RESPONSIVENESS SUMMARY

B&L Woodwaste site

June 22 – July 30, 2007 Public Comment Period

Draft Cleanup Action Plan and

SEPA Determination of Non-Significance

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Site Information

Address: 2201 6th Avenue, Milton
Site Manager: Dom Reale
Public Involvement Coordinator: Meg Bommarito

As part of an existing Enforcement Order, Ecology is requiring Murray Pacific Corp. (Murray Pacific), Louisiana Pacific Corp., Wasser & Winters and Asarco LLC (Asarco) to carry out requirements of a Cleanup Action Plan including;

- Constructing a groundwater barrier wall around the existing capped landfill.
- Treating arsenic contaminated groundwater from within the groundwater barrier and nearby wetland with a pump and treat system.
- Constructing a treatment system to prevent arsenic in the wetlands from reaching the Hylebos Creek.

Ecology completed a State Environmental Policy Act (SEPA) review of the site and determined that the proposed activities would not result in significant harm to the environment (Determination of Non-Significance (DNS)).

The comment period for the draft Cleanup Action Plan and SEPA Determination originally ran from June 22 through July 23, 2007. Due to high public interest, the comment period was extended until July 30, 2007. A public meeting was held on July 18, 2007.

Site Background

The B& L Woodwaste site is located at 2201 6th Avenue in Milton in a mixed residential/agricultural and wetland area. It is southeast of Interstate 5 between Fife Way and the Puget Power access road.

This site was used as an industrial landfill from mid 1970's until the early '80's. Wood chips from log sort yards, slag from the old Asarco smelter in North Tacoma and soil from the Commencement Bay Nearshore/Tideflats area were dumped here.

In 1982, the Commencement Bay Nearshore/Tideflats area, including Hylebos Waterway and the B&L Woodwaste site, were added to the National Priorities List by the Environmental Protection Agency (EPA). The B&L Woodwaste site was named as a source of arsenic, copper and lead.

In 1992, Ecology issued an Enforcement Order requiring Asarco, Inc., Murray Pacific Corporation and Executive Bark, Inc, site owner, to do the following:

- Consolidate the 18 acre site into an 11 acre pile.
- Construct a multi-layer capping system to prevent metals from escaping from the site.
- Install and operate a groundwater monitoring well system
- Create a plan to address any failure of the original remedy

Monitoring during the mid-1990's discovered elevated arsenic in the ditch system that surrounds the pile and increased arsenic in groundwater outside of the landfill containment system,

including a wetland next to the site.

In response to these findings, Ecology completed an extensive study of the wetland area. Results of the study showed:

- Dissolved arsenic levels in the groundwater in a nearby wetland were above Model Toxics Control Act cleanup standards.
- Some waste from the bottom of the pile was in contact with the water table during the winter months.
- Plants and animals in the nearby wetland did not appear to be experiencing any toxic effects.

In 2002, Asarco's funds became unavailable and they were unable to complete the rest of the Cleanup Action Plan. In 2005, Ecology amended the original Enforcement Order and required the PLPs to complete:

- Evaluation of several potential remedies to contain the release of contaminated groundwater from the site
- Investigation of the wetland area to determine what remedial action is needed.

In 2006, Asarco entered into bankruptcy proceedings and has failed to contribute towards cleanup efforts since that time. Murray Pacific has contributed to the preparation of the Cleanup Action Plan.

Site Map


Sw 356th St
Marine View Dr
Milton Rd S
Pierce
King
Tacoma
Portland Ave
509
Pacific Hwy E
705
E Bay St
Fife
Milton Way
Milton
20th St E
5th St
5
Fife Way
Milton Ave Way

RESPONSIVENESS SUMMARY
For the
DRAFT CLEANUP ACTION PLAN
B & L Woodwaste Site

Please find below a complete transcription of all public comments received by Ecology, listed by commenter/author. Each set of comments is followed by Ecology's numbered response to each comment. For those comments which have resulted in a change to the CAP, this change is also listed along with the Ecology response.

Comment 1. Pat Christofferson:

"I'm a Milton resident who used to walk my large dog down at "the Mound" (we call it that in this area) every day for a very long time. We wandered around that area (as possible) as there is so much standing water down there. So – I'm pretty familiar with this site. I noticed it's a bird sanctuary, wild rabbits too.

Then, there was a history of this 'mound' in the Tacoma Tribune. From this article, I learned that when the first big clean-up was done, and the 'mound' was created, there was no plastic, waterproof liner placed beneath it. I also noticed from the proposed plan for this upcoming clean up, there was no plan for a liner. I can only guess what would be involved. Here comes the "however" – it seems like a lot of money and work if the liner isn't finally put into place. I know there's a big field next to it, and also not a lot of room for it to be moved to, but, it can be moved to the east side.

During the wet season I've seen water pouring into a drainage ditch perpendicular to the mound on the north side of it. The water didn't look too healthy. This drainage water was coming out of a large drainage pipe that came out of the mound.

Also, one of Milton's drinking water wells isn't far from this, so; if there isn't going to be a liner, what's the point if "the point" is to protect ground water?

There is a lot of very dark looking water that stands down there with vegetation and trees in it, which is good.

Planting trees (cottonwood comes to mind) may help too. Which I've heard grows quickly and 'drinks' water (standing).

Anyhow – I've taken an interest in this area. I don't go anymore, my dog died and I haven't walked down there since. I really hope it'll remain a bird sanctuary and the rabbits will continue to munch on the farmer's field – it's a unique place and I really loved it."

Ecology Response: First of all Mr. Christofferson, we are very sorry to hear about your dog. Our Cleanup Action Plan (CAP) is designed to fix the environmental problems associated with the site. We will try to respond to your comments in the order you provided them.

1. It is true that the draft CAP does not propose installation of a plastic bottom liner to the 'mound', but we did consider such a liner. In addition to the issue of where

to move the pile, installation of such a liner would still leave a very large volume of contaminated soils and groundwater below a bottom liner. Our proposed plan takes into account a naturally occurring low permeability layer of soil (meaning that water doesn't pass readily through it), which exists starting at 17 to 20 feet below the ground surface. The plan is to create a containment zone by constructing a clay barrier wall around the rim of the mounds cap, down to, and connecting with the low permeability soil layer. Water would be pumped from the inside of this newly created containment zone, so that the only leakage will be into the containment zone, and not out of it.

2. The ditch system at the base of the mound has indeed been found to have some elevated levels of arsenic. The proposed plan would be to stop the leakage of arsenic, by means of the containment system described above, to clean out the ditch sediments, and to pump and treat the groundwater with elevated arsenic levels, which exists in the wetland and in places around the mound perimeter.
3. Regarding Milton municipal drinking water wells in the area: investigations have shown that the shallow groundwater arsenic contamination from the site does not flow downward through the low permeability soil layer described above. In addition to this soil layer, there is a regional upflow of groundwater from deeper to more shallow depths. Thus the deeper Milton wells are protected from the shallow site contamination. The existing level of protection should only be increased by installation of the above-referenced containment system, along with pumping and treatment of the shallow, contaminated groundwater.
4. The planting of trees to absorb contamination has not been selected, since our current plan will directly remove the arsenic, rather than storing it in trees, only to have the trees die and decompose later, releasing the arsenic.

Comment 2. Milton Loflin:

"Please correct your database, web site, and all other record regarding the "B & L Woodwaste site in Milton". This site is not in Milton! It is in unincorporated Pierce County, near Milton. By saying it is in Milton, it implies that Milton officials allowed it to happen. Not true! Milton officials fought vainly with Pierce County officials about this site when it first started. P.C. officials should be held accountable for their inaction."

Ecology Response: The assertion that the site is located in unincorporated Pierce County, rather than in Milton, has also been stated by City of Milton management. Therefore, this change will be reflected in the Final CAP, and in ensuing documents, to the greatest extent possible.

Comment 3. Naomi Berry

"Will my private well water be tested at (government) expense? I am concerned of my arsenic level since I have a family using this private well. No municipal water available."

Ecology Response:
Ecology has been told by Lenford O'Garro, of Washington State Dept. of Health, that he contacted you with information about a laboratory in your area which would analyze your tap water for arsenic at a charge of approximately $18. Mr. O'Garro stated that you told him you were planning to use the recommended lab to test your tap water.

Comment 4. Mike Seeger

"I read the study and proposal – seems only sure way is Removal! Should use the B & L stuff in the Rt. 167 construction – buried properly! They are going to have need of lots of fill. Anything else (other proposals) do not come with any guarantee! Thanks"

Ecology Response:

1. Ecology shares your thought that removal of the pile is an option to be fully considered. The Draft Cleanup Action Plan includes a section (Section 5) devoted to evaluating the various cleanup remedy alternatives, including evaluation of waste removal as a remedial alternative. As you will see in this section, and as was discussed in the public meeting, the proposed containment cleanup alternative provides the same level of protection to human health and the environment, but at a much lower cost.
2. Regarding use of the waste material as fill for the SR 167 project: the waste would not be considered as suitable general fill material, considering the arsenic content. Irrespective of the arsenic, wood waste makes very poor structural subgrade material for construction projects, in that it compacts very poorly, and tends to subside or collapse over time.

Comment 5. Glen Baker, City of Milton

"Please coordinate fencing and signage along trail system with the City of Milton."

Ecology Response:

Ecology will share draft plans for signage and fencing with the City of Milton.

Comment 6. Asarco, Inc. - Robert J. Miller

"GENERAL COMMENTS
1. The scope and range of alternatives in Ecology's 2007 CAP selected for implementation at the B&L Woodwaste Site (Site) are significantly expanded beyond the Ecology approved 2001 Contingency Plan. The selected alternatives in the CAP are also significantly expanded beyond the scope of actions set forth in Ecology's 2005 Amendment No. 2 to the 1992 Enforcement Order issued for the Site. As the chronology summary presented in Table 1 below demonstrates, Ecology's 2005 Amendment No. 2 required implementation of the 2001 Contingency Plan (Plan) and certain supplemental remedial tasks. The additional remedial work primarily involved the Wetlands area, which was not included in the original scope of work under the 2001 Plan. However, the remedial actions evaluated and selected in Ecology's CAP are now significantly greater in scope, in time of implementation, and in cost, as compared to the previously accepted approach presented in the 2001 Plan as supplemented by Ecology's 2005 Amendment No. 2. After careful deliberation, Asarco concludes that neither existing data nor new data provided since 2005, warrant the recent changes in Ecology's approach as presented in its 2007 CAP. In fact, many of the actions presented in the CAP may be counter productive, and could potentially result in advancement of groundwater with

elevated arsenic concentrations to strata and/or locations beyond those presently affected by current site conditions (see specific comments below). The 2001 Contingency Plan presented an evaluation of a range of alternatives including, no action, institutional controls, long-term monitoring, isolation and containment options, active and passive groundwater treatment options, and landfill excavation and disposal. Based on this evaluation, conceptual designs of 5 options were presented in the Plan as alternatives that would be further tested and evaluated. The options selected for evaluation are described in detail in the Plan and include:

- Option 1: Groundwater interception and air sparge treatment systems
- Option 2: Groundwater interception and passive treatment using a permeable reactive treatment system (PRB)
- Option 3: Pump and treat system (control of landfill arsenic migration by active pumping, treatment and discharge after treatment.
- Option 4: Air sparge wall (considered promising because of favorable site chemistry for easy removal of arsenic in groundwater)
- Option 5: PRB wall, no interception controls.

The Ecology CAP presents elements of the alternatives presented in the 2001 Contingency Plan, but combines many of the options into actions that are redundant and often conflict with the objectives of improving groundwater site conditions (see specific comments below). In addition, the actions include active groundwater treatment systems that are high maintenance, of probable limited effectiveness, and include long-term operation & maintenance (O&M) costs resulting in prohibitive and unnecessary expense. This approach is contrary to present remedial approaches preferred by other agencies including the U.S. EPA. The EPA has stated its preference for source control actions and passive systems that limit the need for long-term O&M.

2. The alternatives evaluated in the CAP generally consider only traditional technologies (pump and treat, slurry walls, excavation and removal). It appears that newer innovative technologies that could provide a more permanent and lower operation and maintenance remedy for the Site were given little consideration.

3. The methods used to calculate costs are generally very conservative and in many cases unrealistic. Elements of the cost calculations include multiple contingencies that result in “double counting” in many of the alternatives. In addition, present value discount rates of 2% are low resulting in over-inflated long-term O&M estimates. A discount rate of 7% is more appropriate for these calculations.

SPECIFIC COMMENTS

1. Section 3.1.5. Groundwater Interaction with Surface Water. The wetland is typically a groundwater discharge point for groundwater leaving the landfill. Water uptake through evapo-transpiration by the dense riparian vegetative cover is likely a major mechanism for discharge of water directly from the shallow sand aquifer. There are numerous literature references for water loving plants, including marsh grasses and poplar trees that have tap roots directly into the water table to uptake arsenic and metals into the biomass of the plant. The dense riparian vegetation setting along with the shallow water table associated with the marsh at the Site seem ideally suited for this process. Biomass uptake may be one explanation as to why arsenic and metals in soils in the shallow aquifer contain very low arsenic concentrations, even within the arsenic plume. This suggests both a significant mechanism for on-going natural attenuation as well as a potentially cost effective remedial strategy for groundwater in the shallow

aquifer. It does not appear that the potential for arsenic uptake through biomass at the Site was evaluated.

2. Section 3.2.1. Arsenic Release to Groundwater from Landfill Materials. This section does not address how association of woodwaste and slag affect arsenic mobility. In the proper setting, the potential for mobility of arsenic and metals from the slag is quite low. It's the combination of slag and woodwaste that creates conditions of lower pH and particularly low redox potential that result in conditions that enhance arsenic and iron mobility at the B&L Site. These low redox conditions remain in the upper aquifer as a result of the dense biomass in the marsh. The significant effect of redox change on arsenic mobility is particularly demonstrated by the difficulty of keeping arsenic and iron in solution in groundwater samples that have been exposed to the air, resulting in removal of arsenic and iron from solution as a result of arsenic-iron coprecipitation. This situation suggests a mechanism, and potentially effective strategy, for remediation of groundwater, both from the landfill and in the marsh, that would be simpler and more effective than high maintenance and costly, long-term pump and treatment solutions.

3. Section 3.2.2, third paragraph, third sentence. This paragraph notes that the aquitard may be discontinuous near well D-8B, which is directly adjacent to the landfill. Based on this observation alone, dewatering the waste in the landfill could lead to a higher potential to introduce arsenic into the lower aquifer. As noted in this paragraph, the gradients are presently upward from the lower unit to the upper. Lowering the water table significantly in the upper units may increase the potential for contamination of the Lower units.

4. Section 3.2.4 Plume Stability and Attenuation Processes. Given that the arsenic plume has not advanced in 13 years of monitoring, a pump and treat remedy is unwarranted. A compliance point PRB is already proposed. Therefore, an additional pump and treat remedy would actually be redundant to natural attenuation processes advanced by the PRB. The PRB could act essentially as a reactive chamber that encourages oxidation states that result in further attenuation of arsenic. The fact pointed out in the fifth bullet, i.e., of the change of As III to the oxidized state of As V at the downgradient edge of the plume, reinforces this observation. Finally, the last sentence describing the attenuation of arsenic by the simple introduction of storm water, again suggests effective, passive systems could be implemented at the landfill and in the marsh, resulting in lower operation, maintenance and cost than pump and treat systems.

5. Section 3.3.1 Potential Exposure Pathways and Receptors. This entire section suggests that isolation of groundwater in the landfill would eliminate potential exposure pathways and receptors. The section notes no drinking water aquifers are affected and there is no hydrologic pathway to existing drinking water supplies from the landfill. The additional steps of dewatering the waste within the landfill only creates an on-going treatment stream that, at this time, is of unknown size and that requires long-term treatment. This adds no protective benefit.

6. Section 3.3.1, Page 30, Wetland Soils. The fact that soil concentrations remain so low, and are well below any interim action trigger levels, contradict the need for pump and treat in the marsh area. Arsenic is naturally attenuating and has been removed from the shallow sand aquifer for 13 years, as evidenced by low arsenic soil concentrations. It seems logical that once incoming arsenic from the landfill is prohibited by source area isolation by a slurry wall or similar means, arsenic in groundwater should decline quickly

in the shallow sand aquifer within the marsh. As noted in previous comments, several other active and passive mechanisms exist that may be more effective in quickly lowering arsenic concentration in groundwater by enhancing processes already in action at the site.

7. Section 4.1, Remedial Action Objectives, Page 32, Last Paragraph. This paragraph notes a preference for alternatives that “uses permanent solutions to the extent practicable”…. This review makes use of a “disproportionate cost” analysis. While Asarco is in agreement with Ecology’s evaluation that waste removal and disposal is prohibitively costly, the proposed remedy in the CAP, which includes significant pump and treatment of groundwater, is also neither permanent nor cost effective. The pump and treat actions are also redundant and do little to meet remedial objectives as presented over the next several pages in this section. Isolation with a PRB that allows control of hydraulic pressure inside the wall, and passive treatment of any discharge that is necessary for hydraulic control, would result in significantly less long-term O&M. This remedial approach is closer to meeting the permanence objective than a pump and treat remedy, and is more cost effective.

8. Section 5.2, Comment Elements to All Cleanup Alternatives, Page 43. Upgradient Interceptor Trench.

- While in concept this may be a reasonable action to limit the potential for incoming up-gradient groundwater recharge into the landfill, alternative drain/barrier designs to the slurry wall could be considered, and were elements in the alternatives to be evaluated in the 2001 Plan. The drain may be redundant in combination with the slurry wall. It may also have limitations associated with existing drainage capability and topography. A detailed site survey needs to be prepared to evaluate the feasibility of this option.
- Before the trench remedy is implemented, its affect on the existing positive effect of the upward gradient into the landfill needs further evaluation. Lowering the hydraulic gradient within the landfill may increase the potential for downward infiltration on the west side of the landfill where the aquitard is either thin or may not be present. It may be imprudent to reverse a hydraulic gradient that has been in place for a very long period of time. .
- Other important considerations relating to the installation of an interceptor trench upgradient of the landfill, include the possibility of introduction or acceleration of other contaminants associated with up-gradient urban and agricultural areas (herbicides, pesticides) into the upper aquifer.
- Dewatering inside a slurry wall system creates three potential issues: 1) leakage from the area where the aquitard is not present, 2) introduction of seeps toward the lower hydraulic gradient through the dewatered waste, and 3) negative affects on the structural integrity of the containment system. The rational for dewatering the waste was not justified in the technical section and not supported in this section.

9. Section 5.2, Comment Elements to All Cleanup Alternatives, Page 44. Treatment of Groundwater Outside the Landfill Perimeter. With the exception of DH-23, the “halo wells” may be addressed by attenuation, once the landfill source groundwater is controlled by the slurry wall. Pumping of these wells may not be advisable. Pumping will lower the groundwater table, put outside pressure on the slurry wall, and potentially affect the integrity of the wall. If groundwater levels are lowered both inside and outside the wall by pumping, it will effectually be controlling groundwater migration, causing the slurry wall to be redundant and unnecessary.

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10. Section 5.2, Comment Elements to All Cleanup Alternatives, Page 44. Treatment of Groundwater in the Wetlands CAA. Pump & Treat of the wetlands was not justified in the technical section of the report, and therefore, not supported in the conclusions as the preferred remedy. Source reduction either by a PRB or Phytoremediation can achieve similar results. See comments 1, 2, 3, 4, 5 and 6 above.

11. Section 5.2 Landfill/Ditch CAA Alternatives, Page 46. This is the second Section 5.2 in the document.

12. Section 5.2 Landfill/Ditch CAA Alternatives, Alternative 1 and Alternative 2, General Comment re Hydraulic Control. As discussed above there are alternatives to gradient control for the landfill besides a pump and treat remedy. The hydraulic gradient in the landfill could be controlled using a funnel-gate treatment chamber approach. The gradient in the landfill could be kept at a slightly lower level than outside groundwater. Since there is an upward gradient from lower sediments to the shallow aquifer, a minor amount of incoming groundwater into the landfill will continue after the wall is constructed. Only minor adjustments to hydraulic gradient in the wall should be necessary to maintain an inward gradient from outside the wall. This approach would result in less physical threat to the wall from large gradient differences induced by pumping. Relative to Alternative 2, dewatering the waste provides no real benefit, since the water inside the wall is controlled by the slurry wall itself. In addition, the integrity of the wall is potentially affected by inducing larger gradient differences and the potential to move water through any defects in the wall increases. Significant pumping near the wall for treatment, either inside or outside the wall, may induce the movement of slurry from the wall itself, again affecting its integrity.

13. Page 48, Alternative 3. As noted above, we concur that this alternative (off-site waste removal) is not a practical or appropriate remedy for the site."

<u>Ecology Response</u>:
General Comments:

1. It is misleading to suggest that the 2001 Contingency Plan process had ever resulted in producing a Site remedy, approved by Ecology, reviewed by the public, or consistent with MTCA. The portions of the 2001 Contingency Plan which have been completed serve as a useful but incomplete contribution to the process of evaluating alternatives (check the Order for "Design Analysis for Groundwater….) suitable for remediating the groundwater arsenic problem at the B&L Woodwaste Site.

   The fact that Ecology had required completion of the Contingency Plan should not be interpreted as Ecology approval of the alternatives presented therein. Asarco did not fully meet its obligations under amended Enforcement Order No. DE 92TC-S214, to study and evaluate measures needed to remediate the wetland area adjacent to the Site. Additional study and evaluation by other parties has superseded these efforts.

   The Contingency Plan process did not provide adequate analysis of the relatively short list of remedial alternatives contained therein to demonstrate that they would be effective enough to meet remedial objectives or robust enough to be a permanent solution. There is now sufficient data to favor other remedial

approaches over those suggested in the 2001 Contingency Plan. For example, there are strong technical reasons for rejecting permeable reactive barriers (PRBs) and air sparge treatment, as described below in response to specific comments. The statement that the remedial actions evaluated and selected in the 2007 CAP are "significantly greater in scope, time of implementation, and in cost" reflects the fact that work completed on the 2001 Contingency Plan did not include sufficient detail or completeness to comply with MTCA in addressing the human health and environmental issues associated with the Site.
The statement that elements of the selected remedy "may be counter productive" appears to be unfounded. The proposed remedy has been designed to prevent the scenarios for the spreading of arsenic that are raised in this comment.
Please refer to the responses to specific comments below.

2. An appropriately wide range of potential remedial technologies, including those listed in your comments (phytoremediation and other passive systems), and a number of other new/innovative technologies were evaluated in the Cleanup Action Plan prior to selection of the proposed remedy. Please refer to the responses to specific comments below.

3. The cost calculations used in the Cleanup Action Plan are appropriately conservative and were designed to represent a realistic projection of remedy implementation costs. Ecology is unaware of any "double-counting" in the cost calculations for its alternatives, but welcomes specific comments regarding these calculations. Ecology has reviewed the analysis of several experts with regard to the present value discount rate applied, and does not find any reason, based on this general comment, for modifying the discount rate applied to the cost calculation.

Specific Comments:

1. The GAE Report, an Appendix to the Draft CAP, evaluates phytoremediation as a potential wetland remedy, including the arsenic hyperaccumulator, Pteris vittata (Chinese brake fern). It was rejected as a standalone approach in the preliminary screening of alternatives due to its lack of proven track record, the transfer of arsenic to a new media, and the difficulty of plant survival in flooded conditions. Furthermore, plant material would return to the soil column unless removed on a recurring basis, which would require a significant O&M cost. Phytoremediation was retained as a possible component of surface water treatment cells, which were later rejected for not meeting the remedial action objective of preventing further migration of arsenic in groundwater and for technical reasons related to flooding. Additionally, most of the arsenic in the wetland system exists in the groundwater at the bottom of the upper aquifer, some 17 to 20 feet below the ground surface. This depth range is well below the depth of the root systems of flood zone/wetland vegetation.
2. Redox, and its effect on arsenic solubility, have been carefully considered throughout the preparation of the Draft CAP. Several in situ treatment technologies based on this mechanism were evaluated, including air sparging, chemical oxidant injection, and passive aeration through infiltration of oxygenated surface water (as noted by Asarco in specific comment #4). The "once through" nature of landfill remedies such as Passive Reactive Barriers (PRBs) are too unpredictable to be relied upon as the landfill area remedy. In the wetlands, the mass of readily extractible arsenic contaminated groundwater leads Ecology to

favor removal of this contaminant mass over sorbing it into wetland soil via redox modification. Redox modification technology has been selected as the proposed end-of-plume area remedy, because of the low arsenic concentrations there. Such technology may be useful in the future in the wetlands area, once the pump and treat remedy has lowered the arsenic concentration in groundwater.

3. Changes in groundwater gradients, particularly the vertical gradient between the Upper and Lower Aquifer, resulting from pumping of the groundwater beneath the landfill, and the effects of aquitard continuity or lack thereof were considered extensively in the selection of alternatives. The effect of a possible aquitard discontinuity on the pumping rate required to maintain an inward hydraulic gradient or dewater the woodwaste, were the subject of several groundwater models and technical memoranda by consultants for both Ecology and Murray Pacific. Both studies reached agreement regarding the fundamental hydrogeologic issue raised by this comment: lowering the water level in the landfill would increase the upward vertical gradient, resulting in greater flow into the landfill, not out of the landfill. The comment does not provide analysis of under what scenarios pumping could ever have the opposite effect.

4. First of all, the stability of the elevated arsenic in the wetland groundwater does not provide a basis for removing the need for remediation of this area per MTCA. Regarding the use of PRB technologies; PRBs, including the leading technology for arsenic removal through PRBs, zerovalent iron, do not work through oxidation, but rather through surface-activated reduction reactions and mineral precipitation. PRBs were considered closely in the Draft CAP, and its appendix the GAE Report, but this technology was rejected, in part because the alternating dry and flooded conditions result in alternating redox conditions in shallow groundwater. Because deeper groundwater is not subject to this seasonal redox variation, a reduction-based in situ technology was selected to enhance natural attenuation at the end of the plume. The use of oxygenated stormwater was rejected because it was considered unable to reach into deeper groundwater, and because, as described in the response to specific comment 2 above, oxidative precipitation with iron oxides is very easily reversible during annual wetland flooding conditions.

5. It is Ecology's opinion that effective isolation of groundwater in the landfill requires maintaining hydraulic control, which necessarily generates a treatment stream. It is also Ecology's opinion that dewatering of the woodwaste would prevent the generation of additional leachate, and that arsenic concentration in groundwater would decrease over time, potentially leading to lower treatment costs or eventually to allow direct, untreated discharge. And again, although the wetland groundwater has no current drinking water users, it does potentially affect humans and biota via direct exposure, and thus must be remediated per our state cleanup law and regulations.

6. Ecology agrees that there is evidence of natural attenuation of arsenic in groundwater in the wetlands area. Arsenic attenuation, however, occurs solely through adsorption or coprecipitation onto soil surfaces. Inorganic metalloids such as arsenic are not destroyed. It is because the arsenic cleanup level for soils is 20 mg/kg that the attenuation from groundwater does not raise the concentration above cleanup levels, because the groundwater cleanup level of 5

µg/L is orders of magnitude lower. Ecology is optimistic that natural attenuation following the isolation of the source with a slurry wall will decrease the need for pumping and treatment of groundwater from the wetlands area at some future date. However, this attenuation has yet to be demonstrated, and in the meantime, Ecology must implement a remedy that will clean up areas with highly elevated arsenic concentrations in groundwater.

7. A major reason why the PRB approach was not adopted is that PRBs would require frequent and disruptive maintenance and replacement. Due to limited implementation of PRBs for arsenic, the exact lifetime of the reactive media (presumably zerovalent iron) in the subsurface is unknown, but it is estimated at approximately 10 to 20 years. This time estimate may be considerably foreshortened by the organics associated with wood waste leachate. The need to replace the reactive material at regular intervals results in significant long-term O&M costs. Ecology is unaware of any passive treatment technologies for discharge water that do not require substantial O&M. Passive treatment through oxidation, whether in constructed wetlands ponds or aeration tanks, requires removal and disposal of iron-arsenic sludge. Additionally, the high concentrations of wood waste related organics in the landfill leachate would have deleterious effects on PBR arsenic removal reaction chemistry.

8. Ecology agrees that additional engineering of elements such as the upgradient drain will be needed during the Engineering Design phase, to prevent unwanted side effects. The groundwater that would be intercepted by the drain, however, is shallow groundwater, which is not responsible for the upward gradients observed. The upward gradient is driven by deeper groundwater in the Lower Sand Aquifer flowing along basin-scale flow paths. Intercepting shallow groundwater, if anything, will strengthen the upward gradients from the Lower Sand Aquifer. As discussed in the response to specific comment #3 above, the groundwater modeling and technical analysis conducted thus far has not shown any reason to suspect that lowering the water level (which increases the upward vertical gradient) within the landfill would result in downward infiltration anywhere. The only gradients that would be reversed are those that are currently downward gradients. The analyses have clearly shown that increasing the upward gradient will increase the protectiveness to the Lower Aquifer.

   Regarding the statement; “Other important considerations relating to the installation of an interceptor trench upgradient of the landfill, include the possibility of introduction or acceleration of other contaminants associated with up-gradient urban and agricultural areas (herbicides, pesticides) into the upper aquifer.”
   Ecology notes the concern over the introduction of other contaminants into shallow groundwater through the upgradient drain, but believes that this potential can be avoided through proper design and management of the Site.

   Regarding the statement; “Dewatering inside a slurry wall system creates three potential issues: 1) leakage from the area where the aquitard is not present, 2) introduction of seeps toward the lower hydraulic gradient through the dewatered woodwaste, and 3) negative affects on the structural integrity of the containment system. The rational(e) for dewatering the waste was not justified in the technical section and not supported in this section.”:

With respect to these potential issues 1) & 2), Ecology believes that there is significant technical basis to conclude that dewatering inside the slurry wall system, by increasing upward and inward gradients, decreases the likelihood of downward and outward leakage from the slurry wall. The potential for negative effects on the structural integrity of the slurry wall system has been considered by Ecology. Based on available information, there is reason to believe that a typical slurry wall can withstand a large differential (many feet) in head without damage. The slurry wall will be designed to withstand a suitable differential to lower the water level within the landfill to the desired elevation. Refer to the response to specific comment #5 for additional explanation of the justification of dewatering of the wood waste.

9. Ecology is optimistic that the "halo" wells may require only limited treatment before coming into compliance. Refer to the response to specific comment #8 regarding the effect of pumping on the integrity of the slurry wall. The slurry wall, because it performs an essential containment function, will not be made redundant or unnecessary by pumping outside of the slurry wall to target localized "halo" spots.

10. Ecology believes that sufficient justification exists for the recovery of groundwater contaminated with arsenic up to 1,000 times the cleanup level from the wetlands area. Pumping to remove the mass of arsenic was the leading alternative among the several that were evaluated in the GAE Report, which was reviewed as part of Ecology's alternatives analysis. Reasons include: arsenic is primarily in the dissolved state, and the aquifer is relatively permeable. Thus a groundwater extraction system should be effective in permanently removing the arsenic. The use of a PRB, phytoremediation, and a number of other remedies were rejected based on a detailed analysis of alternatives. Key reasons for rejecting the PRB and phytoremediation are given in the above response to specific comments #1, #4, and #7.

11. Comment noted.

12. Ecology does not find in this comment or elsewhere a credible alternative to pumping groundwater from inside the slurry wall for maintaining hydraulic control. Ecology agrees that it may only require removal of a small amount of water from within the slurry wall to maintain hydraulic control, but the upward gradients and possible discontinuity of the aquitard indicate that continued recovery of some volume will be required. Ecology has addressed the concept of a physical threat to the slurry wall from a head differential in the above response to specific comment #8. Ecology has addressed the added benefit of dewatering wood waste in the above response to specific comment #5.

13. Comment noted.

Comment 7. Louisiana Pacific Corp. – Bert Krages II

"The following comments are submitted by Louisiana-Pacific Corporation (LP) in response to the request by the Washington Department of Ecology (WDOE) for

comments on the proposed Cleanup Action Plan (CAP) for the B&L Woodwaste site in Milton, Washington. One factor that deserves practical consideration is the fact that Asarco is currently in bankruptcy proceedings and thus has an incentive to encourage selection of an ineffective remedy to reduce its liability in those proceedings. A key concern with respect to the proposed remedy is that Asarco is attempting to discharge its liability in the bankruptcy proceeding and, if successful, would face no financial consequences should the proposed remedy fail. It is noteworthy that in the early 1990s, Asarco persuaded WDOE to withdraw the requirement for a liner as part of the original remedy. The absence of such a liner undoubtedly has contributed to the magnitude of the remedy failure that has prompted the present action.
Although much thought has been put into the proposed remedy, there are fundamental aspects that make it potentially vulnerable to failure in the long-term. Some of these aspects relate to the hydrogeology of the site, some relate to the fairly intense levels of operation and maintenance needed to sustain the remedy, and others relate to institutional control issues such as property ownership. Therefore, WDOE is strongly encouraged to give due consideration to aspects that pertain to the likelihood that the proposed remedy may fail.

1. The remedy is subject to the basic flaw of allowing waste materials to lie within a zone beneath the groundwater table. The most significant technical problem the proposed remedy must deal with is intrusion of groundwater into the waste pile. This problem exists because the waste pile lies in an area that is located beneath the water table and thus is exposed to natural forces that tend to drive groundwater into the pile. Such intrusion results in the contamination of groundwater from pollutants contained in the waste pile. The contaminated groundwater is then able to migrate from the area encompassed by the landfill cap. The draft CAP proposes to seal the waste pile off from groundwater by tying a slurry wall into the underlying aquitard. The success of this part of the proposed remedy relies on forming an impermeable barrier between the waste pile and the surrounding groundwater. However, field evidence indicates that the aquitard may not be continuous and thus unable to prevent infiltration into the aquifer. The draft CAP does not provide a substantive degree of discussion of this issue or how it might affect the success and cost of the remedy.
The draft CAP acknowledges at pages 27–28 that the failure of the 1993 remedy is due to the bottom four to six feet of the landfill being saturated by groundwater flowing into the waste pile. It is an axiomatic principle of containment-system design not to place waste materials in a zone that falls beneath a water table. For example, WAC 173-304-460 generally requires liners for landfills except for those located in arid areas in which the waste material is no less than ten feet above the seasonal high level of ground water in the uppermost aquifer. The B&L Woodwaste site is located in a moist climate and has a substantial portion of the waste pile situated beneath the water table. These circumstances strongly suggest that the remedy selection process should have been directed toward a solution that ensures that the waste pile is relocated outside the zone beneath the water table. Otherwise, any containment system intended to exclude groundwater from the pile will be subject to failure any time there is a short term lapse in the operation and maintenance of the containment system. The assumption that the aquitard is continuous may be optimistic and therefore a conservative approach to evaluating the remedy may be warranted. The effect of possible discontinuities should be fully considered with respect to pumping rates, routes of contamination into the lower aquifer, and long term prospects for effectiveness.
Although current information suggests that there is an upward gradient of groundwater flow in the vicinity of the landfill, future changes to the groundwater caused by factors

such as increased groundwater withdrawals due to urban development or changes in the local hydrology, such as surface water alterations, could create a situation in which the groundwater gradients are reversed.

2. The remedy is overly dependent on diligent operation and maintenance.
Another serious flaw with the proposed remedy is that it requires diligent operation and maintenance to maintain effectiveness. According to the CAP, the landfill waste pile contains about 250,000 pounds of arsenic. The Groundwater Alternatives Evaluation (GEA) indicates that the plume in the wetlands area contains about 50 pounds of arsenic. In other words, there is a huge reservoir of arsenic that is available to further contaminate groundwater in the area. Should active operation and maintenance be discontinued, even on a temporary basis, the remedy will either fail or suffer a serious setback. There are three categories of work necessary to implement the remedy and in which a shortcoming of diligence could lead to remedy failure. These categories are pumping, treatment, and structural maintenance. The proposed remedy relies on pumping beneath the landfill cap and in an area of the wetlands north of the landfill. As a general matter, it is unclear from the draft CAP how the pumping will be monitored and at what intervals. The CAP provides no discussion on how the pumping stations will be controlled or whether they will be continually staffed. It is clear that pumping failures of moderate duration could allow the groundwater table to infiltrate within the waste pile or allow contamination to pass untreated outside the well field installed in the wetlands area. More specifically with respect to the landfill cap groundwater extraction system, there are no definitive assurances that the slurry wall and aquitard will withstand the hydraulic loadings imposed by the extraction system. The draft CAP at pages 57, 58 and 63 implicitly acknowledges the possibility that pumping could damage the integrity of the slurry wall and aquitard, although it does not appear to address how such a remedy failure would be addressed. It is not at all clear how safe pumping rates would be established without risking a breach in the containment provided by the slurry wall and aquitard. Furthermore, damage to the integrity of the aquitard by over-pumping could exacerbate the present contamination situation by providing a route for arsenic to contaminate the lower aquifer. The CAP fails to disclose the specific treatment operations that will be used to implement the pump-and-treat portion of the remedy, although the GEA indicates that an iron-precipitation system is contemplated. Unlike the GEA, the CAP states that the cleanup levels would be met only after an ambiguous “many years,” perhaps on the order of 30 years. This indicates that lapses in diligence could result in inadequate treatment of extracted leachate and plume water. This could be of particular concern with respect to leachate and groundwater drawn from the vicinity of the landfill, because these waters will have the highest levels of contamination found at the site. It is presumed that the treated waters will be disposed in the same manner as those drawn from the wetlands area. In the event that such waters do not undergo sufficient treatment due to operator error or similar operational deficiencies, it is highly likely that their disposal will recontaminate groundwater that has been previously treated. Such events would further lengthen the time required to effect the groundwater remedy and concurrently increase the risk of further lapses in diligence.

Structural maintenance is another issue in which a lapse of diligence could result in a failure of the remedy. Two critical elements are the slurry wall and the interceptor trench. It is likely that both elements would not be visible because of their location below grade. This will make these elements more difficult to inspect and evaluate. It is very unclear how monitoring will be implemented to detect leakage through the slurry wall. Furthermore, leakage will likely result in contamination of the infiltrate and add to the

volumes that need to be treated. It is also unclear how the interceptor trench would be monitored for clogging if installed as a French drain. Clogging of the drainage pipe in a French drain would likely result in passage of upgradient groundwater to the slurry wall where it would impose a hydraulic load that could damage the integrity of the slurry wall.

3. The CAP fails to address the effects that the possible relocation of Hylebos Creek could have on groundwater flow dynamics. Page 12 of the draft CAP discusses the possibility that a segment of Hylebos Creek will be relocated as part of a proposed project regarding SR 167. The anticipated relocation would move the relevant section of the creek from a location about 1,500 feet and bearing 325 degrees from the northern edge of the landfill to a location about 700 feet and bearing 315 degrees. Such a relocation could affect both the direction and the rate of groundwater flow and thus alter the contaminant situation. For instance, a change in direction and flow rate could compromise the ability of the wetlands area pump-and-treat system to collect and treat contaminated groundwater. Addressing this issue could require additional monitoring and a possible relocation or augmentation of the pump-and-treat system and impose costs not currently contemplated.

Another issue that is not considered in the draft CAP is the possibility that the proposed relocation of Hylebos Creek could result in excavation through the aquitard between the upper and lower aquifers and create a route for arsenic contamination into the lower aquifer. It should be noted that the current system of monitoring wells would likely not detect a disruption of the aquitard in the vicinity of Hylebos Creek. It is possible that a breach in the aquitard could provide a route for contamination into the lower aquitard, particularly during periods of low flow in Hylebos Creek.

4. The CAP fails to address the impact of flooding on the effectiveness of the remedy. The draft CAP at page 12 tangentially acknowledges that the landfill area is subject to flooding but otherwise devotes remarkably little discussion to this issue. Review of recent historical flood information indicates that the entire site of the proposed remedy was likely inundated with flood waters during regional flooding events in 1991 and 1996. Although the discussion in the CAP glosses over the issue of flooding by implying that proposed changes to Hylebos Creek may reduce the magnitude of flooding at the site, it should be emphasized that the proposed Hylebos Creek projects are in the preliminary design phase and contingent on available funds, and cannot be reasonably relied upon as a basis of ensuring that the site will not be flooded. Furthermore, predictions on the extent of flooding are at best speculative and in any case do not account for floods exceeding the 100-year event magnitude. The effect of a flood inundating the landfill area cannot be ascertained with certainty but could reasonably be expected to result in a complete setback with respect to the removal of groundwater contamination. Infiltration of flood water into the waste pile would likely result in a large reservoir of leachate that would alter the dynamics of contaminant behavior and render the remedy ineffective. Furthermore, migration of contamination during a flood event is very difficult to predict and could result in the transport of contaminants to unexpected locations. For example, a pocket of arsenic contamination seen in the vicinity of wells MW-23 and D10A could be a relic of the 1991 or 1996 flood events. Likewise, historical flooding could explain the existence of the halos of contamination detected at wells D-8A and D-9A.

5. The proposed remedy does not adequately address property ownership and land use issues. The properties encompassing the site are owned by Executive Bark, Inc., the City of Milton, M-F Associates, and Pierce County. Adjacent properties are owned by the

City of Fife, Greenwood-Milton Associates, Pierce County, and a private resident (Herman). The Herman property, to the east of the site, apparently is being partitioned into ten single family parcels. Treatment systems and operational activities will be implemented on all the properties encompassing the site. In addition, cooperation from at least some of the adjacent property is anticipated to be necessary to implement parts of the remedy. Previous comments submitted to WDOE about the site indicate that adjacent property owners generally oppose continued use of the property as a waste storage facility. The draft CAP does provide some discussion of the changing nature of land use in the vicinity of the site and notes that the cities of Fife and Milton are contemplating development of the lands for commercial and recreational use. The parcels are currently zoned for moderate density single family use. However, the draft CAP does not discuss how the inconsistency will be addressed between these uses and those involving a landfill containing 125 tons of arsenic and an ongoing pump-and-treat system.

The Determination of Nonsignificance (DNS) states that deed restrictions will be placed on all the properties at the site. It is unclear how deed restrictions would be imposed upon the properties encompassing the Puget Power road, wetlands area, and the end-of-plume area. Furthermore, the fact that the properties belong to different owners could present enormous difficulties in the event they decide to engage in incompatible land uses or take action that is otherwise detrimental to the proposed remedy.
The property ownership issues need to be addressed before the proposed remedy is approved. An assertion that deed restrictions will be placed on the properties is insufficient because much of the property is owned by parties who are not responsible for the contamination. Furthermore, land use trends should be given considerable consideration because these factors could affect the long term ability to implement and maintain the proposed remedy.

Conclusion
Assuming that a slurry wall, interceptor trench, and constant pumping are able to “hold back the tide” of the horizontal and vertical groundwater gradients directing flow into the waste pile, and that the pumping and treatment systems are diligently maintained and operated in perpetuity, it is entirely possible that the proposed remedy might succeed under otherwise favorable circumstances. However, the evidence suggesting that the underlying aquitard is discontinuous, the inevitability of recurrent flood events, and the uncertainties associated with current and future property owners make the circumstances seem somewhat less than favorable.”

Ecology Response:

1. As the CAP indicates, Ecology agrees that it is not preferable to allow the waste materials to continue to be saturated by shallow groundwater and generate leachate. The containment remedy, however, does address this problem in two ways: by isolating groundwater beneath the landfill so that the only significant flow water leaving the landfill will be the groundwater being pumped out; and by seeking to dewater the woodwaste refuse, should this goal be attainable through reasonable pumping rates.

   With respect to potential aquitard discontinuities and their effect on the remedy, Ecology has carefully considered this matter in the development of the preferred remedy. Among the most convincing factors influencing aquitard continuity and certainty of containment are: A. that the landfill has been in place for 30 years

without contaminating the lower aquifer, B. the presence of upward gradients beneath much of the landfill, and C. the increased upward and inward gradients that will result from pumping within the containment barrier. The upward groundwater gradients are basin-scale hydrogeologic conditions, whose source is deeper groundwater that is pressurized because it originates at higher elevations. Therefore it is highly unlikely that these major scale gradients will be disrupted by human activity in the area.

2. Ecology recognizes that the selected remedy incorporates significant operation and maintenance components, but does not agree that the remedy is "overly dependent on diligent operation and maintenance." To begin with, site conditions including flat horizontal gradients, upward vertical gradients, and a low-permeability aquitard have resulted in a fairly limited extent of arsenic in groundwater, and a relatively slow-moving arsenic plume. In this context, a short interruption of O&M would not result in a significant problem. The proposed remedy includes sufficient safeguards to handle the scenarios described as well as other contingencies. The plume is moving at such a slow rate that, if a leak were to be detected through monitoring, or if a flood occurred, there would be time to recapture this groundwater before it resulted in a significant release of contamination. Leakage through the slurry wall would be detected by the need for an increased pumping flow rate to maintain the appropriate groundwater level within the slurry wall. Such an increase in required pumping flow rate could trigger the need for slurry wall repair. The functionality of the interceptor drain would be monitored by observing the groundwater level in monitoring well(s) located between the drain and the slurry wall. Design of these monitoring systems and system safeguards will be addressed in the forthcoming Engineering Design Report phase of the cleanup.

3. The effects of a possible relocation of Hylebos Creek have been carefully considered in the development of the CAP. Ecology has communicated extensively and will continue to communicate with the Washington State Department of Transportation on this subject, such that any relocation of the creek will not have serious effects on the remedy. The wetlands remedy is largely based on hydraulic capture by directing flow toward pumping wells, which should not be dependent on the direction or gradient of natural groundwater flow. If Hylebos Creek is altered in such a way as to increase the horizontal gradients in the wetlands, which would be necessary to alter the rate of groundwater flow, the groundwater extraction system would be flexible and robust enough to withstand such a change. There is no danger of an excavation penetrating the lower aquitard in the wetlands, because the aquitard is greater than 20 feet below the ground surface and is not targeted for excavation.

4. The potential effects of flooding were considered by Ecology in the development of the CAP. There are several reasons to believe that the remedy is robust enough to withstand a catastrophic flood event: A. the waste is configured as a sloped pile that would be primarily above even the 100-year flood, and the access road where the slurry wall is to be built is well above the surrounding wetlands. Two 100 year floods have occurred since the cap was constructed in 1993, and no known damage has been done to any element of that system; B. the waste pile is covered with an impermeable cap that will be tied into the surrounding slurry wall containment barrier, thus preventing infiltration of flood waters; C. any excess water that may enter the containment

system can be removed through pumping, thus preventing any release of contaminated groundwater; and D. If, in spite of all of the above preventive systems, somehow a release of arsenic laden groundwater from the Site occurs, the arsenic is transported slowly in groundwater through the wetlands. Thus, allowing sufficient time for recovery of any contaminated groundwater escaping outside the containment barrier which may have somehow resulted from a flood.

5. Regarding the multiplicity of land owners involved, and potential issues regarding access and deed restrictions; Ecology has a number of legal mechanisms to achieve these ends. The primary way to address such issues is to find the owners of the contaminated land to be Potentially Liable Persons (PLPs) under MTCA. Non-governmental land owners would be included in the enabling regulatory instrument (such as a Consent Decree), but should not incur any liability for the cleanup, unless they contribute to the release of hazardous substances or deny access for cleanup.

Comment 8. WA Dept. of Transportation – Rae Bennett for Steve Fuchs

"General Comments on Draft Cleanup Action Plan (CAP)

The procurement of financing and the schedule of implementation for the CAP are very important factors that could directly affect WSDOT's SR 167 Extension project. Do you have any more information concerning the financing or project implementation schedule? Especially as to how much funding is available for the CAP and how soon will construction begin on the remedial actions?

Section 4.4.3 of the CAP addresses concerns related to migration of the arsenic plume north of the Wetlands Cleanup Action Area (CAA), to the End of Plume CAA as shown in Figure 14. Due to possible relocation of Hylebos Creek west of the Wetlands CAA, monitoring should be extended to include the western edge of the Wetlands CAA. The CAP should include a contingency plan (perhaps extending the sequestration remedy) to halt migration of the contamination, should monitoring indicate that the plume migration is moving westward.

Section 5.1 and Figure 11 identify proposed cleanup action in the area to the West and South of the Landfill. However, these areas are not within any of the formally-delineated CAAs shown in Figure 14. As the nature of the proposed cleanup action in this area (pumping and treating) is most similar to that proposed for the Wetlands CAA, consider including these areas in the Wetlands CAA. Additionally, property access and potential impacts to this area due to the proposed pumping operation should be discussed, as the area outside the landfill is under other ownership (currently City of Fife)

The proposed cleanup action for the Landfill CAA described in Section 6.1 identifies Protection of Wetlands as a performance criterion. This performance criterion should be included in sections 6.2 and 6.3 for the Wetlands and End of Plume CAAs.

Specific Comments on Landfill/Ditch CAA

Hydraulic control within the slurry wall must be maintained as a performance standard for the slurry wall even if waste dewatering proves infeasible. Groundwater pumping within the slurry wall will be needed to keep the recharge through the landfill cap from building up within the slurry wall and "overtopping" the slurry wall. To reduce groundwater recharge within the slurry wall and enhance the ability of the hydraulic control extraction system to dewater the wastes, has the installation of a more impermeable cap been considered and the benefits/cost evaluated?

The "halo" of contamination to the west, south, and southeast of the landfill is only defined by one well at each location (D-8, D-9, and MW-23/D-10). The full 3-D extent of groundwater contamination in these areas has not been adequately addressed to design the proposed extraction system. Will additional characterization be done during the Design data collection phase?

Will the compliance monitoring system (and other applicable monitoring systems include the "halo" areas west, south, and southeast of the landfill to demonstrate protection of other off-site properties?

The potential impacts of realigning Surprise Lake Tributary as part of the SR 167 Extension project on the current "halo" areas west and south of the landfill and on the proposed ditch cleanup action have not been evaluated. Will the Engineering Design phase of the cleanup project include this evaluation?

WSDOT is considering acquiring a portion of the 54 acre property currently owned by the City of Fife for a combination of new SR 167 roadway, riparian restoration including the realignment of Surprise Lake Tributary, and possible excavation to create mitigation wetlands immediately west and south of the landfill. These actions could potentially impact the current "halo" areas west and south of the landfill and the proposed ditch cleanup action. Will an evaluation of the possible WSDOT acquisition and its affects on the CAP be included in the Engineering Design phase of the cleanup project?

Specific Comments on Wetlands CAA

The general concept of the pump and treat action in the Wetland CAA seems acceptable, but no hydraulic analysis (or groundwater modeling) has been presented to show that it is feasible and effective in protecting off-site properties. Will this evaluation be included in the Engineering Design phase of the cleanup project?

The potential impacts of realigning Hylebos Creek as part of the SR 167 Extension project on the current plume geometry and on the wetland proposed cleanup action (and the end-of-plume action) have not been evaluated. Will this evaluation be included in the Engineering Design phase of the cleanup project?

Specific Comments on End-of-Plume CAA

The general concept of a permeable reactive barrier/in situ sequestration in the end-of-plume CAA seems acceptable, but no technical analysis has been presented to support its feasibility and effectiveness in protecting off-site properties. Please ensure that bench and pilot-scale testing is included during the Engineering Design phase of the cleanup to determine this concepts feasibility and effectiveness in protecting off-site properties.

Comments on SEPA Checklist

The B&L Woodwaste site SEPA Checklist Item #9 asks the following question: "Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. Ecology's answer is simply "None known". There are many properties in the area including the 54-acre parcel owned by the City of Fife, presently known as the "Gathering Place" that are awaiting approval or are currently being developed. The city-owned parcel is possibly affected by the CAP. WSDOT's State Route 167 (SR 167) Extension project is just west of the B&L Woodwaste and it has been in the development stage for several years. The SR 167 Extension project is briefly described on page 12 of the CAP and shown on Figures 5 & 6. WSDOT and FHWA are currently anticipating issuing the Record of Decision (ROD) for the SR 167Extension Project later this summer (2007). Please describe in more detail the protection or benefit to SR 167 on the west side of the B&L Woodwaste site that the CAP would provide?

Section "B" of the SEPA Checklist discusses "Environmental Elements" of the CAP. Under item 1e it is stated that: "500 cubic yards of bentonite clay would be imported from off-site to form the slurry wall. Grading activity would be minimal." Also, on page 43 of the draft CAP an Up-gradient Interceptor Trench/ Slurry Wall is briefly described. Pages 46 and 47 of the draft CAP further provide some additional information concerning "Slurry Walls". However; specific details concerning the dimensions (width, length and depth) of the Slurry walls is not provided. Not knowing the dimensions or at least the depth of the slurry wall it is hard to determine whether the grading activity would be minimal or not. In order to support the conclusion that "Grading activity would be minimal" additional information needs to be provided.

SEPA Checklist Item B 14a. (Transportation) requires the identification of public streets and highways serving the site. The SR167 Corridor was officially established with the approval of its Tier I Final Impact Statement and ROD in June 1999. It would be helpful if the SR 167 Corridor was identified clearly on the Figures relating to the B&L Woodwaste site."

Ecology Response:

Re: General Comments on Draft CAP –

Regarding availability of funding and and schedule for implementation of the CAP:
Ecology is hoping that the nation-wide EPA/DOJ bankruptcy case with Asarco, Inc. will be settled some time in 2007, or shortly thereafter. The timing and availability of funding for CAP implementation hinge, to a great degree, on this settlement. If the bankruptcy is not settled rapidly or favorably regarding this site, then alternative funding mechanisms will be sought, as rapidly as is possible.

Regarding westward wetland plume migration:
All seven monitoring wells located to the west of the landfill and of the wetland arsenic plume show only background arsenic concentrations, indicating that this well established plume has not migrated westward. Implementation of the Draft CAP, including installation of the slurry wall and pumping of the wetland and "halo" areas groundwater will only reduce the chance of plume migration in all directions.

Regarding “Halo” area cleanup:
These areas of elevated arsenic in groundwater near the landfill are relatively small in size. They should be isolated from any source of new arsenic once the slurry wall is installed, and are expected to be brought into compliance with cleanup standards within 5 years of pumping and treatment.

Regarding including Protection of Wetlands as a stated performance criteria in the CAP for the Wetlands and End of Plume Cleanup Action Areas (CAAs):
Ecology will revise the CAP as requested.

Re: Specific Comments on Landfill/Ditch CAA –

Regarding maintaining hydraulic control within the slurry wall, taking measures to avoid groundwater “overtopping” the slurry wall, and designing a more impermeable landfill cap:
As stated in the Draft CAP, the aim of the landfill remedy is to not only maintain the groundwater level within the slurry wall below that of the groundwater outside of the wall; but also to maintain the water level within the slurry wall beneath the level of the waste, if this proves feasible. The existing landfill cap system is quite impermeable. It is a RCRA-equivalent, multi-layer system, including a heavy gage plastic liner. With full 3 dimensional containment in place, and active, monitored pumping underway, “overtopping” the slurry wall is not expected to occur.

Regarding establishing the full 3-D extent of contamination at the “halo” areas:
The Engineering Design Report phase of the cleanup, which will also be subject to public input, will address the Compliance Monitoring System needed for all areas of the site, including the “halo” areas. The Compliance Monitoring System should be comprehensive of all affected or potentially affected off-site properties. Regarding the issue of 3-D characterization; as you will note in the Draft CAP, there is a low permeability soil layer 17 to 20 feet down in the soil column, which has limited the downward movement of the arsenic.

Regarding the proposed SR 167 roadway and Surprise Lake Drain restoration projects:
Ecology plans to continue our open communication with DOT so the each agency will be aware of the other’s plans in time to properly address potential issues. As of this time DOT is aware of Ecology’s plans for the B & L Woodwaste Site. Ecology has received some information regarding DOT’s SR 167 plans, and hopes that you will continue to provide timely information as your plans develop. Please also feel free to schedule a meeting whenever you think it might be of benefit. The Engineering Design Report phase of the B & L Woodwaste Site cleanup can provide another forum for meeting with DOT to formulate cleanup and monitoring plans which serve both agencies needs.

Re: Specific Comments on Wetlands CAA –

Regarding the need for hydraulic analysis/modeling to ensure wetland groundwater extraction and post-treatment discharge will protect off-site properties:
Pumping rate from groundwater from the wetlands CAA is expected to be fairly low (5 – 15 cfm). The treated water would be re-introduced into the wetland (via a National Pollution Discharge Elimination System (NPDES) Permit), resulting in little or no net loss of wetland water. If the decision is made by DOT to excavate a very deep channel for

Hylebos Creek, then the flat, slow hydraulic gradient of the wetlands may be increased. In that case, Ecology may have to modify the design of the groundwater extraction system to ensure capture of the high arsenic wetland plume area. Here again, the Engineering Design phase should include interaction with DOT projects. The sooner Ecology is made aware of nearby projects and their potential impacts, the more readily the Engineering Design phase will properly respond to any related design challenges.

Re: Specific Comments on End-of-Plume CAA –

As requested, Ecology plans to require bench/pilot testing of proposed End-of-Plume area in situ treatment process(es) during the Engineering Design project phase. Effects of the treatment system on off-site properties will be considered as part of this analysis.

Re: Comments on SEPA Checklist –

Regarding the request for more detail regarding protection or benefit to the SR 167 project and other properties, especially west of the Site:
As stated above, the arsenic plume has not shown significant westward movement, even prior to implementation of the proposed CAP. The proposed remedy is designed to ensure the arsenic within and immediately beneath the landfill is contained and not released. The proposed remedy also provides for cleanup of arsenic which has already been released from beyond the landfill boundaries. The proposed remedy also includes ongoing monitoring to ensure the remedy remains effective.

Regarding the need for specific slurry wall dimensions to know whether grading will be minimal:
Installation of a slurry wall is similar to trenching, in that only a narrow strip of soil is disturbed. The depth of the slurry wall is known to be from 17 to 20 feet deep, which is the depth of the low permeability soil layer. The top of the slurry wall will be near the land surface. The width of the slurry wall will be determined during the Engineering Design Phase. It is expected to be more than 2 feet wide, but less than 5 feet wide. Some soil will likely be removed from the excavation, staged and trucked off-site, while approximately 500 cubic yards of bentonite clay will be added to the temporarily dug trench. All digging activity will occur close to the perimeter of the landfill. The overall land form elevation will not change significantly, nor will any significant cuts or fills occur. It is on this basis that Ecology has stated that minimal grading activity will occur.

Regarding clear identification of the SR 167 corridor in the CAP:
The most accurate representation of the SR 167 corridor known to exist by Ecology, and provided by DOT, is already included in the Draft CAP (See Draft CAP Figures 3, 4 & 5). If DOT has a better or revised version of the SR167 corridor it can send to Ecology, then this version will be included in forthcoming Ecology documents relating to the Site. As DOT plans evolve regarding SR 167 and any other potentially related projects, please forward any revised plans to Ecology as soon as possible.

Comment 9. Citizens for a Healthy Bay – Leslie Ann Rose

"The purpose of this letter is to provide comments by Citizens for a Healthy Bay (CHB) regarding the document referenced above. CHB is a citizen-based, non-profit organization representing the greater Commencement Bay community and working to engage citizens to clean up, restore and protect the Commencement Bay environs. As such, over the past 17 years, we have acted to provide community oversight and participation into cleanup and restoration actions in Commencement Bay the Puyallup River Watershed.
CHB acknowledges the efforts put forth by Floyd|Snider and the Department of Ecology in preparing the proposed Cleanup Action Plan for the B&L Woodwaste site. Although the B & L site operated as an industrial landfill from the mid-1970s until its closure in the early 1980s, there is no evidence that the facility was permitted prior to its operation. The permitted status of the site should have been verified by the site PLPs prior to contracting for the disposal of woodwaste. Additionally, the site was inappropriately sited, and fails to meet criteria for siting and operation of a disposal facility established by the Dept. of Ecology as the surface and groundwater hydrology, soils, regular flooding regime and site proximity to wetlands would preclude operation of a facility at this site.
The CAP does not address the potential adverse impacts to the hydrology of the surrounding wetlands as a result of the proposed pump-and-treat and/or slurry wall remedies. Groundwater can only be returned to the area if post-treatment arsenic levels meet water quality standards. During the Q&A session at the public open house hosted by Ecology on July 18, 2007 you stated that it had not been determined whether or not post-treatment arsenic levels would meet water quality standards to allow groundwater to be returned to the wetlands site. Additionally, the potential adverse hydrologic impacts of constructing a slurry wall to prevent further contamination to the upper wetlands have not been determined. The wetlands impacted by the B&L Woodwaste site are one of the largest and most important wetland systems in the Hylebos Creek Basin and the hydrology must be scrupulously protected as part of the remedy."

Ecology Response:

Ecology is in full agreement that the landfill siting location and the permitting (if any) of the landfill in the 1970s were inappropriate. It is, of course, understood that the landfill was already at its present location before Ecology began the environmental investigation and cleanup.

Regarding the inappropriateness of "operating a facility at the site":
Here again, the B & L Woodwaste Site is not an operating solid or hazardous waste disposal facility; it is an abandoned former wood waste landfill.

Regarding potential negative impacts from the proposed remedy to the wetland system:
As was stated above, in response to a comment by WA DOT: Pumping rate from groundwater from the wetlands CAA is expected to be fairly low (5 – 15 cfm). The treated water would be re-introduced into the wetland (via a National Pollution Discharge Elimination System (NPDES) Permit), resulting in very low to zero net loss of wetland water. Compliance with this permit should ensure that appropriate water quality criteria will be attained by treatment system effluent. Design of the groundwater extraction and treatment systems will occur during the Engineering Design Report phase of the cleanup. We agree that this wetlands system is very important, and look forward to

continued input into this cleanup process by your group and by other natural resource advocates.

Comment 10: Puyallup Tribe – Bill Sullivan:

"Dom, thank-you for the opportunity to respond to your proposed clean-up plan for the B&L woodwaste site. The Puyallup Tribe of Indians are very concerned that the proposed plan will continue to release hazardous substances into the surrounding wetlands and to Hylebos creek. The tribe initially opposed the siting of the landfill at this site and were hoping that Ecology would take this opportunity to remove this waste from this ecologically sensitive area. The proposed alternative is based on studies and pilot testing that have not been conducted and therefore the matrix to determine long term protectiveness and cost are speculative at best. Furthermore, the cleanup plan fails to recognize the federally protected treaty rights of the Puyallup Tribe Section 4.2.2 Federal ARARs should include the Puyallup Indian Settlement Agreement.

Future plans to expand the HOV lanes on I-5 and the expansion of SR 167 will be in close proximity to the landfill. WDOT has proposed to implement habitat restoration and rechannelization of Hylebos in this area.The preferred alternative may continue to adversely impact groundwater and the wetland making the proposed mitigation by WDOT impossible. In addition,the NRDA trustees have spent millions of dollars in habitat restoration along Hylebos creek and plan to undertake additional habitat restoration projects in the near future.

The tribe implores Ecology to reconsider the cleanup alternatives and take a closer look at the removal option. The excavation of this landfill will provide compliance with the Treshold criteria and allow for the restoration and rehabilitation of the Hylebos creek complex.

Some thoughts about the B&L Woodwaste Cleanup Action remedy proposed by Ecology:

It is mystifying that this cleanup action has taken over 20 years to address leachate from a landfill that caused a 43% mortality rate with juvenile coho salmon and EP tox tests indicate are a dangerous waste.

Prevention of leachate generation and discharge of arsenic-laden groundwater to adjacent wetlands and ultimately to Hylebos Creek is preferential to groundwater containment at the edge of the refuse pile using a bentonite, slurry containment system. One of the remediation technologies to prevent leachate generation and migration into the aquifer and adjacent wetland includes installation of a landfill liner and re-installation of existing sump, leachate collection lines, and engineered cap. This remedy was rejected in the RI/FS process in 1993 and then again apparently in the preliminary screening process of remedial technologies for the current cleanup action due to its estimated expense. It is unclear however, why this particular remedy was not subject to public review during this action and eliminated as an alternative based on cost alone. Alternatively, all remedies that would prevent the generation of leachate or at least treat the landfill leachate would be preferential to the containment of groundwater.

Installation of a slurry wall limits functionality of the adjacent wetlands by blocking groundwater supply to the wetland and diminishes the wetland, as the floodplain for the Hylebos, as a discharge area for regional groundwater. The slurry wall technology is

unproven, requiring bench scale testing and further hydrogeologic and geotechnical investigation before a final design could be developed. Implementing the preferred remedy at this site compromises the success of planned relocation of Hylebos Creek and riparian restoration by a sister agency, WDOT. Consistency in remedies is needed by both WDOT and Ecology in addressing road mitigation and cleanup of the landfill. WDOT plans place the relocated channel within 200 feet of the arsenic plume, which will likely alter the shallow groundwater flow regime and stability of the plume. The section of Hylebos Creek currently closest to the plume near the I-5 culvert is 600 feet from the down gradient end of the wetlands plume. Investigations indicate arsenic speciation and redox is central to the fate, transport, and attenuation of arsenic at and adjacent to the landfill. Arsenic beneath the landfill and wetlands is primarily trivalent arsenic, which is highly mobile and toxic. Trivalent arsenic occurs under reducing conditions. Microbes at the landfill use up DO at site and generate anoxic, reducing conditions. Evidence suggests oxidation and adsorption onto solid surfaces is the controlling mechanism responsible for attenuation.

Site investigations indicate the overall health of the adjacent wetlands to be poor. Elevated surface water concentrations of inorganic arsenic exceed acute water quality standards. Pore water bioassays indicate degraded soil microbiologic functions. Seasonally high conductivities and hardness measured at stations nearest the wetland are believed also to contribute to high wetland impacts.
Existing wetland plants are not significant accumulators of arsenic so their usefulness for bioremediation is limited. [It is not clear if bioremediation with alternative wetland plant species would be more successful.]."

Ecology Response:

Regarding concern that the proposed remedy may cause a continuing arsenic release to wetlands:
The proposed remedy has been specifically designed to stop the release of arsenic from the landfill as quickly as possible, and to remove the previously-released arsenic from the wetlands and surrounding areas.

Regarding preference for waste pile removal:
Ecology also strongly holds this preference. As you will note from the Cleanup Action Plan (CAP) and GAE Report documents, waste removal was considered as a potential remedy. What has been discovered is that the proposed containment remedy results in the same degree of human health and environmental protection as the removal options. The cost of containment is over $20 MM. The cost of removal ranged from $65 – 150 MM. The less costly ($65 – 90 MM) removal options, where the waste is removed, but contaminated subsoils remained, still required a slurry wall for containment. Removal of waste and subsoils cost over $100 MM. The containment option achieves the same level of protection as removal options, albeit with ongoing need for operation and maintenance, thus it has been selected as Ecology's preferred remedy.

Regarding the matrix used to determine long term protectiveness being speculative at best:
Ecology has endeavored to prepare the Draft CAP as accurately and professionally as was possible. In addition to our in-house review, Ecology consigned with recognized engineering consulting firm (Hart Crowser/Dan McCarthy) in preparation of the CAP and the remedy comparison matrices. Further, Ecology consigned with nationally recognized

consultants (The Brattle Group) to cross check our list of remedies, decision making and cost estimation.

Regarding the need for inclusion of the Puyallup Indian Settlement Agreement as one of the CAP Federal ARARs:
As we have discussed by telephone; the Settlement Agreement includes provisions that the Tribe be kept a part of matters affecting Tribal lands, and requires protection of the fisheries resource, and the environment as a whole. But, since the Settlement Agreement does not include any Site cleanup standards or requirements beyond those already required by MTCA, it would not be suitable as an ARAR. Although the Settlement Agreement would not be considered an ARAR, Ecology would still be subject to applicable provisions. Ecology intends to remain in communication with you, within the spirit and intent of the Settlement Agreement, throughout the Site cleanup process.

Regarding the possibility that the proposed remedy may continue to adversely impact groundwater, and make the proposed DOT mitigation impossible:
As stated above, the proposed remedy has been specifically designed to stop the release of arsenic from the landfill as quickly as possible, and to remove the previously-released arsenic from the wetlands and surrounding areas. Ecology has been in communication with DOT to coordinate our projects in this region. Although each agency (DOT and Ecology) may have to modify our project approach to accommodate the other, it is our mutual goal to integrate these projects into a comprehensive and effective habitat enhancement and cleanup effort.

In response to the statement that it is mystifying that this project has taken over 20 years to address leachate toxic to juvenile Coho salmon:
Please recall that the original remedial action, consolidation and capping of landfill waste, was completed in 1993. This action resulted in greatly reducing the release of leachate into the surrounding ditch system, Surprise Lake Drain and Hylebos Creek. Whereas the pre-1993 ditch water was, as you point out, at dangerous waste concentrations, the current arsenic ditch concentration is not measurable above background at Surprise Lake Drain.

Regarding why installation of a landfill liner was not done in 1993, and why it isn't proposed as part of the current proposed remedy:
The Remedial Investigation and Feasibility Study used for selection and design of the 1993 capping remedy failed to recognize that some of the waste would (seasonally) be beneath the water table. This shortcoming led, regrettably, to the approval, with public review, of capping the mounded waste without a bottom liner. Even if a bottom liner had been installed at that time, the groundwater with elevated arsenic between such a liner and the low permeability soil layer, 17 – 20 feet below the ground surface, would likely still have caused a release of arsenic to the wetland.

The low permeability confining soil layer coupled with the existence of an upward area-wide groundwater gradient provide the capability of containing not only the waste, but also the 17 – 20 deep by 11 acre volume of contaminated subsoils and groundwater. It is for these reasons that installation of a bottom liner for the waste pile has been rejected in the current Draft CAP, in favor of using the low permeability soil layer for the same purpose.

Regarding the statement that a slurry wall would limit the functionality of the wetlands by blocking groundwater supply:
The diversion trench, planned for installation upgradient from the landfill, would allow regional shallow groundwater to flow around the slurry wall and into the wetland. Pumping from within the slurry wall and from the wetlands would be of relatively low volume. Moreover, once treated per NPDES Permit requirements, this extracted groundwater would be returned to the wetland. So the proposed remedy would cause very little to no net loss of water to the wetland.

Regarding the statement that slurry wall technology is unproven, and requires bench scale testing and further hydrogeologic and geotechnical investigation:
It is true that testing will be needed to determine the appropriate mix of bentonite, soils and other slurry wall components. Testing will be needed to determine the appropriate thickness of the slurry wall. This is the way that slurry walls are normally designed. Slurry walls are not exotic or "emerging" technology. They have been used extensively in EPA CERCLA Records of Decision at Superfund Sites nationwide for many years.

Regarding arsenic speciation between trivalent and pentavalent forms:
Comment noted. This information has already influenced the proposed End-of-Plume area in situ treatment remedy.

Regarding the paragraph noting the poor environmental health of the wetland:
Removal of arsenic from the wetland as proposed is intended to result in cleanup of the wetland, and restoration of its biological health.

Regarding the use of native or introduced plant species for phytoremediation of the wetlands:
As you are probably aware, phytoremediation was evaluated as a potential wetland remedy in the Draft CAP. As you know, arsenic is an element, which may be sequestered by certain plants which hyperaccumulate it. But removal of the arsenic would require harvesting of the plants and its concomitant, disruptive effect on the wetland biota. The harvested plants would then have to be treated off-site by landfilling, incineration or chemical digestion.

Comment 11. Dept. of Archaeology and Historic Preservation – Stephenie Kramer, and also from the Puyallup Tribe of Indians – Amber Santiago

Ms. Kramer wrote:
"We have reviewed the materials forwarded to our office for the proposed project referenced above. The area has the potential for archaeological resources. There is a National Register Eligible archaeological site (45PI488) within one-half mile of the project area on the same landform. We are writing to insure cultural resources have been considered during the planning of this clean-up, and that the Puyallup Tribe has been consulted. We were not able to find any records in our file documenting an archaeological assessment was performed for this parcel. If a study has been done, please forward to us immediately. If not, we recommend these resources be assessed prior to ground disturbing activities or fill placement.

If any federal funds or permits are involved Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations, 36CFR800, must be followed. This is a separate process from SEPA and requires formal government-to-government consultation with the affected Tribes and this agency.

These comments are based on the information available at the time of this review and on behalf of the State Historic Preservation Officer. Should additional information become available, our assessment may be revised. Thank you for the opportunity to comment on this project and we look forward to receiving the survey report. Please note that DAHP has recently revised our cultural resource reporting guidelines. The guidelines are available on our website at http://www.dahp.wa.gov/documents/ExternalFinalFINAL_000.pdf. Should you have any questions, please feel free to contact me at (360) 586-3083 or Stephenie.Kramer@dahp.wa.gov."

Ms. Santiago wrote (dated August 8, 2007, after the end of the comment period):
"We received a letter from the Department of Archaeology & Historic Preservation on July 20th regarding the above mentioned project. The subject property is located within the Usual and Accustomed area of our people. The term "Usual and Accustomed Areas" comes from the treaties that the tribes in this area signed with the federal government. Tribes reserved the right to fish, hunt and gather in our "usual and accustomed grounds and stations." These U&A areas have been adjudicated by the federal courts. As with all of these areas they are significant areas to our Tribe.

The project location is in very close proximity to several areas that have potential for possible archaeological discoveries. At this time, please recognize that historic sites may be exposed when such projects are undertaken. We concur with the Department of Archaeology & Historic Preservation Office, that you hire an archaeologist to oversee and evaluate the proposed location of your project and complete a cultural resource report. Any exposure of historical sites will need to be reported to my office immediately. Please keep us advised of any activity regarding this site.

The comments contained within this letter apply to cultural and historic resources exclusively. The Tribe encourages your agency to contact the Tribe's Natural Resources, Land Use, or other applicable departments and solicit those departments' input on your project. Other Tribal departments may have objections, concerns or input into your proposal above and beyond comments contained within this letter.

Thank you for your prompt response in this matter."

Ecology Response:

Regarding the requests to perform an archaeological assessment of the Site:
Ecology will ensure that an archaeological assessment be performed as part of the forthcoming Engineering Design phase of the project; and prior to commencement of any soil disturbing or filling work on Site. In the interim, Ecology would appreciate meeting with the Tribe and/or with DAHP to discuss all matters of significance to each party regarding cleanup of this Site.

Regarding the request for Ecology to contact other Tribal departments:

As you can see from the previous comment above, Ecology has been in contact with, and has received comments from, Bill Sullivan, Director of Natural Resources for the Tribe, and members of his staff.