit logs
- Elevated concentrations of HRO, DRO, GRO, and CPAHs
- Elevated PID readings (up to 913 ppm at TP-41)

Since a monitoring well cannot be installed downgradient and near the river (i.e. south of TP-32), it would be appropriate to assess groundwater contaminant concentrations on the west side of the tracks. Similarly, if a monitoring well cannot be installed downgradient of this source area on the west side of the tracks, it would be appropriate to install a monitoring well within this source area. Ecology advises working with your driller to assess potential locations to install a monitoring well safely within site constraints.

Conclusions Regarding Monitoring Locations. After the three monitoring wells discussed above have been installed, developed, and sampled, a significantly greater confidence can be placed on conclusions regarding groundwater quality at the site and potential impacts to the river.

3. Groundwater Analytes. Analytes proposed in Section 3.4 of the work plan conclude DRO and ORO (with and without Silica Gel Cleanup), GRO, Naphthalene, CPAHs, BTEX, and total organic carbon (TOC). The selection of Site analytes is a function of the site conceptual model (i.e. release mechanisms) and historical data. As discussed during our July 10, 2018 site walkthrough, Ecology is not convinced that the contamination at the site is solely attributable to a release of crude petroleum from a train derailment during the 1930s. Ecology has received no evidence of such a release to date. In addition, all test pits with a log reported by an archeologist in the December 27, 2012 Cleanup Status Report included significant quantities of debris and refuse. The debris included materials such as wood, concrete, asphalt, metal, plastic, and glass. Free product and tar were observed at many test pit locations, and observed contamination ranged from gray free product at TP-5 to black sticky tar at location T6.

Ecology has performed additional review of historical contamination data since our July 10, 2018 walkthrough. Significant heterogeneity in contaminant exceedances was noted, including variability of types of constituents with exceedances (see Table 1, attached). In addition, PID readings were highly variable with areas of elevated PID readings noted in the area of TP-34 and TP-37/TP-40/TP-41. Ecology considers the body of evidence to suggest the strong likelihood of releases associated with uncontrolled dumping activities in addition to a possible derailment accident. The possibility of additional release mechanisms, such as for the gasoline observed at location B5 cannot be precluded. Therefore, Ecology considers the potential site contaminants cannot be limited to the proposed petroleum constituents at this time.

Other potential contaminants that can be associated with uncontrolled dumping include volatile organic compounds (VOCs), semi-volatile organic compounds, (SVOCs), metals, pesticides/herbicides and PCBs. Data has been previously collected for metals and PCBs and no cleanup level exceedances have occurred for those constituents. Therefore, Ecology concurs with not analyzing groundwater samples for metals or PCBs at this time. Most pesticides are not particularly mobile in groundwater, and no specific information has been identified to suggest that pesticides/herbicides are likely constituents of concern. Therefore, Ecology concurs with not analyzing groundwater samples for pesticides/herbicides at this time. Groundwater contamination by VOCs or SVOCs cannot be precluded at this time. Therefore, Ecology requests sampling and analysis for full suite VOCs by EPA Method 8260 and SVOCs by EPA Method 8270. Reporting limits should be below potential Method A or Method B cleanup levels. Ecology does not request sampling for these analytes at MW-2, MW-3, or MW-4, which are all upgradient or crossgradient of contamination areas. After the results of the first quarterly sampling round is complete, the groundwater constituents of concern can be reviewed and recommendations can be submitted to Ecology regarding potential changes to sampled wells or the required analyses.

4. Reporting. Ecology offers the following advisory comments with respect to reporting the results from the monitoring well installation and sampling activities:
  - Please include field turbidity in tabulations of monitoring well sampling results since these could have a bearing on Site sampling results.
  - With respect to NWTPH-Dx results with and without silica gel cleanup, Ecology's Guidance for Remediation of Petroleum Contaminated Sites, revised June 2016 is clear on the use of groundwater NWTPH-Dx results without silica gel cleanup. This guidance states "...silica gel cleanup should not be used for NWTPH-Dx analysis of groundwater samples unless uncontaminated background samples indicate that naturally occurring organic matter is a significant component of the TPH being detected in groundwater samples." The lack of NWTPH-Dx detections in MW-2, MW-3, and MW-4 suggest this that naturally occurring organic matter is not a site concern. Ecology anticipates continuing this approach, barring receipt of new guidance from Ecology's Policy group.
5. Soil Sampling During Well Installation. Section 3.2 states "if evidence of soil contamination is observed in the smear zone ... a soil sample will be collected from the interval exhibiting the greatest evidence of contamination or the interval immediately above water during the time of drilling." A case has been presented to Ecology that the soil contamination at the Site is not mobile (i.e. no active soil to groundwater pathway). Ecology recommends that in addition to collecting soil samples from the smear zone above the water table, saturated soil that has evidence of contamination should also be sampled. Such data, provided the groundwater results are below cleanup levels, would help support BNSF's assertions regarding contaminant mobility. Ecology recognizes that a great deal of vadose contamination data has been collected at the site to date.

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However, collecting shallow vadose zone soil samples above the smear zone (if evidence of contamination is observed) may help to support site conceptual model refinement.

6. Well Construction. Ecology concurs with the construction of monitoring wells MW-5 and MW-6 as discussed in Section 3.2 and Table 1. For a monitoring well located near TP-37/TP-41, a screened interval of 5-15 feet below ground surface would appear to be appropriate (consistent with MW-2, MW-3, and MW-4).
7. Schedule. As discussed during our July 10, 2018 site walkthrough, fire is a serious potential concern for the site. Ecology advises consulting with the City of Cashmere Fire Department regarding potential mitigation measures to ensure a wildfire is not caused by well installation activities.

Ecology does not require revision and reissue of the work plan, provided all of Ecology's above comments are incorporated into the execution of the work plan. TRC and BNSF can proceed with well installation and sampling. Please provide Ecology with your field schedule a minimum of two weeks prior, in case we decide to be onsite to observe. Ecology may also choose to collect split samples.

Please contact me at (509) 454-7835 if you have any questions or would like clarification of any portion of this letter.

Sincerely,



Frank P. Winslow  
Site Manager  
CRO Toxics Cleanup Program

Enclosure

cc:

Site File



**Table 1**  
**Summary of Soil Cleanup Level Exceedances**

	Sample Loc	Depth (feet)	HRO	DRO	GRO	BEN
1	B-1	4	1			
2	B-2	8	1	1	1	
3	B-5	8			1	
4	B-8	5	1			
5	TP1	6-8	1	1		
6	TP2	6-8	1	1		
7	TP9	6-8	1			
8	TP10	6-8				1
9	TP11	4-6	1			
10	TP12	4-6				1
11	TP12	6-8				1
12	TP25	14	1	1	NA	NA
13	TP26	16	1	1	NA	NA
14	TP27	12	1	1	NA	NA
15	TP30	14	1			
16	TP34	14	1		1	
17	T2-SW	8	1			
18	T2-NE	8	1			
19	T4-S	8	1	1	1	
20	T4-N	8	1	1	1	
21	T6-S	8	1	1	1	
22	T6-N	10	1	1	1	
23	T7-S	8	1	1	1	
24	T7-N	8	1	1	1	
25	MW-1	10	1	1	1	
			21	13	10	3

Count	Exceedances
7	HRO Only
5	HRO + DRO
8	HRO + DRO + GRO
1	HRO + GRO
0	DRO Only
1	GRO Only
3	BEN Only
25	TOTAL

\* From Table 1, Revised Cleanup Action Work Plan, December 31, 2013.

