

**STATE OF WASHINGTON
ENERGY FACILITY SITE EVALUATION COUNCIL**

**WASTEWATER DISPOSAL PERMIT EFSEC No. 2002-01
RESPONSE TO COMMENTS**

**BP CHERRY POINT COGENERATION PROJECT
BP West Coast Products LLC
4519 Grandview Road
Blaine, Washington 98230**

September 24, 2004

In November 2003, the Energy Facility Site Evaluation Council (EFSEC or Council) issued for public comment a draft State Waste Discharge (SWD) Permit for the proposed BP Cherry Point Cogeneration Project. A public hearing was held on December 9, 2003 in Blaine, Washington, and written comments were received through December 12, 2003.

EFSEC received the following six comment letters and oral comment from one individual:

- Eliana Steele-Friedlob
- Wendy Steffensen, RE Sources for Sustainable Communities
- Steve Irving, North Cascade Audubon Society
- Mike Torpey, BP Cherry Point Cogeneration Project
- John P. Williams
- Cathy Cleveland (oral and written comments)

A full copy of the comments is on file at EFSEC and is available upon request.

The department of Ecology, under contract to EFSEC, has reviewed the comments, and has provided a recommendation to the Council for changes to the permit. The responses to comments, and recommended permit changes, if any, are discussed below.

As stated in the November 7, 2003 fact sheet accompanying the draft SWD Permit, the wastewater discharges resulting from construction and operation of the proposed BP Cherry Point Cogeneration Project were assessed for compliance with applicable Washington state and federal water quality regulations and guidelines. Permit conditions were written to ensure that discharges would comply with all Washington state water quality standards.

In preparing the response to comments, EFSEC and the Ecology permit writer determined that the storm water discharges from the BP Cherry Point Cogeneration Project should be regulated by EFSEC through a National Pollution Discharge Elimination System (NPDES) Permit, rather than a state permit. A draft NPDES Permit for the stormwater discharges was prepared and issued for public comment. The permit changes applicable to stormwater conditions

recommended below have been incorporated into the NPDES permit. A separate response to comments has been developed for the NPDES permit.

When put into final form, the “State Waste Discharge” permit was also renamed to “Wastewater Disposal” permit to better reflect the fact that it is not a state permit issued by Department of Ecology, but a permit issued by EFSEC under its authority pursuant to Chapter 80.50. RCW.

Note: The use of the term “permit” in the comment summaries refers to the draft SWD Permit that was issued for public comment in November 2003. Comments have been summarized, and appear in italics below.

Comment from Eliana Steele-Friedlob and Wendy Steffensen, RE Sources (1):

1. *It is likely that the amount of oil and grease, sediment, and metals entering Terrell Creek will be greater than previously seen. Provide an analysis that shows that the allowed oil and grease, sediment, and metals concentrations will not have an effect on Terrell Creek and other wildlife in the watershed. Provide a monitoring plan for Terrell Creek that tracks changes in sensitive biota, suspended sediment, and sediment metal concentrations. If the stormwater discharge is shown to be detrimental to Terrell Creek and its biota, more effective stormwater treatment should be required and the adverse effects be reversed and mitigated.*

Response #1:

Because this is a new facility, site-specific stormwater characterization information is not yet available. The Department of Ecology's experience with other cogeneration plants is that the stormwater discharges from these facilities have relatively low concentrations of oil and grease, solids, and metals. On the basis of this experience, the Ecology permit writer believes that the stormwater discharge will meet water quality standards in Terrell Creek. These standards are designed to be protective of all biota in the receiving water and watershed.

The NPDES permit includes numeric limits for oil and grease and total suspended solids and a narrative requirement to comply with water quality standards. Source control best management practices (BMPs) and treatment BMPs are also required to limit the contamination of stormwater and prevent water quality violations.

The NPDES permit includes monitoring to provide tangible evidence of how well the permit requirements control pollutants in stormwater. If analysis shows that the stormwater discharge is violating water quality standards, enforcement action may be taken. There is also a general condition in the NPDES permit that will allow EFSEC to reopen the permit to address any adverse effects from the stormwater discharge.

Comments from Wendy Steffensen, RE Sources (2-8):

2. *It is stated that secondary containment for chemicals is large enough for the amount of chemical contained plus an allowance for rainfall. The weather is unpredictable and rainfalls are often deluges. It is recommended that the secondary containers have removable roofs as well. These roofs could be removed during times of loading and unloading, but would provide an extra insurance against chemical leaks, given our unpredictable weather and heavy rainfalls.*

Response #2:

We agree that the weather is unpredictable and that there can be heavy rainfall in the Cherry Point area. However, it is not a reasonable expectation to require BP to enclose their chemical storage tanks. There are various laws that regulate the storage of

petroleum products and chemicals from the oil spill prevention rules to the Uniform Fire Code. Generally these laws require secondary containment sized for the volume of the tank and at most the volume of the tank plus an allowance for rainfall.

3. *Although it is stated that semi-annual and annual tests shall be conducted for priority pollutant metals for process water and stormwater, this testing is not included in the Summary Table of Report Submittals.*

Response #3:

This requirement has been added to the Summary Table of Report Submittals in the NPDES permit, and was added to the Wastewater Disposal Permit.

4. *Since the cogeneration facility is new, semi-annual tests do not appear to be sufficient to gauge the amount of metals being discharged. More frequent testing should be required until there is a good baseline characterization. Increase the frequency of priority pollutant metals tests to quarterly in the first year and bi-annually in years thereafter until the baseline is known with certainty.*

Response #4:

BP has stated that the concentrations of several metals may change in the process wastewater depending upon the type of wood used in the cooling tower construction (see Comment #38). Because of this uncertainty, and to check the estimates and assumptions made for other constituents, the frequency of priority pollutant metal testing has been increased to quarterly the first year of the permit and to semi-annually in the years thereafter for both the process wastewater and the stormwater discharges. Testing for key metals that may be present in the cooling tower blowdown and metal cleaning wastes has also been added to the Wastewater Disposal permit. See the response to Comment #15. Depending upon the results of these analyses, EFSEC would consider reducing monitoring during the next Wastewater Disposal permit term.

5. *Include methods where concentration of sample is used for PBT analysis, where those test methods have been EPA approved.*

Response #5:

To our knowledge, neither the Environmental Protection Agency nor the Department of Ecology has established procedures for concentrating samples. There is no one method of concentrating wastewater effluent that is effective because of the variability of discharges and the variability of test methods. Concentrating samples can also change the nature of a sample. BP will be required to use test procedures that are approved for wastewater discharge monitoring, as shown in 40 CFR 136.

6. *How are the stormwater detention ponds sized? Are they sized adequately for treatment of large volumes of water, as occurs during sustained rainfalls?*

Response #6:

The stormwater detention ponds should be sized to meet the design requirements in the “Stormwater Management Manual for Western Washington” (August 2001) and any other local stormwater management design requirements. These requirements specify that stormwater ponds should be designed to treat rainfall from a 6-month, 24-hour storm, at a minimum. BP presented information about the design basis for the stormwater ponds in Appendix F (Attachment A) of their Application for Site Certification. The design of the stormwater system will be examined in detail when the engineering report and plans and specifications are submitted to EFSEC for review and approval per Condition G5 of the NPDES Permit.

7. *It appears that hydrotest water will be discharged to Terrell Creek. Prior to allowing hydrotest water to go to Terrell Creek, provide an analysis of its constituents, including chlorine and oil and grease and an analysis of the effect of the hydrotest water quality on Terrell Creek.*

Response #7:

Hydrostatic test water generated during construction of the cogeneration project will be sent to the BP refinery for treatment. Condition S2.D. of the draft Wastewater Disposal permit requires BP to submit a plan to EFSEC for characterizing hydrostatic test water at least 90 days prior to construction. The plan shall also specify criteria that will need to be met before the wastewater can be discharged to the refinery’s wastewater treatment system and disposal option(s) if these criteria are exceeded. The permit does not authorize hydrostatic test water to be discharged to Terrell Creek.

8. *In addition to the 10 and 15 mg/l limit placed on oil and grease, add a requirement that no sheen can be present on the stormwater before it is discharged to Terrell Creek.*

Response #8:

The 10 and 15 mg/l requirement is a technology-based standard for the design of oil/water separators. The design standard also addresses oil sheen. The “Stormwater Manual for Western Washington” published in August 2001 states that “Oil and water separators should be designed to remove oil and TPH down to 15 mg/l at any time and 10 mg/l on a 24-hr average, and produce a discharge that does not cause an ongoing or recurring visible sheen in the stormwater discharge, or in the receiving water.” (Volume V, Chapter 11).

A “no visible sheen” requirement is difficult to include in permits. Biological sheens are often mistaken for oil sheens and are prevalent when water is retained in a pond. A requirement has been added to the NPDES permit to check for a visible sheen in the stormwater discharge and, if observed, to investigate for a possible oil source, to make sure that the oil/water separator is operating properly, and to take corrective action as necessary.

Comments from Steve Irving, North Cascades Audubon Society (9):

9. *The wastewater from the cogeneration facility will be added to the refinery's wastewater and discharged into Puget Sound at Cherry Point. The cogeneration wastewater will have been heated and chemically altered. Dr. Kate Stenberg has expressed concern about the effect of the wastewater stream on the herring. The fact that herring stock have decreased precipitously in recent years was a major factor in the designation of Cherry Point as an Aquatic Reserve by the Department of Natural Resources. We should be very careful when we are considering increasing the temperature or chemical load of our waters in this area.*

Response #9:

As presented in the Fact Sheet for the draft SWD permit, an analysis was conducted of the metal concentrations in the cogeneration wastewater prior to and after combining with the refinery's process wastewater. This analysis took into account the removal efficiencies of the refinery wastewater treatment system and dilution factors authorized in the refinery's NPDES permit. It was determined that the metal concentrations of the combined discharge were within the State's Water Quality Standards for marine waters. A temperature analysis was also conducted of the combined discharge. It found that the temperature loading from the cogeneration facility was negligible when compared to the refinery process wastewaters and that the combined discharge would also be within water quality standards. The State Water Quality Standards are designed to be protective of biota in the receiving waters around the refinery discharge.

There is no evidence that the refinery effluent is causing the herring decline cited by the commenter. The Department of Ecology has been working with several other state agencies and stakeholders as part of the Cherry Point Technical workgroup to investigate the causes of the herring decline. The workgroup has identified a number of stressors and natural conditions that may be working independently or in concert with each other to cause the decline. Studies in the BP refinery NPDES permit and as part of the technical workgroup are intended to track down the cause of the decline. If there is a causal link found between the BP refinery's effluent and the decline in herring, action will be taken to remediate the problem.

Work is progressing in developing several herring bioassay test protocols to determine impacts from effluent on herring embryo and larval life stages. These protocols will be ready for use by early 2005. Herring bioassay testing is required in the BP refinery NPDES permit once the protocols are available and approved for use.

Comments from Mike Torpey, BP Cogeneration Project, on the Permit (10-28):

10. *In issuing the final State Waste Discharge Permit, EFSEC should clearly indicate that EFSEC and Ecology have determined that a National Pollutant Discharge Elimination System (NPDES) permit is not required for the stormwater discharges from the project site. EFSEC should document Ecology's reasoning for the public record.*

Response #10:

In checking the reasoning for the type of mechanism used to authorize the discharges from the proposed BP cogeneration facility, EFSEC has determined that a National Pollutant Discharge Elimination System (NPDES) permit should be issued rather than a state waste discharge permit for the stormwater discharge. A draft NPDES permit and fact sheet were developed and issued for public comment. None of the site-specific conditions of discharge documented in the draft SWD Permit were changed as a result of this determination.

11. *In the Summary Table and Condition S2.D, change "90 days prior to construction" to "90 days prior to discharge". Hydrostatic test water will not be generated until at least one and one half years into construction. Requiring the characterization 90 days prior to construction is far too early.*

Response #11:

The wording in the summary table and applicable Condition S2.D of the Wastewater Disposal Permit will be changed to "90 days prior to discharge" in the final permit.

12. *In the Summary Table and Conditions S2.A and S2.E, change "steady state operation" to "commercial operation". Commercial operation is defined as the point where the construction contractor officially turns over the operation of the facility to the developer to begin commercial power sales. This would be at the end of the equipment commissioning period and after completion of performance testing.*

Response #12:

The wording in the summary table and Conditions S2.A and S2.E of the draft SWD Permit will be changed to "commercial operation" in the Wastewater Disposal Permit.

13. *In the Summary Table and Condition S.5, change "starting operations" to "first fire". First fire is a defined point during the commissioning and performance testing period where natural gas is first introduced and burned in the first turbine.*

Response #13:

The wording in the summary table and Condition S5 of the Wastewater Disposal Permit was changed as follows:

For storm water systems, and the oil/water separators, the NPDES permit (condition S.6) requires a Treatment System Operating Plan (TSOP) for the construction phase and a TSOP for the operations phase. The TSOP for the construction phase shall be submitted to the Council for approval ninety (90) days prior to starting site preparation of the facilities. The TSOP for the operations phase shall be submitted to the Council for approval ninety (90) days prior to completing construction.

For process water systems the Wastewater Disposal permit would require that an Operations and Maintenance Manual be submitted 90 days prior to the first discharge of waste water.

14. *The Summary Table and Condition S8.E state that the stormwater pond shall be constructed prior to site preparation. The stormwater pond will be constructed as one of the first activities of the site preparation effort.*

Response #14:

The intent here is that the stormwater pond is in place prior to any soil removal or disruption that would lead to erosion and a discharge of solids.

15. *Condition S1.A requiring “no detectable amount of organic priority pollutants in the discharges” seems to be inconsistent with the requirement to have “no toxics in toxic amounts” in Section C of this condition for the stormwater discharges. Is this consistent with state and federal water quality standards?*

Response #15:

The requirement for “no detectable amount of organic priority pollutants in the discharge” is from the Pretreatment Standards for New Sources in the Steam Electric Power Generating Point Source Category, 40 CFR 423.17. These are technology-based pre-treatment standards that apply to waste streams from a cogeneration facility that are discharged to a publicly owned treatment works (POTW) or another facility for treatment. The Wastewater Disposal Permit has been revised to clarify that these requirements apply to pollutants in the cooling tower blowdown. The Wastewater Disposal Permit requirement for no discharge of PCBs was also clarified to apply to the process wastewaters to be discharged to the refinery.

When reviewing the federal effluent guidelines for steam electric power generating facilities, it was determined that several other pre-treatment standards apply to waste streams from the BP cogeneration facility that will be discharged to the refinery. These standards include a copper limit on chemical metal cleaning wastes and limits for

chromium and zinc in cooling tower blowdown. The pretreatment standards and monitoring to check the discharge for compliance with these standards has been added to the Wastewater Disposal Permit.

“No toxics in toxic amounts” is a narrative requirement in the water quality standards that applies to the stormwater discharge from the BP cogeneration facility. The footnote to this requirement in the NPDES Permit clarifies that Terrell Creek, the receiving water for the stormwater discharge, is the point for determining compliance with this standard.

16. *Condition S1.C. - The stormwater system will manage all uncontaminated rain water. Rain water collected in secondary containment will be routed to the stormwater system, unless it is determined to be contaminated.*

Response #16:

In previous communications, BP has indicated that: 1) stormwater that has the potential to collect process chemicals and lube oils will be routed to the process wastewater system and 2) stormwater that has a very low potential to be contaminated with oil or chemicals and that can also be checked prior to discharge (such as secondary containment around electrical breakers), will be routed to the stormwater system.

BP needs to have procedures in place to ensure that operators are making uncontaminated rain water determinations appropriately. The details of these procedures will be required to be included in the Operations Stormwater Pollution Prevention Plan, required by the NPDES Permit, which will be reviewed and approved by EFSEC.

17. *Condition S2.C – TSS limits for the stormwater discharge may be more restrictive than a turbidity limit based upon the freshwater water quality standards. However, a 25 mg/l TSS limit may be easier to monitor.*

Response #17:

A TSS limit was included in the NPDES permit because TSS is a good surrogate for turbidity and is easier to monitor.

18. *Please include the following statement in Condition S2.C – “The stormwater system was designed using the Western Washington Hydrology Model Version 2 (WVHM2). By using this model for the stormwater system design, the stormwater system is expected to be capable of meeting the required Stormwater Effluent Limitations. It is presumed that by using this model, that the stormwater system is sufficiently sized to meet discharge specifications.” It is our expectation, as well as the Department of Ecology’s, that by using the WVHM2, the stormwater system would be capable of meeting the required Stormwater Effluent Limitations.*

Response #18:

The stormwater detention ponds should be sized to meet the design requirements in the “Stormwater Management Manual for Western Washington” (August 2001) and any other local stormwater management design requirements. Without having the detailed pre-construction design drawings available, such a determination cannot be made. The design of the stormwater system will be examined in detail when the engineering report and plans and specifications are submitted to EFSEC for review and approval per Condition G5 of the NPDES Permit. This type of statement is generally included in the approval letter sent following review of the engineering report and plans and specifications.

19. *Please remove pH, flow, and temperature parameters from Condition S2.A. These parameters are important to the refinery for wastewater control but they should not be included for the purpose of monitoring the cogeneration plant process wastewater discharge compliance.*

Response #19:

These parameters have been removed from Condition S2.A of the Wastewater Disposal Permit. The refinery will be accountable under its NPDES permit for any impacts from the cogeneration wastewater that may adversely affect the refinery wastewater treatment system. In order to properly monitor those impacts, the refinery should be recording pH, flow, and temperature as process control parameters.

20. *The permit requires much more frequent monitoring of stormwater than is required under Ecology’s general permit for stormwater discharges. While the general permit requires quarterly monitoring, the draft permit for this site requires daily and weekly monitoring. No justification for the increased monitoring is provided. In the past, EFSEC has followed the general permit’s monitoring schedule and should do so in this case.*

Response #20:

The general permit for stormwater discharges provides coverage for discharges from a broad range of industrial activities. The choice of monitoring frequency for the general permit had to take into account cost for the smaller facilities (mom/pop facilities) within this range. This decision also factored in the number of opportunities available for a facility to sample their discharge to capture the first flush from a defined storm event. These monitoring requirements apply to “uncontrolled” discharges, not those from a detention pond.

The monitoring requirements in the NPDES permit for the BP cogeneration facility were intended to be more restrictive than the general permit to be protective of the wetlands and other sensitive wildlife in the Terrell Creek watershed and to monitor the stormwater discharge for potential sources of contamination. The frequency of monitoring in the NPDES permit is comparable to monitoring required at other recently approved

combustion turbine facilities (the Tenaska cogeneration facility and the Wallula Power Project).

The frequency of monitoring during construction was reduced from daily to weekly in the NPDES Permit. If the results of monitoring during this permit cycle are favorable, EFSEC could consider reducing monitoring during the next permit term.

21. *In Condition S2.E, change the minimum detection limit required for mercury from “0.2” to “0.25”.*

Response #21:

The “USEPA Approved Methods and Levels for the NPDES Program” (July 25, 2001) specifies the required minimum detection limits that need to be met for wastewater discharge monitoring. The minimum detection limit required for analyzing mercury using the cold vapor method is 0.2 ug/l.

22. *Condition S2.F, Flow Measurement – It is not clear if this requirement refers to process water or stormwater or both. As stated previously, we request that the process water flow parameter be removed. Also, there is no requirement in the permit to measure stormwater flow. Because the stormwater pond will be conservatively designed according to WWHM2 and built according to the design, then it is expected to achieve the required level of control.*

Response #22:

The requirement to measure process wastewater flow was removed from the Wastewater Disposal Permit per Comment #19. Since there is no other requirement to measure flow, this condition was also not included the NPDES permit.

23. *Condition S5. – This paragraph needs clarification to differentiate between O&M manuals required for the construction phase and O&M manuals required for operations phase. WAC 173-240-150 refers to Industrial Wastewater Facilities, which would cover the cogeneration project process wastewater system. The process wastewater O&M manual should be required before completing construction.*

Response #23:

WAC 173-240-150 applies to both stormwater and process wastewater treatment systems for industrial facilities. As indicated in Response #13 above, the following requirements would apply:

For storm water systems, and the oil/water separators, the NPDES permit (condition S.6) requires a Treatment System Operating Plan (TSOP) for the construction phase and a TSOP for the operations phase. The TSOP for the construction phase shall be submitted to the Council for approval ninety (90) days prior to starting site preparation of the

facilities. The TSOP for the operations phase shall be submitted to the Council for approval ninety (90) days prior to completing construction.

For process water systems the Wastewater Disposal Permit would require that an Operations and Maintenance Manual be submitted 90 days prior to the first discharge of waste water.

24. *Condition S7.A, last paragraph – Change “have” to “follow”. One site specific SPCC plan would be developed by the primary contractor. We would then expect all contractors to follow the site specific plan rather than develop their own individual plans.*

Response #24:

Condition S8.A. of the NPDES permit uses the wording “follow”.

25. *Condition S7.B, 6. – Change “implemented” to “submitted to EFSEC”. The operations SPCCP should be submitted to EFSEC six months prior to beginning commercial operations.*

Response #25:

Condition S8.B.) of the NPDES permit requires that an operations spill control plan shall be submitted six months prior to beginning commercial operation and must be followed throughout the term of the permit.

26. *Condition S8.E – This provision indicates that the stormwater ponds are to be lined. The project does not propose to line the ponds, and there is no requirement under state or federal law that they be lined.*

Response #26:

The Implementation Guidance for the State Ground Water Quality Regulations (April 1996, Publication #96-02) states that the Ground Water Quality Standards apply to any activity that has potential to contaminate ground water quality. Stormwater discharges are listed as one of the activities considered to have potential to contaminate. To demonstrate compliance with the Ground Water Quality Standards, the Department of Ecology offers two options – 1) be covered by a permit that contains ground water protection provisions or 2) complete a hydrogeologic study and develop a ground water monitoring plan.

The NPDES Permit and fact sheet do not include a requirement for lined ponds. BMPs and other permit requirements are expected to limit potential contamination of stormwater and to protect groundwater quality during construction and operations.

27. *Condition S8.E – Delete “when sediment accumulation exceeds an average depth of six inches or”. The ponds will be cleaned periodically, when TSS levels indicate that the*

pond is not capable of retaining solids. We would plan to leave between six and twelve inches in the pond after cleaning to ensure the integrity of the pond system.

Response #27:

The specific depth requirement was removed from the applicable condition in the NPDES permit. Wording was added to reference a specific depth in the engineering report and Treatment System Operating Plans for the stormwater detention ponds. The stormwater ponds will be designed for a specified storm event and will require that a certain volume is maintained to meet that design standard on an on-going basis. The stormwater ponds will be able to retain only so many solids before affecting the design capacity.

The NPDES permit requires that BP submit an engineering report with the details of the design and operation of the stormwater treatment system. As part of the engineering report, BP will be required to determine the maximum level of solids that will be allowed to meet the design standard for the ponds. The Treatment System Operating Plans for the stormwater detention ponds will also include procedures for periodically checking the sediment levels in the ponds and then cleaning the ponds when the maximum level of solids is reached.

28. *Condition G7. – It is not reasonable to require all engineering reports and detailed plans and specifications to be submitted 180 days prior to construction. Some documents, such as those related to the stormwater system for site preparation and construction should be submitted before construction. Documents related to the process wastewater system should be submitted before the cogeneration project wastewater system design is finalized. WAC 173-240-110 states that “All engineering reports and plans and specifications should be submitted by the owner consistent with a compliance schedule issued by the department or at least 30 days before the time approval is desired.”*

Response #28:

NPDES Permit Condition G5 states that “Prior to constructing or modifying any stormwater treatment or control facilities, an engineering report and detailed plans and specifications shall be submitted to the Council for review and approval.” Our reading of this condition is that BP will need to submit engineering reports and plans and specs 180 days prior to construction of the system in question versus prior to plant construction. Because BP will need approval of the engineering report and plans and specifications before they begin construction, EFSEC has required a longer lead time for review and approval of these documents. The permit condition does allow the Council to approve a shorter submittal timeframe.

Comments from Mike Torpey, BP Cogeneration Project, on the Fact Sheet (29-39):

29. *Industrial Process, page 5, list of chemicals – The volumes given are preliminary and all are open to change. Some volumes are incorrect. For example, the anhydrous ammonia tank is 12,000 gallons.*

Ammonia – change “2,000 to 6,000” to “12,000”.
Lubricating oil – add “6,200 gallon tanks”
Hydrogen – change “square” to “cubic”
Carbon dioxide - change “square” to “cubic”
Corrosion inhibitors – change “550” to “55”

Add: “Polyquaternary Amine Polymer, 350 gallon tank”.

Response #29:

The list of chemicals in the Fact Sheet for the NPDES permit has been revised to include the stated changes and to indicate that these are estimated quantities.

30. *Industrial Process, page 5, paragraph 3 – Change “process wastewater” to “stormwater”. Rainwater collected in secondary containment will be routed to the stormwater system after it is determined to be uncontaminated.*

Response #30:

This section was changed in the Fact Sheet to the draft NPDES permit to state that rainwater collected in secondary containment will be retained until it is determined that it is uncontaminated. This determination will be made following procedures outlined in the Permittee’s Stormwater Pollution Prevention Plan. See response to Comment #16.

31. *Proposed Process Water Management, page 6 – Add “Preliminary” to the title of the Water Balance Diagram.*

Response #31:

The title of the diagram in the NPDES Permit Fact Sheet was changed to include the word “Preliminary”.

32. *Proposed Process Water Management, page 6, paragraph 3 – Change “STG” to “cooling water”. The statement is not correct. “Circulating water” refers to cooling water that is circulated between the cooling tower and the steam turbine condenser. Some of this circulating water is purged from the cooling water system to control the concentration of solids in the water. Some of the cogeneration project process wastewater is also generated by the water that is purged from the boiler systems to remove solids.*

Response #32:

The wording in this sentence was changed to “cooling water” in the NPDES Permit Fact Sheet.

33. *Proposed Process Water Management, page 6, paragraph 1 – Reword the second sentence to “Approximately 510,000 pounds per hour of steam will be extracted from the*

steam turbine and routed to the refinery for the processing of crude oil.” A primary purpose of the cogeneration project is to intentionally export steam from the plant to the refinery. It is accurate to state that the excess and residual steam not used by the refinery is routed through the steam turbine.

Response #33:

This sentence was reworded as suggested in the Fact Sheet to the draft NPDES Permit.

34. *Proposed Stormwater Management, page 8 – Delete the second sentence. The provision indicates that the stormwater ponds are to be lined. The project does not propose to line the ponds and there is no requirement under state or federal law that they be lined. Contaminated stormwater will be routed to the refinery wastewater treatment system. The stormwater pond will receive only uncontaminated rain water.*

Response #34:

The reference to lining the stormwater ponds has not been included in the NPDES Permit. See the response to Comment #26.

35. *Proposed Sanitary Waste Management, page 8 – Change “2 gpm or approximately 2,880 gallons per day” to “1-5 gpm or approximately 1,400 to 7,200 gallons per day”.*

Response #35:

The wording in this sentence was changed as suggested in the Fact Sheet to the draft NPDES permit.

36. *Stormwater Discharge, page 10 – Remove references to lined ponds. The stormwater detention ponds will not be lined.*

Response #36:

The references to lined ponds have been deleted. See the response to Comment #26.

37. *Technology-Based Limits, Process Wastewater Discharge, page 13, first paragraph – Change “startup and steady state operation” to “commercial operation”.*

Response #37:

The wording in this section was changed to “commercial operation”.

38. *Water Quality Based Limits, Process Wastewater Discharge, page 13 – The last sentence in the first paragraph states that metal concentrations in the combined discharge will comply with state requirements. During the initial in-service period, substantial levels of copper could leach out of cooling tower wood. Note: Table 7.1-1 (Exhibit 6) states that copper levels could be as high as 0.291 mg/l due to initial leaching from Chromated*

Copper Arsenate (CCA) treated wood. We understand that CCA treatment is no longer permitted by the EPA. In its place, Alkaline Copper Quaternary (ACQ) type treatment is under consideration. This type of treatment does not use chromium or arsenic but uses a much higher concentration of copper. As ACQ is a new treatment methodology, the concentration of copper is not fully understood. Preliminary indications are that levels could be as much as 3 times higher (i.e., 1.0 mg/l).

Response #38:

A new condition has been added to the Wastewater Disposal Permit requiring BP to evaluate alternatives to chemically treated wood used in cooling tower construction and the cost of those alternatives in an engineering report submitted to the Council for review and approval. This condition also requires that treatment technologies for heavy metals in cooling tower blowdown also be evaluated. This information will be used by EFSEC to make a determination that “all, known, available, and reasonable methods of treatment” (AKART) including pollution prevention were considered for the metals in the cooling tower waste stream.

EFSEC will also analyze information collected during the permit cycle to ensure that metal concentrations in the combined refinery/cogeneration discharge comply with water quality standards. See the response to Comment #4.

39. *Water Quality Based Limits, Process Wastewater Discharge, page 13 – Delete “and the stormwater detention ponds will be lined.” in the second paragraph.*

Response #39:

This wording has been removed.

Comments from John P. Williams (40-52):

40. *The BP cogeneration project will increase the discharges of refinery effluent by 8.1% as an annual average. However, the peak flows from the cogeneration facility will be over 16% of the total refinery flows. On occasions when the cogeneration facility is discharging at maximum levels, its wastewater will add significant increases in the metals levels of the refinery effluent.*

Response #40:

The frequency of priority pollutant metal testing has been increased in the permit to account for the variability of pollutants in the discharge from the cogeneration facility. See the response to Comment #4. EFSEC will analyze data collected during the permit cycle to ensure that metal concentrations in the combined refinery/cogeneration discharge comply with water quality standards.

41. *The BP cogeneration project will concentrate, by boiling, the ambient contaminants and trace metals present in the influent water. The permit assumes 10-15 cycles for the*

cooling water and presents estimated levels of pollutants based on 15 cycles of Nooksack River water. However, it does not appear that the permit Fact Sheet contains calculations of the concentrations of trace metals and other contaminants when the influent is once-through cooling water from the Alcoa aluminum smelter. The Fact Sheet asserts that the cooling water is the same quality as the PUD (Nooksack River) water, however, due to the heating of the water during the once through cooling process, an increase in trace pollutants is likely.

Response #41:

The Fact Sheet for the SWD Permit indicated that the once through cooling water received from Alcoa is the same as the water withdrawn from the Nooksack River by the PUD, except that it is five degrees (Fahrenheit) warmer. The water is used at Alcoa for once through cooling of air compressors. The water is not concentrated in the once through cooling process, and it is therefore unlikely that any concentration of trace impurities would occur, prior to delivery of the water to the Cogeneration project.

It should also be noted that the BP Cherry Point Project cooling system (the cooling towers), cool the condenser water through an “evaporative cooling” process. Water from the steam turbine generator condensers enters the cooling towers at a temperature of 80.3 degrees Fahrenheit, and exits the cooling tower at a temperature of 61.9 degrees. Water losses in the cooling tower occur through evaporation, not boiling.

42. *The list of chemicals stored on site includes corrosion inhibitors, scale control agents, polymer, and zinc and phosphanate solutions. The Fact Sheet does not provide any detail about the make-up and ingredients of these materials or discuss to what degree these chemicals will be discharged into the effluent. Since these compounds may contain some metals, including zinc and possibly aluminum, iron, or other metals, these chemicals should be described in the Fact Sheet and limited in the proposed permit.*

Response #42:

Information about the chemicals to be used in the cogeneration process is described in more detail in Appendices D and F of the Application for Site Certification. The characterization information presented by BP and shown in Exhibit 6 of the draft SWD Permit Fact Sheet is an estimate of the chemical composition expected in the process wastewater streams as a result of using these chemicals in the cogeneration process. Also see the response to Comment #15.

43. *The Fact Sheet alleges that the BP cogeneration facility’s discharges of 1.45 lb/day of chromium will be completely treated at the refinery wastewater treatment plant. It is unlikely that 100% of the chromium (or any metal or contaminant) will be removed by the wastewater treatment system.*

Response #43:

The draft SWD Permit Fact Sheet does not state that chromium will be completely treated in the refinery wastewater treatment system. It states that an analysis was conducted to determine if metal concentrations in the combined refinery/cogeneration discharge were within water quality standards. Removal efficiencies calculated for metals in the refinery wastewater treatment system and dilution factors authorized in the refinery's NPDES permit were used in this analysis. The conclusion from this analysis was that metal concentrations, including chromium, would be well within water quality standards.

The concentrations of chromium predicted in the cogeneration process waste stream may be much lower with a change in the treated wood used in the cooling tower construction, as discussed in Comment #38. See the response to Comment #38.

44. *Even if the refinery wastewater treatment system removes all of the cogeneration facility's chromium, the system will be generating sludge which contains 100s of pounds of chromium annually. The methods of treatment and disposal of sludge containing elevated levels of highly toxic metals such as chromium should have been described in the Fact Sheet, so that reviewers can be assured that the environment is protected.*

Response #44:

Sludges from the primary treatment units in the refinery wastewater treatment system are listed hazardous wastes and must be managed in accordance with the State Dangerous Waste Regulations. Other sludges in the refinery wastewater treatment system must be tested regularly to determine if they too are hazardous and then managed accordingly.

45. *The Fact Sheet's implied assertion that 100% of the chromium will be removed at the refinery treatment plant is in conflict with Table 8.2-1, which shows that 1.45 lbs/day of chromium from the cogeneration facility will be discharged into the Strait of Georgia. This table also asserts that there is no chromium discharged from the refinery proper.*

Response #45:

See the response to Comment #43.

46. *Table 8.2-1 does not present the potential amounts of mass loading and the resulting potential concentrations of other trace metals present in the influent. For instance, copper in the cogeneration facility discharge will be 0.16 mg/l. The refinery effluent contains copper at over 13 ug/l and the marine acute standard is 2.9 ug/l. Even with copper concentrations in the cogeneration facility's discharge being diluted in the refinery wastewater and assuming the refinery wastewater treatment plant removes some of the copper, the mixing zone for the combined refinery/cogeneration facility effluent will contain toxic levels of copper before dilution.*

Response #46:

Mixing zones are areas where the water quality standards may be exceeded but are small enough so as not to interfere with beneficial uses. They are designed for chronic protection and to limit exposure times so as not to cause acute mortalities or interfere with the passage of aquatic organisms in the water body. Even though the numeric criteria may be exceeded for a short distance around a discharge, the probability of any mortality for an organism floating or swimming through the effluent is very small.

The concentrations of copper predicted in the cogeneration process waste stream may be much higher with a change in the treated wood used in the cooling tower construction, as discussed in Comment #38. See the response to Comment #38.

47. *Zinc at concentrations of about 112 ug/l will also be present in the effluent. Since the marine acute aquatic standard for zinc is 95 ug/l, the cogeneration facility's discharges will cause and contribute to toxic levels of zinc within the effluent mixing zone, absent a significant reduction in zinc levels in the refinery wastewater treatment system. The refinery wastewater already contains about 43 ug/l of zinc. Combined with the BP cogeneration facility zinc discharges, the refinery zinc discharges will be at about 153 ug/l, or more than 150% of the acute marine standard.*

Response #47:

An analysis was conducted to determine if metal concentrations in the combined refinery/cogeneration discharge were within water quality standards. Removal efficiencies calculated for metals in the refinery wastewater treatment system and dilution factors authorized in the refinery's NPDES permit were used in this analysis. The conclusion from this analysis was that metal concentrations, including zinc, would be well within the marine acute and chronic water quality standards.

48. *The ConocoPhillips NPDES permit fact sheet states that the risk-based arsenic criterion for marine for protection of human health is 0.14 ug/l. Since arsenic will be present in the cogeneration plant effluent at 170-350 ug/l after dilution by the refinery wastewater, arsenic will still be present at about 20 to 43 ug/l in the final discharges from the refinery. This is 140 to 300 times higher than the risk-based arsenic criterion for marine water for the protection of human health. This concentration of arsenic will likely not be diluted with an appropriate mixing zone to levels well below the human health marine criteria.*

Response #48:

The ConocoPhillips NPDES permit fact sheet also states that there is confusion in implementing the human health standard for arsenic because it differs so significantly from the drinking water standard of 50 ug/l and because the human health criteria are sometimes exceeded by natural background concentrations of arsenic in surface water and groundwater. A regulatory mechanism to deal with the issues associated with natural background concentrations of arsenic is currently lacking.

Therefore, the Department of Ecology's Water Quality Program decided to pursue a three-pronged strategy to address the issues associated with the arsenic criteria and not include effluent limitations based upon the human health criteria in permits at this time.

The concentrations of arsenic predicted in the cogeneration process waste stream may be much lower with a change in the treated wood used in the cooling tower construction, as discussed in Comment #38. See the response to Comment #38.

49. *The refinery already discharges 700 pounds of nickel annually, according to recent TRI information. That calculates to about 71 ug/l in the final effluent. The BP cogeneration facility's discharge will add another 11 ug/l to total about 82 ug/l in the final effluent. This concentration is ten times the marine acute criterion of 8.3 ug/l.*

Response #49:

See the response to Comment #47.

50. *Given the make-up of crude oil and the history of refinery operations, it highly likely that the refinery effluent does already contain these and other metals. If metals are already present at higher levels in the effluent, the exceedances of acute marine aquatic standards will be more pronounced.*

Response #50:

The refinery effluent does include several of the metals mentioned. See the response to Comment #47.

51. *Reductions in these levels of metals are especially important because of the sensitive pacific herring spawning grounds in the vicinity of the outfall. The herring population in the Cherry Point area has reportedly declined 80% in the last three decades. Some studies implicate the toxicity of the refinery wastewater in the high herring embryo mortality rates and the occurrence of mutagenic impacts and deformed skeletons found among the fry.*

Response #51:

See the response to Comment #9.

52. *Hydrostatic water will be tested to determine if it is suitable for disposal in the refinery wastewater system. Hydrostatic test water, presumably from the power plant and pipeline testing, can total millions of gallons and often contain elevated levels of metal, hydrocarbons, lubricants, and very high or low pH levels. This wastewater should have been characterized in the Fact Sheet, and if the refinery is unable to treat it, an alternative treatment scheme should have been described.*

Response #52:

It is preferable, if possible, to have actual characterization data from which to make decisions. Because of the potential variability of the hydrostatic test water, the permit includes a requirement that BP develop a plan with procedures to evaluate the characteristics of the test water batches and then make decisions about disposal options.

Comments from Cathy Cleveland (53-54):

53. *The State Waste Discharge Permit will allow 15 mg/l of oils to slip through the stormwater system and drain into Terrell Creek. This is unacceptable. Toxicity tests done on Whatcom Creek after the pipeline rupture showed much lower levels of gasoline and other hydrocarbons to be “safe” for salmon to return in the fall. These amounts, for survival of salmon eggs, fry, and juveniles, are mg/liter less than the amounts the permit allows.*

Studies conducted following the Exxon Valdez oil spill concluded that pink salmon eggs are sensitive to low concentrations of polynuclear aromatic hydrocarbons (PAHs) that characterize weathered oil. Western Washington University’s Institute of Environmental Toxicology and Chemistry confirms that sunlight changes the chemical bonds of hydrocarbons and makes them more toxic than they originally were. Salmon embryos exposed to PAH concentrations of 1.0 ppb demonstrated a twofold increase in mortality compared with unexpected embryos.

The National Marine Fisheries Services are tracing a link between contaminants associated with automobile oil and damage to the immune system of salmon. Studies in the Columbia River have shown that when hydrocarbon contaminants reach 1,000 ppb, no arthropods are found (a food supply for salmon) – a much lower ratio than 15 mg/liter.

Response #53:

The information that the commenter is referring to involves studies of oil or hydrocarbon product spills or releases and their affects on marine and fresh water biota. The oil/water separator proposed as part of the cogeneration facility’s stormwater treatment system is required to be designed to remove oil and other water-insoluble hydrocarbon products and settleable solids from stormwater runoff. The oil and grease being measured in the treated stormwater discharge is in the dissolved form rather than actual weathered oil or hydrocarbon product.

The oil and grease limit of 15 mg/l is a technology-based limit as discussed in the response to Comment #8. However, this concentration is also used as a benchmark value in the state and federal industrial general stormwater permits. The fact sheets for these permits state that discharges that do not exceed benchmark values are not likely to violate water quality standards.

The NPDES Permit for the BP cogeneration facility also includes a limit on toxics in the stormwater effluent that will restrict the discharge of PAHs.

54. *As part of the Endangered Species Act, the National Marine Fisheries Service (NMFS) has determined that the Chum, Chinook, and Steelhead salmon are at risk of extinction primarily due to human activities. The NMFS lists several categories of actions that are most likely to harm endangered salmon. Category B is the most relevant to Terrell Creek: Discharging pollutants, such as oil, toxic chemicals, radioactivity, carcinogens... into a listed species habitat. NMFS states that those who believe their activities are likely to injure or kill salmon are encouraged to immediately change that activity. This means to not divert stormwater into Terrell Creek because there is a potential to injure or kill salmon eggs, salmon fry, and juvenile salmon.*

The Maritime Heritage Fish Hatchery in Bellingham has studied the recurrent mortality of coho salmon. Hatchery water is supplied by Whatcom Creek. Mortality typically coincides with first-flush storm events, which suggests that toxic pollutants in the stormwater runoff to Whatcom Creek may be responsible.

We respectfully request that BP voluntarily stipulate to modify their plans for stormwater disposal and treatment. We ask that all stormwater and surface water go through the refinery wastewater treatment system and none of it go into Terrell Creek directly or indirectly. If BP will not voluntarily agree to be in compliance with the Endangered Species Act, we respectfully request that all stormwater and surface water on refinery/cogeneration property be required to go into the refinery wastewater treatment system.

Response #54:

BP did consider routing stormwater runoff from the cogeneration facility to the refinery's stormwater treatment system. However, concurrently with the review of the mitigation to wetlands impacts, the Army Corps of Engineers and the Department of Ecology's Wetlands Section preferred that surface water be kept in the Terrell Creek basin rather than discharged through the refinery to the Strait of Georgia. This would allow use of the water for beneficial mitigation measures to restore and enhance existing wetlands and habitat.

The limits on the stormwater discharge in the NPDES permit are designed to meet the State's Water Quality standards for discharges to fresh water. These standards were designed to be protective of all biota in the receiving water and watershed.