From:	Winslow, Frank (ECY)
To:	"Lisa Thompson"
Cc:	Suzy Stumpf
Subject:	RE: XN0032 - Block 10 Site - Remedial System Operations and Cleanup Objectives
Date:	Friday, August 16, 2024 8:44:29 AM
Attachments:	image001.png image002.png image003.png

Hi Lisa,

Thank you for the Teams call with you and Suzy on August 15, 2024.

As discussed during the call, Ecology has concluded that we can provide concurrence on the cessation of the operation of the DPE system (including groundwater recovery and treatment), provided an appropriate downgradient groundwater monitoring well is installed and sampled, and provided that the analytical results from that monitoring well are as anticipated. I have discussed this approach with Ecology's Northwest Regional Office's (NWRO's) peer reviewer for this Site and they have provided their concurrence on this.

Essentially, the monitoring wells at the west side of the Block 10NE show a trend toward compliance except for at well DPE-36. Although the footing drain on the eastern boundary of the Block 10W parcel is anticipated to likely contain groundwater from the Block 10NE parcel, Ecology has concluded that the presence of the footing drain and/or sampling of the footing drain is not sufficient alone to demonstrate compliance. Hence, a monitoring well located further to the west is advised. As discussed, we understand that the parking lane on the west side of Pontius Avenue North is the closest location that could serve that purpose. We advise installing and sampling a monitoring well with a screened interval no longer than 15 feet at a location due west of DPE-36. This due west location is based on 1) the shallow groundwater contamination extent being defined to the northwest and southwest in the Block 10NE area, and 2) Site potentiometric surface maps and surface topography indicating a westerly groundwater flow direction.

Ecology anticipates the next steps for the Site as follows:

- Installation and sampling of the monitoring well (we recognize this will likely take some time due to City of Seattle street cut permit requirements) and submittal of the sampling results and well completion information to Ecology.
- Revision and resubmittal of the compliance monitoring plan proposing post-NFA monitoring on a 15 month basis following NFA issue. This compliance monitoring plan should propose contingency measures in case the new westernmost monitoring well has cleanup level exceedance(s) of Site contaminants. Other components of the compliance monitoring plan have been discussed under previous correspondences. The purpose of the other monitoring locations will to demonstrate continued compliance for shallow groundwater to the northwest and southwest as well as in the deeper aquifer zone, and to allow continued assessment of contaminant concentrations over time at the locations with the highest remaining contaminant concentrations. Ecology's concurrence on this compliance monitoring plan will be needed prior to NFA issue.
- Ecology's issue of a NFA letter that includes continued groundwater monitoring requirements. Ecology's NFA letter will indicate that continued monitoring needs beyond the first four post-NFA events will be determined by Ecology's periodic reviewer during the 5-year periodic review process. It is anticipated that continued groundwater monitoring will likely be needed following the 5-year periodic review if contaminant concentrations in groundwater are still above MTCA cleanup levels. However, the appropriate monitoring locations and monitoring frequency could be revisited at that time.

- Post NFA monitoring to take place including notification and reporting requirements stipulated within the NFA letter.

Please let me know if you have any questions regarding this email or any other matters.

Thanks, Frank

Frank P. Winslow, LHG

WA Expedited VCP Site Manager
Department of Ecology – Toxics Cleanup Program
1250 W. Alder Street, Union Gap, WA 98903
(509) 424-0543 (cell)

Frank.Winslow@ecy.wa.gov

From: Lisa Thompson <lthompson@farallonconsulting.com>
Sent: Tuesday, August 6, 2024 3:21 PM
To: Winslow, Frank (ECY) <fwin461@ECY.WA.GOV>
Cc: Suzy Stumpf <sstumpf@farallonconsulting.com>
Subject: RE: XN0032 - Block 10 Site - Remedial System Operations and Cleanup Objectives

External Email

Frank,

During our call on June 24, 2024, we discussed the mass recovered from the dual-phase extraction (DPE) system over time in the vapor versus aqueous phases; the vapor and groundwater barrier system on the Block 10W Property; and the groundwater points of compliance for the Block 10 Site. Below please find supplemental information regarding costs to operate the DPE system per pound of tetrachloroethene (PCE) removed; Block 10W vapor and groundwater barrier system construction details; and challenges of installing a monitoring well downgradient of Block 10NE.

Farallon's understanding is that once the points of compliance for groundwater are confirmed with Ecology, that an Addendum to the Cleanup Action Report (CAR) and revisions to the Compliance Monitoring Plan will need to be prepared. We appreciate Ecology's cooperation in discussing the Block 10 Site and the path to regulatory closure.

Prior to submitting the Addendum to the Block 10 Site CAR, Farallon wants to provide Ecology with the supplemental information to support the cessation of DPE system and an evaluation of potential points of compliance for groundwater at the Block 10 Site.

DPE System Operation Costs

Over the course of approximately ten years of DPE system operation, a total of approximately 25 pounds of PCE was removed in the vapor phase as documented by DPE system air effluent sampling and summarized in Chart 10 (Attachment 1). Mass recovery decreased from approximately 9 pounds per year at start up to less than 1 pound per year during system operations in 2022 and 2023 (Chart 10). In comparison, a total of approximately 0.52 pounds of PCE was removed in the aqueous phase over approximately ten years of DPE system operation as documented by DPE system water compliance and

effluent samples and summarized in Table 12 (Attachment 1). Based on the DPE system emissions compliance monitoring, 98 percent of the mass removed to date was attributed to vapor phase recovery and only 2 percent of the mass removed to date was attributed to aqueous phase.

The cost for one year of DPE system operation is approximately $65,000, not including groundwater compliance monitoring. Based on DPE system performance, the estimated cost to remove 0.05 pounds of PCE is approximately $65,000 per year of operation, resulting in a disproportionate cost to operate the DPE system to only recover contaminated groundwater.

Block 10W Construction Details

Attached please find the following drawings associated with Block 10W vapor and groundwater barrier system (Attachment 2):

- Laundry Block Below Grade NW (P02) – Plumbing drawing detailing the configuration of the shoring and foundation wall and footing drainage configuration.
- Laundry Block Level P3 Northwest Slab Plan (A1.1) – Architectural drawing showing the foundation elevation of the lowest level of the parking garage is 76'-0" NAVD88 on the east side and 72'-6" on the northwest corner where the vault and sump pump is located.
- Laundry Block Foundation Drainage Plan (C4.0) and Foundation Drainage Details (C4.1). – Civil drawings showing the location of the 6" perforated collector pipe.
- Figure 9, Cross-Section A-A', Post-Excavation and DPE system Operation.

We will be conducting a survey of the existing remediation system wells since the previous elevations were based on an arbitrary 100-foot datum established at the Site. Using the arbitrary datum, groundwater elevation in the perched groundwater-bearing zone along the Block 10NE western boundary ranges from approximately 79' to 88'. Using on the arbitrary datum, the approximate groundwater elevation within Block 10NE is higher than the lowest level of the Block 10W parking garage and associated sump pump; therefore, the groundwater barrier system has adequate coverage to intercept upgradient groundwater in the perched groundwater-bearing zone flowing onto Block 10W (Figure 9).

The sump pump in the parking garage of Block 10W is currently undergoing repairs and is expected to be back in service by the end of August.

Downgradient Monitoring Well Installation

Ecology asked if it was feasible to install a new monitoring well west of the Block 10W property to be used as a point of compliance for groundwater. As Farallon describes above, the groundwater impacts in the perched groundwater-bearing zone along the Block 10NE western property boundary are being intercepted by the Block 10W groundwater barrier system.

Below please find a summary of complications associated with installation of a monitoring well west of the Block 10W property that include access issues, time frame, and estimated costs to install a well downgradient of Block 10NE: a 30 foot below ground surface (ft bgs) well in the perched groundwater-bearing zone.

Potential Issues: Due to the presence of a building on Block 10W, utility infrastructure, and bioretention planters on the east side of Pontious Avenue North, the nearest location to the west and downgradient of Block 10NE where it is feasible to install a monitoring well is along the parking lane on the west side of Pontius Avenue North (Attachment 3). This location is approximately 200 feet west of Block 10NE.

Time Frame: Including street use permitting and driller scheduling, it is anticipated that well installation could be completed in approximately 12 to 20 weeks.

Cost Estimate: $35,000

Prior to the remedial excavation, monitoring wells MW-1, MW-2, MW-4, and MW-7 were located downgradient of Block 10NE on Block 10W (Figure 10). Concentrations of vinyl chloride exceeded MTCA cleanup levels at MW-1 and MW-2. Concentrations of PCE/others from monitoring wells MW-4 and MW-7 were either reported not detected at the laboratory PQL or were less than their respective MTCA cleanup levels for groundwater. A decreasing trend was observed from MW-1 downgradient to MW-2. MW-1, MW-2, and MW-4 were located in the perched groundwater-bearing zone and the entire perched groundwater-bearing zone was removed during remedial excavation and construction of the current building. Monitoring well MW-7 was located in the deep groundwater-bearing interval and PCE/others were either reported non detected at the laboratory PQL or was less than their respective MTCA cleanup levels for groundwater.

Action Items to discuss and confirm with Ecology:

- Confirm Conditional Points of Compliance. Monitoring wells DPE-32, DPE-38, and DDPE-42 can be used as conditional points of compliance in addition to the Block 10W groundwater barrier system, when flow is observed. No additional monitoring wells are required to be installed.
- Confirm Cessation of DPE System. Based on asymptotic vapor and aqueous phase mass recovery rates, decrease in mass recovery rates over time, proposed conditional points of compliance for groundwater, and engineering and institutional controls in place, Farallon recommends that no further active remediation is required beyond long term vapor intrusion mitigation measures.
- Confirm Modifications to Compliance Monitoring. The Compliance Monitoring Plan currently includes monitoring a network of 9 monitoring wells and conducting groundwater monitoring events every 15 months. Please confirm the discussed modification increase the compliance monitoring well network from 9 to 14 wells and frequency of groundwater monitoring to be revised to one year of quarterly monitoring, then transition to groundwater monitoring events every 15 months.

Please let us know if you have any questions or would like to schedule a call to discuss.

Regards,

Lisa Thompson
Associate Engineer
Phone 425-395-4636

From: Lisa Thompson
Sent: Tuesday, June 18, 2024 2:19 PM
To: 'Winslow, Frank (ECY)' <fwin461@ECY.WA.GOV>
Cc: Suzy Stumpf <sstumpf@farallonconsulting.com>
Subject: RE: XN0032 - Block 10 Site - Remedial System Operations and Cleanup Objectives

Hi Frank,

Please see Farallon's responses to your questions below, in green.

Regards,

Lisa Thompson
Associate Engineer
Phone 425-395-4636

From: Lisa Thompson
Sent: Tuesday, June 18, 2024 10:17 AM
To: Winslow, Frank (ECY) <fwin461@ECY.WA.GOV>
Cc: Suzy Stumpf <sstumpf@farallonconsulting.com>
Subject: RE: XN0032 - Block 10 Site - Remedial System Operations and Cleanup Objectives

Hi Frank,

Thanks for the update.
Suzy is out today, so I don't think it will be feasible to get you a response today.
We should be able to get you a response by Wednesday or Thursday.

Thanks,

Lisa Thompson
Associate Engineer
Phone 425-395-4636

From: Winslow, Frank (ECY) <fwin461@ECY.WA.GOV>
Sent: Tuesday, June 18, 2024 9:57 AM
To: Lisa Thompson <lthompson@farallonconsulting.com>
Cc: Suzy Stumpf <sstumpf@farallonconsulting.com>
Subject: RE: XN0032 - Block 10 Site - Remedial System Operations and Cleanup Objectives

I was able to book 2:00 pm today with my peer reviewer, so if there is any chance of having your reply before then, I would much appreciate it.

Thanks, Frank

From: Winslow, Frank (ECY)
Sent: Tuesday, June 18, 2024 9:53 AM
To: 'Lisa Thompson' <lthompson@farallonconsulting.com>
Cc: 'Suzy Stumpf' <sstumpf@farallonconsulting.com>
Subject: RE: XN0032 - Block 10 Site - Remedial System Operations and Cleanup Objectives

Hi Lisa,

I preparation for my discussions with our peer reviewer, it would be helpful if you could provide a reply to the following from our April 18, 2024 email. We had discussed this a bit during a Teams call, but it would be very helpful to have Farallon's response in writing.

"In making this determination, it would be helpful to refine our conceptual understanding. We wish to have a more clear conceptual model regarding:

- *The apparent rebound in the system influent following system shut off in 2023 (CAR Table 12);*
- *The highly variable PCE results in DPE-34 over time (spiking up to 4,700 µg/L in May 2021); and*
- *The increase in TCE concentrations in DPE-35 from January 2018 to September 2019.*

It is clear that there is not a simple system response, and there may be value to pulsing of the system if significant rebound could still be occurring. However, assessing such value is currently challenging. Charts showing pumping of DPE-34 versus PCE concentration and pumping of DPE-35 versus TCE concentration would be helpful (pumping can be shown as bars or lines, and concentrations as lines). These charts will be helpful to assess whether the observed increases are clearly a rebound affect in response to pulsing the system, and may help in assessing whether additional pulsing may be beneficial. ***If such charts can be provided to Ecology for our use in our internal discussions, this should be helpful."***

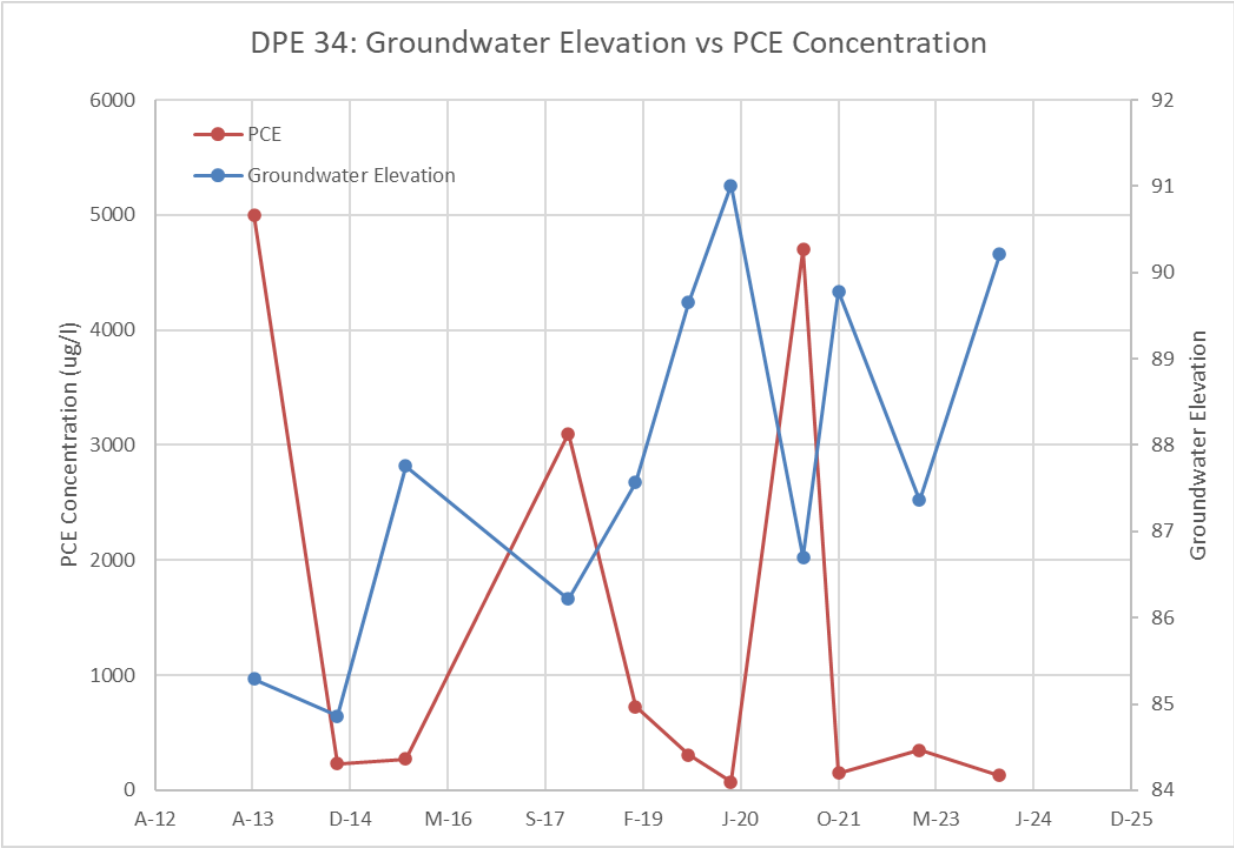
For the groundwater sampling events prior to May 2023, the downwell pumps were turned off approximately two weeks prior to the event. Prior to turning off the pumps, they were on and cycling when water was present above the pump inlet. See charts below for comparisons of groundwater elevation and PCE at DPE-34 and groundwater elevation and TCE at DPE-35.

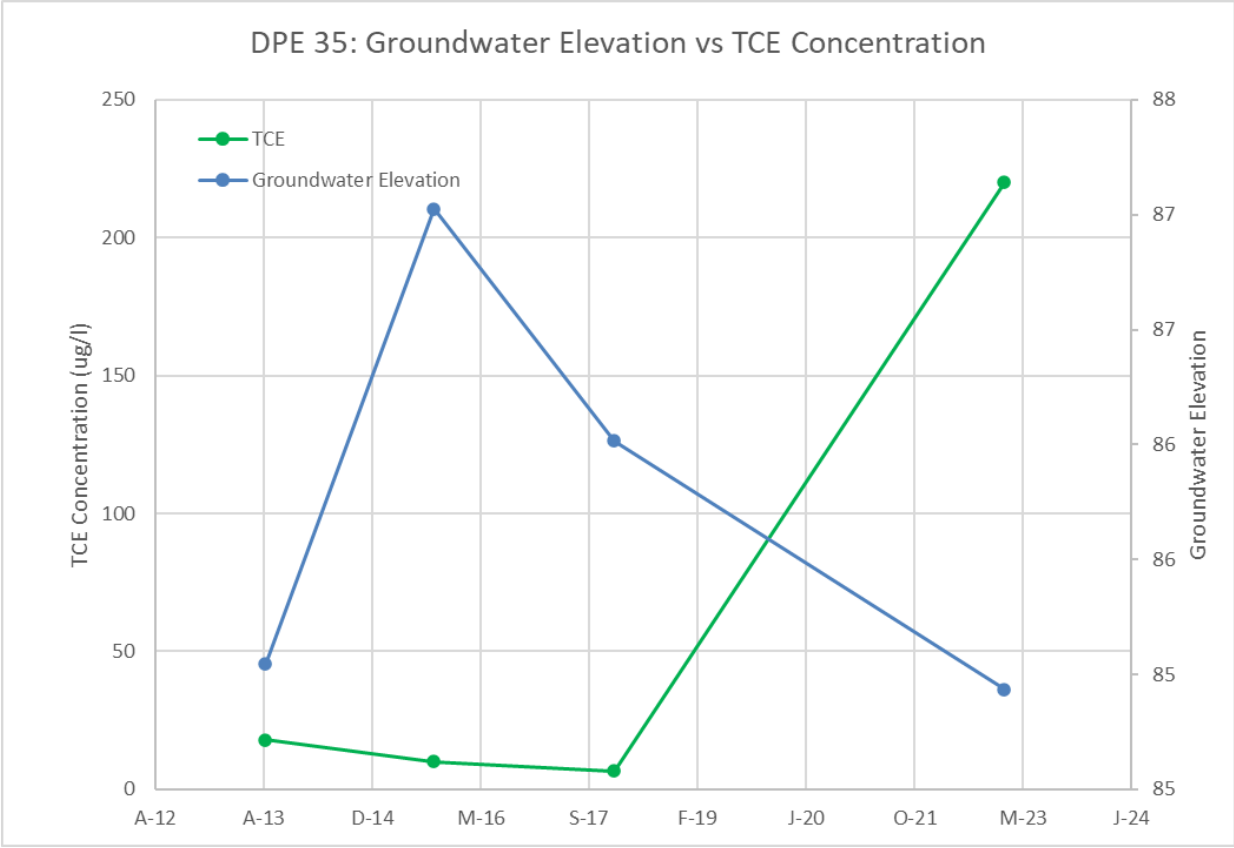
With respect to the observed rebound in 2023 within CAR Table 12, Ecology understands that the aggregate concentrations in CAR Table 12 are not particularly conclusive since the aggregate sample is not believed to be a well-blended result (influence from specific wells can be variable in this influent sample, based on the timing of the sampling). A brief discussion of how this works would be helpful.

The downwell pumps were turned off in May 2023. Between May 2023 and the sampling event on June 27, 2023, less than 150 gallons were recorded going through the system. Water was pumped through the system to discharge water that had accumulated in the SVE manifold lines. The intent of the influent and effluent sampling on June 27, 2023, was to monitor carbon performance and comply with the King County Discharge Authorization, not collect representative data of system performance. Typical water discharge system performance samples were collected when the system was operating normally.

With respect to the relationship between spiking concentrations and pumping at DPE-34 and DPE-35, my understanding is that Farallon does not believe that any correlation between pump cycling and the elevated concentrations (spikes) observed at DPE-34 and DPE-35 can be drawn. However, I have not seen any charts or data showing pump runtimes from DPE-34 and DE-35. Supporting that conclusion with a data presentation may be appropriate. If the observed spikes are not attributable to specific pumping scenarios, does Farallon have an alternative conceptual model?

For the groundwater sampling events prior to May 2023, the downwell pumps were turned off approximately two weeks prior to the event. Prior to turning off the pumps, they were on and cycling when water was present above the pump inlet. There are no flow meters on the individual lines, so it is not possible to record the flow from each individual pump. However, it does appear that the concentrations of PCE and TCE at DPE-34 and DPE-35 increase during times of lower groundwater elevations, see draft charts below.





Thanks, Frank

From: Winslow, Frank (ECY)
Sent: Tuesday, June 18, 2024 9:24 AM
To: 'Lisa Thompson' <lthompson@farallonconsulting.com>
Cc: Suzy Stumpf <sstumpf@farallonconsulting.com>
Subject: RE: XN0032 - Block 10 Site - Remedial System Operations and Cleanup Objectives

Hi Lisa,

Thank you for submitting this information. I will be reviewing it with my peer reviewer and we will let you know our response as soon as we can.

Thanks, Frank

Frank P. Winslow, LHG

WA Expedited VCP Site Manager
Department of Ecology – Toxics Cleanup Program
1250 W. Alder Street, Union Gap, WA 98903
(509) 424-0543 (cell)

Frank.Winslow@ecy.wa.gov

From: Lisa Thompson <lthompson@farallonconsulting.com>
Sent: Friday, June 14, 2024 5:03 PM
To: Winslow, Frank (ECY) <fwin461@ECY.WA.GOV>
Cc: Suzy Stumpf <sstumpf@farallonconsulting.com>
Subject: RE: XN0032 - Block 10 Site - Remedial System Operations and Cleanup Objectives

External Email

Frank,

Please find Farallon's initial response based on Department of Ecology's comments on the Cleanup Acton Report (CAR) dated February 16, 2024, and subsequent email correspondence with Ecology. Farallon's understanding is that once we are able to confirm the points of compliance for groundwater with Ecology, that we will need to provide an Addendum to the CAR and revisions to the Compliance Monitoring Plan. We appreciate Ecology's cooperation in discussing Block 10 and the path to regulatory closure.

Prior to submitting the Addendum to the Block 10 CAR, Farallon wants to provide Ecology with the additional figures and tables requested and updated CAR tables with groundwater data collected in 2024 to support an evaluation of potential points of compliance for groundwater and continued operation of the subslab depressurization system at Block 10.

Below please find the following revised figures:

- Figure 9 – Cross-Section
- Figure 10 – Groundwater Analytical Results

- Figure 15A and 15B – Groundwater Contour Maps, Perched Groundwater-Bearing Zone, November 2021 and February 2024
- Figure 16A and 16B – Groundwater Contour Maps, Deep Groundwater-Bearing Interval, November 2021 and February 2024

Below please find the following revised tables:

- Table 4 – Summary of Groundwater Analytical Results for HVOCs - Pre-Excavation
- Table 7 – Remediation System Well Construction Details and Groundwater Elevations, Block 10NE
- Table 9 – Summary of Groundwater Analytical Results for HVOCs, Block 10NE
- Table 12 – Groundwater Treatment System Compliance Sampling Results, Block 10NE
- Table 15 – Summary of Soil Sample Analytical Results - Alley
- Table 16 – Summary of Remedial Actions

Figure 9 is a revised cross-section with additional groundwater data through February 2024 included.

Figure 10 and Table 9 are a revised figure and table with groundwater monitoring results from the additional February and May 2024 monitoring events. Monitoring wells DPE-30, DPE-32, DPE-36, DPE-38, and DDPE-42 along the east side of the alley were monitored using low flow sampling techniques on May 30, 2024. Concentrations of PCE and TCE were detected at concentrations less than MTCA cleanup levels in all wells except for DPE-36 in the central area of Block 10NE. Figure 10 was revised to show historical groundwater data both on and off property. Monitoring well MW-8 formerly located east of Block 10NE on Yale Avenue North had concentrations of PCE, TCE, and vinyl chloride not detected above the laboratory practical quantitation limit.

Figures 15A and 15B consist of perched groundwater-bearing zone contour maps from the November 2021 and February 2024 monitoring events, respectively. Groundwater flow direction in the perched groundwater-bearing zone is generally west/northwest.

Figures 16A and 16B consist of deeper groundwater-bearing interval contour maps from the November 2021 and February 2024 monitoring events, respectively. Groundwater flow direction in the deeper groundwater-bearing zone is generally west/northwest.

Table 12, Groundwater Treatment System Compliance Sampling Results, Block 10NE, has been revised and includes the performance groundwater samples collected on April 4, 2024, from the system influent without dual-phase extraction (DPE) wells DPE-34 and DPE-35 pumping, and then with only DPE-34 and DPE-35 pumping. The concentration of PCE without DPE-34 and DPE-35 was 22 ug/l; with only DPE-34 and DPE-35 pumping the PCE concentration was 58 ug/l.

The previously requested 2014 O&M Manual can be found at this link:
https://farallonconsultingllc.box.com/s/6mcag5dgrhect3md602mofse35i7l9re

Farallon wants to discuss and confirm with Ecology:

- **Conditional Points of Compliance.** Monitoring wells DPE-32, DPE-38, and DDPE-42 can be used as conditional points of compliance in addition to the Block 10W groundwater barrier

system, when flow is observed.

- **Confirm Cessation of DPE.** Based on generally asymptotic vapor and aqueous phase mass recovery rates, proposed conditional points of compliance for groundwater, engineering and institutional controls in place, Farallon recommends that no further active remediation is required beyond long term vapor intrusion mitigation measures.
- **Confirm Modifications to Compliance Monitoring.** The Compliance Monitoring Plan currently includes groundwater monitoring events every 15 months. Please confirm if changes in the frequency or duration of compliance monitoring.

Please let us know if you have any questions or would like to schedule a call to discuss.

Regards,

Lisa Thompson
Associate Engineer
Phone 425-395-4636

From: Winslow, Frank (ECY) <fwin461@ECY.WA.GOV>
Sent: Thursday, April 18, 2024 10:09 AM
To: Lisa Thompson <lthompson@farallonconsulting.com>
Cc: Suzy Stumpf <sstumpf@farallonconsulting.com>
Subject: RE: XN0032 - Block 10 Site - Remedial System Operations and Cleanup Objectives

Hi Lisa,

Thank you for providing the updated Table 12 from the Cleanup Action Report (CAR).

The results without DPE-34 and DPE-35 (PCE at 22 µg/L) are not surprising; however, the results from pumping only DPE-34 and DPE-35 (PCE at 55 µg/L and TCE at 4.5 µg/L) are lower than expected, based on the December 2022 results presented within the CAR. Based on the most recent results from DPE-34 and DPE-35 from Table 9 of the CAR (December 2022 results for DPE-34 and November 2021 results for DPE-35), the average PCE and TCE concentrations would be 187 µg/L and 97 µg/L, respectively.

However, I believe you indicated that you had more recent well sampling data (if I recall correctly, 74 ug/L PCE at DPE-34 in February 2024). Hence, the 55 µg/L in the combined sample may not be unexpected. **Please forward the up to date version of CAR Table 9.** Was DPE-35 also sampled in February 2024?

After our receipt of an updated Table 9, I will schedule Ecology-internal calls with my Peer Reviewer and Section Manager to discuss the question of anticipated returns from continued system operation. From our call on March 27, 2024, I believe you had indicated that the cost of continued operation of the DPE system was estimated at $63,000 per year. Does this number sound correct? Ecology's guidance on Disproportionate Cost Analysis (DCA) focuses on identifying the most permanent cleanup solutions that are not disproportionate in cost, but does not examine the specific question of ceasing remedial operations based on reduced benefit versus operational cost. This becomes a best professional judgement question. Farallon appears to be making the assertion that the costs of continued operation are disproportionate when compared with the incremental benefits of continued operation. Ecology is examining that assertion, and will determine whether or not we concur.

In making this determination, it would be helpful to refine our conceptual understanding. We wish to have a more clear conceptual model regarding:

- The apparent rebound in the system influent following system shut off in 2023 (CAR Table 12);
- The highly variable PCE results in DPE-34 over time (spiking up to 4,700 µg/L in May 2021); and
- The increase in TCE concentrations in DPE-35 from January 2018 to September 2019.

It is clear that there is not a simple system response, and there may be value to pulsing of the system if significant rebound could still be occurring. However, assessing such value is currently challenging. Charts showing pumping of DPE-34 versus PCE concentration and pumping of DPE-35 versus TCE concentration would be helpful (pumping can be shown as bars or lines, and concentrations as lines). These charts will be helpful to assess whether the observed increases are clearly a rebound affect in response to pulsing the system, and may help in assessing whether additional pulsing may be beneficial. **If such charts can be provided to Ecology for our use in our internal discussions, this should be helpful.**

Any ETA on the requested potentiometric surface map? That is an important component of our assessment of potential Conditional Points of Compliance (CPOCs). Prior to scheduling a Teams call to discuss the Site data and the path forward, Ecology would like to be armed with the data requested within our March 28, 2024 email, to the extent possible.

Thanks, Frank

Frank P. Winslow, LHG

WA Expedited VCP Site Manager
Department of Ecology – Toxics Cleanup Program
1250 W. Alder Street, Union Gap, WA 98903
(509) 424-0543 (cell)

Frank.Winslow@ecy.wa.gov

From: Lisa Thompson <lthompson@farallonconsulting.com>
Sent: Thursday, April 18, 2024 8:34 AM
To: Winslow, Frank (ECY) <fwin461@ECY.WA.GOV>
Cc: Suzy Stumpf <sstumpf@farallonconsulting.com>
Subject: RE: XN0032 - Block 10 Site - Remedial System Operations and Cleanup Objectives

External Email

Hi Frank,

Attached please find revised Table 12, Groundwater Treatment System Compliance Sampling Results, Block 10NE, that includes the performance groundwater samples collected on April 4, 2024, from the system influent without dual-phase extraction wells DPE-34 and DPE-35 pumping, and then with only DPE-34 and DPE-35 pumping. The concentration of PCE without DPE-34 and DPE-35 was 22 ug/l; with only DPE-34 and DPE-35 pumping the PCE concentration was 58 ug/l.

We are putting together the rest of the data package requested, but would like to get a meeting

coordinated. As you noted, it may be helpful to have peer reviewer Tena Seeds join the call if you think that is appropriate.

Do you have availability during the following days and times?

- Wednesday, 4/24 -- 9 am to 1 pm
- Thursday, 4/25 -- 9 am to 11 am
- Friday, 4/26 -- 1 pm to 3 pm

Please let us know your availability and if you have additional questions as we finish putting together the rest of the data package.

Regards,

Lisa Thompson, P.E.
Associate Engineer
Phone 425-395-4636

From: Winslow, Frank (ECY) <fwin461@ECY.WA.GOV>
Sent: Monday, April 1, 2024 8:43 AM
To: Lisa Thompson <lthompson@farallonconsulting.com>
Cc: Suzy Stumpf <sstumpf@farallonconsulting.com>
Subject: RE: XN0032 - Block 10 Site - Remedial System Operations and Cleanup Objectives

Hi Lisa,

Thanks for your email. Can you send me the shallow aquifer potentiometric surface map as soon as it is available, so that we can look further at the question of conditional points of compliance (CPOCs)? If there is sufficient data for a deep aquifer surface as well, that would be helpful.

It will be interesting to see if the shallow aquifer has a relatively planar surface, or still hummocky as a result of the low permeability/interconnectivity. When that map is available, please include the duration since last pumping of any wells.

Thanks, Frank

From: Lisa Thompson <lthompson@farallonconsulting.com>
Sent: Monday, April 1, 2024 7:55 AM
To: Winslow, Frank (ECY) <fwin461@ECY.WA.GOV>
Cc: Suzy Stumpf <sstumpf@farallonconsulting.com>
Subject: RE: XN0032 - Block 10 Site - Remedial System Operations and Cleanup Objectives

Hi Frank,

We collected a round of depth to groundwater in February (without pumping) before the groundwater monitoring event so we can use that data for the potentiometric surface map.

Thanks,

Lisa Thompson, P.E.
Associate Engineer
Phone 425-395-4636

From: Winslow, Frank (ECY) <fwin461@ECY.WA.GOV>
Sent: Friday, March 29, 2024 11:55 AM
To: Lisa Thompson <lthompson@farallonconsulting.com>
Cc: Suzy Stumpf <sstumpf@farallonconsulting.com>
Subject: RE: XN0032 - Block 10 Site - Remedial System Operations and Cleanup Objectives

Oh – please note that the requested potentiometric surface map to define appropriate CPOC location(s), an extended period with no pumping would be ideal. Therefore, it would be appropriate to get the water level round first, if possible.

Thanks, Frank

From: Winslow, Frank (ECY)
Sent: Friday, March 29, 2024 11:42 AM
To: 'Lisa Thompson' <lthompson@farallonconsulting.com>
Cc: Suzy Stumpf <sstumpf@farallonconsulting.com>
Subject: RE: XN0032 - Block 10 Site - Remedial System Operations and Cleanup Objectives

Sounds good. Thanks!

From: Lisa Thompson <lthompson@farallonconsulting.com>
Sent: Friday, March 29, 2024 11:15 AM
To: Winslow, Frank (ECY) <fwin461@ECY.WA.GOV>
Cc: Suzy Stumpf <sstumpf@farallonconsulting.com>
Subject: RE: XN0032 - Block 10 Site - Remedial System Operations and Cleanup Objectives

External Email

Hi Frank,

Thanks for the follow up email. We will collect groundwater treatment influent samples, update tables and figures, and let you know when we are ready for another call.

Regards,

Lisa Thompson, P.E.
Associate Engineer
Phone 425-395-4636

From: Winslow, Frank (ECY) <fwin461@ECY.WA.GOV>
Sent: Thursday, March 28, 2024 9:21 AM
To: Suzy Stumpf <sstumpf@farallonconsulting.com>; Lisa Thompson <lthompson@farallonconsulting.com>
Subject: XN0032 - Block 10 Site - Remedial System Operations and Cleanup Objectives

Hi Suzy and Lisa,

Thank you for the Teams call yesterday. I have discussed the Site with my peer reviewer and my Section Manager. As previously discussed (including below email dated February 22, 2024), Ecology is requesting additional groundwater cleanup at the Site prior to NFA issue as there are 1) high concentrations of Site contaminants (PCE and TCE) in groundwater at DPE-34 and DPE-35 as well as 2) elevated concentrations in the manifolded treatment influent on 6/27/23 (PCE at 140 ug/L). It appears that turning off the system prior to 6/27/23 resulted in a rebound of contamination in groundwater. More recent sampling of the manifolded influent in February 2024 reportedly had 74 µg/L PCE.

Ecology expects that a more focused pumping and treatment of groundwater within the DPE-series well to target remaining "hot spots" would be appropriate. There appears to be potential for applying a remediation level and Conditional Points of Compliance (CPOCs) to target for the cessation of the DPE groundwater recovery and treatment system. Ecology suggests the following next steps to support the definition of remediation level and CPOCs to be followed by Ecology issue of a NFA Likely opinion letter.

- Conducting a potentiometric surface map prior to turning on any pumping wells. Since the system has been turned off for an extended period, this provides the first opportunity to see what current (equilibrated) groundwater flow directions look like. Verifying current groundwater flow will be critical for establishing appropriate CPOC location(s).
- Collect a groundwater treatment influent sample with all of the DPE wells pumped except for DPE-34 and DPE-35. This is anticipated to verify the lack of significant concentrations from this well set and, presumably, the lack of value in continuing to pump these wells.
- Collect a groundwater treatment influent sample with only wells DPE-34 and DPE-35 pumped. This is anticipated to verify the value of the continued recovery from these wells.
- Collect current groundwater samples from DPE- series monitoring wells located near to the alley. This will allow assessment of use of these wells as potential CPOCs. Based on existing groundwater data, continued pumping at DPE-36 could be warranted if CPOCs are selected along the western boundary of the Block 10 NE property. Ecology may consider the Block 10 W barrier wall to be the CPOC, but only if a strong case can be made that this wall contains all contaminated groundwater from the Block 10 NE area.
- Our peer reviewer requested verification of the upgradient extent of groundwater contamination. Cleanup Action Report Figure 10 had no monitoring wells to the east with contaminant concentration above cleanup levels. Is there historical data that was used to delineate that boundary?

Please let me know if you have any questions regarding the above suggested steps.

Thanks, Frank

Frank P. Winslow, LHG

WA Expedited VCP Site Manager
Department of Ecology – Toxics Cleanup Program
1250 W. Alder Street, Union Gap, WA 98903
(509) 424-0543 (cell)

Frank.Winslow@ecy.wa.gov

From: Winslow, Frank (ECY)
Sent: Wednesday, March 20, 2024 8:52 AM
To: 'Lisa Thompson' <lthompson@farallonconsulting.com>
Cc: Suzy Stumpf <sstumpf@farallonconsulting.com>
Subject: RE: Block 10 Site (VCP Project ID: XN0032) - Cleanup Action Report

HI Lisa,

I'm going to send an invite for 3/27/24. BTW, I discussed this site with my boss, HQ Section Manager, Erik Snyder. I wanted to make sure that they did not object to proceeding with recording the EC prior to Ecology's concurrence on the Cleanup Action Completion Report. Essentially, the EC does not include any provisions with respect to the DPE wells. However, this does not seem to be a concern, since we anticipate that NFA issue would follow Ecology's concurrence at some point in the future that the DPE wells are no longer needed.

I was looking into the system a bit: The 2014 RI/FS states:

> *A detailed description of the remediation system is included in the Operation and Maintenance Manual, Dual Phase Extraction, Soil Vapor Extraction, and Subslab Depressurization System, Block 10 Supply Laundry Building, 1265 Republican Street, Seattle Washington prepared by Farallon dated November 6, 2014.*

I don't believe Ecology has the 2014 O&M Manual. Can you provide an electronic copy for our record? It is our understanding that the DPE wells have pumps that remove water for treatment as well as an in-well vapor recovery system for vapors. It is also our understanding that the SVE system was installed for the sole purpose of protection of the Block 10 SW property.

The 2014 RI/FS states:

> *Groundwater from DPE wells is pumped from each well to the remediation room, where it is filtered by two parallel sets of bag filters prior to passing through the granular activated carbon (GAC) canisters, and discharges to the sanitary sewer.*

Based on this, I am assuming that the DPE wells can be operated as groundwater recovery wells only, without operating the vapor recovery component of the DPE system, as Ecology has concluded that the continued operation of the SSDS appears to provide sufficient protection for the vapor pathway, and the contaminated groundwater is the primary concern at this time with respect to reaching cleanup objectives. In addition, I would assume that pumping of only the DPE wells that have elevated CVOC concentrations may be practicable, as not all DPE wells have elevated CVOC concentrations.

I am providing this feedback at this time just to ensure that you are clear on Ecology's

understandings/perspective at this time. Rather than an email reply, we can discuss the above during our 3/27/24 call.

Thanks, Frank

Frank P. Winslow, LHG

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(509) 424-0543 (cell)

Frank.Winslow@ecy.wa.gov

From: Lisa Thompson <lthompson@farallonconsulting.com>
Sent: Tuesday, March 19, 2024 1:52 PM
To: Winslow, Frank (ECY) <fwin461@ECY.WA.GOV>
Cc: Suzy Stumpf <sstumpf@farallonconsulting.com>
Subject: RE: Block 10 Site (VCP Project ID: XN0032) - Cleanup Action Report

Hi Frank,

Are you available for a Teams call to discuss next steps at Block 10 next week during the following days/times?

- Wednesday, 3/27, 10 am to 12 pm or after 2 pm
- Thursday, 3/28, after 2 pm

Thanks,

Lisa Thompson, P.E.
Associate Engineer
Phone 425-395-4636

From: Lisa Thompson
Sent: Friday, February 23, 2024 12:07 PM
To: 'Winslow, Frank (ECY)' <fwin461@ECY.WA.GOV>
Subject: RE: Block 10 Site (VCP Project ID: XN0032) - Cleanup Action Report

Hi Frank,

Thanks for the initial feedback. We will review the feedback and let you know when we are ready to schedule a Teams call.

Regards,

Lisa Thompson, P.E.
Associate Engineer
Phone 425-395-4636

From: Winslow, Frank (ECY) <fwin461@ECY.WA.GOV>
Sent: Thursday, February 22, 2024 4:53 PM
To: Lisa Thompson <lthompson@farallonconsulting.com>
Subject: RE: Block 10 Site (VCP Project ID: XN0032) - Cleanup Action Report

Hi Lisa,

Ecology has the following initial feedback, base on our preliminary review of the Cleanup Action Report:

- Please provide a revised Table 4 (Block 10 W pre-excavation groundwater results) with rows highlighted gray if the entire well screened interval was removed with the Block 10W excavation.
- Please provide a new Table that summarizes the start and end dates of the remedial actions, including the Block 10 W and NE excavations, the DPE and SVE systems, the Block 10 W groundwater barrier system, and the SSDS.
- Please provide a Table summarizing of the remaining contamination above cleanup levels beneath the alley (including contaminants, depths, and concentrations) for Ecology's inclusion in a notification letter to the City of Seattle.

The above requested tables can be provide as a supplemental submittal.

- Ecology notes that our concurrence was sought from Ecology in 2023 regarding ceasing operation of the DPE and SVE systems. Our email dated 6/16/23 provided our concurrence on ceasing operation of the SVE system, but with respect to the groundwater extraction using the DPE wells we stated the following (emphasis added):

  Ecology cannot offer concurrence at this time regarding discontinuing operation of the DPE system with respect to cleanup of contaminated groundwater. An opinion request with the submittal of the Cleanup Action Completion Report will result in our providing our opinion on whether cleanup at the Site has met the substantive requirements of MTCA. We recognize that operation of the SVE system may not be fully independent of the DPE system. Discontinuing operation of the DPE system at this time would be solely Farallon and JPM Chase's decision, although Ecology would conclude that continued operation of DPE wells generally appears to be warranted (most recent groundwater sampling results would appear to indicate relatively high concentrations still remain - to 350 µg/L PCE and 36 µg/L TCE). I do not know how much the operation of the DPE system can be adjusted to target remaining higher concentration areas; however, the reduction of the recovery effluent concentration to 30 µg/L in 2023 cannot alone be concluded to be a cleanup performance metric demonstrating that groundwater has been cleaned up to the maximum extent practicable.

  Ecology notes that achieving cleanup levels for groundwater are generally demonstrated through 4-8 consecutive quarters of groundwater data below cleanup levels. The upper end of this is commonly

cited for chlorinated VOCs in groundwater due to potential groundwater rebound effects. Continued active remediation would generally be expected until cleanup levels have been achieved. Making a case for sufficiency of cleanup of groundwater with such remaining concentrations may be challenging. This does not preclude the possibility of potentially transitioning continued O&M and monitoring to a post-NFA status. Under this scenario, Ecology would review O&M and monitoring data on a five-year basis during periodic reviews.

Understanding the groundwater at the Site also requires a detailed understanding of the "drying up" of the shallow groundwater system as well as the connectivity between aquifer zones. The Cleanup Action Report should present data supporting this case, including water level time trends and detailed sections showing the changes in water levels. Presentation of data demonstrating the discontinuity of the shallow groundwater system may have potential to support a case for why relative benefits of continued active cleanup may be low. We understand that such a case may be presented within the Cleanup Action Report for the deeper groundwater system as well. If a case can be made that the groundwater contamination is limited to the Property, and the plume(s) is stable or receding, then there may be potential to manage remaining groundwater contamination via institutional controls under an environmental covenant and conditional points of compliance. **However, since a remedial system is currently in place and is apparently continuing to remove contaminant mass, in general, Ecology would conclude that continued operation appears to be warranted.**

The Cleanup Action Report stated on page 1-3:

Operation of the DPE and SVE systems ceased in May 2023 following confirmation that asymptotic levels for HVOC removal were attained.

Ecology notes that CAR Table 12 shows PCE in treatment system influent samples increased from 4.9 µg/L on 10/19/22 to 140 µg/L on 6/27/23. This was following cessation of pumping in March of April of 2023, indicating a rebound affect. **Ecology therefore cannot concur with the statement that "asymptotic levels for HVOC removal were attained" with respect to the DPE wells, nor that the groundwater has been cleaned up to the maximum extent practicable. Therefore, continued operation of the DPE wells and groundwater treatment system appears to be warranted**. The data from 6/27/23 appears to suggest that pulsing of the DPE system may result in the greatest benefit. In addition, if the DPE system can be manifolded such that DPE wells with lower concentrations are not pumped, a more efficient recovery could potentially be affected. We recognize that the actual operations may be limited by site-specific constraints; however, such optimization should be considered to the extent possible.

As mentioned in our email dated 6/16/23, groundwater concentrations beneath Block 10 NE are still high at several locations. The most recent concentrations from CAR Table 9 include PCE at 350 µg/L at DPE-34 in December 2022 and at 230 µg/L in SVE-22 in November 2021. Most recent PCE concentrations at DPE-33, DPE-36, and DPE-31 were 76 µg/L, 66 µg/L, and 39 µg/L. TCE was detected at 190 ug/L at DPE-35. Many of these most recent results were in December 2022.

In addition to the groundwater contaminant data, Ecology notes that the water level time trend plots in Charts 3 through 8 do not make a compelling case for dewatering of the shallow groundwater system occurring. We recognize that selected DPE wells having insufficient water for sampling may be suggestive of the aquifer system being drained, but this should be verified by taking water level measurements after the system has not been operating for a period of time (current water level conditions from all of the DPE wells would be useful to allow assessment of potential aquifer dewatering).

Ecology requests sampling of the following monitoring wells to collect current groundwater data: SVE-22, DPE-14, DPE-31, DPE-33, DPE-34, DPE-35, DPE-36, DDPE-39, and DDPE-42. If wells are dry (an insufficient volume of water is present for sampling) then such should be reported. Ecology anticipates that these nine monitoring wells that had the highest concentrations of PCE and TCE in the most recent sampling round should also comprise the compliance monitoring network (rather than the nine monitoring wells presented within the compliance monitoring plan). Ecology suggests that the sampling

of these monitoring wells be performed as soon as possible. Continued water level measurements within these monitoring wells and time trend plotting is also appropriate.

Ecology notes that there may potential for Ecology to issue a NFA letter with a requirement for continued operation of the DPE wells and groundwater treatment system. After you have had a chance to discuss this email amongst your team, Ecology suggests a Teams call to discuss next steps at the Site.

Thanks, Frank

Frank P. Winslow, LHG

WA Expedited VCP Site Manager
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Frank.Winslow@ecy.wa.gov

From: Winslow, Frank (ECY)
Sent: Thursday, February 22, 2024 8:57 AM
To: 'Lisa Thompson' <lthompson@farallonconsulting.com>
Cc: Lipman, Genna <genna.lipman@jpmorgan.com>; Riley Conkin <rconkin@farallonconsulting.com>; Suzy Stumpf <sstumpf@farallonconsulting.com>; Peter Kingston <pkingston@farallonconsulting.com>; Rake, Brandon <brandon.rake@jpmchase.com>
Subject: RE: Block 10 Site (VCP Project ID: XN0032) - Cleanup Action Report

Hi Lisa,

Documents received.

We will begin our review within the next few days. We will let you know if we have any questions.

Thanks, Frank

Frank P. Winslow, LHG

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Department of Ecology – Toxics Cleanup Program
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From: Lisa Thompson <lthompson@farallonconsulting.com>
Sent: Thursday, February 22, 2024 8:45 AM
To: Winslow, Frank (ECY) <fwin461@ECY.WA.GOV>
Cc: Lipman, Genna <genna.lipman@jpmorgan.com>; Riley Conkin <rconkin@farallonconsulting.com>; Suzy Stumpf <sstumpf@farallonconsulting.com>; Peter Kingston <pkingston@farallonconsulting.com>; Rake, Brandon <brandon.rake@jpmchase.com>; Ken Lederman <ken@mhseattle.com>; Wyatt, Kathryn (ATG) <Kathryn.Wyatt@atg.wa.gov>
Subject: Block 10 Site (VCP Project ID: XN0032) - Cleanup Action Report

External Email

Frank,

Please find the Block 10 Site Cleanup Action Report at the link below.

- Cleanup Action Report – https://farallonconsultingllc.box.com/s/jx7e4p6lhp31qcb6bu6bab155w5p24cc

The Compliance Groundwater Monitoring Plan and Operations and Maintenance Plan can be found in Appendix I and J, respectively, or separately at the links below.

- Compliance Groundwater Monitoring Plan – https://farallonconsultingllc.box.com/s/unh11nzpfw555ehfhxuzxzbz8cnaj82r
- Operations and Maintenance Plan – https://farallonconsultingllc.box.com/s/2b8kxt0v4ne1gu8iopfbrihau3774fez

Please let us know if you have any questions.

Regards,

Lisa Thompson, P.E. (WA)
Associate Engineer

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