RESPONSIVENESS SUMMARY

Port of Vancouver Cadet/Swan, NuStar Terminal Services, Inc., and Kinder Morgan

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Agreed Order #15806

Prepared by

Washington State Department of Ecology

Southwest Regional Office

Toxics Cleanup Program

Lacey, Washington

May 2019

Contents

Site Information

Address: Port of Vancouver

Cleanup Site Manager: Craig Rankine

Public Involvement Coordinator: Sheila Coughlan

The Washington Department of Ecology (Ecology) is entering into a new Agreed Order with Port of Vancouver Cadet/Swan (port), NuStar Terminals Services, Inc., (NuStar) and Kinder Morgan Bulk Terminals LLC., (KMBT) to address recently discovered contamination on the Port of Vancouver property. The Agreed Order requires the port, NuStar and KMBT to:

- Prepare a supplemental remedial investigation (RI) work plan.
- Conduct a supplemental RI.
- Write a supplemental RI report that addresses potential contaminants in soil, sediment, and groundwater.
- Include supplemental and 2013 RI information into a new Feasibility Study (FS) that compares cleanup options for the entire site.

Ecology held a public comment period from March 4 to April 2, 2019 on the Agreed Order and Public Participation Plan. Two letters were received online via SmartComments.

The responsiveness summary addresses each comment with a response by Ecology. The two letters are attached in Appendix A and B in the exact form they were received.

Site Background

Soil and groundwater were polluted decades ago with chlorinated solvents such as trichloroethylene (TCE) that were used by the Cadet Manufacturing Company (Cadet), and the former Swan Manufacturing Company (Swan) to clean sheet metal parts. These businesses made electric heaters.

Soil and groundwater were also polluted with chlorinated solvents, such as perchloroethylene (PCE) and TCE that were handled by GATX Terminals Corporation, former operators at the NuStar facility. Data indicates that contaminated groundwater migrating from the upland area toward the Columbia River is a source of chlorinated solvents in sediment.

NuStar, a tenant of the port, handles bulk fertilizer products at their terminal. KMBT, another tenant of the port, handles copper ore that also contains other metals, and other bulk products. KMBT coordinates ore transport from mines to shipping companies. KMBT's facility is located

next to NuStar. NuStar found nitrate, ammonia, and copper in groundwater beneath the NuStar and KMBT facilities.

The areas of nitrate, ammonia, and copper contamination in the groundwater are located below and adjacent to the NuStar and KMBT facilities. The nitrate, ammonia and copper contamination are within a larger area-wide plume of solvent-related groundwater contamination that the port and NuStar are in the process of cleaning up.

It has not been determined if nitrate, ammonia and copper are present in soil or sediment.

The presence of these materials can be harmful to human health and the environment, so cleanup is important.

Next Steps

Ecology will finalize the Agreed Order and Public Participation Plan. As Ecology moves through the investigation and cleanup process, the public will be able to review and comment on the Supplemental RI report, FS report, and CAP.

Clark Public Utilities (CPU) and the Pacific Groundwater Group Letter

CPU Comment

CPU seeks assurances that hydraulic controls currently in place will remain effective as Pleistocene Alluvial Aquifer (PAA) pumping begins at the Carol Curtis Wellfield. This should also include any revisions to predicted behavior of the contaminant plume included in the supplemental remedial investigation.

Ecology Response

Thank you for your comments and update on pumping at the Carol Curtis Wellfield. Ecology and the Port of Vancouver (port) are committed to cleanup and preventing spread of contamination especially in response to another pumping center, including the Carol Curtis Wellfield. The extent of the groundwater contaminant plume has decreased significantly since start-up of the groundwater pump and treat system at the former SMC site in June 2009. The system was installed as an interim action. After completion of the Supplemental RI, final cleanup actions will be assessed in the FS and CAP. Ecology will be working with the port and CPU to assess adequacy of the pump and treat system operation in response to increased pumping from the PAA.

CPU Comment

Model simulations performed by PGG using the Vancouver Lake Lowlands Groundwater Model (Parametrix et al, 2008) suggest that plume containment operations may need to be revised to accommodate CPU's PAA pumping. The Cadet RI (Parametrix, 2009) and its Groundwater Pump and Treat Work Plan (Parametrix 2007, 2010) include provisions to adapt hydraulic control in response to changes in the wellfield operations.

Ecology Response

Ecology will be working with the port and CPU to assess adequacy of the pump and treat system operation in response to increased pumping from the PAA.

CPU Comment

Consistent with Work Plan, the supplemental remedial investigation work plan and ensuing supplemental RI/FS should include updated analysis of plume containment under current and known future conditions to demonstrate that plume containment will be maintained. Ongoing demonstration of plume containment through water-level and water-quality monitoring should also be included as a remedial action objective (RAO).

Ecology Response

The Supplemental RI will focus on identifying the nature and extent of copper and other pertinent metals, nitrate, nitrite, and ammonia contamination in all media. Groundwater level and quality monitoring will continue to be used for assessing areas where contamination is present. Final cleanup actions will be assessed in the FS and CAP.

City of Vancouver Memorandum

City of Vancouver Comment

The sites are partially within and just outside the Port of Vancouver (Port) water supply well contribution zones, as indicated by Clark County Maps Online (see Figure 1). The fact sheet for the site indicates groundwater is contaminated with solvents, metals and nutrients. The fact sheet states that public drinking water is not affected yet does not reflect the Port's well vulnerability. While the actual wellhead may be outside the physical sites of concern, the dynamic connection of groundwater, tidally influenced surface water and the well are not reflected in the fact sheet. These interconnections represent additional concerns for health and the environment that should be addressed in the remedial investigation as well as the public participation plan.

Ecology Response

The fact sheet presents a general overview of why Ecology is requiring a Supplemental RI. The public participation plan does not address site technical issues. The scope of work for the Supplemental RI will be developed to define the nature and extent of contamination.

City of Vancouver Comment

It may be helpful to understand that in terms of municipal water supply, the Clark Public Utilities (CPU) and Port have already developed public drinking water from the Vancouver Lake lowlands area. The City has identified the same tidally influenced area for future sources in the most recent Comprehensive Water System Plan (2015). The Salmon-Washougal and Lewis Watershed Management Plan (WRIAs 27-28), adopted July 2006, gave clear direction that any new municipal source should come from this Pleistocene Alluvial Aquifer (PAA) within Section 3.3.3 Regional Water Supply Options recommendations:

"The planning unit views the Columbia River and groundwater in hydraulic continuity with the Columbia River as a major water resource to meet water supply needs. As new water supplies are needed, it is preferable they be withdrawn from the Columbia River, adjacent lowland reaches of tributaries subject to tidal effects, and/or associated ground waters, rather than from flow-limited reaches of streams tributary to the Columbia."

Legacy contamination and the potential for water, soil and sediment contamination has implications for our master planning and future City drinking water capacity. This should be addressed in the remedial investigation as well as the future feasibility study and cleanup action plan. The 2006 Watershed Management Plan gave a specific recommendation that a collaborative PAA protective solution be generated amongst Clark Public Utilities, the Port of Vancouver and the City of Vancouver.

Ecology Response

The nature and extent of contamination will be addressed in the Supplemental RI report.

City of Vancouver Comment

Additionally, portions of the sites are within designated shorelines (Figure 2) and that may affect remediation investigations or cleanup actions. Until the scope of soil or sediment contamination is determined, the implications for shorelines and Growth Management Act compliance are unclear but that determination should be included in the future feasibility study and action plan. Including City planning staff in future discussions and notifications is the best way to insure our obligations for shoreline protection and master planning are met.

Ecology Response

Ecology and the Potential Liable Parties (PLPs) entered into a legal agreement that requires the PLPs to define the nature and extent of contamination in all media, including the Columbia River shoreline and to select the best cleanup methods. The cleanup work will be conducted under another legal agreement and will meet state standards. The City, as well as any other interested party has the opportunity to comment during public comment periods on any future documents such as Agreed Orders, the Supplemental RI report, FS and CAP.

City of Vancouver Comment

Related to the shorelines and shallow groundwater in this tidally influenced area, much of the sites are within modeled floodplains. The contaminant variety could present concerns for surface water quality as well as groundwater, sediment and soil contamination. In particular, the City is concerned about copper concentrations at the Kinder Morgan site, the proximity to the river and exceeding surface Water Quality Standards. Copper is known to have negative effects on endangered fish populations and changes to the water quality in the Columbia are likely to have implications for the City's wastewater treatment plants discharges.

Ecology Response

Ecology and the PLPs entered into a legal agreement that requires the PLPs to identify the nature and extent of contamination in all media. This includes gathering data to learn if copper in groundwater is discharging to the Columbia River. The results will be documented in a Supplemental RI report.

City of Vancouver Comment

Lastly, the fact sheet fails to acknowledge the common relationship between the identified groundwater contaminants which are presumed to be dissolved compounds and those that are likely to bind to soils and sediments. With the dynamic groundwater and tidally-influenced hydrology of this area, the potential for widespread contamination is significant as the groundwater plume moves laterally and in elevation, along with the river. Copper, in particular, is known to bind to soils and while a groundwater plume may be cleaned up, concerns for residual contamination in the surrounding environment, including shoreline sediments bears further investigation relative to the agreed order.

Ecology Response

As part of the Supplemental RI and FS, a conceptual site model will be put together to show the nature and extent of contamination. The model illustrates the various and potential contaminant pathways in and between each media. This information is used to select appropriate cleanup methods for each media and is documented in the FS and CAP.

Attachment A. Letter from Clark Public Utilities and Pacific Groundwater Group

Clark Public Utilities

Thank you for the opportunity to comment. I have uploaded a letter with our comments and comments on our behalf from our Hydrogeologist Peter Schwartzman, LHG. of Pacific Groundwater Group.

Sincerely John Roth, Clark Public Utilities.

April 2nd, 2019

Craig Rankine
Cleanup Project Manager
WA Department of Ecology
Vancouver Field Office
12121 NE 99th St., Suite 2100
Vancouver, WA 98682

Subject: Vancouver Port of NuStar Cadet Swan Site and Kinder Morgan: Facility Site Identification 1026, Site Cleanup ID 3450

Dear Mr. Rankine:

Thank you for the opportunity to provide comment on the agreed order for the "Vancouver Port of Nustar Cadet Swan Site and Kinder Morgan: Facility Site ID 1026, Site Cleanup ID 3450".

As a customer owned and customer focused utility, Clark PUD is committed to providing high quality water service to our rate payers. We have a groundwater production and treatment facility, known as Carol J. Curtis Water Production Facility, at 5806 NW Fruit Valley Road. We currently serve an estimated 98,000 customers and roughly 5,400 acre feet of water from this site. That is roughly 40% of our total water production. With more development and growth expected, we are planning for significant groundwater development to occur at the Carol J. Curtis Water Production Facility.

We look forward to continuing to partner with other local water purveyors, regulators and interested parties to ensure access to safe drinking water for our customers. In collaboration with, and on our behalf, Pacific Groundwater Group has prepared comments on the agreed order and I respectfully submit those comments and information attached hereto.

Sincerely,

John Roth
Water Quality & Production Manager
Clark Public Utilities
(360) 992-8023

Attachments: Letter Pacific Groundwater Group, Draft Agreed Order site id# 1026 Peter Schwartzman

April 2, 2019

WA Department of Ecology
Vancouver Field Office
12121 NE 99th St., Suite 2100
Vancouver, WA 98682

Attn: Craig Rankine (Cleanup Project Manager)

Re: Draft Agreed Order for the Vancouver Port of NuStar Cadet Swan Site, Facility Site Identification 1026

Dear Mr. Rankine,

This letter provides comments on draft Agreed Order (AO) DE15806 for the Vancouver Port of NuStar Cadet Swan Site ("Site"). These comments are submitted on behalf of Clark Public Utilities (CPU), which operates municipal water-supply wells in the Site vicinity at their Carol Curtis Wellfield and pumps groundwater at their River Road Facility (Figure 1). As part of their wellhead protection responsibilities, CPU takes an active role in tracking contaminant sources within wellhead protection areas. CPU seeks to work cooperatively with Site managers and other purveyors in the Vancouver Lake Lowland that are performing overlapping wellhead protection and fate and transport evaluations. In that context, CPU's comments relate to ensuring that analyses of contaminant fate and transport conducted under the AO include consideration of pumping from both the River Road facility and the Carol Curtis Wellfield.

Documented contamination at the Site occurs within the Pleistocene Alluvial Aquifer (PAA). The Site currently operates a pump and treat system to provide hydraulic control and plume containment. Site groundwater monitoring suggests that the pump and treat system has been effective in providing hydraulic control. However, CPU's groundwater withdrawals from the PAA will soon change from the conditions described in the *Groundwater Pump and Treat Interim Action* and *Remedial Investigation* reports (Parametrix 2007; 2009; 2010). The Carol Curtis Wellfield currently withdraws water from three deep wells completed in the Sand and Gravel Aquifer (SGA), but will be expanding its operation in 2020/2021 to include wells completed in the PAA. PAA pumping at the Carol Curtis wellfield is expected to reach a maximum withdrawal of 20,000 acre-feet per year at full buildout.

CPU seeks assurances that hydraulic controls currently in place will remain effective as PAA pumping begins at the Carol Curtis Wellfield. This should also include any revisions to predicted behavior of the contaminant plume included in the supplemental remedial investigation.

Model simulations performed by PGG using the Vancouver Lake Lowlands Groundwater Model (Parametrix et al, 2008) suggest that plume containment operations may need to be revised to accommodate CPU's PAA pumping. The Cadet RI (Parametrix, 2009) and its Groundwater Pump and Treat Work Plan (Parametrix 2007, 2010) include provisions to adapt hydraulic control in response to changes in the wellfield operations. Specifically, the Work Plan states:

> **7.2.2 Flexibility to Modify Alternative to Offset Changes in Current and Proposed Wellfields in Project Area**
>
> The proposed interim remedial action is capable of achieving the objectives outlined in Section 5. However, this interim action can be easily modified after installation in the event that the objectives are not being met. Changes that can be made to enhance the pump rate, if necessary, include:
>
> - Increase pump rate with no change to the well. The well will have a maximum capacity of 3,900 gpm.
> - Add a second well to the extraction system.
>
> In addition, the present action can be modified, if necessary, as part of a final action. The most likely change required to achieve containment in the final action would be to increase the pump rate in response to groundwater development in the Columbia River Lowlands. This would likely require installation of a second extraction well.

Consistent with Work Plan, the supplemental remedial investigation work plan and ensuing supplemental RI/FS should include updated analysis of plume containment under current and known future conditions to demonstrate that plume containment will be maintained. Ongoing demonstration of plume containment through water-level and water-quality monitoring should also be included as a remedial action objective (RAO).

CPU looks forward to working cooperatively with Ecology, the Port and other purveyors to ensure adequate wellhead protection for the Carol Curtis Wellfield and neighboring points of withdrawal. CPU and Pacific Groundwater Group appreciate the opportunity to comment on the referenced Agreed Order, and will likely provide further comment as the supplemental RI/FS process unfolds.

Sincerely,

Pacific Groundwater Group

Peter Schwartzman
Principal Hydrogeologist

Attachments:

Figure 1. Predicted Capture by SMC Site Extraction Well Without PAA Pumping at Carol Curtis Wellfield

REFERENCES

Parametrix, 2007. *Groundwater Pump and Treat Interim Action SMC/Cadet Commingled Plume DRAFT Work Plan*. Prepared for the Port of Vancouver. November 19, 2007.

Parametrix, S.S. Papadopulos & Associates, Pacific Groundwater Group and Keta Waters. 2008. *Vancouver Lake Lowlands Groundwater Model Summary Report.* Consultant's report prepared for Port of Vancouver and Clark Public Utilities dated February 2008.

Parametrix, 2009. *Final Remedial Investigation Report Former Building 2220 Site.* Prepared for the Port of Vancouver. May 7, 2009.

Parametrix, 2010. *Final Remedial Investigation Report Cadet Manufacturing Company Site*. Prepared for the Port of Vancouver. May 25, 2010.

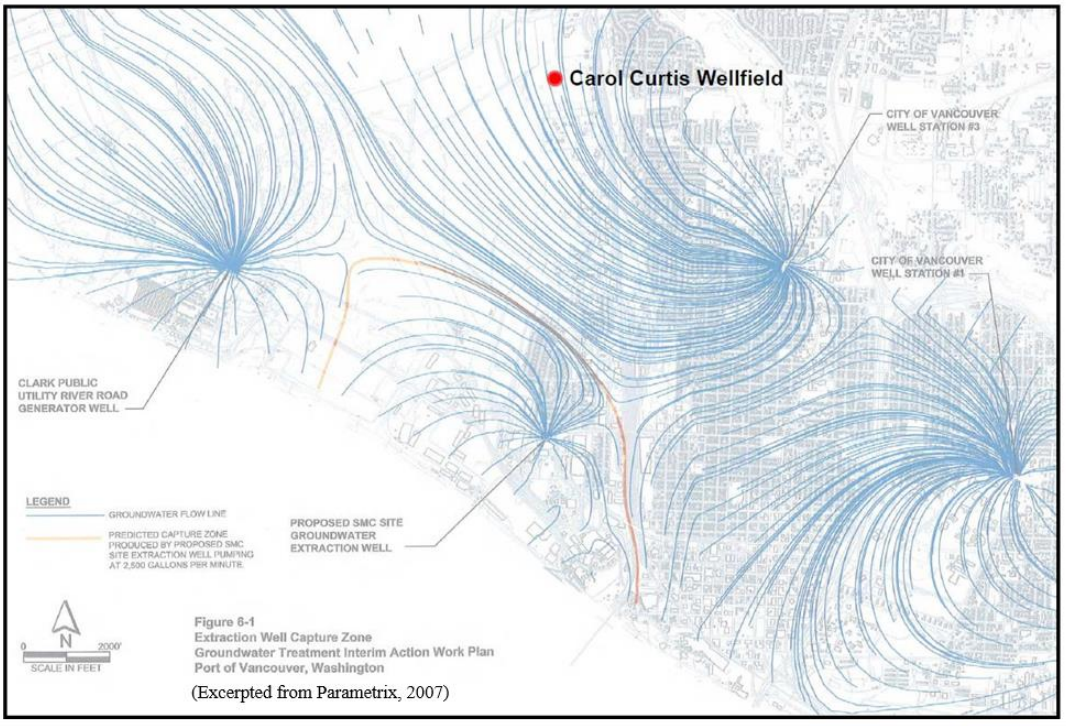

Figure 1
Predicted Capture by SMC Site Extraction Well Without PAA Pumping at Carol Curtis Wellfield

Clark Public Utilities
Agreed Order DE15806

PgG

Attachment B. Letter from City of Vancouver and Nikki Guillot

Nikki Guillot

City of Vancouver (City) staff appreciates the opportunity to comment on the following site within City limits, adjacent to the Columbia River.

Water Resource Protection
The sites are partially within and just outside the Port of Vancouver (Port) water supply well contribution zones, as indicated by Clark County Maps Online (see Figure 1). The fact sheet for the site indicates groundwater is contaminated with solvents, metals and nutrients. The fact sheet states that public drinking water is not affected yet does not reflect the Port's well vulnerability. While the actual wellhead may be outside the physical sites of concern, the dynamic connection of groundwater, tidally influenced surface water and the well are not reflected in the fact sheet. These interconnections represent additional concerns for health and the environment that should be addressed in the remedial investigation as well as the public participation plan.

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Additionally, portions of the sites are within designated shorelines (Figure 2) and that may affect remediation investigations or cleanup actions. Until the scope of soil or sediment contamination is determined, the implications for shorelines and Growth Management Act compliance are unclear but that determination should be included in the future feasibility study and action plan. Including City planning staff in future discussions and notifications is the best way to insure our obligations for shoreline protection and master planning are met.

Related to the shorelines and shallow groundwater in this tidally influenced area, much of the sites are within modeled floodplains. The contaminant variety could present concerns for surface water quality as well as groundwater, sediment and soil contamination. In particular, the City is concerned about copper concentrations at the Kinder Morgan site, the proximity to the river and exceeding surface Water Quality Standards. Copper is known to have negative effects on endangered fish populations and changes to the water quality in the Columbia are likely to have implications for the

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Figure 1. Municipal Wellhead Protection Areas (Clark County Maps Online)

Figure 2. Designated Shorelines (Clark County Maps Online)

CITY OF Vancouver WASHINGTON

MEMORANDUM

DATE: COMMENTS SUBMITTED VIA ON-LINE FORM MARCH 28, 2019

FROM: Kris Olinger, Senior Civil Engineer, Public Works Dep't., Surface Water Engineering
Patrick Craney, Water Resources Engineer, Public Works Dep't., Water Engineering
Nikki Guillot, Environmental Scientist, Public Works Dep't., Surface Water Engineering

RE: **City of Vancouver Comments- Agreed Order & Public Participation Plan**
Port of Vancouver Cadet/Swan, NuStar and Kinder Morgan
2565 NW Harborside Drive, Facility Site ID: 1026 Cleanup Site ID: 3450
https://fortress.wa.gov/ecy/gsp/Sitepage.aspx?csid=3450

CC: **Greg Turner, Land Use Manager, Community & Economic Development Dept.**
Patty Boyden & Matt Graves, Port of Vancouver, Environmental Services
Doug Quinn, Clark Public Utilities, Water Services

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Figure 1. Municipal Wellhead Protection Areas (Clark County Maps Online)

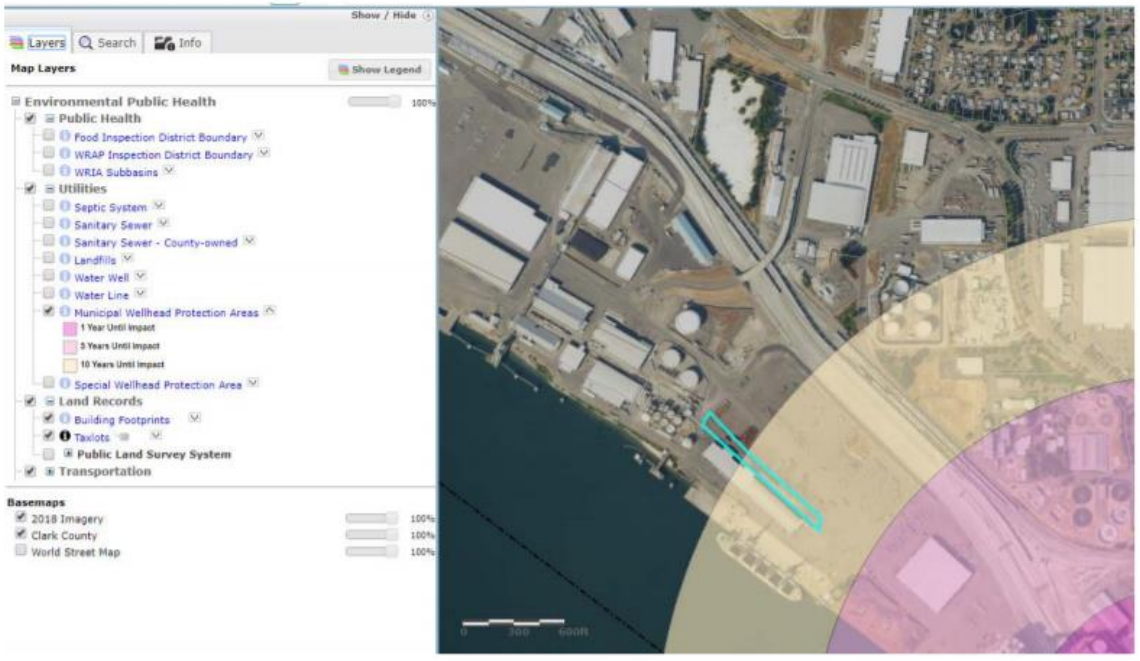

Figure 2. Designated Shorelines (Clark County Maps Online)