



SHAPIRO
& ASSOCIATES, INC.

MEMORANDUM

To: Irina Makarow, Energy Facility Site Evaluation Council

From: Marc Boulé, Shapiro and Associates, Inc.

Re: BP Cogeneration Facility 401 Certification

Date: October 29, 2003

1. INTRODUCTION

This technical memorandum has been prepared to evaluate the stormwater (construction and operation) and spill prevention elements, and the proposed wetland mitigation design included in the BP Cogeneration Facility Revised Application for Site Certification (ASC) (BP West Coast Products LLC 2002); Revised Wetland Mitigation Plan, BP Cherry Point (URS 2003a, as amended by 2003b); and other associated documents received during preparation of the BP Cogeneration Facility Environmental Impact Statement (EIS).

This memorandum presents the professional opinion of Shapiro and Associates, Inc. (SHAPIRO) as to how the BP cogeneration facility proposal meets applicable federal and state regulations and guidelines for stormwater and spill prevention and wetland mitigation. Should the Energy Facility Site Evaluation Council (EFSEC) decide to recommend approval of the proposal to the Governor of Washington State, this memorandum suggests language for additional conditions for site certification that would have to be met by the proponent to ensure compliance with applicable regulations and guidelines.

These recommendations were identified following review of the Revised ASC and the revised wetland mitigation plan.

2. WATER QUALITY

2.1 Objective

This memorandum evaluates the stormwater (construction and operation) and spill prevention elements of the Revised ASC (BP West Coast Products LLC 2002) for the proposed BP cogeneration facility and the associated Wetland Mitigation Plan (URS 2003a, as amended). This

evaluation is based on review of the Revised ASC and wetland mitigation documents, review of applicable water quality regulations and guidelines, and discussions with Washington Department of Ecology (Ecology) staff.

This analysis is based on the conceptual level of information provided in the Revised ASC (BP West Coast Products LLC 2002). Should EFSEC decide to recommend approval of this proposal to the Governor of Washington State, EFSEC would complete an engineering review of the stormwater and spill prevention plans and design documents submitted by the Applicant. These plans and documents would be subject to review and approval from other interested agencies such as Ecology, as well.

2.2 Authorities

Under 33 U.S.C. 1341, 16 U.S.C. 1456, and EFSEC's authority pursuant to Revised Code of Washington (RCW) 80.50 and 90.48.262, the ASC and associated documents were reviewed for the following:

- conformance with applicable water-quality-based, technology-based, and toxic or pretreatment effluent limitations as provided under 33 U.S.C. Sections 1311, 1312, 1313, 1316, and 1317 (FWPCA Sections 301, 303, 306 and 307);
- conformance with the state water quality standards as provided for in Chapter 173-201A WAC authorized by 33 U.S.C. 1313 and by Chapter 90.48 RCW, and with other appropriate requirements of state law; and
- conformance with the provision of using all known, available, and reasonable methods to prevent and control pollution of state waters as required by RCW 90.48.010.

2.3 Evaluation of Revised Application

2.3.1 Project Description

The proposed project includes construction and operation of a 720-megawatt (MW) natural gas-fired, combined-cycle cogeneration plant to generate steam and electrical power on a site approximately 6 miles northwest of Ferndale in Whatcom County, Washington. Steam and 85 MW of electricity would be provided to meet the operating needs of the BP Cherry Point Refinery. An additional 635 MW of electrical power would be produced for local and regional consumption. The cogeneration facility and all but one supporting element, including new natural gas and water supply connections, transmission lines, detention ponds, and construction laydown areas, would be located on Applicant-owned property. Four miles of Bonneville Power Administration (BPA) Transmission Line No. 2 within BPA right-of-way also may need to be upgraded if agreement on a Remedial Action Scheme (RAS) cannot be reached with Alcoa Intalco Works. The proposed cogeneration facility, including access roads, would cover 33.4 acres. Adjoining construction laydown areas would occupy 36.3 acres.

The proposed construction would permanently fill 30.5 acres of wetland and temporarily affect 4.9 acres of wetland. The proposal includes permanent fill of 1.7 acres of palustrine forested wetland and 28.8 acres of palustrine emergent wetland, and temporary fill of 4.9 acres of

palustrine emergent wetland (URS 2003). Mitigation would consist of hydrologic restoration and habitat enhancement of 85.7 acres of existing degraded palustrine emergent wetland on two mitigation sites just north of Grandview Road, along with enhancement (and potential conversion to wetland) of an additional 25 acres of upland in the same area. Hydrology would be restored by plugging drainage ditches and introducing stormwater from the project site.

If the Alcoa Intalco Works remains in operation, recycled, non-contact, once-through cooling water from the nearby Works would be supplied to the cogeneration facility's evaporative cooling system. If not, the BP cogeneration facility would use the water otherwise provided to Alcoa. In either case, the amount of industrial water that would be withdrawn from the Nooksack River would remain the same. The proposed project would be designed to provide redundant steam and electricity to meet existing and future needs at the BP Cherry Point Refinery and in the Pacific Northwest, as well as other areas where electrical energy is needed.

In addition to facilities at the BP cogeneration facility site, the project would require construction of a variety of other features, including the following:

- natural gas, potable water, sanitary wastewater, industrial wastewater, and steam pipeline connections with the BP refinery;
- recycled water pipeline connection within Alcoa Aluminum Works (if implemented);
- water pipeline from Whatcom County Public Utility District (PUD) supply line in Aldergrove Road across the refinery site to the cogeneration facility;
- transmission line interconnection with the BPA transmission corridor;
- possible upgraded BPA Transmission Line No. 2 in BPA's corridor from Custer substation to BP interconnection; and
- wetland mitigation sites north of Grandview Road, both east and west of Blaine Road.

During normal operation, the cogeneration facility would generate wastewater from the following activities:

- treatment of raw water and refinery condensate to produce high-quality boiler feedwater,
- collection of water and/or other minor drainage from various types of equipment and secondary containment areas,
- blowdown of water from the cooling tower,
- sanitary wastes from employee water use, and
- stormwater.

Wastewater from the first three activities would be directed to the refinery's wastewater treatment facility. After treatment, it would be discharged along with treated refinery wastewater to the BP marine outfall 001 at Cherry Point. The proposed project would increase the discharge flow by an average of approximately 190 gallons per minute (approximately 8% of existing refinery flow discharge). Sanitary waste would be combined with refinery sanitary waste and discharged to the Birch Bay Water and Sewer District treatment plant. Stormwater from the cogeneration facility would be treated onsite and discharged to a wetland mitigation area located immediately north of Grandview Road. Stormwater from the laydown areas would be treated

onsite and discharged to an unnamed tributary to Terrell Creek north of Grandview Road and west of the mitigation area.

2.3.2 Existing Conditions of Project Site

Surface Water Resources

Surface water resources of the proposed BP cogeneration facility site include the wetlands identified above and existing drainage ditches that ultimately discharge to Terrell Creek north of the site. Surface water resources along the Bonneville 230 kilovolt (kV) transmission line alignment include Terrell, Fingalson, and California creeks and a few unnamed tributaries to them.

Neither the Washington Department of Natural Resources (DNR) nor Whatcom County has determined the “type” for streams in the project vicinity. Using DNR Guidelines (WAC 222-16-030), Terrell Creek in the vicinity of the mitigation areas might be considered a Type 3 water. Terrell, Fingalson, and California creeks, and their unnamed tributaries crossed by the BPA Bonneville Custer to Intalco powerline corridor, are probably Type 4 or 5 waters. Under WAC 173-201A-Terrell, Fingalson and California creeks (WRIA 1) are classified as Class AA (Excellent) because they are tributaries to the Strait of Georgia, a Class AA water of the state. The Strait of Georgia at the BP (previously Arco) outfall has been identified on the current state of Washington 303(d) list as exceeding state water quality standards for sediment bioassay.

2.3.3 Impacts to Water Resources

Development of the proposed cogeneration plant and laydown areas would permanently fill 30.5 acres of wetland and temporarily affect 4.9 acres of wetland. The proposal includes permanent fill of 1.7 acres of palustrine forested wetland and 28.8 acres of palustrine emergent wetland, and temporary fill of 4.9 acres of palustrine emergent wetland (URS 2003a).

The proposed 230 kV transmission line interconnect would entail the fill of 0.40 acre of wetland for maintenance roads and tower construction (Radian and Dames and Moore 1999). A U.S. Army Corps of Engineers (Corps) Section 404 permit has been issued for this work.

Upgrade of the existing BPA Transmission Line No. 2 to the Custer substation would span Terrell, Fingalson, and California creeks. Exact locations of the towers have not yet been determined, but, while most wetlands could probably be avoided, some fill in wetlands would be expected.

2.3.4 Stormwater Management

Stormwater management considerations for the BP cogeneration facility include site construction and permanent stormwater management. Protection of water quality is regulated by Ecology under Chapter 90.48 RCW and the Federal Clean Water Act (Section 402). EFSEC has been delegated by the U.S. Environmental Protection Agency (EPA) to issue General National Pollutant Discharge Elimination System (NPDES) permits for stormwater discharges from

facilities under its jurisdiction. Stormwater management must follow Ecology's Stormwater Management Manual for Western Washington, August 2000 Final Draft (SWMM) or latest edition. A detailed Stormwater Pollution Prevention Plan (SWPPP) and a detailed Temporary Erosion and Sediment Control (TESC) Plan would be prepared as a requirement of the NPDES permit for the construction and operation phases of the project, natural gas line, transmission line, and offsite utilities. That NPDES permit would be under the state waste discharge baseline general permit for stormwater discharges associated with industrial activities (40 CFR 423). Best management practices (BMPs) must follow requirements set forth in the SWMM.

The Revised ASC for the proposed BP cogeneration facility presented a conceptual grading and drainage plan and description of stormwater management during construction and operation. The Applicant proposes to prepare and submit the final design of stormwater management to EFSEC for approval prior to project construction, should the project be approved by the state of Washington.

Detention Facility

The Applicant would design and size the detention facilities to conform to the SWMM and the Western Washington Hydrology Model version 2. The Applicant also proposes to construct the permanent detention pond on the project site prior to any other site construction activities. The detention pond would then be used as a construction-phase sediment trap. No mention is made in the ASC as to whether the pond would be cleaned of sediment for permanent operation as a detention/wet pond upon completion of site construction. As recommended in the SWMM, the detention facilities should be constructed consistent with requirements of the state wastewater discharge permit.

Drainage Ditches

The Design Basis Operational Stormwater Control System (Figure 1B, in Appendix A) of the Revised Cogeneration Project Compensatory Mitigation Plan, dated April 21, 2003 (URS 2003a), shows both existing and proposed drainage ditches at the plant and laydown area sites. A new ditch on the east side of the plant will carry flow from upslope to the existing ditch along the south side of the plant where it flows west to Blaine Road and then north to Grandview Road. Flows then enter a culvert and flow northward in a roadside ditch to Terrell Creek. This system will intercept all flows presently moving unhindered across the plant location. Upon completion of construction, a portion of the flow in this system will be redirected to the western restoration area. Perimeter ditches on the cogeneration facility site will carry flows to the detention pond. In the laydown areas, new ditches will carry flows north and then west to a detention pond in the northwest corner.

Spill Prevention

The Revised ASC discusses spill prevention and control (Sections 3.3.5 and 3.16.2) and states that an SWPPP would be prepared for the project. A spill prevention, control, and countermeasures plan (SPCCP) would be a component of that SWPPP (the SPCCP is usually a separate document). ASC Appendix D, Section 9.2 describes liquid storage secondary

containment strategies at the proposed BP cogeneration facility. Ecology regulations state that the spill containment area must be a minimum of 110% of the volume of the tanks within the diked area.

2.3.5 Monitoring

BP has not proposed any monitoring of wastewater discharge. The draft State Waste Discharge Permit mandates effluent limitation for the oil/water separators and the stormwater discharges. It also mandates a monitoring schedule for discharge flowing to the "Terrell Creek wetlands." This implies the discharge from the BP cogeneration facility site and not necessarily the laydown areas.

2.4 Recommended Water Quality Certification Conditions

Based on SHAPIRO's review of the Revised ASC for the proposed BP cogeneration facility and should EFSEC decide to recommend approval of this proposal to the Governor, the conceptual information provided in the above document is adequate for a positive recommendation by EFSEC, provided the agreement for site certification contains the following additional conditions:

A. No Impairment of Water Quality

- A1. Certification of this proposal does not authorize the Applicant, BP, to exceed applicable state water quality standards (Chapter 173-201A WAC) or sediment quality standards (Chapter 173-204 WAC). Water quality criteria contained in WAC 173-201A-030(1) and WAC 173-201A-040 shall apply to this project, unless otherwise authorized by EFSEC. Nothing in this certification shall absolve the Applicant, BP, from liability for contamination and any subsequent cleanup of surface waters or sediments occurring as a result of project construction or operations.

Georgia Strait at the BP (previously Arco) outfall has been identified on the current 303(d) list as exceeding state water quality standards for sediment bioassay. This proposed project shall not result in further exceedences of this standard.

B. Timing Requirements

- B1. This order shall be valid during construction and long-term operation and maintenance of the project.
- a) The Applicant shall reapply with an updated Joint Aquatic Resources Permit Application (JARPA) if five years elapse between the date of the execution of the Site Certification Agreement (SCA) and completion of the project construction and/or discharge for which the federal permit is being sought.
- b) The Applicant shall submit an updated application to EFSEC, with a copy to Ecology, if the information contained in the Revised JARPA submitted April 23, 2003, is altered by facility relocation submittals to the federal agency and/or state agencies.

- c) Any future construction-related activities that could impact waters of the state at this project location, emergency or otherwise, that are not defined in the Revised JARPA submitted April 21, 2003, or have not been approved in advance in writing by EFSEC are not authorized. Such proposed actions shall be reviewed with EFSEC for approval prior to implementation.

B2. In-water work is subject to a fishery closure window described in Washington State Department of Fish and Wildlife's (WDFW) Hydraulic Project Approval. Work in or near the water that may affect fish migration, spawning, or rearing shall cease immediately upon determination by WDFW that fisheries resources may be adversely affected.

C. Notification Requirements

C1. Notification shall be made to EFSEC for the following activities:

- a) a pre-construction meeting at least 30 days prior to beginning construction to review environmental permits and the mitigation plan,
- b) at least 10 days prior to starting construction at the project site or at each of the wetland mitigation sites, and
- c) within seven (7) days after completion of construction at the project and each of the wetland mitigation sites.

C2. The Applicant shall ensure that all appropriate project engineer(s) and the lead contractor(s) at the project site and/or mitigation sites have read and understand relevant conditions of this order and all permits, approvals, and documents referenced in this order.

- a) The Applicant shall provide to EFSEC a signed statement (see Attachment #1) from each project engineer(s) and lead contractor(s) that they have read and understand the conditions of this order and the above referenced permits, plans, documents, and approvals.
- b) These statements shall be provided to EFSEC no less than seven (7) days before each project engineer or lead contractor begins work at the project or mitigation sites.

C3. SHAPIRO recommends that the Applicant provide a status report monthly describing the condition of stormwater controls and BMPs, any field revisions to the SWPP or TESC and the reasons why they were necessary, and the results of stormwater monitoring required in the State Waste Discharge Permit.

D. Stormwater Management

D1. The Applicant shall submit stormwater design plans and drawings at 60% and 95% completion to EFSEC and Ecology for review and approval. These drawings shall address the items defined in Sections 1.3.4, 1.3.5, and 1.3.6 above. The plans shall include design features and a contingency plan for system failure.

- D2. SHAPIRO recommends parking lot oil and grease traps be constructed off-line to reduce the potential for flushing that occurs to in-line catch basins during high flow conditions.
- D3. SHAPIRO recommends grass-lined swales be included in the final stormwater design to optimize stormwater treatment efficiencies because all stormwater will be directed to a tributary of Terrell Creek or to mitigation wetlands and then to Terrell Creek.

E. Project Monitoring

- E1. Monitoring for this project shall be completed as described in the Washington EFSEC's Site Certification Agreement with the following changes and clarifications:

- The Applicant shall establish a water quality monitoring station at the point of discharge from the stormwater detention ponds to the wetland mitigation site during construction and operation of the project, as noted in the State Waste Discharge Permit. Because laydown areas 1, 2, and 3 drain directly to a tributary of Terrell Creek, SHAPIRO recommends that a water quality monitoring station also be established at the outlet of the laydown areas' detention pond for use during construction. Subsequent to project completion, responsibility for review of this monitoring should be transferred to Ecology through an NPDES permit.

- E2. Stormwater monitoring and reporting:

- a) During construction, the Applicant shall comply with the monitoring and reporting conditions within the State Waste Discharge Permit issued for this project.
- b) After construction, the Applicant shall monitor stormwater runoff to determine the success of the stormwater treatment systems. Water quality monitoring and visual observations shall be conducted for the first two years of plant operation and at least monthly during storms or during active runoff into the stormwater treatment systems. If, during or after the initial monitoring effort, results of monitoring show a pattern of exceedences of state water quality standards, additional monitoring may be required. Sampling and testing shall be done in accordance with 40 CFR and Puget Sound Estuary Protocols, U.S. EPA's NPDES Storm Water Sampling Guidance Document (EPA 833-B-92-001) or equivalent.
- c) In addition to the above, the Applicant shall submit a stormwater monitoring plan to EFSEC for review and approval 60 days before the project becomes operational. This plan shall include the following information:
 - name and phone number of person(s) responsible for monitoring;
 - map of sample locations;
 - upstream measurements for turbidity in the receiving water;
 - discharge points prior to stormwater mixing with receiving water;
 - parameter(s) to be monitored, including:
 - temperature,
 - pH,
 - total suspended solids (TSS),

- metals (copper, lead and zinc),
 - turbidity,
 - flow volume, and
 - total petroleum hydrocarbons;
- d) sample method; and
- e) sample frequency.

As noted in the State Waste Discharge Permit, all monitoring data shall be prepared by an accredited or registered laboratory per WAC 173-50

E3. SHAPIRO recommends that documentation of annual maintenance and cleaning of catch basins and oil and grease traps be included with the annual monitoring report.

F. Construction Conditions

F1. The Applicant shall comply with the State Waste Discharge Permit (40 CFR 423) to be issued by EFSEC.

F2. Construction Stormwater and Erosion Control

- a. Work in or near waters of the state shall be done so as to minimize turbidity, erosion, and other water quality impacts. Construction stormwater, sediment and erosion control BMPs suitable to prevent exceedences of state water quality standards (e.g., hay bales, detention areas, filter fences, etc.) shall be in place before starting any clearing, filling, and grading work at the impact sites, and shall comply with all requirements of the State Waste Discharge Permit, now or in the future.
- b. Prior to clearing and grading in wetlands, the wetlands adjacent to the project site and natural gas alignment shall be protected from construction impacts. Construction fencing (brightly colored mesh fencing) shall be installed at the edge of clearing within 50 feet of the existing wetlands to be protected. This fencing shall be completed prior to clearing. All project staff shall be trained to recognize construction fencing or flagging that identifies wetland boundaries. Equipment shall not be moved into or operated in wetlands that are not authorized to be filled.

F3. During clearing and filling at the cogeneration facility site, gas pipeline alignment, electrical transmission corridor, and utility lines, the Applicant shall take all necessary measures to minimize the alteration or disturbance of existing wetland and upland vegetation.

F4. All construction debris shall be properly disposed of on land more than 200 feet from any waterway so that it cannot enter a waterway or cause water quality degradation to state waters.

F5. All excess excavated material shall be disposed of above the 100-year floodplain and shall be contained to prevent its reentry into waters of the state.

- F6. At the completion of construction, hydroseeding may be used to stabilize slopes and soils until other required planting is completed. Hydroseed mix shall consist of native, non-invasive, or annual plant species only.
- F7. Wash water containing oils, grease, or other hazardous materials resulting from wash down of equipment or working areas shall be contained for proper disposal in the BP refinery wastewater treatment facility, and shall not be discharged into state waters or storm drains that drain to waters of the state. The Applicant shall establish and maintain a designated area for washing equipment and vehicles so that wash waters are managed and treated to avoid a violation of water quality standards.
- F8. Applicant shall provide notice in writing to EFSEC at least three (3) working days prior to the start of placing fill in wetlands or other waters of the state.
- F9. The Applicant shall ensure that fill placed for the proposed project does not contain toxic materials in toxic amounts.
- F10. The applicant shall include BMPs for all in-water and over-water construction activities in the SWPPP and SPCCP for this project.
- F11. The Applicant shall periodically inspect and maintain all erosion control structures. Inspections shall be conducted no less than every seven (7) days from the start of the project to final site stabilization. Additional inspections shall be conducted after rainfall greater than 0.5 inch per 24-hour period, to ensure erosion control measures are in good working condition. These inspections shall be conducted within 24 hours after the rainfall. Any damaged structures shall be addressed immediately. Inspections shall be documented in writing and available for EFSEC's review on request.
- F12. The Applicant shall follow and implement all specifications for erosion and sediment control specified in the SWPPP and/or TESC Plan as required in the State Waste Discharge Permit. The erosion control devices shall be in place before starting construction and shall be maintained so as to be effective throughout construction. Some adjustments to planned erosion and sediment control may be allowed in order to meet the water quality standards.
- F13. The Applicant shall monitor for water quality during construction as required by the State Waste Discharge Permit. Results shall be reported as specified in the approved SWPPP.
- F14. Machinery and equipment used during construction shall be serviced, fueled, and maintained on uplands to prevent contamination to surface waters.
- F15. All excess excavated material shall be disposed of above the ordinary high water mark and shall be contained to prevent its reentry into waters of the state.
- F16. Turbid water generated from construction activities, including turbid dewatering water, shall not be discharged directly to waters of the state or the mitigation wetlands. Turbid

water shall be pumped to a treatment facility to allow the fine materials to settle and then discharged per the NPDES permit requirements or transferred offsite to a treatment facility.

- F17. Dewatering water that is not turbid may be discharged directly to the stormwater treatment system provided that:
- a) the water has not been in contact with raw and “uncured” concrete or other harmful materials, and
 - b) the water will meet all water quality standards at the point of discharge.
- F 18. Construction of the cogeneration facility and the laydown areas will be monitored to ensure that wetland impacts are avoided and minimized.

G. Operational Conditions

- G1. Chemical storage tanks and equipment shall have secondary containment to prevent spills to the stormwater system.
- G2. An SPCCP for fuel, oil products, and hazardous chemicals or substances stored and used at the site shall be developed and implemented in accordance with the requirements of Sections 311 and 402 of the Clean Water Act and the attendant regulation 40 CFR 112.
- G3. Stormwater discharge in the wetland mitigation outlet trench should be monitored according to the frequency and requirements established in the State Waste Discharge Permit (No.WA-ST-7441). Since discharge from the laydown areas detention pond would flow directly to an unnamed tributary of Terrell Creek, SHAPIRO recommends that discharge from detention pond No. 2 be monitored similarly to discharge from detention pond No. 1 that would flow to the mitigation areas. At a minimum, stormwater discharge shall be required to be monitored for oil and grease, TSS, pH, and priority pollutant metals. If stormwater does not meet Class AA standards, it shall be discharged to the refinery’s wastewater treatment system.

H. Emergency/Contingency Measures

- H1. In the event the Applicant is unable to comply with any of the permit terms and conditions for any reason, the Applicant shall:
- Immediately take action to stop, contain, and clean up unauthorized discharges or otherwise stop the violation and correct the problem.
 - Notify EFSEC and Ecology of the failure to comply. Spills shall be reported immediately to EFSEC and Ecology’s 24-hour spill response team at (425) 649-7000, within 24 hours to Ecology’s Alice Kelly at (425) 649-7145, and within the next business day to EFSEC.
 - Submit a detailed written report to EFSEC within five (5) days that describes the nature of the violation, corrective action taken and/or planned, steps to be taken to

prevent a recurrence, analytical results of any samples taken, and any other pertinent information.

Compliance with this condition does not relieve the Applicant from responsibility to maintain continuous compliance with the terms and conditions of this order or the resulting liability from failure to comply.

- H2. Fuel hoses, oil drums, oil or fuel transfer valves and fittings, etc., shall be checked regularly for drips or leaks and shall be maintained and stored properly to prevent spills into state waters. No refueling of equipment shall occur over, or within 50 feet of, wetlands.

I. General Conditions

- I1. This certification does not exempt the Applicant and is provisional upon compliance with other statutes and codes administered by federal agencies.
- I2. The Applicant shall be out of compliance with the SCA if the project is constructed and/or operated in a manner not consistent with the Revised Application for Site Certification, the Site Certification Agreement, or as otherwise approved by EFSEC. Additional mitigation measures may be required through other federal requirements.
- I3. Any future action at this project location, emergency or otherwise, that has not been approved by EFSEC is not authorized. All future actions shall be approved in advance by EFSEC.
- I4. Copies of this Site Certification Agreement shall be kept on the job site and readily available for reference by EFSEC personnel, the construction superintendent, construction managers and foremen, and state and local government inspectors.

To avoid violations or noncompliance with this order, the Applicant shall ensure that project managers, construction superintendents, and other responsible parties have read and understand relevant aspects of this order, the NPDES permit, and any subsequent revision or EFSEC-approved plans.

- I5. The Applicant shall provide access to the project site and all mitigation sites upon request by EFSEC personnel for site inspections, monitoring, necessary data collection, or to ensure that conditions of this order are being met.
- I6. EFSEC is authorized to issue additional conditions if EFSEC determines further actions are necessary to implement the water quality laws of the state.

3. WETLANDS

3.1 Objective

This portion of the technical memorandum has been prepared to provide an evaluation of the proposed wetland mitigation design included in the April 2003 Revised ASC for the BP cogeneration facility. The documents reviewed include the Revised ASC , April 2003, including all of Appendix H and Revised Wetland Mitigation Plan, BP Cherry Point (URS 2003a, as amended by 2003b) and other associated documents received during preparation of the BP Cogeneration Facility EIS.

The mitigation design has been reviewed following standard procedures used by Ecology. Each element of the design has been assessed using publications (listed below) prepared by Ecology for the regulation and rating of wetlands and the design of mitigation plans. The objective of this part of the technical memorandum is to determine whether individual elements of the mitigation plan adequately conform to Washington State standards for water quality certification under Section 401 of the Clean Water Act.

This part of the memorandum is divided into two sections: an evaluation of the proposed wetland mitigation design and a set of additional conditions under which the plan would be adequate for certification under Section 401 of the Clean Water Act.

3.2 Evaluation of Wetland Mitigation Plan

3.2.1 Project Description

The BP cogeneration facility would be located in Whatcom County, Washington. The proposed 33.4 acre site includes 11.88 acres of palustrine emergent and palustrine forested wetland. The natural gas-turbine cogeneration facility would be constructed on this site. Approximately 36.3 acres on the adjacent refinery site would be converted to laydown areas to support project construction. Of this, approximately 18.6 acres are palustrine emergent and palustrine scrub-shrub wetlands. A water supply pipeline would be constructed from the PUD supply line located adjacent to Aldergrove Road to the cogeneration facility. The proposed project also would contain power transmission line components, including a 0.8-mile-long interconnect to the nearby Custer-Intalco Bonneville Transmission Line No. 2 and an upgrade of approximately 4 miles of that Bonneville line. An existing gas pipeline on the refinery would be connected to the cogeneration facility. Approximately 600 feet of new gas pipeline would be necessary to connect the existing pipeline to a compressor station and back to the cogeneration facility.

Neither the project description in the February 2003 wetland delineation report nor the April 2003 wetland mitigation plan present the entire project as described in the Revised ASC. Both exclude the BPA transmission line corridor, while the wetland mitigation plan gives a brief description of the transmission line interconnect corridor wetlands and wetland impacts, noting that Corps permits already have been issued for this work. (Whatcom County permits have not been issued.) A brief description of wetlands in the BPA transmission line corridor is provided in Environmental Resources Report (URS 2003c).

The proposed wetland mitigation design has been presented as compensation for 30.5 acres of permanent wetland impacts at the facility site and laydown areas and restoration for 4.9 acres of temporary wetland disturbance. Additional impacts associated with the reconstruction of the BPA transmission line have not yet been determined.

Site Assessment for Existing Conditions of Project/Impact Site

The site assessment provided in the wetland mitigation plan and associated documents includes the following components:

- wetland delineations of the project site, the mitigation area, and the 0.8-mile transmission line interconnect corridor;
- wetland identification in the BPA transmission line corridor;
- functions provided by existing wetlands at the project site and in the mitigation areas;
- ratings of wetlands; and
- impact summary of area and functions.

Buffers at the project site are discussed briefly as “Upland Plant Communities” (BP West Coast Products LLC 2002) and in the revised mitigation plan (URS 2003a).

Wetlands on the project site were rated using Ecology’s (1993) *Washington State Wetland Rating System* (BP West Coast Products LLC 2002) and Ecology’s (1999) *Methods for Assessing Wetland Functions* (WFAM). The latter also was used to assess wetland function impacts on the project site and function gains on the mitigation site (URS 2003a).

Wetland Delineation

The wetland delineation of the project site and laydown areas was conducted using the Corps’ 1987 Wetland Delineation Manual (Environmental Laboratory 1987). The wetland delineators also referred to the 1997 Washington State Department of Ecology Wetlands Identification and Delineation Manual (Ecology 1997). Following a site visit, the wetland delineation was confirmed by the Corps on October 18, 2002. The final revised delineation (BP West Coast Products LLC 2002) was included in Appendix H of the Revised ASC and summarized in the final EIS. A total of nine wetlands or wetland complexes were identified within the project and laydown areas. They varied in size from 0.14 acre to 13.41 acres. A few, notably Wetland D, extend far offsite and their entire extent was not delineated. Most of the wetlands were identified as palustrine emergent, although three also had a forested component. The majority of the wetlands to be filled are mixed grasslands, many dominated by the invasive reed canarygrass (*Phalaris arundinacea*). Willows (*Salix* spp.) are present in the laydown area wetlands, but do not dominate the communities, while 2.5 acres of impact area are dominated by hybrid poplars (*Populus* sp.).

Wetland Functions

Wetland functions on the project site and laydown areas are described by Golder (BP West Coast Products LLC 2002) using WFAM and the results are presented in Appendix H of the Revised ASC. The WFAM uses an array of quantitative information collected in the field to calculate an index for each of 15 wetland functions. The index ranges in value from 1 to 10. Functions generally can be consolidated as habitat, groundwater recharge, surface water quantity influence, and water quality influence. Generally, wetlands on the site rate low, less than 4, for most habitat functions, with the exception of primary production and export, for which all rate greater than 5 and as high as 10. Groundwater recharge was rated low in most wetlands, but moderate in a few. Surface water influence was generally rated low, except for wetland I, the only wetland that actually contains a surface water channel. Water quality functions were rated low to moderate in all wetlands.

Wetland Ratings

Project site and laydown area wetlands were rated using Washington State (Ecology 1993) methods (BP West Coast Products LLC 2002). Guidance from the Washington State Wetlands Rating Guide – Western Washington (Ecology 1993) includes the following information relative to segmenting contiguous wetland areas for rating purposes:

- hydrologic regime;
- size, configuration, and distribution of the wetlands;
- presence of constructed structures; and
- the assignment of dual ratings. Dual ratings should not be applied to Category 2 and Category 3 wetlands (e.g., a wetland area cannot receive a Category 2/3 rating). Only Category 1 wetlands under certain conditions, such as a forested wetland, can be segmented to receive dual ratings.

Information provided by the Applicant in Appendix H of the Revised ASC and presented in the Draft EIS (EFSEC and BPA 2003) identified all wetlands on the project site and in the laydown areas as Category 3.

Wetland Buffer Size and Condition

Uplands in the project site are briefly described in Appendix H of the Revised ASC. Many of the wetlands on the site are an isolated and scattered matrix within a mixed grassland and forested system. Alder (*Alnus* spp.), hybrid poplar, and blackberry (*Rubus* spp.) are common. Douglas fir (*Pseudotsuga menziesii*) is present in some areas. Wetlands in laydown areas are more contiguous, bounded on the north by Grandview Road, on the west by forest and then refinery, on the south by grassland and refinery, and on the east by Blaine Road and then grassland/reed canarygrass wetland.

Wetland Impact Summary

The summary of wetland impact area and loss of wetland functions, as discussed in the April 2003 mitigation plan (URS 2003a), appears to be accurate and appropriate as a basis for designing the wetland mitigation plan. A total of 30.5 acres of wetland will be permanently filled on the project and laydown area sites. Another 4.9 acres will be filled for laydown areas, and then restored after project construction is complete.

3.3 Mitigation Approach

Based on Ecology's standard review of mitigation plans, a wetland mitigation plan is deemed acceptable if it contains a sufficiently detailed discussion of the mitigation approach, including the following items:

- mitigation sequencing;
- goals or primary objectives that will require performance standards;
- a mitigation technique/approach describing wetland communities (e.g., emergent, scrub-shrub, forested, open water) to be created and anticipated hydrology (seasonal ponding or saturation, permanent ponding or saturation, intermittent ponding or saturation); and
- project construction monitoring and mitigation/BMPs.

Mitigation sequencing is discussed briefly in the URS (2003a) Mitigation Plan. Avoidance is discussed briefly in the alternatives analysis, but not to the level of detail expected by the Corps. Some restoration of wetland impacts is proposed in the laydown areas. While Ecology typically would prefer greater detail in this section, concurrence with the general concept presented was established through meetings and site visits.

While the goals and performance standards generally meet Ecology's desires, control of non-native species raises some concern. It appears that about half of the two CMAs have reed canarygrass cover in excess of 20%. The Applicant proposes to maintain these areas with less than 20% cover of reed canarygrass. Ecology standard is to control reed canarygrass to less than 10% cover. With regard to wetland hydrologic conditions, contrary to what is presented in the mitigation plan (URS 2003a), the Corps standard for wetlands is saturation to the surface for 12.5% of the growing season (Environmental Laboratory 1987; Ossinger 1999).

The mitigation technique/approach meets the standards for a preliminary mitigation plan, but lacks the detail necessary for a final mitigation plan. More detail should be provided regarding the extent and nature of the various plant communities expected on the mitigation sites. Vegetation spacing in the planting plan is inconsistent between communities and based on SHAPIRO's experience does not meet standards established by the Washington Department of Transportation.

3.4 Mitigation Site Selection

The Applicant's evaluation of available potential mitigation sites in the Terrell Creek watershed indicates there are few suitable sites and none as large and contiguous to the creek as the

proposed sites. Selection of the wetland mitigation sites appears to be appropriate in terms of landscape setting and soils. Proximity of the sites to Terrell Creek and the addition of surface water across the watershed should be a benefit to hydrologic conditions and habitat within the creek corridor. SHAPIRO believes the hydrologic conditions on CMA 2 can be restored to better reflect hydrologic conditions prior to agricultural development. Furthermore, wetlands on both mitigation areas can be enhanced to provide wetland functions not present in the existing agricultural setting of the wetlands.

3.5 Preliminary Mitigation Site Plan

The preliminary mitigation site plan provided by the Applicant includes a plan view of the proposed restoration and mitigation areas, and plant species lists for those mitigated areas. The general concept of restoring disturbed areas and enhancing existing wetland hydrologic conditions is appropriate, as is the plan to eliminate invasive species and augment species and community diversity with a variety of wetland classes. Two elements that are typically addressed in mitigation plans are mitigation area and buffers. The adequacy of these two elements for the proposed BP cogeneration facility is discussed below.

3.5.1 Mitigation Area

This analysis of mitigation area is based on Ecology's prescribed ratios of wetland impacts to mitigation acres, dependent on the type of mitigation offered. The wetland mitigation plan for this project proposes 110.1 acres of wetland mitigation. Of this, 4.86 acres of wetlands disturbed by the project would be restored upon completion of the project construction. An additional 76.8 acres of emergent wetlands would be enhanced. (Although not stated in the mitigation plan, it appears from the functional assessment that the Applicant assumes the entire emergent wetland system will convert to forested and scrub/shrub.)

Ecology normally requires compensatory mitigation for impacts to Category 3 palustrine emergent wetlands at a 2:1 ratio if the mitigation involves restoration of existing degraded wetlands or creation of new wetlands, and a 4:1 ratio for enhancement of existing wetlands. Much of the existing wetland that would be affected by the project is primarily low-quality emergent areas that have been subjected to a long disturbance caused by farming and subsequent domination by invasives after agriculture was abandoned. Most of the functions normally provided by emergent wetlands have been compromised by this land use. Ecology has acknowledged that restoration and creation of wetland would be extremely limited and that wetland enhancement ratios of 2.8:1 are below recommended ranges.

At the same time, it is appropriate that elimination of the 1.6-acre forested wetland, albeit disturbed and mostly non-native (hybrid poplar), demands higher ratios. Therefore, the mitigation analysis uses a 4.75:1 enhancement ratio to establish the 7.6-acre forested portion of the mitigation. This does not meet the 6:1 ration typically recommended by Ecology. Finally, the Applicant has proposed restoration of 9.9 acres of wetland and upland habitat, temporarily disturbed by project construction. Of this, approximately 4.9 acres would be restored as wetland habitat and the remainder would be restored as upland habitat.

URS (2003a) assessed the expected gains and losses in function associated with the project impacts and associated compensatory mitigation. URS used the WFAM to individually evaluate 15 wetland functions. This was done for the project wetlands under current conditions¹, and a predicted function performance for the mitigation wetlands 25 years after construction/enhancement. Generally, the analysis showed an increase in habitat functions and a decrease in wetland hydrologic functions over existing conditions on the site. These changes can be attributed to several factors. Habitat increases would occur as a result of replacement of grassland (especially reed canarygrass) with the proposed native trees, shrubs, and emergents. The reduction of water quality and groundwater recharge functions probably reflects replacement of isolated wetlands (in many cases artificially isolated as a result of agricultural activities) with enhancement and creation of flow-through wetlands.

Ecology has indicated the preliminary mitigation presented by the Applicant appears to sufficiently compensate for wetland hydrologic functions that would be lost due to construction of the proposed BP cogeneration facility

Reflecting on the overall mitigation package, Ecology has determined that the restoration of wetland hydrologic conditions in an area where they had been lost on CMA 2, combined with the elimination of invasives and replanting with native species in both mitigation areas, would be acceptable compensatory mitigation for the wetland losses associated with the project.

3.5.2 Wetland Buffers

The enhanced wetland mitigation areas should have adequate buffers included in the design of the site. The current mitigation design includes upland buffers in existing wetlands, and provides limited buffers for wetlands. To the north the riparian corridor of Terrell Creek offers a mature buffer for most of both mitigation areas. Both mitigation areas are bordered by Grandview Road, and, if constructed, the 50-foot-wide corridor of the GSX pipeline, which likely will be preserved in grassland vegetation, whether upland or wetland. Both mitigation areas also are bordered by Blaine Road, to the west of CMA 1 and the east of CMA 2. A minimum 50-foot strip along either side of Blaine Road should be planted with forested upland or wetland species, as appropriate. A similar buffer should be planted along the northern edge of the GSX pipeline corridor. This would provide a visual, noise, and light barrier for the mitigation wetlands.

In portions of the existing mitigation areas, a buffer is not feasible. To the east of CMA 1 is either continued wetland or, in the southeast corner, a knoll that is grassland and forest. With CMA 2, a combination of emergent wetlands, upland grasslands, and forest continues offsite to the west. This would provide some buffer function for the interior of the mitigation areas.

1 As noted above, Golder (BP West Coast Products LLC 2002) also evaluated wetland function losses on the project site using WFAM. The Golder analysis showed slightly high function on the project site, primarily as a result of assuming the wetlands would have some influence on fisheries resources in Terrell Creek, whereas URS assumed the project site had no influence on fisheries resources.

3.6 Monitoring

The monitoring plan outlined in the URS (2003) report is generally adequate, with the following exceptions:

- invasive species, especially reed canarygrass, should be controlled to less than 10% everywhere on the mitigation sites; and
- the number of groundwater wells should be increased in the mitigation areas.

As previously mentioned, the Applicant should be required to prepare a final mitigation plan to address monitoring methods and contingency measures using guidance provided by Washington State in publications from Ecology (1994) and WSDOT (Ossinger 1999).

3.6.1 Invasive Species Control

Control of invasive species will be a critical component of the success of the mitigation. The proposed 20% cover of reed canarygrass over 50% of the mitigation areas and 10% over the remaining area translates to about 15 acres of reed canarygrass. SHAPIRO considers this to be too high, and it substantially reduces the effective mitigation ratios. A reed canarygrass cover of no more than 10% should be maintained over the entire site.

The current monitoring plan discusses control of reed canarygrass. It also should include Himalayan blackberry (*Rubus procerus*), barnyard grass (*Echinochloa crusgalli*), and other noxious weeds that may invade the mitigation area. The Applicant should consult the Whatcom County Noxious Weed Control Board for appropriate species to monitor and control.

3.6.2 Groundwater Monitoring

The mitigation plan states that four shallow groundwater monitoring wells will be placed in the approximately 10 acres of restoration areas and four more in the 100 acres of mitigation areas. While SHAPIRO does not feel it is necessary to put in one well for every 2.5 acres, one every 25 acres does not seem to be enough to adequately assess wetland hydrologic conditions. A series of transects of groundwater wells, both perpendicular and parallel to the slope, would offer a better view of hydrologic conditions and a baseline against which to assess the results from the temporary boreholes.

3.7 Other Features

3.7.1 Site Ownership

The wetland mitigation plan notes the present ownership of the land by BP, but makes no mention of future ownership or preservation of the mitigation areas. The area should be placed in a permanent conservation easement and recorded with Whatcom County.

3.8 Conclusion and Recommended Conditions for Certification

SHAPIRO concludes, after a thorough review of the wetland mitigation information contained in the Revised ASC and the 2003 mitigation plan (as amended) (URS 2003a and b), and should the Council decide to recommend approval of this proposal to the Governor, that the wetland mitigation plan appears to be adequate for approval by EFSEC, provided the agreement for site certification contains the following additional conditions:

- A. **Project Description** – SHAPIRO recommends that a single and complete project description be prepared for the entire project. It should include a description of the cogeneration facility, laydown areas, all connections with the refinery, the intertie connection to BPA Transmission Line No. 2, any upgrades to BPA Transmission Line No. 2, including tower locations, the water supply pipeline, and all wetland mitigation. This description should include all wetland impacts associated with each element of the project. It should be submitted no less than 90 days prior to initiating construction.
- B. **BPA Corridor Wetland Delineation** – SHAPIRO recommends a complete wetland delineation be completed on the portion of the BPA Custer-to-Intalco powerline corridor that would need to be upgraded if agreement on a RAS cannot be reached with Alcoa Intalco Works, and in the corridor for the water supply pipeline coming from Aldergrove Road. The delineation should include an assessment of ratings and functions of all wetlands within the corridor; an assessment of all impacts, including any maintenance road construction, or upgrade; and an alternatives analysis of why impacts would occur and what efforts have been made to reduce or minimize those impacts. The delineation should be submitted to EFSEC and the Corps no less than 90 days prior to beginning construction on the transmission line upgrade.
- C. **Final Wetland Mitigation Plan Scope** – A final mitigation plan shall be submitted to EFSEC for approval 60 calendar days prior to the beginning of construction. The final mitigation plan would include detailed plans for construction of wetland and buffer mitigation areas. Plan sheets would include grading plans showing final finish grade elevations and any related construction; planting plans showing plant types, locations, and quantities; and detail sheets showing specific methods for the construction of wetland and buffer mitigation areas. Specifications would describe materials, quality, and finish of plan elements, and would include quantities for all mitigation area plantings. Success criteria and a contingency plan shall also be included. A detailed wetland monitoring plan for vegetation and hydrology shall be part of the final mitigation plan, and shall include sampling and monitoring sites, frequency of monitoring, and sampling and analysis techniques.
- D. **Compensatory Mitigation Area** – The mitigation area shall be approximately 110 acres north of Grandview Road plus 9.9 acres of wetland and upland restoration area south of Grandview Road.

- E. Wetland Buffers** – The discussion of buffer sizes and conditions should be expanded to describe all buffers including those for the transmission line components of the project. The amended mitigation plan should include minimum 50-foot buffers around all existing wetlands at the cogeneration facility site mitigation areas where feasible. It should also include a minimum 50-foot forested buffer along both sides of Blaine Road and the north side of Grandview Road in the vicinity of the mitigation areas.
- F. Mitigation Elements** – Mitigation elements are more fully described in the above-referenced documents and as revised through the conditions of this order. Mitigation elements include the following:
- ditches on site CMA 1 shall be filled as indicated in Figure 8A of the above-referenced mitigation plan;
 - ditches on site CMA 2 shall be filled as indicated in Figure 9A of the above-referenced addendum;
 - inlet trench on CMA 2 shall be constructed on-the-level at approximately elevation 98.5 feet (NGVD) per Figure 9A of the above-referenced addendum, consistent with in-the-field engineering and without weirs or check dams; and
 - the mitigation areas (CMA 1 and 2) shall contain no areas of permanent open water.
- G. Pre-construction Meeting** – The Applicant’s wetland biologist and EFSEC staff, or designated representative, shall meet in the field before construction begins to discuss final details of the mitigation plan. The location of the discharge trench shall be surveyed and staked prior to the pre-construction meeting.
- H. "As-Built" Report** – An “as-built” report, including up-to-date as-built drawings documenting the final design of the project area, shall be prepared when site construction and planting are completed. A copy of the "as-built" report shall be sent to EFSEC at P.O. Box 43172, Olympia, Washington 98504-3172 within 60 calendar days of completing construction and initial planting, and in no case later than 13 months from the date of permit issuance. Up-to-date as-built progress reports will be due following each phase of the mitigation activity until completion of the mitigation. The report shall include the following:
- vicinity map showing site access;
 - final site topography at scale of no less than 1 inch equals 100 feet;
 - drawings that shall clearly identify the boundaries of the mitigation areas;
 - the installed planting scheme showing densities, sizes, and locations of plants, as well as plant sources and the time of planting;
 - drawings that clearly identify the stormwater drainage discharge channels, including associated stormwater channels within the west wetland mitigation area;
 - before and after photographs of the area taken from permanent reference points;
 - locations of photopoints;
 - locations of sampling and monitoring sites; and
 - an analysis of any changes to the mitigation plan that occurred during construction.

- I. Field Supervision** – The wetland grading activity and wetland and buffer plant installation shall be field-supervised by qualified consultant(s) to ensure proper elevations are achieved and plants are appropriately placed.
- J. Deed Restriction** – Permanent protection of the wetland mitigation and preservation area shall be recorded with Whatcom County on the appropriate property deed. The deed shall clearly indicate that the wetland mitigation and preservation areas are “waters of the state.” Documentation that this requirement has been fulfilled, including copies of permanent restrictive easements, shall be provided to EFSEC at the same time as the "as-built" report.
- K. Maintenance** – The Applicant is responsible for maintaining the wetland mitigation sites such that the required performance standards are met. When needed to meet success criteria within the mitigation plan, dead or dying plants shall be replaced during the first available planting season with the same species or an alternative approved by EFSEC. If necessary, all plantings shall be watered and maintained (including weeding) for a period of at least five (5) years after completion of the project. Invasive species shall be monitored and controlled. Maintenance may be required beyond five (5) years if, within that time, a significant number of plants fail.
- L. Mitigation Monitoring** – Monitoring shall be conducted as identified in the Monitoring and Maintenance section of the mitigation plan (page 54), with the addition of more groundwater monitoring wells in the CMA 1 and CMA 2 mitigation areas. A minimum of 20 wells should be installed in those areas. A detailed monitoring program, including how the percentage of cover of native plant species will be measured, shall be developed to reflect the performance standards outlined below, and shall be submitted to EFSEC for review no later than October 31 of each monitoring year. Monitoring shall take place over a period of ten (10) years, with vegetation monitoring in years 1, 2, 3, 5, 7, and 10. Copies of all monitoring reports shall be submitted to EFSEC and to the Corps for each monitoring year. If the results of the monitoring at year 10 show that the mitigation area does not satisfy the performance standards set forth above, additional monitoring and mitigation may be required (e.g., replanting, soil amendments, selection of alternative species, etc.). Any additional monitoring or mitigation measures are subject to review and approval of EFSEC.
- M. Performance Standards** – The performance of the wetland mitigation shall be measured by the following criteria:
- 100% of planted species shall survive or be replanted after the first year of planting;
 - native plant species shall have an areal cover of at least 20% of the mitigation area the third monitoring year, 30% the fifth year, 50% the seventh year, and 75% the tenth year;
 - non-native invasive plant species shall cover no more than 10% of the mitigation sites at any time during the monitoring period;
 - plantings shall have at least an 80% survival rate from years two through five;

- desirable native upland vegetation shall cover at least 75% of the buffer area by the end of year 10;
- A minimum of 10 shallow groundwater wells shall be established in the CMAs to assess wetland hydrologic conditions; and
- wetland areas shall exhibit saturation to the surface for a minimum of 12.5% of the growing season.

N. Access – The Applicant shall provide access to the mitigation site upon request by EFSEC personnel for site inspections, monitoring, and necessary data collection to ensure that the wetland construction and monitoring plans are implemented as approved.

O. Timing – The final wetland mitigation plan shall be implemented either prior to construction of the proposed cogeneration facility, or concurrently with the facility.

4. REFERENCES

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