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September 10, 2008

000029-02

Sean Sheldrake  
U.S. EPA Region 10  
Attn: ECL-110  
1200 Sixth Avenue  
Seattle, Washington 98101

**Re:** NW Natural Responses to EPA Comments on the *Annual Data Evaluation Monitoring Report - Year 1 Long-Term Pilot Cap Monitoring*, GASCO Removal Action

Dear Sean:

The following presents a summary of NW Natural's responses to the U.S. Environmental Protection Agency's (EPA's) comments on the subject report dated August 20, 2008. Given the limited number of relatively minor revisions that would be necessary to reflect EPA's comments, NW Natural proposes that this response letter serve as an addendum to the *Annual Data Evaluation Monitoring Report – Year 1 Long-Term Pilot Cap Monitoring* rather than submitting a revised report. Where appropriate, future submittals will incorporate the information requested by EPA in its comment letter.

For your reference, EPA's original comments are provided in bold text above NW Natural's response.

## **NW NATURAL RESPONSE TO EPA GENERAL COMMENTS ON THE YEAR 1 ANNUAL DATA EVALUATION MONITORING REPORT**

- 1. The Year 1, Event 1 and Year 1, Event 2 Data Summary Reports follow the data presentation format of Year 0 reports. Review of these reports indicates that all EPA comments on data presentation and formatting from previous reports have been incorporated. As these reports are data summaries and offer no interpretation or evaluation, no further comments are noted for the Year 1, Event 1 and Year 1, Event 2 Data Summary Reports.**

*NW Natural Response:* Comment noted.

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2. It should be noted that the EPA had substantial comments on the Draft Year 0 Annual Data Evaluation Monitoring Report submitted in June 2007. The information and interpretation included in the current Year 1 Annual Data Evaluation Monitoring Report does a much better job at evaluating the data relative to past monitoring events and the overall site conditions. It appears that NW Natural made substantial effort into incorporating the previous EPA comments into the Year 1 Annual Data Evaluation Monitoring Report.

*NW Natural Response:* Comment noted.

3. In March 2008, NW Natural proposed revision of the pilot cap monitoring objectives and activities to focus on the collection of data that best support and inform the efficient performance of any anticipated long-term remedial actions. EPA concurred with the request in an approval letter dated April 30, 2008. The Year 1 Annual Data Evaluation Monitoring Report should include this information.

*NW Natural Response:* The report was already being produced for EPA submittal when the approval letter was received. The text in the last paragraph of Section 1 should instead read as follows: "NW Natural recently submitted a memorandum entitled *Proposed Revised Long-Term Pilot Cap Monitoring Approach – NW Natural "Gasco" Site* (Anchor 2008c) which was approved by EPA in a letter dated April 30, 2008."

4. NW Natural provided an evaluation of spatial and temporal concentration trends for bulk sediment, depositional sediment, porewater, and near-bottom surface water samples. With the exception of correlations noted in the report, NW Natural indicates that the data collected from Year 0 and Year 1 monitoring events is inconsistent and variable for both temporal and spatial trends. EPA (via its contractor, Parametrix) thoroughly reviewed the data and did not note significant temporal or spatial trends between the Year 0 and Year 1 data beyond that noted in the report. The reason for the variable nature of the data appears to be related to the complex nature of seasonal river conditions, the necessary slight off-sets for porewater and sediment sampling, relatively high groundwater flow in the pilot cap area, and the nature of historical discharge to the river.

*NW Natural Response:* Comment noted.

5. EPA concurs that the pilot cap has remained stable and withstood river conditions thus far, suggesting the design gradations are sufficient. However, in terms of being an effective means of isolating chemicals in the residual sediment or preventing groundwater advection, EPA does not agree that the cap application would be appropriate over a broader area of the site. The data collected during the pilot cap

**evaluation does not support capping as an isolating engineering control. Significant additional studies would be necessary to determine the feasibility of capping as a means for isolating contaminated sediment indefinitely.**

*NW Natural Response:* The intent of the pilot capping was to help understand the potential effectiveness of capping as a long-term sediment remedy at the Site. However, it is not possible for a pilot cap at one particular area of the Site to provide all information necessary to predict 1) future Site groundwater conditions after upland source controls are implemented, 2) the effectiveness of capping at all other Site areas under those future groundwater conditions, or 3) the effectiveness of all possible cap designs. Consequently, we believe EPA's conclusion regarding capping at the Site is unwarranted based upon the information gathered to date for the pilot cap.

The pilot cap monitoring has shown that under the current groundwater discharge conditions at this particular area, this particular cap design is ineffective. In this area, two independent studies have shown that groundwater seepage in the pilot cap area is significantly elevated above observed velocities in other locations adjacent to the Site. This provides valuable information on the design parameters and effectiveness considerations for capping at this Site. Specifically, we can conclude from monitoring data that groundwater discharge velocities must be controlled in at least some shoreline areas for capping to be an effective sediment remedy. Given that upland groundwater source controls currently being evaluated by NW Natural under the DEQ process will severely curtail the discharge of groundwater along the shoreline, capping may be a viable alternative in combination with upland groundwater controls over much of the Site.

Consistent with recent discussions with EPA on the potential elements of a Scope of Work for final sediment remedy design, it is NW Natural's expectation that capping (along with removal) will be fully evaluated considering the above technical issues in any future sediments remedies. Although we do not think this is the intent of EPA's comment, NW Natural does not believe that future evaluations of remedial alternatives should assume that capping at the site is infeasible at all locations and under all future groundwater conditions (i.e., following completion of upland groundwater discharge controls), based on the pilot study results or for other reasons.

- 6. While EPA concurs that mixing of residual sediment with pilot cap material may have occurred during cap placement, and may contribute in part to detected concentrations in the pilot cap bulk sediment and porewater, it does not believe that the concentrations of chemicals detected in pilot cap sediment and porewater are wholly attributable to mixing of tar body residuals during cap placement.**

*NW Natural Response:* Comment noted.

7. It appears that relatively high groundwater velocities in the pilot cap area are a significant contributor to the quick failure (less than 6 months) of the pilot cap. EPA supports the implementation of thorough upland source control to address this issue.

*NW Natural Response:* Comment noted.

## **SPECIFIC COMMENTS TO YEAR 1 ANNUAL DATA EVALUATION MONITORING REPORT**

1. Section 1, last paragraph. NW Natural submitted a Proposed Revised Long-Term Monitoring Approach (dated March 26, 2008). EPA provided approval of the revised monitoring approach in a letter dated April 30, 2008. The report should be revised to reflect this information.

*NW Natural Response:* See general comment #3 response.

2. Section 3.1, 2nd paragraph. The report indicates that no sheens or product release were identified during the visual inspections. However, small areas of sheen appear to be present on the river surface in some photographs and are noted in the monitoring forms. EPA agrees that no significant sheen was observed during the visual monitoring, but small sheens are visual on the water surface and possibly along the shoreline (near the organoclay mat) and should be acknowledged in the report.

*NW Natural Response:* The text in the second paragraph of Section 3.1 should instead read as follows: "The visual monitoring forms are provided in Appendix B. *Although some limited spotty sheens were noted during some of the visual monitoring events in the nearshore area, no significant areas of contiguous sheen or product release were identified during any of the visual inspections.*"

3. Section 3.3, 3rd paragraph, last sentence. Was this sentence intended to indicate that no seepage of NAPL was observed during the Year 1 events, rather than Year 0 events as stated?

*NW Natural Response:* This sentence should instead read as follows: "No seepage of NAPL (e.g., tar oil and tar) was identified at these stations during the *Year 1* monitoring events."

4. Section 3.7.1. The report indicates that low level contaminants have been detected in piezometer rinsate blanks during the Year 0 events. NW Natural implemented a more robust decontamination procedure for the Year 1 events with some success. All future

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**monitoring using piezometers should include the more robust decontamination procedures to avoid cross-contamination.**

*NW Natural Response:* Although the EPA-approved revised long-term pilot cap monitoring approach does not include the use of piezometer samplers, any future Site sampling proposals to EPA using this equipment will include the more robust decontamination procedures.

5. **Section 3.7.3. NW Natural indicates that results for some compounds during Year 1 Event 2 monitoring were rejected in the data validation process as a result of significantly missed holding times due to laboratory error. NW Natural should implement better communication with the project laboratory to ensure holding times and data quality objectives are met.**

*NW Natural Response:* As noted in the subject report, the missed holding times were due to internal laboratory error, not miscommunication between NW Natural's consultant and the laboratory.

6. **Section 3.8.1, 2nd bullet. The report indicates a large pile of gravel was encountered overlying the sediment sampling station PCM-18. NW Natural indicates that the gravel was placed at this location during an offshore investigation. What was the purpose and origin of the gravel?**

*NW Natural Response:* Under DEQ oversight, NW Natural conducted an offshore investigation to characterize offshore subsurface groundwater quality and geotechnical properties. This information was needed to facilitate preparation of a groundwater source control alternatives analysis. This investigation included the collection of a single boring (GS-06) just shoreward of the pilot cap area. NW Natural's consultant (Anchor Environmental, L.L.C. [Anchor]) provided DEQ with the December 6, 2006 letter titled *Addendum to Offshore Final Phase I Field Sampling Approach, NW Natural, Gasco Site, Portland, Oregon* that addressed the protection of the pilot cap during the advancement of the station GP-06 boring. Specifically, this letter stated that "Although we do not think the spuds would be expected to penetrate the armor layer we will (1) attempt to orient the barge in such a manner as to avoid spudding on the cap and (2) if this is not possible, then the locations of the spuds on the cap will be recorded and we will place one cubic yard of similar armor stone in both locations after the drilling is complete."

Following additional investigation of the sampling equipment and access to the GS-06 location, Anchor identified the need to secure the sampling barge through spud placement within the pilot cap area, as detailed in a work plan letter to DEQ (EPA was copied) dated December 20, 2006. DEQ subsequently approved of the spud placement at GS-06 in a letter

dated December 28, 2006. During placement, completion of the boring activities, and removal of the spuds no sheen was observed on the river surface. Following completion of the sampling activities at this station, the spud anchor points were marked with buoys. In accordance with the conditions specified in DEQ's December 28, 2006 approval letter, approximately 1 cubic yard of clean gravel from a local quarry was placed at each of the buoy locations using a front end loader from a barge. Anchor provided oversight of this placement and coordinated a video reconnaissance survey of the post-placement conditions. During the video survey visibility was less than six inches, making visual observations infeasible. However, a short video was taken to document the conditions and the rest of the evaluation was done by feel without the camera. The diver observed that the gravel piles were 8 to 12 feet in diameter and were easily distinguished from the surrounding cap by the small amount of overlying river sediment and the distinct grade change. The surrounding pilot cap armoring was covered by 6 to 8 inches of sandy silt. An excursion around the base of each pile showed no sign of spud holes.

- 7. Section 4, 2nd paragraph. NW Natural submitted a Proposed Revised Long-Term Monitoring Approach (dated March 26, 2008). EPA provided approval of the revised monitoring approach in a letter dated April 30, 2008. The Year 1 Annual Data Evaluation Monitoring Report should be revised to reflect this information.**

*NW Natural Response:* See general comment #3 response.

- 8. Section 4.1.1, 3rd paragraph. EPA agrees that the physical and visual monitoring of the pilot cap layer during the Year 1 events, as well as Year 0 events, indicate that the pilot cap is stable during the river conditions so far encountered, suggesting the design gradations are sufficient. However, in terms of being an effective means of isolating chemicals in the residual sediment or preventing groundwater advection, EPA does not agree with the statement in other sections of the report that the cap application would be appropriate over a broader area of the site. The data collected during the pilot cap evaluation does not support capping as an isolating engineering control.**

*NW Natural Response:* See general comment #5 response.

- 9. Section 4.1.2. NW Natural indicates that NAPL was not observed in the cores collected and no shoreline product seepage was identified during any of the visual monitoring events. A review of the core logs indicate that heavy sheen and odor were noted on a number of cores samples. This information should be reflected in the report.**

*NW Natural Response:* For the sake of brevity, the findings presented in Section 4.1.2 were limited to the presence or absence of NAPL (e.g., tar oil or tar) given that was the primary objective of the product seepage monitoring as defined in the Statement of Work. Section

3.3 refers the reader to the core logs in Appendix D for all other physical and visual characteristics (e.g., grainsize, odor, sheen, type of substrate, etc.) noted during the core logging. As identified by EPA, the logs do provide information on the pilot cap samples that did note the presence of heavy sheen and/or odor.

10. **Section 4.1.3. While the cap appears to physically isolate underlying sediments, it has done little to isolate contaminants migrating through the cap into the river. EPA agrees that thorough upland hydraulic source control is essential to manage groundwater advection. Although limiting groundwater advection could increase the likelihood of capping as an isolating engineering control, the accelerated failure of the pilot cap indicates that capping may not be appropriate to isolate contaminated sediments for an indefinite amount of time. In addition, it is not apparent that the pilot cap data collected during the Year 0 and Year 1 monitoring events is useful for final design of a cap, as the effectiveness of the cap could not be quantified (i.e. breakthrough observed during 1<sup>st</sup> monitoring event).**

*NW Natural Response:* See general comment #5 response.

11. **Section 4.2.1, last paragraph. NW Natural indicates that due to groundwater discharge rates and unique features in the pilot cap area, it is unlikely that the observed pilot cap chemical results are indicative of results expected in similarly designed capped areas. While these unique features in the pilot cap area likely impacted chemical results, there is no data to support capping as an isolating engineering control. Significant additional studies would be necessary to determine the feasibility of capping as a means for isolating contaminated sediment indefinitely.**

*NW Natural Response:* See general comment #5 response. In addition, we agree that additional field studies may be needed to determine the appropriate locations and design features of caps in any future site remedy.

12. **Section 4.2.2. While EPA concurs that mixing of residual sediment with pilot cap material may have occurred during cap placement, and may contribute in part to detected concentrations in the pilot cap bulk sediment and porewater, we do not believe that the concentrations of chemicals detected in pilot cap sediment and porewater are wholly attributable to mixing of tar body residuals during cap placement. EPA agrees that source control (upland and inwater) is a primary factor in potential success of any remedial efforts (which include caps) applied to the river sediments.**

*NW Natural Response:* Comment noted. It should be noted that groundwater sources can recontaminate new clean dredge surfaces as well as caps. Thus, NW Natural believes

groundwater source control is necessary to minimize recontamination of either potential future Site sediment remedial alternative.

- 13. Section 4.2.3. EPA agrees that upland source control is important to reduce the flow of contaminants in groundwater to the transition zone water, which may be impacting river sediments in the pilot cap area.**

*NW Natural Response:* Comment noted.

- 14. Section 4.2.4.2, second paragraph, 1st sentence. "Year 1 Event 3" should read "Year 0 Event 3".**

*NW Natural Response:* NW Natural concurs with this revision.

- 15. Section 4.2.4.3 2nd paragraph. The 2nd sentence in this paragraph indicates naphthalene twice.**

*NW Natural Response:* The second occurrence of "naphthalene" should be removed from the text.

- 16. Section 4.2.5. EPA agrees that upland source control is important to reduce the flow of contaminants in groundwater to the transition zone water, which may be impacting river sediments in the pilot cap area. However, the data collected during the pilot cap evaluation does not support capping as an isolating engineering control. Significant additional studies would be necessary to determine the feasibility of capping as a means for isolating contaminated sediment indefinitely.**

*NW Natural Response:* See general comment #5 and specific comment #11 responses.

- 17. Figures 27, 28, and 29, sample station PCM-14, PCM-15. PCM-14 sample location: there is a typo in the gray box, the text says "pcm-14", but should be blank to depict a non-detect. PCM-15: The identifier for PCM-15 is not visible due to a typo.**

*NW Natural Response:* Comment noted. Future figure submittals will be checked to ensure these issues are not repeated.

Sincerely,

A handwritten signature in black ink that reads "Ryan Barth". The signature is written in a cursive, slightly slanted style.

Ryan Barth, P.E.

Anchor Environmental, L.L.C.

Cc:

Rick Wadsworth, P.E., Parametrix

Matt McClincy, Oregon Department of Environmental Quality

Bob Wyatt, NW Natural

Patty Dost, Schwabe, Williamson, and Wyatt

Carl Stivers, Anchor Environmental, L.L.C.