

Appendix G

Stipulated Agreements

Exhibit 1 – Partial Settlement Agreement between Washington Utilities and Transportation Commission and Sumas Energy 2 Concerning Natural Gas Pipeline Issues

Exhibit 2 – Declaration of Curt Leigh in Support of Settlement Agreement between Washington Department of Fish and Wildlife and Sumas Energy 2

Exhibit 3 – Settlement Agreement between Washington Department of Fish and Wildlife and Sumas Energy 2

Exhibit 4 – Partial Stipulation Agreement between City of Sumas and Sumas Energy 2

Exhibit 5 – Supplemental Settlement Agreement between Washington Department of Fish and Wildlife and Sumas Energy 2 Regarding Wetlands

Exhibit JW-4 (attachment to Exhibit 5) – Wetland Delineation and Mitigation Report prepared by Bexar Environmental Consulting

Exhibit 6 – Settlement Agreement between Washington Department of Ecology and Sumas Energy 2

Exhibit 9 – Stipulated Withdrawal of Bonneville Power Administration

Exhibit 10 – Stipulation and Settlement Agreement Between Washington Utilities and Transportation Commission and Sumas Energy 2

ENERGY FACILITY SITE
EVALUATION COUNCIL

Docket No. 99-1

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Exhibit No. 1

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ENERGY FACILITY SITE
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BEFORE THE STATE OF WASHINGTON
ENERGY FACILITY SITE EVALUATION COUNCIL

In the Matter of Application No. 99-1:

SUMAS ENERGY 2 GENERATION
FACILITY

PARTIAL SETTLEMENT AGREEMENT
BETWEEN WASHINGTON UTILITIES
AND TRANSPORTATION COMMISSION
AND SUMAS ENERGY 2 CONCERNING
NATURAL GAS PIPELINE ISSUES

Sumas Energy 2, Inc. ("SE2") has filed an application with the Washington State Energy Facility Site Evaluation Council ("EFSEC") requesting a site certification agreement to allow construction and operation of the proposed Sumas Energy 2 Generation Facility ("the Project"). The Washington Utilities and Transportation Commission ("WUTC") has intervened in these proceedings as a "member agency" as described in RCW 80.50.030(3).

In addition to its other interests in this Project, the WUTC has an interest in ensuring that the Project is designed, constructed, operated and maintained in compliance with all applicable federal and state rules and regulations. The WUTC has jurisdiction under Revised Code of Washington Chapter 80.28 to regulate the construction, operation and maintenance of interstate natural gas pipelines. In resolution only of the WUTC's concerns over the construction, operation and maintenance of a natural gas pipeline as a part of the project, the Applicant and WUTC hereby stipulate as follows:

1 1. In addition to all state and federal regulatory requirements discussed below,
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3 SE2 shall design, construct, operate and maintain the natural gas pipeline in accordance with
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5 the specifications outlined in Appendix A to this Agreement.
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7 2. During the design, construction, operation, and maintenance of the Project,
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9 SE2 shall comply with WUTC rules and regulations governing natural gas pipelines, WAC
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11 chapter 480-93, and with applicable federal pipeline safety rules and regulations, including
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13 those rules set forth in 49 C.F.R. Parts 191 and 192.
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15 3. SE2 shall prepare comprehensive written specifications and standards for the
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17 Project consistent with regulations set forth in 49 C.F.R. Part 192. Specifications shall
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19 include a map that identifies the pipeline and its components. SE2 shall file such
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21 comprehensive written specifications and standards for the Project with EFSEC and WUTC at
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23 least 90 days prior to the start of construction or reconstruction of the Project. SE2 shall also
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25 notify EFSEC and WUTC at least 30 days in advance of initial ground breaking.
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27 4. The WUTC shall notify SE2 and EFSEC of any noncompliance of the
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29 comprehensive written specifications and standards with the regulations set forth in the
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31 Washington Administrative Code (WAC) 480-93 and 49 C.F.R. Part 192. The WUTC shall
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33 submit a noncompliance report to SE2 and EFSEC within 45 days of completion of the audit.
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35 5. The WUTC shall monitor the design, construction, operation and maintenance
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37 of the Project. If the WUTC becomes aware of any noncompliance with state or federal
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39 regulations during the design, construction, operation and maintenance of the Project, the
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41 WUTC shall notify SE2 and EFSEC, and the Applicant may be subject to appropriate
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43 enforcement action by the WUTC as authorized by R.C.W. 80.28.212.
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1 6. SE2 shall report to the WUTC any accident or safety related condition at the
2 same time the accident or condition is reported to the U.S. Department of Transportation,
3 Office of Pipeline Safety.
4

5 SE2 and the WUTC further agree and jointly request that the terms of this stipulation
6 be incorporated into any certification agreement issued by EFSEC in this proceeding.
7
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11
12 DATED: May 10, 2000.

PERKINS COIE LLP

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14
15 By Charles R. Blumenfeld
16 Karen M. McGaffey
17 Charles R. Blumenfeld
18 Attorneys for Sumas Energy 2, Inc.
19
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22
23 DATED: May 11, 2000.

Christine O. Gregoire, Attorney General

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26 By Ann E. Rendahl
27 Ann E. Rendahl
28 Assistant Attorney General
29 Counsel for Washington Utilities and
30 Transportation Commission
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Appendix A
to
Settlement Agreement between WUTC and SE2

The Project for which SE2 seeks a site certification agreement pursuant to R.C.W. chapter 80.50, includes a 16-inch natural gas line extending approximately 5.5 miles from the West Coast Pipeline located at the U.S.-Canada border to the project site in Sumas, Washington. SE2 proposes to design, construct, operate and maintain the pipeline in compliance with federal and state law, and in many instances, to exceed existing regulatory requirements:

1. The pipeline will be designed as follows:

a. Pipe. The pipeline will be constructed using electric resistance welded low carbon steel pipe API-5L, X56 or better. The pipe will be designed for a maximum hoop strength less than 20% of the specified minimum yield strength (SMYS). The pipe will have a longitudinal joint factor (E) of 1.00.

b. Specified Minimum Yield Strength. The pipeline will be constructed of pipe having a specified minimum yield strength of at least 56,000 psi.

c. Pipe Thickness. The pipeline will be constructed of pipe that is 0.375 inches thick, which is roughly twice the thickness that federal regulations require for pipelines, such as this, that are located in Class I areas. In fact, this pipe will exceed thickness requirements for pipelines located in Class IV areas.

d. Flexibility. The pipeline will be designed to prevent thermal expansion or contraction from causing excessive stresses in the pipe or associated components as defined in 40 C.F.R. § 192.159.

e. External Pipe Coating. In order to resist corrosion, the pipeline will be coated with fusion-bonded epoxy overlain with a layer of extruded polyethylene.

f. Valves & Flanges. Valves will meet or exceed the minimum requirements found in 40 C.F.R. § 192.145. Flanges will meet or exceed the minimum requirements found in 40 C.F.R. § 192.147.

g. Welds. Pipeline joints will be welded by qualified welders following written welding procedures specifying the methods for welding all required pipeline joints. Welding procedures and pipeline welders will be qualified in accordance with API Standard 1104. The procedures will be submitted to the WUTC for approval prior to construction. During construction, welder qualification records will be available as required by 40 C.F.R. § 192.227, and will include a Coupon Test Report.

h. Depth. The pipeline will be buried a minimum of 4 ½ feet (to the top of the pipe) to minimize the possibility of inadvertent third-party damage. Warning tape will be placed in the trench above the pipeline to warn anyone excavating of the pipeline's location.

i. Bedding. Pipeline bedding and shading material will consist of sand or sand-like material, with a minimum of 6 inches of fine materials no larger than 3/8-inch to protect the pipe and coating. Bedding will cover the entire pipeline.

j. Operating Temperature. The gas operating temperature is expected to be no higher than 60 degrees F. The temperature derating factor (T) will be 1.00. (See 40 C.F.R. § 192.115.)

k. Cathodic Protection. The pipeline will be further protected from corrosion by a Sacrificial Anode Cathodic Protection System, with sacrificial anode beds installed at intervals along the pipeline. The system will be designed based on the results of a site-specific cathodic protection survey. Test stations will be installed at several locations along the line to facilitate monitoring of the system.

l. Emergency Valves. The pipeline will have two isolation valves. An emergency shut down valve will be installed at the regulator station within twenty feet of the border. A second valve will be located at the SE2 facility. The valves at the regulator station and at the SE2 facility will have blow down stations that will allow for the safe release of natural gas to the atmosphere in a safe manner. They will have manual valves and vertical stacks made of carbon steel pipe that rise to at least 10 feet above ground surface. A remote shutoff valve operated from the facility main control room will be installed at the border pressure reducing station.

m. Control System. Pressure monitoring devices will be installed at each end of the pipeline to monitor the pressure drop of the pipeline. The pressure signal at the border pressure regulating station will be transmitted to the control room at the facility. The facility supervisory control system will be designed to send a signal to close the emergency shut down valve at the border station under high or low pressure conditions, or if the rate of pressure decay exceeds established parameters.

n. Pressure Regulation and Overpressure Protection. A pressure regulation station will be designed to include overpressure protection to prevent the line pressure from exceeding maximum allowable operating pressure (MAOP). The maximum operating pressure will not exceed 499 psig. SE2 shall request approval from WUTC to

operate the pipeline at pressure exceeding 250 psig that is within 100 feet of buildings as required by WAC 480-93-030 Prescribed Areas.

2. During and immediately following construction, the following tests will be performed to ensure pipeline integrity:

a. Welds. 100% of the welds will be inspected radiographically, by a qualified radiographer. Any defects found in welds will be replaced or repaired. All repaired welds will be radiographed again to ensure their integrity.

b. Coating. The entire pipeline coating will be "jeeped" just prior to lowering into the trench to detect holidays and other defects in the coating. Any flaws detected will be repaired.

c. Hydrostatic Testing. SE2 will conduct a 24-hour hydrostatic pressure test at at least 150% of MAOP for the two segments of the pipeline. The segment from the Canadian border to the pressure regulating station will be tested at at least 1200 psig, and the segment from the pressure regulating station to the facility will be tested at at least 750 psig.

d. Internal Line Inspection. Following construction, SE2 will conduct an internal line inspection with a internal inspection device commonly known as a "smart pig." Inspection device specifications will be submitted to WUTC 30 days prior to running the device. The company will submit smart pig inspection results to the WUTC upon completion along with a schedule for excavation, repairs and replacement of any defects that affect the integrity of the pipe or components.

e. Cathodic Protection Inspections. Following construction, SE2 will conduct a continuous potential survey to verify the effectiveness of the cathodic protection system. SE2 will also conduct a stray current test to check for possible interference caused by other utilities in the area.

3. The pipeline will be operated and maintained as outlined in the revised Application for Site Certification, including the following:

a. Qualified Operators. Qualified operators will operate and maintain the pipeline. Operators will comply with State and Federal Pipeline Safety regulations concerning operator training and certification. SE2 will develop operator qualification requirements prior to pipeline operation.

b. Operations and Maintenance Manual and Emergency Plan. A detailed operations manual will be developed to address standard operations and maintenance practices, and responding to abnormal operating conditions as required by 49 C.F.R. 192.605 and WAC 489-93. SE2 will develop an emergency plan to address emergency response activities as described in WAC 480-93-180 and 49 C.F.R. 192.615. The manual and plan will satisfy state and federal regulations related to pipeline operation and maintenance. They will be submitted to the WUTC 45 days prior to initial operation and subsequent changes and amendments filed promptly thereafter.

c. Leak Detection Surveys. SE2 will conduct monthly leak detection surveys, inspecting the right of way visually and with the use of flame ionization gas detectors.

d. Internal Line Inspections. SE2 will conduct inspections with internal inspection devices (smart pigs) during major plant shutdowns, which occur approximately every five years.

e. Cathodic Protection Inspections. SE2 will regularly monitor the effectiveness of the cathodic protection system. SE2 will inspect the system twice a year, and will conduct a continuous potential survey once every two years following construction.

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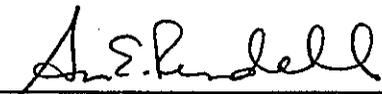
BEFORE THE STATE OF WASHINGTON
ENERGY FACILITY SITE EVALUATION COUNCIL

In the Matter of Application)	
No. 99-1)	
SUMAS ENERGY 2, INC.)	WASHINGTON UTILITIES AND
SUMAS ENERGY 2 GENERATION)	TRANSPORTATION COMMISSION
FACILITY)	ANSWER TO SUBJECT TO CHECK
)	QUESTION

During the adjudicative hearing on May 15, 2000 concerning settlement agreements, Joe Subsits of the Washington Utilities and Transportation Commission (WUTC) presented testimony concerning the Partial Settlement Agreement Between Washington Utilities and Transportation Commission and Sumas Energy 2 Concerning Natural Gas Pipeline Issues. During cross examination by Mr. Bricklin, Mr. Subsits agreed to provide the citation to regulations requiring pipelines to report overpressure incidents to the WUTC. The requirement is in Washington Administrative Code section 480-93-183.

DATED this 17th day of May, 2000.

CHRISTINE O. GREGOIRE
Attorney General


 ANN E. RENDAHL, WSBA No. 22848
 Assistant Attorney General
 Counsel for WUTC
 (360) 664-1189

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Docket No. 99-1

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Exhibit No. 2

BEFORE THE STATE OF WASHINGTON
ENERGY FACILITY SITE EVALUATION COUNCIL

In the Matter of Application No. 99-1
SUMAS ENERGY 2, INC.
SUMAS ENERGY 2 GENERATION
FACILITY

NO.

DECLARATION OF CURT LEIGH IN
SUPPORT OF SETTLEMENT
AGREEMENT BETWEEN
WASHINGTON DEPARTMENT OF
FISH AND WILDLIFE AND SUMAS
ENERGY 2

I, CURT LEIGH, declare as follows:

1. I am now and at all times mentioned a citizen of the United States and a resident of the state of Washington, over the age of 18 years, competent to make this declaration, and make this declaration from my own personal knowledge and judgment.

2. I am the lead Department staff person assigned to this case and I am assigned to the Major Projects Section of the Habitat Division. In the Major Projects section, I represent the Department in proceedings involving large scale developments or construction projects, including energy production facilities. My duties include identifying natural resources, describing development related impacts to those resources, and working with project sponsors to implement mitigation measures that will reduce those impacts and replace unavoidable losses to fish and wildlife and their habitat.

3. I have been involved with this proceeding since February, 1999, when Sumas Energy 2 (SE2) filed the original Application for Site Certification Agreement with EFSEC for this Project. I have reviewed the materials filed and/or supplied by SE2.

DECLARATION OF CURT LEIGH

ATTORNEY GENERAL OF WASHINGTON
1125 Washington Street SE

PO Box 40100
Olympia, WA 98504-0100
(360) 753-6200

1 4. Regarding the SE2 proposed Project, I am generally familiar with the site. I am
2 also knowledgeable about the fish and wildlife resources and habitats that occur both at the site
3 and in the general area of the proposed development. I visited the proposed SE2 project site on
4 April 15, 1999. I understand the potential fish and wildlife impacts that are likely to occur if the
5 Energy Facility Site Evaluation Council were to recommend a permit for the SE2 Project.

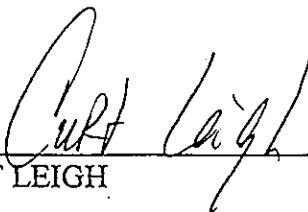
6 5. With the assistance of counsel, I have met with representatives and consultants
7 from SE2 on a number of occasions to: 1) discuss the fish and wildlife resources potentially
8 subject to impacts; 2) discuss Project design changes or relocations which would avoid potential
9 impacts; and 3) discuss alternative means to protect fish and wildlife resources and mitigate
10 impacts likely to occur to those resources.

11 6. Based on those discussions, the Department and SE2 have agreed to a number of
12 action items that SE2 is willing to take to avoid unnecessary impacts, and to address remaining
13 or potential impacts, in addition to the measures identified in the Application for Site
14 Certification Agreement. Those commitments are contained in the Settlement Agreement
15 Between Washington Department of Fish and Wildlife and Sumas Energy 2. The commitments
16 resolve all of the impacts to fish and wildlife resources except identification of, and mitigation
17 for, impacts to wetlands.

18 7. The Department of Fish and Wildlife recommends that the Council adopt the
19 Settlement Agreement between Washington Department of Fish and Wildlife and Sumas Energy
20 2, in full.

21 8. I will be unable to attend the Council's hearing on stipulation in this matter. I
22 have created this declaration to be filed instead of my in person appearance to support the
23 Settlement Agreement. I, on behalf of the Department of Fish and Wildlife, authorize Assistant
24 Attorney General William C. Frymire to file this Declaration as a statement of the Department of
25 Fish and Wildlife's official support for the Settlement Agreement.

1 DATED this 12 day of May, 2000.

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4 CURT LEIGH

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ENERGY FACILITY SITE
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BEFORE THE STATE OF WASHINGTON
ENERGY FACILITY SITE EVALUATION COUNCIL

In the Matter of Application No. 99-1:

SUMAS ENERGY 2 GENERATION
FACILITY

SETTLEMENT AGREEMENT BETWEEN
WASHINGTON DEPARTMENT OF FISH
& WILDLIFE AND SUMAS ENERGY 2

I. Introduction

A. Parties

Sumas Energy 2, Inc. (SE2) is seeking a Site Certification Agreement (SCA) from the Energy Facility Site Evaluation Council (EFSEC) to construct and operate the proposed Sumas 2 Generation Facility (S2GF or Project).

Washington Department of Fish and Wildlife (WDFW) has a mandate to preserve, protect, manage, and perpetuate the state's fish and wildlife resources including habitat.

WDFW is a party to the site certification adjudication before EFSEC.

B. Purpose and Intent

SE2 and WDFW (collectively "the Parties") have been involved in discussions and negotiations related to the Project's potential effect upon fish and wildlife resources, including habitat. The Project consists of a 660 MW combined-cycle combustion turbine generation facility and associated facilities, including a 4.25-mile natural gas pipeline, and a 5.9-mile, 230 kV transmission line connection facility. Through this Agreement, WDFW and SE2 set forth

1 the obligations and restrictions that the Parties intend to have incorporated into the SCA as
2 conditions for the Project should EFSEC recommend that the Project be certified. The
3 obligations and restrictions set forth in this Agreement relate to resources that will be affected
4 by construction and operation of the Project facilities at the Project site, and the construction
5 and operation of the approximate 4.25-mile natural gas pipeline from the border crossing east
6 of Sumas, Washington to the Project site, the construction and operation of the approximate
7 5.9 mile electrical transmission line from the Project site to the Canadian electrical grid at
8 British Columbia Hydro's Clayburn Station as these components are proposed at the time of
9 entry of this Agreement. The Parties agree to amend this Agreement, as necessary, if the
10 proposed project changes substantially from that proposed at the time of entry of this
11 Agreement. The Agreement does not address issues that may be raised at EFSEC or non-
12 EFSEC proceedings outside the adjudicative hearing or other Project impacts, if any.

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25 **C. Resolution of Issues**

26 SE2 has undertaken preliminary site impact assessments to identify the major
27 significant impacts expected from construction and operation of the Project facility, gas
28 pipeline, and electrical transmission line. The Parties agree that not all impacts may be known
29 and therefore, the Agreement contains commitments to address currently expected specific
30 impacts and a commitment to principles of impact assessment and mitigation for potential
31 future unknown impacts.
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38 The Parties further agree that SE2 will comply with any conditions in any settlement
39 agreement with the Department of Ecology that set stricter standards regarding wetlands and
40 water quality.
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II. SE2 Commitments

A. Project Application

SE2 agrees that the applicable mitigation measures identified in the following sections of its S2GF Project Application, as revised, shall be incorporated into the amended SCA as binding commitments: section 1.4 (Mitigation Measures); section 2.10 (Surface Water Runoff); section 2.14 (Construction Methodology); and section 3.4 (Plants and Animals

B. Natural Gas Pipeline and Electrical Transmission Line

The proposed project includes a 4.25-mile natural gas pipeline from the U.S./Canadian border east of Sumas, Washington to the S2GF site, and a 5.9 mile, 230 kV electrical transmission line from the S2GF site to BC Hydro's Clayburn Substation, approximately 0.5 miles of which is located in Washington State. SE2 shall apply the priority of mitigation principles (avoid, minimize, restore and replace, in that priority order) in its decisions and actions in planning, constructing, operating and maintaining the natural gas pipeline and the portion of the electrical transmission line, located in Washington State. To effectuate application of the principles, SE2 shall, prior to construction of the pipeline, create a detailed pipeline construction plan, which shall contain, at a minimum, the following wetland, riparian, and aquatic habitat protection standards. Prior to construction of the electrical transmission line, SE2 shall also create a detailed transmission line construction plan that shall contain, at a minimum, design features that prevent avian electrocution and collision in addition to the protection standards in subsections 1,2,3,4,7 & 8 of this Agreement. The parties agree that to the extent that one or more of the following standards or requirements cannot be met, SE2 and WDFW shall confer, and insofar as possible agree, on the appropriate standard or requirement to be used and amend the Agreement accordingly.

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1. Construction Timing

- a. As suggested in section 1.4 of the revised Application, all “out of the water” soil disturbing activities associated with wetland, stream, or river crossings shall occur during the dry portion of the year, typically late spring through early fall.
- b. Construction related activity that may be necessary within the wetted channel and/or within fifty feet of the bank shall be limited to the period of June 15 through October 15. This provision shall supersede any other or inconsistent dates provided elsewhere.

2. Access, Staging, and Ancillary Areas

- a. All equipment crossing a water body must use a construction bridge. Culvert crossings are not allowed.
- b. All equipment bridges shall be designed to pass the maximum flow and be maintained to prevent flow restrictions during the period that the equipment bridge is in place.
- c. The only access roads, other than the construction right of way, that may be used in wetlands are those existing roads that can be used with no modification and no impact on the wetland.
- d. Locate all staging areas, additional spoil storage areas, and other additional work areas at least 50 feet away from the ordinary high water mark or wetland boundary. In no event shall vegetation be cleared between these areas and the water body or wetland. Limit size to minimum needed to construct the wetland or water body crossing.

1 e. Refuel all construction equipment at least 100 feet from water bodies
2 or wetland boundaries.
3

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5 **3. Spoil Pile Placement and Control**
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7 a. The upper 12" of topsoil will be reserved, separated from subsoil, and
8 returned to the trench as a final layer for planting.
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10 b. All spoil material from water body crossings must be placed in the right
11 of way at least 50 feet away from the ordinary high water line. All spoil shall be contained
12 within sediment filter devices
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17 **4. General Construction Procedures/ Monitoring of Performance**
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19 a. Notify the WDFW at least 48 hours prior to commencement of pipe
20 installation activities under each water body.
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22 b. In wetlands and riparian areas, limit the construction rights-of-way to
23 50 feet or less.
24

25 c. In wetlands and riparian areas, vegetation that must be removed shall
26 be cut at ground level, leaving existing root systems intact. Limit pulling of tree stumps and
27 grading activities to those areas where root systems would directly interfere with trenching,
28 pipe installation and backfill.
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33 d. If standing water or saturated soils are present, use low ground weight
34 construction equipment and/or operate on prefabricated equipment mats.
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37 e. Pre-construction wetland hydrology, which will be documented during
38 pre-construction planning, will be maintained with the installation of impermeable plugs at the
39 edge of the wetland, and in the pipeline trench, comprised of an impermeable material.
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43 f. Silt fencing will be used to protect wetlands outside the construction
44 corridor from sedimentation.
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- 1 g. The affected wetland areas will be regraded to pre-project contours.
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 3 h. The flow of the existing ditches will be restored and maintained after
 4
 5 construction.
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 7 i. Disturbed areas will be revegetated with approved native vegetation, or
 8
 9 vegetation consistent with ongoing agricultural use, prior to the next wet season following
 10
 11 construction.
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 13 j. Emergent wetland areas will be reseeded or hydro-seeded with a mix of
 14
 15 native species, identified in section II.B.7, which will be selected after consultation with
 16
 17 WDFW prior to the next growing season.
 18

19 **5. Specific Stream and River Crossing Methods¹**

<u>STREAM NAME</u>	<u>METHOD</u>
Sumas Creek	Horizontal Directionally Drill
Johnson Creek	Horizontal Directionally Drill
Bone Creek	Horizontal Directionally Drill

29 **6. Hydrostatic Testing**

- 30 a. Perform 100 percent radiographic inspection of all section welds prior
 31
 32 to installation under water bodies or wetlands.
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 34 b. Screen the intake hose (3/32" perforations) to prevent entrainment of
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 36 fish. The maximum approach velocity shall not exceed 0.4 feet/second.
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 43 ¹Subject to engineering feasibility and Army Corps of Engineer requirements. If SE2 determines it cannot
 44 cross Sumas Creek, Johnson Creek, or Bone Creek by horizontal directional drilling, SE2 will inform WDFW of the
 45 alternative crossing method. If after review of the alternative method, WDFW believes additional conditions are
 46 necessary, SE2 and WDFW will amend this Agreement to add conditions related to the alternative crossing method.
 47

1 c. At least thirty days prior to use, provide to EFSEC a list of specific
2 locations proposed for withdrawal and discharge of hydrostatic test water and allow EFSEC
3 to review and comment on the list in consultation with WDFW and WDOE.
4

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6 d. Notify EFSEC, WDFW and WDOE of intent to begin using specific
7 sources at least 48 hours prior to testing.
8

9
10 e. Maintain adequate flow rates at all times to protect aquatic life and
11 provide for all other water body uses, including downstream withdrawals.
12

13 f. Hydrostatic test manifolds shall be located outside wetlands and
14 riparian areas.
15

16 g. If a utility line is pressure tested using water or chlorinated water, and
17 such water is to be discharged to waters of the State upon completion of the test, such
18 discharge shall not cause an exceedance of State water quality standards.
19

20 g. Regulate discharge rate and use energy dissipation device(s) in order to
21 prevent erosion of upland areas, stream bottom scour, suspension of sediments, or excessive
22 stream flow.
23

24
25 **7. Restoration, Stabilization, and Revegetation**
26

27 a. Suggested native species that may be used for revegetation in the on-
28 site constructed wetland include: Black cottonwood, Red alder, Salmonberry, Scouler
29 willow, Pacific willow, Red-osier dogwood, Slough sedge, and Tall mannagrass.
30

31 b. Suggested native species that may be used for revegetation in the on-
32 site enhanced wetland include: Black cottonwood, Red alder, Salmonberry, Scouler willow,
33 Pacific willow, and Red-osier dogwood.
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35 c. Suggested native species that may be used for revegetation in the on-
36 site nonwetland buffer include: Western Hemlock, Western Red Cedar, Black cottonwood,
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1 Red alder, Vine maple, Wild Rose, Salmonberry, Scouler willow, Bearded fescue, Hair
2
3 Bentgrass, and Native Bluegrass (*Poa nervosa*).

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5 d. Suggested native species that may be used for revegetation in
6
7 emergent pasture wetlands include: Slough sedge, Beaked sedge, Spike bentgrass,
8
9 Bluejoint reedgrass, and Northern mannagrass.

10
11 **8. Right-of-Way Maintenance Practices**

12
13 a. Do not use herbicides or pesticides in or within 100 feet of a water
14
15 body unless such use has been approved by WDFW and WDOE as a means of preventing the
16
17 spread of undesirable exotic vegetation in conformance with B.8.d. below.

18
19 b. SE2 shall not utilize vegetation maintenance practices for normal right
20
21 of way maintenance over the full width of the permanent right of way in wetlands and riparian
22
23 areas. To facilitate periodic pipeline surveys, however, a corridor centered on the pipeline up
24
25 to ten feet wide may be maintained in a herbaceous state. In addition, trees that are located
26
27 within fifteen feet of the pipeline and are greater than fifteen feet in height may be selectively
28
29 cut and removed from the right of way by SE2, using replacement criteria described in section
30
31 II.D.4, of this agreement.

32
33 c. Monitor the success of revegetation annually, with written reports to
34
35 EFSEC and copies to WDFW and WDOE, for the first five years after construction.
36
37 Revegetation of wetland, riparian, and upland areas that are currently vegetated with native
38
39 species is considered successful if the native herbaceous and/or woody cover is at least eighty
40
41 percent of the total cover, and native species diversity is at least fifty percent of the diversity
42
43 originally planted in the area. If revegetation is not successful at the end of five years,
44
45 riparian and upland habitats will follow the replacement criteria found in section II.D of this
46
47

1 agreement. If wetland revegetation is not successful at the end of five years, the project
2 sponsor shall develop and implement (in consultation with a professional wetland ecologist
3 and the Departments of Ecology and Fish and Wildlife) a plan to actively revegetate the
4 wetland with native wetland herbaceous and woody plant species
5
6

7
8
9 d. Develop specific procedures to prevent the invasion or spread of
10 undesirable exotic vegetation.
11

12
13 **C. Other Plans**

14
15 1. SE2 agrees to develop the following plans and to consult with, and seek
16 consensus with, WDFW during the development and review of the plans:
17

18
19 a. Environmental Protection Control Plan/Construction Management
20 Plan(s) to include an independent environmental monitor with stop-work authority who
21 reports to a state agency.
22

23
24
25 b. Erosion and sediment control plan.

26
27 c. Restoration of ROW plan including restoration and maintenance
28 practices, schedules, monitoring methods, contingencies, and noxious weed control measures.
29

30
31 d. Construction water use and control plan.

32
33 e. Right of Way Management Plan.

34
35 f. Storm water control plan during construction.
36

37 2. In addition, WDFW shall be provided with the following plans in accord with
38 standard EFSEC procedures:
39

40
41 a. Petroleum and toxic material handling, storage, and spill response plan.
42

43
44 b. Long-term storm water control plan.
45
46
47

1 **D. Future Impact Assessment and Mitigation**

2
3 The Parties agree that the principles of impact assessment that have been applied to
4 the currently expected impacts and that shall be applied to all unforeseen impacts are, in
5 descending order of importance, 1) avoid the impact wherever possible; 2) minimize the
6 impact; 3) provide on-site, in-kind mitigation; and lastly, 4) provide off-site compensatory
7 mitigation.
8
9
10
11

12
13 WDFW and SE2 agree that, to the extent impacts to fish and wildlife habitat cannot be
14 avoided in the construction and operation of the Project, the impacts will be mitigated as
15 follows:
16
17

18
19 **1. Wetland Habitat Mitigation**

20
21 WDFW and SE2 agree that mitigation for impacts to wetlands, both on site and along
22 the rights of way, are an important but currently unresolved issue. Resolution of this issue is
23 expected to be the subject of a supplementary agreement.
24
25

26
27 **2. Upland Habitat Mitigation**

28
29 **a. Shrub Habitat**

30
31 (1) Shrub areas that are cleared for construction of the gas pipeline
32 or the electrical transmission line will be restored to shrub habitat by SE2 following
33 construction. For shrub areas that are cleared and that are not returned to shrub habitat,
34 mitigation shall be by replacement of shrub habitat in selected locations that are controlled by
35 SE2, or otherwise protected, (restoration or creation) in an amount equal to twice the
36 unrestored shrub area. Successful planting of shrubs in formerly disturbed herbaceous sites
37 (such as abandoned agricultural fields) shall qualify. It is understood by the parties that the
38 gas pipeline and electric transmission line are being constructed in easements not on property
39
40
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1 owned by SE2; therefore, SE2 will not have control of activities of the owner after SE2's
2 restoration activities are implemented.
3

4
5 b. With respect to the electrical transmission line, trimmed
6 material and tree trunks will be typically left on the ground in natural vegetated areas for
7 habitat features. Footing construction areas are to be restored and revegetated according to
8 pre-construction conditions.
9

10
11
12
13 **3. Herbaceous Habitat**

14
15 a. Disturbance impacts to herbaceous habitat shall be mitigated by
16 restoration of the disturbed areas using approved native species with safeguards against
17 weedy invasive species.
18

19
20 b. In areas where the natural gas pipeline traverses cultivated agricultural
21 areas, or areas occupied exclusively with grasses, the grass areas will be re-seeded, while
22 areas planted in corn may be left as is.
23
24
25

26
27
28
29 **4. Forest Habitat**

30
31 To replace trees that are removed from the rights of way due to construction or
32 maintenance activities, standard size apple and crabapple, or other appropriate fruit producing
33 trees, will be planted in selected locations that are controlled by the company, or otherwise
34 protected. Those locations will be more than fifteen feet from the centerline of the pipe. Tree
35 replacement will be at a ratio of three new trees for each tree removed.
36
37
38
39
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41
42

43 **III. Withdrawal of Objections**

44
45 Based upon the above commitments made by SE2, WDFW stipulates to the
46 withdrawal of the issues addressed in this Stipulation from the adjudicative hearing. The
47

1 parties agree that wetland impact, protection, mitigation, and enhancement issues are not
2 resolved by this Stipulation and are not withdrawn by WDFW. WDFW specifically reserves
3 the right to raise these issues in EFSEC and non-EFSEC proceedings outside the adjudicative
4 hearing, and to raise other issues not addressed in this Stipulation in the adjudicatory hearing
5
6
7
8

9 DATED: May 12, 2000.

10
11
12 **PERKINS COIE LLP**

13
14
15 By Charles R. Blumenfeld
16 Karen M. McGaffey
17 Charles R. Blumenfeld
18 Attorneys for Sumas Energy 2, Inc.
19
20
21

22
23
24 **WASHINGTON ATTORNEY GENERAL**

25
26 By William C. Frymire
27 Mary McCrea
28 William C. Frymire
29 Assistant Attorney General
30 Attorney for Washington Department of
31 Fish and Wildlife
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Exhibit 4

ENERGY FACILITY SITE
EVALUATION COUNCIL

BEFORE THE STATE OF WASHINGTON
ENERGY FACILITY SITE EVALUATION COUNCIL

In the Matter of Application No. 99-1:

SUMAS ENERGY 2 GENERATION
FACILITY

PARTIAL STIPULATION AGREEMENT
BETWEEN CITY OF SUMAS AND
SUMAS ENERGY 2

The Applicant, Sumas Energy 2, Inc. ("SE2"), has filed an application with the Washington State Energy Facility Site Evaluation Council ("EFSEC") requesting a site certification agreement to allow construction and operation of the proposed Sumas Energy 2 Generation Facility ("the Project").

The City of Sumas ("the City") petitioned to intervene in these proceedings, and SE2 did not object to the City's intervention. The City was granted party status by EFSEC. In its petition to intervene, the City expressed an interest in the effects of the Project's construction and operation within the City limits, including the effects on land, water, city services, noise, traffic, flooding, air emissions and aesthetics. SE2 and the City have entered into this Stipulation in order to resolve some of the City's concerns. The Stipulation shall in no way limit the City's the right to participate in the EFSEC proceedings consistent with this stipulation and to raise issues other than those resolved by this Stipulation.

STIPULATION AGREEMENT BETWEEN
CITY OF SUMAS AND SUMAS ENERGY 2

- 1

[31742-0001/SL003717.147]

ORIGINAL

PERKINS COIE LLP
1201 Third Avenue, Suite 4800
Seattle, Washington 98101-3099
(206) 583-8888

1
2
3 1. Stack Height. As described in the Application, the SE2 facility will have two
4 150-foot exhaust stacks associated with the gas combustion turbines. The air quality
5 modeling performed by SE2's consultants indicates that the ambient pollutant concentrations
6 would be further reduced if the height of the stacks were increased to 180 feet. Greater winds
7 at that height would increase the dispersion of the stack's emissions. The City requests that
8 EFSEC require SE2 to increase the height of the stacks to 180 feet, and SE2 has agreed not
9 to oppose this request.
10
11
12
13
14
15

16
17 2. Noise. The City agrees that, pursuant to current state law and city code, a 50
18 dBA nighttime noise limit is allowed at residentially-zoned receiving properties. The City
19 agrees that the 50 dBA limit is applicable to the noise generated by SE2, not the cumulative
20 noise received at a given residential property from SE2 in combination with other noise
21 sources. SE2 agrees to comply with the above interpretation of state law and city code. SE2
22 agrees to perform pre- and post-construction monitoring to verify compliance with code
23 requirements. Once operational, if SE2 is found to exceed the City's noise limits, SE2 will
24 install additional noise abatement measures at the facility in order to bring noise limits into
25 compliance with code requirements.
26
27
28
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33

34
35 3. Water Supply. On November 22, 1999, the City of Sumas issued a
36 Certificate of Water and Sewer Availability to SE2. To the extent set forth in the Certificate,
37 the City agreed to supply up to 1,053 acre-feet per year of nonpotable water to the Project.
38 Subsequent changes to SE2's proposal have resulted in a reduction in the amount of water
39 required for the Project. SE2 and the City now agree that the City's commitment set forth in
40 the Certificate for nonpotable water supply to the Project is reduced to the volume of 1,025
41 acre-feet per year. However, all other provisions of this Certificate remain in effect. As a
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STIPULATION AGREEMENT BETWEEN
CITY OF SUMAS AND SUMAS ENERGY 2

- 2

[31742-0001/SI.003717.147]

PERKINS COIE LLP
1201 Third Avenue, Suite 4800
Seattle, Washington 98101-3099
(206) 583-8888

1 condition of supplying this water, the City has requested that SE2 pay for the facilities
2 necessary to reliably supply that water. SE2 agrees to do so. In particular, SE2 agrees to pay
3 for a new high-capacity well and pump at the Sumas Municipal Well Field; one or more new
4 wells and pumps at the May Road Well Field, and two new segments of water line necessary
5 to maintain adequate fire flow elsewhere in the industrial area. If the Project is certified and
6 built, SE2 also agrees to pay the City, in addition to any other applicable fees and charges,
7 \$25,000 per year of operation to be used by the City solely for the purposes of aquifer
8 protection, and research and analysis to support future water rights applications.
9

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17 4. Nitrates. In the event that nitrate concentrations in the City's potable water
18 supply exceed applicable federal, state or local standards at any date subsequent to the
19 Project's start of operation, regardless of the cause of the nitrate exceedences, SE2 agrees to
20 reimburse the City, as described hereafter, for a nitrate removal system in order to comply
21 with the applicable standards. SE2 and the City agree that the initial estimate of the capital
22 cost of a nitrate removal system is \$500,000 in the year 2000. SE2 and the City agree that the
23 future cost of the system is the aforementioned initial estimate adjusted annually by the GDP
24 Implicit Price Deflator, using 2000 as the base year ("Future Costs"). SE2 agrees to assume
25 sole financial responsibility for up to the Future Costs of the nitrate removal system. Further,
26 SE2 agrees to pay its proportionate share of any costs in excess of the Future Costs (based
27 upon SE2's contracted volume of potable water usage in relation to the City's total potable
28 water right volume of 1,919 acre-feet per year). SE2 agrees that it will consent to a water
29 rate surcharge imposed on the SE2 facility, in an amount sufficient to discharge SE2's above-
30 described financial obligation over a ten-year amortization period.
31
32

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45 5. Sewer Service. There is an existing contract for sewage service, dated
46 December 14, 1998, between the City and the Sumas Cogeneration Company, L.P.
47

1 ("SCCLP"). The contract allows SCCLP to discharge up to 80,000 gallons per day ("gpd") of
2
3 wastewater to the City sanitary sewer, provided that the wastewater meets all applicable
4
5 standards. Pursuant to Paragraph 8.10 of the contract, the City consents to the transfer of all
6
7 or any portion of the Contract Capacity from SCCLP to the SE2 facility.
8

9 6. Public Roads. During the construction of the facility, there may be an increase
10
11 in the amount and weight of traffic on all roads designate by the Washington Department of
12
13 Transportation for Canadian weight limits. SE2 agrees to make any repairs to these roads that
14
15 are necessary in light of damage caused by SE2's construction-related traffic. The City will
16
17 perform pre- and post- construction evaluations of the conditions of these roads, and will
18
19 determine, on the basis of these evaluations, whether repairs are necessary following
20
21 construction. In addition to the damage related repairs, described above, SE2 agrees to
22
23 repave the portion of Bob Mitchell Avenue extending north from Front Street to the
24
25 Burlington Northern grade crossing, which is approximately 1700 feet long.
26

27 7. Electrical System. During the construction of the facility, SE2 will need to
28
29 obtain electrical power from the City. Reconductoring of the City's underground electric line
30
31 leading west from the south sub-station to an area determined by the City adjacent to the
32
33 facility site is needed in order to reliably supply construction phase power to the SE2 site
34
35 while not impairing the City's system or compromising its ability to provide electrical power to
36
37 its other users. SE2 agrees to pay the costs to re-conductor the 12.47 kV 3-phase line
38
39 extending from the south sub-station to Bob Mitchell Avenue. SE2 also agrees to pay the
40
41 cost to obtain and install a pad-mounted switch (equivalent to S&C Model 662-32) at a
42
43 location determined by the City adjacent to the facility in order to provide safe management of
44
45 the electric utility in the vicinity of the SE2 site.
46
47

1 The City and SE2 further agree and jointly request that the terms of this Stipulation be
2 incorporated into any site certification agreement issued by EFSEC in these proceedings.
3
4

5 DATED: June 22, 2000.
6

7 PERKINS COIE LLP
8

SMITH & KOSANKE
9

10 By Charles R. Blumenfeld
11 Karen M. McGaffey
12 Charles R. Blumenfeld
13 Elizabeth L. McDougall
14 Attorneys for Sumas Energy 2, Inc.
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By James J. Wright
James J. Wright
Attorneys for City of Sumas

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Exhibit 5

ENERGY FACILITY SITE
EVALUATION COUNCIL
BEFORE THE STATE OF WASHINGTON
ENERGY FACILITY SITE EVALUATION COUNCIL

In the Matter of Application No. 99-1:

SUMAS ENERGY 2 GENERATION
FACILITY

SUPPLEMENTAL SETTLEMENT
AGREEMENT BETWEEN
WASHINGTON DEPARTMENT OF FISH
& WILDLIFE AND SUMAS ENERGY 2
REGARDING WETLANDS

I. Introduction

A. Parties

Sumas Energy 2, Inc. (SE2) is seeking a Site Certification Agreement (SCA) from the Energy Facility Site Evaluation Council (EFSEC) to construct and operate the proposed Sumas 2 Generation Facility (S2GF or Project).

Washington Department of Fish and Wildlife (WDFW) has a mandate to preserve, protect, manage, and perpetuate the state's fish and wildlife resources including habitat.

WDFW is a party to the site certification adjudication before EFSEC.

B. Purpose and Intent

On May 12, 2000, SE2 and WDFW entered into a stipulation in this proceeding which addressed all of the issues raised by WDFW with the exception of identification of wetland resources, and the protection and mitigation of wetland impacts. Since May 12, 2000, the parties have met and undertaken further discussion of wetland impacts and issues. As a supplement to the May 12, 2000 Stipulation, the parties enter this stipulation to address the

1 identification of wetland resources, impacts to those resources, and SE2's agreed protection
2 and mitigation actions regarding those resources.
3
4

5 The provisions of this Agreement are intended to supplement the provisions of the
6 May 12, 2000 Agreement between the parties which was submitted to EFSEC.
7
8

9 **C. Resolution of Issues**

10 SE2 has undertaken preliminary site impact assessments to identify the major
11 significant wetland impacts expected from construction and operation of the Project facility,
12 gas pipeline, and electrical transmission line. The Parties agree that not all impacts may be
13 known and therefore, the Agreement contains commitments to address currently expected
14 specific impacts and a commitment to principles of impact assessment and mitigation for
15 potential future unknown impacts.
16
17
18
19
20
21

22 The Parties further agree that SE2 will comply with any conditions in any settlement
23 agreement with the Department of Ecology that set stricter standards regarding wetlands and
24 water quality.
25
26
27
28

29 **II. SE2 Commitments**

30 **A. SE2's Recommended Commitments**

31 SE2 agrees that it shall recommend the mitigation measures identified in the following
32 sections of this Settlement Agreement be incorporated into the SCA as binding commitments.
33
34
35
36

37 **B. Wetland Assessment and Mitigation**

38 The Parties agree that the principles of impact assessment that have been applied to
39 the currently expected impacts and that shall be applied to all unforeseen impacts are, in
40 descending order of importance, 1) avoid the impact wherever possible; 2) minimize the
41 impact, and 3) provide on-site, in-kind mitigation.
42
43
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1 WDFW and SE2 agree that, to the extent impacts to wetlands habitat cannot be
2 avoided in the construction and operation of the Project, the impacts will be mitigated as
3 follows:
4

5
6
7 **1. Wetland Delineation & Mitigation Report**

8 SE2 shall undertake a wetland mitigation plan that includes a combination of
9 wetland preservation, enhancement and creation to replace wetlands that will be filled and/or
10 altered. This plan, entitled "Wetland Delineation & Mitigation Report" (the "Report") dated
11 June 26, 2000 (filed with EFSEC as Exhibit JW-4) is incorporated into this Agreement.
12
13
14

15
16
17 **2. Additional Mitigation**

18 a. SE2 agrees to modify the performance standards for trees and shrubs
19 set forth on pp. 23 and 24 of the Report so that 50% of the canopy closure for those
20 vegetation types will be achieved by Year 10.
21
22

23 b. SE2 agrees to plant Western red cedar trees in the forested and
24 shrubbed wetland on the site to enhance this wetland. The cedars will be planted on 15-foot
25 centers or in pods through the wetland where the elevation is conducive for their growth.
26 SE2 agrees to develop a detailed plan for these plantings and to consult with, and seek
27 consensus with WDFW during the development and review of the plan. The parties agree that
28 the plan will include site-specific performance standards that will be in lieu of the vegetation
29 performance standards set forth in the Report.
30
31

32 c. SE2 agrees to modify the design of the drainage ditches on the site,
33 including the outlet design, to insure that an adequate supply of water is provided to the
34 wetlands being created and enhanced, and to provide additional habitat features. This
35 modification will include maintaining a vegetative channel east of the forested and shrubbed
36 wetland, and on the north and east sides of the project site, provided that there is adequate
37
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1 width on the east side of the property site in conjunction with a landscaped screen. SE2
2
3 agrees to develop a design plan for these modifications and to consult with, and seek
4
5 consensus with, WDFW during development and review of the plan.
6

7
8 **III. Withdrawal of Objections**

9 Based upon the above commitments made by SE2, WDFW agrees that SE2 has
10 mitigated impacts to wetlands regarding wildlife. Therefore, based on this Agreement and the
11 May 12, 2000 Agreement, WDFW stipulates to the withdrawal of its issues from the
12
13 adjudicative hearing, and to the withdrawal of the prefiled testimony of Curt Leigh.
14
15

16
17 DATED: July 17, 2000

18 **PERKINS COIE LLP**

19
20
21
22 By _____

23 Karen M. McGaffey
24 Charles R. Blumenfeld
25 Elizabeth L. McDougall
26 Attorneys for Sumas Energy 2, Inc.
27
28
29

30
31 **WASHINGTON ATTORNEY GENERAL**

32
33
34 By _____

35 William Frymire
36 Mary McCrea
37 Assistant Attorneys General
38 Attorneys for Washington Department of
39 Fish and Wildlife
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BEFORE THE STATE OF WASHINGTON
ENERGY FACILITY SITE EVALUATION COUNCIL

IN RE APPLICATION NO. 99-1

EXHIBIT ____ (JW-4)

SUMAS ENERGY 2 GENERATION
FACILITY

Wetland Delineation & Mitigation Report
for the
Sumas Energy 2, Inc. Electric Generating Plant Facility
Sumas, Whatcom County, WA

Prepared for:

Sumas Energy 2, Inc.
335 Parkplace, Suite 110
Kirkland, WA 98033

Prepared by:

Bexar Environmental Consulting Ltd.
P.O. Box 3527
Blaine, WA 98231-3527

June 26, 2000

John E. Wong, Principal

TABLE OF CONTENTS

	Page
1.0 PROJECT UNDERSTANDING.....	1
1.1 Scope of Work	1
1.2 Background.....	1
2.0 METHODOLOGY.....	2
3.0 RESULTS	2
3.1 Project Site Setting	2
3.2 Soils.....	2
3.3 Hydrology.....	3
3.4 Existing Plant Communities & Wetland Areas.....	5
3.4.1 General	5
3.4.2 Plant Communities.....	5
3.4.3 Wetland Areas	6
3.5 HGM Position and Landscape.....	7
4.0 WETLAND FUNCTIONS	8
4.1 WA Department of Ecology Draft Characterization Inventory	8
4.2 Wetlands Functional Assessment Methodology	10
5.0 WETLAND CATEGORIES	11
6.0 ANTICIPATED IMPACTS & MITIGATIVE MEASURES.....	12
6.1 Vegetation Impacts	12
6.2 Wetland & Wetland Buffer Impacts	13
6.3 Impacted Wetland Functions	13
6.4 Indirect Impacts.....	15
7.0 PLANT SITE MITIGATION.....	17
7.1 General.....	17
7.2 West Mitigation Area	17
7.3 East Mitigation Area.....	18
7.4 Preserved Wooded Area	19
7.5 Proposed Vegetative Assemblage.....	20
7.6 Proposed Soil Structure.....	20
7.7 Proposed Hydrology.....	20
7.8 Proposed Habitat Features	21
7.9 Sequencing & Schedule.....	22
8.0 OBJECTIVES	22
8.1 General.....	22
8.2 Mitigation Ratios.....	22

TABLE OF CONTENTS (cont.)

9.0	PERFORMANCE STANDARDS.....	23
9.1	Vegetation	23
9.2	Soils.....	24
9.3	Hydrology.....	24
9.4	Habitat Features	24
10.0	MONITORING.....	25
10.1	Vegetation Monitoring.....	25
10.2	Soils Monitoring	25
10.3	Hydrology Monitoring.....	25
10.4	Wildlife Monitoring.....	26
11.0	REPORTING.....	26
12.0	SITE PROTECTION.....	26
13.0	CONTINGENCY PLAN.....	27

FIGURES

Figure 1 - Vicinity Map

LIST OF APPENDIXES

- Appendix A - David Evans & Assoc. 1995 Wetland Delineation Map
- Appendix B - NRCS/Corps 1996 Confirmed Wetland Boundary
- Appendix C - Bexar Environmental Consulting Ltd. Revised Delineation
- Appendix D - Table of Observed Hydrology (2000) & Rainfall Data
- Appendix E - Wilson Engineering Plan of Wetland Mitigation & Stormwater Features
- Appendix F - May 18, 2000 Photographs by Bexar Environmental Consulting
- Appendix G - Wetland Fill in NRCS/Corps Confirmed Wetlands
- Appendix H - Fill in Bexar Environmental Consulting Ltd. Revised Delineation Boundaries

1.0 PROJECT UNDERSTANDING

1.1 Scope of Work

The report was prepared for purposes of discussing settlement with the Washington Department of Ecology (WADOE) and the Washington Department of Fish and Wildlife (WADFW) in connection with the Energy Facility Site Evaluation Council (EFSEC) proceedings concerning the Sumas Energy 2, Inc. generation facility.

This report summarizes the conclusions of past wetland delineations conducted at the project site, but supplements those delineations with additional analysis of areas designated by the Natural Resource Conservation Service (NRCS) as "prior converted cropland." This supplemental analysis is not intended to supersede the existing wetland boundaries confirmed by the NRCS and the U.S. Army Corps of Engineers.

The report also presents an expanded wetland mitigation plan.

1.2 Background

The plant site wetlands were studied and delineated by David Evans and Associates, Inc. and Bexar Environmental Consulting Ltd., and subsequently confirmed by the NRCS in 1995 and 1996. At that time, the NRCS was the agency responsible for confirming Section 404 wetlands within agricultural areas pursuant to a multi-agency agreement, including the Corps of Engineers. The NRCS confirmation is still in effect and is being used by the Corps.

David Evans and Associates (DEA) conducted a wetland reconnaissance in January through April 1995. The wetland reconnaissance was followed by a formal wetland delineation in October 1995 during which time soil and hydrology were sampled and recorded. Wetland boundaries were flagged and surveyed by Larry Steele & Associates as shown on the map contained in Appendix A.

Subsequent to the DEA delineation, it was determined that the land was subject to prior converted cropland (PC) rules as administered by the NRCS and recognized by the Corps of Engineers. At the time of the delineation, the NRCS was charged as the lead agency for establishing wetland boundaries on agricultural lands. This procedure was established by a January 6, 1994 Memorandum of Agreement (MOA) between the Corps, the U.S. Environmental Protection Agency, the U.S. Department of Agriculture (NRCS), and U.S. Fish and Wildlife Service. Application of the MOA in the state of Washington was established by a coordinated agreement between these federal agencies and the WADOE and the WADFW in August 1994.

Accordingly, wetland boundaries were confirmed by the NRCS through onsite analysis and a review of aerial photography. The wetland boundaries map as confirmed by the NRCS, and accompanying correspondence, are contained in Appendix B. It is this confirmation that Sumas Energy 2, Inc. has relied upon for its Section 404 application to the Corps of Engineers and its application to

EFSEC. The NRCS confirmation has been reaffirmed as being valid by the Corps in its letter dated February 15, 1996.

After receiving comments from the WADOE and WADFW, Bexar Environmental Consulting Ltd. (Bexar) performed additional observations and sampling of the areas previously designated as prior converted croplands. Although Bexar maintains that the prior converted cropland designation continues to be appropriate, this report discusses the extent to which some of those cropped areas may have wetland characteristics.

2.0 METHODOLOGY

The wetlands on the site were delineated in 1995 by DEA and Bexar according to the methodology described in the 1987 publication titled "Corps of Engineers Wetlands Delineation Manual" (1987) and the USDA-NRCS National Security Food Act Manual, Part 514. Reference was also made to the March 1997 Washington State Department of Ecology titled "Washington State Wetlands Identification and Delineation Manual".

Bexar assessed the wetland functions and categories using the Washington Department of Ecology Draft Wetland Characterization Methodology, a Snohomish County functional assessment methodology based on the Wetland Evaluation Technique, and the Washington State Wetland Rating System.

3.0 RESULTS

3.1 Project Site Setting

Plant Site

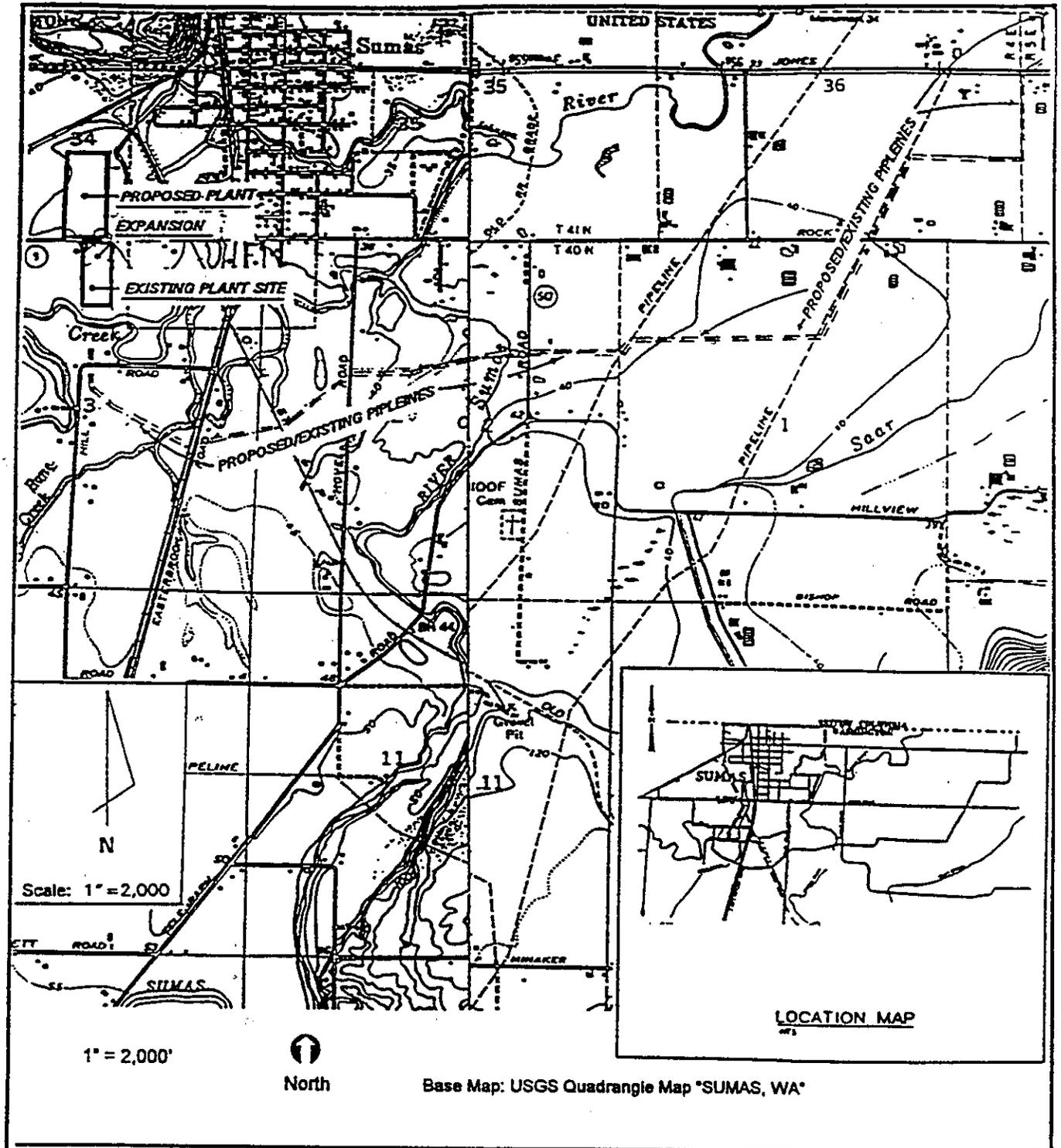
The proposed plant site is situated approximately 2,200 feet south of the U.S./Canadian border, in the south ½ of Section 34, Township 41N, Range 4E, Sumas, Washington (Figure 1).

The proposed plant site is located in an agricultural field managed for corn production that has been artificially drained with drain tile and ditches. The land is nearly level and slopes downward slightly to the middle of the property at the location of an existing ditch, and also to the east.

The site is bordered on the north by a fallow fill site, the south by State Highway 9, the east by fill and fallow pasture, and the west by cornfield and an approximate 9-acre wooded area. The IKO asphalt shingle plant is located west of the wooded area and cornfield.

3.2 Soils

The Natural Resource Conservation Service (NRCS) soil maps for Whatcom County indicates the majority of the project area to be occupied with Sumas silt loam, 0 to 2% slopes (#162). A minor part of the property is mapped as having Puget silt loam, drained 0 to 2% slopes (#123) at the southeast part of



Applicant: SUMAS ENERGY 2, INC.

COE No. 98-4-02021

Proposal: Wetland Fill for Electric Generation Facility

At: Sumas, Whatcom Co., WA

Date March 1, 1999 | Rev. 10/1/99

the site, and most of the west mitigation site. Both of these soil units are on the NRCS list of hydric soils.

The soils within the plant site and west mitigation area have been subject to intense manipulation to promote its agricultural use. Drain tile and ditching have been installed to accelerate drainage, and the land is typically disked three of four years for the planting of corn. The disking effectively breaks up the soil structure into unnatural blocks to accelerate drainage and promote root penetration of the corn.

3.3 Hydrology

General

The site is located within the Fraser River drainage basin, and also receives overbank flooding from the Nooksack River during severe flood events. The plant site is situated on lands that drain to Sumas Creek via a drainage ditch and storm sewer.

Hydrology for the wetlands is attributed to a seasonal high groundwater table and precipitation. The wetlands are not influenced by the Sumas River, Johnson Creek or Sumas Creek.

Site hydrology has been observed and sampled on numerous occasions over the past five years. The significant observations were:

January through April 1995 (DEA)
October 10, 1995 (DEA)
January 18, 1996 (NRCS, Bexar)
May 3, 2000 (WADOE, Bexar, Robinson and Noble, Inc.)
May 17, 2000 (WADOE, Bexar)
May 18, 2000 (Bexar)

Plant Site

The plant site is situated on agricultural lands that have been artificially drained with ditching and functioning drain tile. Drain tile consists of 4-inch diameter pipe laid in 4-foot sections at a depth of 20 to 36-inches. Ditches are located on the south property line, and the common boundary between the plant site and the wooded area (see Wilson Engineering map, Appendix E). Flow from this ditch originates from the Burlington Northern railroad grade side ditch, which is supplemented with runoff from the IKO stormwater detention pond. The onsite, north-south ditch outfalls into a significant ditch described in the following paragraph.

A large drainage ditch enters the southwest part of the site at State Highway 9, and flows northeast through the plant site, and ultimately into Johnson Creek. The drainage ditch is culverted for approximately 800-feet east of the east plant site boundary towards Sumas Creek and Johnson Creek. The ditch

* WADOE visited the site on May 3 and 17, 2000 in its capacity as EFSEC's consultant.

was reportedly constructed to primarily convey runoff from State Highway 9, but has also served to drain the surrounding land. The drain tile are directed to flow and outfall in the direction of this ditch.

The Farmed Wetland Pasture (FWP) wetlands are typically ponded for greater than 14 days during the growing season. The wetland ditch possesses surface water for the majority of the growing season, but flow has been observed only following significant, prolonged rainfall. It is stagnant during the summer. Other wetland areas previously identified by DEA, and this spring by Bexar, are saturated at or near the surface during the early part of the growing season, and to a lesser extent, the latter part of the growing season.

Wetland hydrology as defined in the WA State Wetlands Delineation Manual (WSWDM) and the 1987 Federal Manual requires that areas be seasonally inundated and/or saturated to the surface for a consecutive number of days greater than 12.5% of the growing season, provided the soil and vegetation parameters are met. Areas inundated or saturated between 5% and 12.5% of the growing season may or may not be wetlands. There is little guidance as to when a 5% threshold applies, and under what conditions that the 12.5% threshold applies. In the absence of such guidance it is reasonable to apply the 12.5% threshold given the manipulated and drained condition of the property. Drained lands and soils, or permeable soils typically require more water to satisfy wetland hydrology.

The growing season as defined by the NRCS for the Clearbrook Station (close to Sumas) begins March 30th and ends November 2nd, which is a 241-day period. 5% is 12 days and 12.5% is 30 days.

Rainfall. March 2000 rainfall for Bellingham was normal, while the available Clearbrook records suggest that rainfall was also near normal for March (see Appendix D). April rainfall for Clearbrook was above was normal (3.80" vs. 3.33"), and May was significantly above normal (5.71" vs. 2.85").

Of interest is that 4.16" of rainfall occurred for the 20 day period prior to the May 3rd WADOE site inspection. This includes 0.38" of rainfall that day. An additional 1.94" of rain occurred over the next 7 days, up to and including May 10th, which includes 0.50" of rainfall that day. 0.41" of rainfall occurred over the next seven days, up to the May 17th WADOE inspection.

Water levels dropped significantly in numerous of the sample holes during the period from May 3rd to May 17th and it is believed that most of the decrease occurred in the six or seven days preceding the May 17th inspection date. Except for the ponded area, most other samples experienced a significant decrease in the water level as indicated in the table in Appendix D. These sample points are considered to not have met the hydrology test for wetlands.

Of additional interest, is that for the 21-day period of March 24th to April 13th, only 0.84" of precipitation was recorded. For the 16-day period of March 29th to April 13th, only 0.33" of precipitation was recorded. It is assumed that continuous wetland hydrology was interrupted during this period.

Many of the samples were not saturated at the May 17th and 18th inspections. The site obviously experiences rapid infiltration and accelerated drainage due to the plowed condition of the soil. The more compact subsoil prevents effective

infiltration; therefore rainfall occupies the upper layer of the soil profile. Water follows the path of least resistance in the soil which, for these soils, are the spaces between the soil clumps produced by the annual plowing. Although water was present as seepage from the side or bottom of the hole, the soil itself was not saturated. That is, the pores and peds were not saturated because water could not be expressed by hand compression.

The breaks in the soils produced by the plowing are not considered to be peds, which is only applicable to natural breaks in the soil. The 1987 Federal Manual and the 1997 WADOE Manual both reference that when water enters a nonsandy hole at 12", one can assume soils are saturated to the surface. However this assumption does not control over actual physical sampling where the sampling determines that the soils are not, in fact saturated. Neither does the assumption apply to all soils. The observed absence of saturated soils in these samples supports the conclusion that water entering the hole at 12" or higher is not sufficient to saturate soils.

By comparison, samples E14, E16 and E17 experienced rapid infilling of the holes at the May 17th inspection (see Appendix D). In these samples the soils were also saturated throughout, as saturation was observed in the soil or could be pressed out of the soil.

Photographs of select samples are provided in Appendix F.

3.4 Existing Plant Communities & Wetland Areas

3.4.1 General

The National Wetlands Inventory (NWI) indicates that no wetlands are present within the plant site. The NWI map further indicates Sumas Creek as the only wetland feature to be crossed by the utility lines.

3.4.2 Plant Communities

Plant Site & West Mitigation Site

The proposed plant site has been in agricultural use for many years, therefore the vegetative assemblage is determined by the crop that is planted, or the resident grass community, which grows in the fallow year of rotation. Records indicate corn to be the dominant crop since at least 1974, with infrequent cycles of fallow pasture growth or hay. During 1998 the land was fallow and dominated by barnyard grass (*Echinochloa crusgalli*), red clover (*Trifolium pratense*), white clover (*Trifolium repens*), broad-leaf plantain (*Plantago major*), timothy (*Phleum pratense*), quackgrass (*Agropyron repens*), and corn stubble. The land was subsequently tilled in October of 1998 for preparation of the following years' planting of corn.

Subsequent inspections this spring (2000) provided the opportunity to observe vegetation prior to plowing of the fields. The vegetation was somewhat sparse and consists of grasses and forbs. Throughout the site is creeping foxtail (*Alopecurus geniculatus*), Western pearlwort (*Sagina occidentalis*), Shepard's-purse (*Capsella bursa-pastoris*), clover, mustard (*Brassica sp.*), American

brooklime (*Veronica Americana*), carrot (*Daucus sp.*), a dandelion like species; buttercup (*Ranunculus sp.*), common plantain (*Plantago major*), and thistle. The vegetative assemblage is not a reliable indicator of wetlands because the annual plowing abnormally distributes seeds and there is no natural or long-term competition. The plants observed in May 2000 established on bare soil without competition from other plants; therefore plants adapted for wetland conditions can also persist in nonwetland areas, particularly during the wet season. Nonwetland plants and wetland plants were found side by side. Based on the 1998 inspection when the field was fallow, it is likely the vegetation present in the spring may not persist throughout the year, or that nonhydrophytic vegetation and invasive species will establish and become dominant as the season progresses.

The farmed pasture wetlands (FWP) and the wetland ditch were both dominated with reed canary grass and interspersed with barnyard-grass during the 1998-growing season, both species which are included in WADOE's list of invasive species.

Part of the west mitigation area that is targeted for wetland creation and enhancement is similarly planted with corn, however, the FWP portion sometimes remains fallow and is then dominated with reed canary grass.

An 8.8 acre, square shaped shrub and tree area is located west of the north part of the plant site. This area has been previously described as a forested wetland, however, it is a palustrine shrub wetland with some forested areas. The owner of the property reported that this wooded area was not cleared and farmed in order to provide a refuge for livestock. 1976 aerial photography indicates only the east ½ to have any significant cover with shrubs or trees, however older and newer photography show higher percent cover suggesting the site has been subject to a series of logging, clearing and subsequent regeneration.

The tree areas possess black cottonwood, paper birch (*Betula papyrfera*), and red alder (*Alnus rubra*). A few remnant semi-mature red cedars and one Sitka spruce (*Picea sitchensis*) are also present and represent species left from prior logging. Immature red alder and salmonberry (*Rubus spectabilis*) are also prevalent in the tree areas. The surrounding shrub community contains areas of tall shrub and lower shrub stratas. Pacific willow (*Salix lasiandra*), vine maple (*Acer circinatum*) and red-osier dogwood (*Cornus sericea*), are typical of the tall shrub area, while low shrub areas consist of salmonberry, Douglas spirea (*Spiraea douglassi*), sweetbrier (*Rosa eglanteria*) and Himalayan blackberry (*Rubus discolor*). Noted emergent species were reed canary grass (*Phalaris arundinacea*), creeping buttercup (*Ranunculus repens*), stinging nettle (*Urtica dioica*), large-leaved avens (*Geum macrophyllum*) and youth-on-age (*Tolmiea menziesii*). Himalayan blackberry and reed canary grass are scattered throughout this block and are attributed to past site disturbances by logging and livestock.

3.4.3 Wetland Areas

The NRCS and Corps have confirmed the presence of approximately 4.22 acres of wetlands on the site, not including the wooded area (see Appendix B). The DEA 1995 wetland delineation, which included PC lands that were excluded by the NRCS/Corps, totals approximately 10.42 acres, not including the wooded area (see Appendix A).

Based on the hydrology observed in Spring 2000, Bexar suggests that if the PC designation is disregarded, there are areas that could be added as wetlands, and areas that should be deleted as wetlands from the DEA delineation. A revised wetland map prepared by Bexar, that includes PC lands, contains approximately 12.69 acres of wetlands, not including the wooded area.

The revised mapping relies largely on the samples obtained during the WADOE visits of May 3, 2000, May 17, 2000, and a May 18, 2000 sampling and mapping effort by Bexar. The May 3rd samples were regarded as extreme and not normal due to the above normal rainfall; however it did provide an opportunity to observe drainage patterns, and the opportunity to compare data with other sampling dates. Particular attention was given the results of the May 17th and May 18th samples, as rainfall had receded for a one-week period. During that one-week period, water levels were significantly lower as indicated in the Table in Appendix D.

This accelerated drop in water is attributed to the agricultural manipulations attributed to disking, drain tile and drainage ditches. Wetland hydrology was therefore absent at or near the surface for many of the samples. For these samples, water entering the hole at or above 12-inches was not sufficient to saturate the soils at or near the surface. These areas also coincide with the slightly higher topographic positions on the property. Vegetation was not a useful indicator due to the agricultural nature of the land. The plowing, planting and harvesting has abnormally distributed seeds, and the plants that are present in a pioneer or first successional-stage without significant competition. These plants would likely be replaced with a different plant assemblage later in the season if the fields were to remain fallow.

In applying a saturation standard for duration of wetland hydrology, it is appropriate that a 12.5% threshold be applied given the agricultural manipulations and drained condition of the fields.

3.5 Existing Position & Function In Landscape

Project site wetlands were evaluated according to "The Hydrogeomorphic Classification of Wetlands" (Brinson, 1993). The classification system classifies wetlands based on the geomorphic setting, water source and hydrodynamics.

Geomorphic Setting

All of the project site wetlands would be regarded as depressional type wetlands as opposed to riverine or fringe (lake) wetlands. The wetlands are further divided into four subcategories, 1.) wetlands with no apparent inlet or outlet, 2.) wetlands positioned on a local topographic high with only a surface outlet, 3.) wetlands with inlets and outlets and 4.) groundwater slope wetlands. Most of the site wetlands possess two of these subcategories.

Most of the larger wetland areas would be regarded as groundwater slope wetlands without an inlet and outlet. To a degree, all of these wetlands offer temporary storage of floodwaters. Wetlands with no outlets retain inflow and allow filtration while those with inlets and outlets contribute to stream base flow as do groundwater slope wetlands.

Water Sources

Water sources for the project site wetlands include precipitation and groundwater discharge, with a seasonal high water table as the principle source. Groundwater discharge supplies nutrients as it passes through organic and mineral soils and also renews stream base flows where applicable.

Hydrodynamics

The hydrodynamics of the project site wetlands are primarily "vertical fluctuations" as classified by Brinson and are stated as resulting from evapotranspiration and subsequent replacement by precipitation or groundwater discharges. While precipitation is significant, evapotranspiration is also seasonally significant. Vertical fluctuations provide the ability to retain floodwaters so long as capacity is available (conditions not saturated).

4.0 WETLAND FUNCTIONS

4.1 WA Department of Ecology Draft Characterization Inventory Methodology

The wetland functions for the plant site were evaluated according to the WADOE Draft Characterization Inventory Methodology (WADOE Draft Methodology). The system evaluates the following functions: wetland condition, wetland buffer, wildlife habitat, nutrient and sediment entrapment, flood and stormwater desynchronization, groundwater discharge and recharge, support of stream base flow, shoreline stabilization and heritage and cultural value. Fisheries habitat was added as a separate item with use of the Whatcom County assessment. A summary is provided in Table 4-1 and the text below.

Background Conditions

Wetland functions have been altered due to the cleared condition of the site and the ongoing cultivation. The typical crop rotation consists of three years

of growing corn followed by one fallow year. During the crop years, the site is plowed in the spring, followed by manure application and seeding. Herbicide is applied as needed, particularly the season subsequent to the fallow year.

Plant Site

Although the FWP and PC lands are adjacent and sometimes contiguous to the wooded wetland area, only the farmed part was evaluated because that is the part which will be impacted, and also it is distinctly different with respect to land use and the extent of disturbance. However, for the purpose of size and hydrologic functions, the entire wetland area (wooded, shrub, emergent) was considered.

Below is a discussion on the results of the evaluation using the WADOE Draft Methodology.

The overall wetland condition rates as *low* for the FWP wetland/PC lands, and the wetland ditch (W) due to the presence of exotic species, hydrologic alterations (ditching/drain tile), agricultural activity (haying, corn), and evidence of pollutants (sedimentation). The buffer rates *low* for the wetland ditch (W) due to the adjacent land cover type (corn/pasture). The FWP/PC lands wetland buffers rates as *medium* because it abuts and is part of a wooded and shrub wetland. The heritage value of the wetlands rates as *low* due to the absence of a Washington Natural Heritage wetland, mature forested wetland, estuarine wetland, sphagnum bog, fen and the absence of any known endangered, threatened or sensitive species. Cultural value rates as *low* for the wetlands due to the poor condition, low habitat value and wetland types, private ownership, lack of access and scenic diversity. High points were assigned for the close proximity to the city.

Wildlife habitat rates as *low* for the wetlands, not including the wooded area. Low points were provided for lack of significant open water and habitat features, single habitat type, simple shape of the wetland and poor condition of the wetland. Medium points were assigned for the FWP's size (when added to the adjacent wooded area), buffer and corridor. According to the assessment, fisheries habitat rates as *low* due to the absence of habitat within the pasture setting. The wetland ditch is not known to provide habitat due to the 800 foot length of culvert to the east, and the summer drying of the ditch.

The most significant hydrologic function, which rates as *high*, is related to entrapment of nutrients and sediments. The high rating is due to the percent of vegetative cover¹, low flow, slight slopes with constricted outlets and the pollutant (sedimentation) input. Flood and stormwater retention rates as *medium* due to the small storage capacity, the low position in the watershed, and the low vegetation density. Additional points were provided for the dense ground cover in the wetland ditch, the connection to Sumas Creek 1,600 feet to the east and size. Groundwater discharge and recharge rates as *unlikely* for the wetlands due to the confining nature of the subsoil and the soils being in

¹Applies to wetland ditch and also when FWP is fallow; does not apply when FWP is in corn.

the hydrologic group "D". The confining layer beneath the wetlands *retards* groundwater recharge². The project area is located above the Abbotsford/Sumas aquifer, but is not connected or directly related. The FWP/PC lands and wetland ditch received a *medium* evaluation for *support of stream base flow* because it indirectly *supports* stream flow due to the connection with Johnson Creek. *Shoreline stabilization* is not viewed as being applicable because the wetlands do not possess a shoreline.

TABLE 4-1 - Wetland Functions Comparison Summary³

Wetland Function	Plant Site		
	Farmed Wetland Pasture (FWP); PC Lands	Wetland Ditch	8.8 ac. & Mitigation Area (mature)
Wetland Condition	Low	Low	Medium
Buffer	Med	Low	Med
Wildlife Habitat	Low	Low	Medium
Fisheries Habitat	Not applicable	Unlikely	Not applicable
Nutrient/Sediment Entrapment	High	High	High
Flood/Storm Desynchronization	Low	Low	Low-Med
Groundwater Discharge	Unlikely	Unlikely	Unlikely
Groundwater Recharge	Retarded	Retarded	Retarded
Stream Baseflow Support	Unlikely	Possible	Unlikely
Shoreline Stabilization	Not applicable	Not applicable	Not applicable
Cultural Values	Low	Low	Low-Med
Heritage Values	Not applicable	Not applicable	Not applicable

4.2 Wetlands Functional Assessment Methodology

Wetlands located on the plant site wetlands and the west mitigation area were also evaluated according to a Snohomish County functional assessment methodology based on the Wetlands Evaluation Technique (Adamus), and other literature specific to the Pacific northwest and wetland systems. The results of this assessment are provided in Table 4-2.

The wildlife and hydrologic functions evaluated in the WADOE Characterization Inventory are also considered in this assessment, the

² The primary source of water for the Sumas Aquifer system is from rainfall on the upland areas to the north and west of the valley. From a regional perspective, available shallow groundwater recharge, although buffered by the low permeability sediments, could contribute 5 to 15 percent of recharge to the aquifer.

³ Washington Department of Ecology Draft Characterization Inventory Analysis

difference being that the Snohomish County methodology evaluates the ability and the actual opportunity.

This evaluation yielded results somewhat similar to the WADOE Characterization Inventory. Differences include the wetlands high *opportunity* for flood flow alteration. One difference was the *ability* for flood flow alteration, which rated low for the Wetland Ditch due to the unconfined outlet. The *ability* for the FWP/PC lands and the mitigation area rates as high due to apparent seasonal ponding and restricted outlet.

Stream base flow contribution *potential* rates low due its position in the lower basin. The stream base flow contribution *ability* is medium based on possessing a permanent constricted outlet. Only the ditch has an unrestricted outlet, while the remaining wetlands are restricted by slight topographic variances.

Table 4-2 Plant Site & Mitigation Area Wetland Functions⁴

Function	Farmed Wetland/PC Lands	Wetland Ditch	Mitigation Area
Hydrologic			
Sediment stabilization	1	1	1
Sediment retention	5	5	5
Toxicant retention	5	5	5
Nutrient uptake	3	3	3
Pollution reduction	3	3	3
Flood flow alteration opportunity	5	5	5
Flood flow alteration ability	5	1	5
Stream base flow contribution potential	1	1	1
Stream base flow contribution ability	3	5	3
Groundwater recharge	1	1	1
Percent of 100%	62	60	64
Wildlife Habitat			
Habitat diversity	1 to 3	1	3
Travel corridor	1	1	1
Plant food quality	1	1	5
Occlusion	1	1	5
Habitat features	1	1	3
Wetland edge	1	1	3
Total habitat area	5	5	5
Observed species	1	1	3
Known usage	1	1	1
Sensitive species	1	1	1
Percent of 100%	28 to 30	28	60

With respect to wildlife, the ratings were generally low due to the lack of habitat features, single wetland class, plant food quality (only corn cobs), and

⁴ Table 4-2 is a wetland functions summary using the Snohomish County functional assessment methodology based on the Wetlands Evaluation Technique (Adams). Note that each function evaluated has the potential of receiving 1, 3 or 5 points, with 5 being the highest.

the lack of occlusion. Additional points were provided for the seasonal ponding and the size of the wetland acreage.

The assessment also indicates that Wildlife Functions should increase by 38% as a result of the proposed mitigation plant community, which will offer feeding opportunities, occlusion, habitat and structural diversity.

5.0 WETLAND CATEGORIES

Affected, or potentially affected, wetlands within the City of Sumas were rated according to the 1993 City of Sumas Wetland Ordinance and according to the Washington Department of Ecology Wetlands Rating system (Publication #93-74, 2nd edition) for federal and state permitting. The 1993 City of Sumas Wetland Ordinance Categorization criteria are the same as contained in its 1999 Master Shoreline Program. Affected wetlands outside the City of Sumas were rated only according to the WADOE method. Table 5-1 is a summary of the rating.

City of Sumas

The FWP wetland within the plant site is a Category III or IV Wetland. Although the wetland is connected to the wooded area to the west, it is evaluated separately because of the different habitat type caused by agricultural activity. The wetland lacks open water and has one habitat type dominated with one species. The wetland would apparently qualify as a Category IV Wetland based on the single wetland class and single dominant plant species (corn or reed canary grass/barnyard grass), however its association with the wooded area tends towards a Category III rating.

The wetland ditch in the plant site is a Category III Wetland based on the presence of a single wetland class and a predominance of exotic species (reed canary grass, barnyard grass).

Table 5-1

WETLAND CATEGORY SUMMARY						
Wetland	Type	Community	Isolated	DOE Pts.	City	DOE
FWP/PC	PEM	Corn	No	16	III/IV	III
Wetl. ditch (W)	PEM	Ditch	no	9	III	III
9.4 ac. Wooded Block	PSS/PEM/PFO	Native, invasive	yes	28	III	II

Plant Site

Using the Department of Ecology wetland rating system, the plant site wetlands rated as follows: FWP/PC lands and Wetland Ditch (W) as a Category III Wetlands. Both received significantly less than required 22 points for a Category II rating. The low rating was primarily due to the agricultural and monotypic grass cover that resulted in low habitat features, lack of

structural diversity and species diversity. The wooded block immediately west rated as a Category II Wetland as a result of a 28-point rating.

6.0 ANTICIPATED IMPACTS

6.1 Vegetation Impacts

Plant Site

Developed areas within the plant site will result in the permanent loss of approximately 27.5 acres of agricultural land, mostly planted with corn. The loss will not have significant impacts to wildlife or to other adjacent plant communities due to the disturbed condition of the wetlands and the ongoing nature of those activities, and the availability of similar habitat in areas in the vicinity.

6.2 Wetland & Wetland Buffer Impacts

Plant Site

The project (including the redesigned stormwater detention system) will result in the filling, excavation or culverting of 2.81 acres of palustrine emergent wetlands *confirmed by the NRCS and Corps* (see Appendix G). Of these, 1.81 acres are farmed wetlands (FWP) and 1.0 acre is an approximate 660 linear foot wetland ditch (W). The 1.81 acres of farmed wetlands are located on the east edge of the forested and shrub wetland area. The wetland to be filled consists of the farmed area and reed canary grass to this wetland. The 1.81 acres includes the relocation of 600 linear feet of ditch located parallel to the east edge of the 8.8-acre block preservation area block will require relocation, which is approximately 4,800 square feet and dominated with reed canary grass. Ditch spoils would be temporarily placed on areas already filled, or areas to be filled and then hauled offsite to a nonwetland disposal site (see Table 6-1).

1.0 acre of the wetland ditch is to be backfilled on the plant site and realigned through the south and east edge of the plant site until it intersects and outfalls into the existing culverted part of the ditch. This ditch is dominated by reed canary grass and subdominated by barnyard grass. The 600 foot ditch on the east side of the wooded area is to be relocated around the north and east side of the proposed plant site (see Table 6-1).

Using the revised wetland mapping by Bexar (see Appendix H), which ignores the PC designation, a total of approximately 8.76 acres of FWP, wetlands and PC lands would be filled, excavated or culverted (see Table 6-1). The 1.0-acre wetland ditch (660 feet) and the 600-foot ditch will be relocated as described in the preceding paragraph. This impact acreage includes 0.77 acres of detention pond Cell No. 2 that is below the 38.9-foot permanent pool elevation, although it is to be planted with native shrubs, and therefore, retains wetland attributes.

6.3 Impacted Wetland Functions

The overall wetland condition, which rated *low* for the FWP/PC lands and the wetland ditch, *is not considered to be significantly impacted to the extent that mitigation is required.* This due to existing disturbed wetland condition.

The *buffer*, rates *low* for the wetland ditch and *medium* for the FWP where it abuts the wooded and shrub wetland. *Because the wetland ditch and FWP/PC lands will be filled, the buffer becomes irrelevant.*

Agricultural areas are south and east of the wooded areas and provide open areas, but are also a potential source of sedimentation and nutrient input. Hydrology within the wooded area is not expected to be impacted because a drainage ditch on the east side of the wooded area separates it from the plant site from the agricultural area. *That is, the ditch effectively prevents the proposed plant site from contributing surface hydrology to the wooded area. Filling this ditch may actually decrease drainage of the east edge of the wooded area.*

The proposed mitigation south of the wooded area will significantly increase the quality of the wooded area buffer. Wildlife attributes similar to the wooded area will be available, and the potential of agricultural pollutants will be eliminated.

Heritage value and cultural value both rate low. These values are not expected to be affected by the proposed wetland fill due to the condition of the wetlands. The wooded area will be placed into a permanent conservation easement, as well as the proposed mitigation areas. This will increase the overall wooded area and provides the city's population an opportunity to observe the development of the mitigation. These mitigation areas will increase heritage and cultural values by adding significant shrub and tree areas within the city.

Wildlife habitat rates as low for the wetlands. The proposed mitigation will not provide the same feeding opportunities for shorebirds, but will provide resting and feeding opportunities for ducks and geese. The mitigation will provide resting, feeding and nesting opportunities for passerines and small mammals. The wildlife opportunities afforded by the proposed mitigation area are considered to be superior to those provided by the agricultural setting. This is because shrub and forested areas offer greater species richness, and other agricultural settings are available nearby and not in short supply.

According to the assessment, **fisheries habitat** rates as *low* due to the absence of habitat within the pasture setting. This wetland ditch is not known to provide habitat due to the 800-foot length of culvert to the east, and the summer drying of the ditch. *Fisheries habitat is not expected to be impacted.*

The most significant hydrologic functions, which rate as *high*, are related to **entrapment of nutrients and sediments.** The high rating is due to the percent

vegetative cover⁵, low flow, slight slopes with constricted outlets and the pollutant (sedimentation) input. The rating indicates the potential for a wetland to perform this function based on the actual presence of a pollutant, and assumed ground cover. The existing condition however allow for significant sedimentation and pollutant introduction from the cornfield area, but the ditch allows opportunity for reduction due the dense reed canary grass cover.

The proposed plant site and mitigation south of the wooded area will improve on this function by eliminating the source of agricultural related pollutants. The plant sedimentation will be detained by the stormwater detention facility, and the proposed mitigation area will be seeded and planted with trees and shrubs, both which will eliminate erosion, sedimentation and nutrient inputs. The 660 linear feet of wetland ditch is to be replaced with approximately 880 linear feet of channel constructed for drainage, and secondly for water quality. The new ditch is expected to provide the ability to perform the same wetland hydrologic functions as the filled segment of the wetland ditch, depending on the frequency of grass maintenance. The additional proposed mitigation in the east mitigation area will provide a swale-like wetland feature that will provide additional residence time for treated runoff, which will increase the opportunity for water quality improvement.

Flood and stormwater retention rates as low due to the small storage capacity, low position in the watershed, and size. Additional points were provided for the dense ground cover in the wetland ditch and its connection to Sumas Creek 1,600 feet to the east. Ground water geologists, Robinson and Noble, Inc., reports that the site does not store significant amounts of surface water for subsequent release due to the shallow surface soil and its silt and clay nature. Robinson and Noble estimates that 4.088 gpd would be discharged from the entire 20-acre site, but only after sufficient rain has fallen to saturate soils. They have estimated that 1.6 acre-feet of water are released from the site on an annual basis.

The proposed detention pond is designed to detain surface water such that no increase in downstream flow occurs. The proposed planting of the mitigation area south of the wooded area will allow the interception of rainfall, and reduce runoff, both which will mitigate for impacts related to the plant site. During significant flood events, the trees and shrubs slow water velocity and increases residence time. The proposed mitigation area on the east mitigation area will provide a swale-like wetland feature that will provide additional residence time for stormwater runoff, and add a small amount of floodwater capacity.

Shoreline stabilization is not viewed as being applicable because the wetlands do not possess a shoreline.

6.4 Indirect Impacts

1. Potential secondary impact to adjacent wetlands from interception of surface runoff by development.

⁵Applies to wetland ditch and also when FWP is fallow; does not apply when FWP is in corn.

Anticipated Impacts: Filling of the plant site is not expected to decrease surface hydrology for the remaining wetlands. The farmland where the plant site is proposed drains primarily to the south. Any drainage to the west is intercepted by the north-south ditch on the west boundary and then carried to the main wetland ditch. Other parts of the plant site drain directly in to the main wetland ditch. The offsite wetlands west of the plant site receive surface runoff mostly from farmland to the west. Wetland hydrology is also attributed to a high ground water table, which will not be disrupted. The remaining wetlands are expected to remain sufficiently saturated to maintain their existing hydrologic regime. The ditch located between the preserved wooded area and the proposed plant site (west edge) will be relocated to the north. Existing hydrology within the remaining wetlands are not expected to be significantly affected, due their lower elevation and the seasonal high water table. Treated stormwater will also be routed through the wetland for added hydrology. The wooded area is expected to benefit from the ditch relocation because it may promote drainage at the east edge of the wooded area.

Filling of the FWP and PC lands is not expected to significantly decrease or increase the hydrology of the remaining wetlands because the hydrology is provided by the high ground water table. It should be noted that the wooded area is not a depression, but is similar to elevations to the east and west. According to the previous landowner, the wooded area was retained to provide shade for livestock and is not due to abnormal wetness.

2. Introduction of pollutants (oil/grease, refuse, sedimentation) is a potential secondary impact to wetlands.

Anticipated Impacts and Mitigative Measures: Site runoff requires onsite detention and treatment prior to release. Site runoff is to be detained in the multi-cell stormwater detention facility prior to release into the proposed drainage and water quality channel. Treated water will first enter the mitigation wetlands and provide additional treatment prior to entering the new ditch system. During construction, the erosion and sediment control plan should also provide for the installation of silt fencing or straw bales at wetlands and ditches which are adjacent to fill areas. The proposed project will produce some positive impacts to water quality through the cessation of the agricultural operation and associated pollutants, such as sedimentation, fertilization and herbicide application.

3. Potential impacts to wildlife in the approximate 9-acre shrub and wooded block west of the plant site.

Anticipated Impacts and Mitigative Measures: The shrub and wooded block is surrounded by agricultural or industrial activity and is separated from other significant habitats through agricultural lands approved for industrial development, and a railroad grade. Due to the zoning of this area, the block will likely become further isolated which will most likely affect larger mammals, such as deer and coyote. Small mammals and passerines should not be significantly affected. To mitigate for the buffer encroachment, the

9-acre block is to be preserved and assured protection by placing it into a conservation easement recorded.

4. Potential impacts associated with the relocation of two existing drainage ditches.

The approximate 880 linear feet of relocated channel (water quality and drainage) to be constructed will provide similar hydrologic functions afforded by the filled 660 linear feet. This channel is being constructed to accommodate stormwater runoff, after detention. The relocation of the 600-foot ditch is not expected to significantly affect the hydrology of the farmed wetland, or the wooded area, which it borders. To the contrary, the relocation of the ditch will remove a drainage feature that potentially drains part of the wooded area. The lower emergent wetland which it borders will continue to have hydrology from the seasonal high water table and proposed treated runoff from the stormwater detention facility.

7.0 PLANT SITE WETLAND MITIGATION

7.1 General

Two areas which provide a total of 19.41 acres are being dedicated to mitigation and preservation. The mitigation more than offsets impacted wetland functions associated with the proposed plant site.

The proposed mitigation is on or adjacent to the site and consists of a 5.87-acre tract located west of the plant site, and a 4.1-acre tract immediately east of the plant site, and a 9.44-acre area that is a palustrine forested and shrub wetland with an emergent fringe. A diagram showing the areas is provided in Appendix E.

Proposed tree species for the various mitigation areas are indicated in Table 8-2. All species are considered to be native, compatible and similar to naturally occurring species in existing adjacent wetland areas.

The proposed mitigation will compensate for the lost wetland habitat of small mammals and passerines, and may provide additional habitat opportunities for amphibians. The lower elevations of the constructed wetland are intended to mitigate for floodwater capacity lost by the filling of the 1.9 acres of wetlands. The shrub and tree plantings are also expected to reduce stormwater runoff through the interception of rainfall.

	West Area	East Area	Preserved Area	Total
Wetland Enhancement	4.17 ac.	1.82 ac.		5.99 ac.
Wetland Creation	0.99 ac.	2.18 ac.		3.17 ac.
Buffer/Nonwetland	0.71 ac.	0.10 ac.		0.81 ac.
Total	5.87 ac.	4.10 ac.	9.44 ac.	19.41 ac.

7.2 West Mitigation Area

A description of the vegetation, soil and hydrology is previously described in Section 3.4.3.

The west mitigation area is mostly farmed, but also contains a lower wetland area (kidney shaped) that is periodically farmed depending on seasonal wetness. When fallow, this area supports a dense stand of reed canary grass (*Phalaris arundinacea*). This lower area will contain most of detention pond Cell No. 2, which will provide different levels of mitigation. The proposal within the west mitigation area is to construct some wetland areas by slightly lowering nonwetland areas, and enhanced wetland areas by planting them with native shrubs, and trees at more elevated landscape positions. Treated stormwater from Cell No. 2 will be discharged in the wetland proposed for enhancement, which will provide an additional measure of water quality treatment and stormwater attenuation.

Surface hydrology for the enhanced wetland area is expected to remain unchanged due to the regionally high groundwater table. Any encountered drain tile in the mitigation area will be removed.

Water quality treatment and flood storage, over and above that which is required, is being provided in Cell No. 2 by the area above the permanent pool elevation of 38.9 feet. Fill associated with Cell No. 2 has been included in the wetland fill calculation, and the area below the permanent pool elevation of 38.9' has not been included as mitigation acreage. Nonetheless, this area will be planted with native shrubs to also provide wildlife benefits.

This mitigation area will compliment the existing wooded area immediately to the north. The existing ditch, which is located between the proposed plant site and the wooded area, is to be relocated north of the plant site. Hydrology from this ditch outfalls into the lower part of the existing wetland, however lost hydrology is not expected to affect the wetland, which will be replaced with outfall water from Cell # 2 and the seasonal high water table.

7.3 East Mitigation Area

The 4.1-acre mitigation east of the plant site is fallow pasture occupied with invasive and exotic grass species such as reed canary grass, timothy (*Phleum pratense*), quackgrass (*Agropyron repens*), bluegrass (*Poa compressa*), creeping buttercup (*Ranunculus repens*), water foxtail (*Alopecurus geniculatus*) and other less abundant species including common plantain, curly dock (*Rumex crispus*), lady's-thumb knotweed (*Polygonum amphibium*), and ovate spikerush (*Beocharis ovata*) (David Evans and Associates, 1991). North of this mitigation area, the land had been filled and may be used as a construction staging area. Bob Mitchell Avenue forms the east boundary and Hesselgrave Way the south boundary. A gravel road is present along the west part of the property, and also buried road gravel in areas parallel to Bob Mitchell Avenue. The gravel will have to be removed and replaced with suitable soils.

The proposed mitigation is somewhat similar to the west area in that existing wetland areas will be enhanced with native shrubs and a minor component of trees tolerant of wet conditions. Surrounding nonwetland area will be lowered as wetland creation, and subsequently planted with native shrubs and trees. The existing gravel road area will be removed, and replaced with a wetland community. A wetland swale is proposed to enter the northwest part of the site and exit the northeast part of the site. This swale will accommodate treated runoff from the plant site bioswale, and then reconnect and outfall into an existing culvert. The swale will have a minimum 10-foot bottom with 4:1 to 6:1 side slopes, and will provide additional water quality treatment, storage for floodwater, and maintenance of stream base flows.

Created wetland areas will be lowered by one to two feet, topsoil replaced or imported, and planted with native grass and shrub species. The seasonal high water table, and also the proposed swale will provide wetland hydrology.

Reed canary grass will have to be eliminated from both mitigation areas and maintained for a 10-year period. The proposed vegetative assemblage is provided in Table 7-2, which contains those species recently recommended by the Washington Department of Fish and Wildlife.

Surface hydrology for the enhanced wetland area is expected to remain unchanged due to the regionally high groundwater table.

TABLE 7-2		SE2 MITIGATION PLANT LIST		
Species	Constructed/ Created & Enhanced Wetlands (Blue)	Constructed/ Created & Enhanced Wetlands (Yellow)	Buffer & Detention Pond Berms ⁶ (Drk Green)	Status
<i>Trees</i>				
Red alder (<i>Alnus rubra</i>)		•	•	FAC
Paper birch (<i>Betula papyrifera</i>)				FAC
Pacific crabapple (<i>Malus fusca</i>)				FACW
Black cottonwood (<i>Populus balsamifera</i>)		•	•	FAC
Douglas fir (<i>Pseudotsuga menziesii</i>)				FACU
Western red cedar (<i>Thuja plicata</i>)		--	•	FAC
Western hemlock (<i>Tsuga heterophylla</i>)			•	FACU-
<i>Shrubs, Ferns and Vines</i>				
Red-osier dogwood (<i>Cornus sericea</i>)	•	•	•	FACW
Oceanspray (<i>Holodiscus discolor</i>)				NI
Nootka rose (<i>Rosa nutkana</i>)			•	FAC+
Thimbleberry (<i>Rubus parviflorus</i>)				FAC-
Salmonberry (<i>Rubus spectabilis</i>)		•		FAC
Red elderberry (<i>Sambucus racemosa</i>)				FACU
Pacific willow (<i>Salix lasiandra</i>)	•	•		FAC+
Scouler's willow (<i>Salix scoulerana</i>)	•	•	•	FAC
Snowberry (<i>Symphoricarpos albus</i>)			•	FACU

⁵ Colors refer to colors found on diagram in Appendix E.

⁶ No trees to be planted in Detention Pond Cell #2, or on berms so as to maintain structural integrity. Pacific willow to be planted within Cell #2, but away from berm area.

<i>Forbs</i>				
Spike bentgrass (<i>Agrostis exarata</i>)		•		FACW
Hair bentgrass (<i>Agrostis scabra</i>)			•	FAC
Bluejoint (<i>Calamagrostis canadensis</i>)		•		FACW+
Slough sedge (<i>Carex obnupta</i>)	•	•		OBL
Beaked sedge (<i>Carex rostrata</i>)		•		OBL
Bearded fescue (<i>Festuca subulata</i>)			•	FACU+
Northern mannagrass (<i>Glyceria borealis</i>)		•		OBL
Tall mannagrass (<i>Glyceria elata</i>)	•			FACW+
Native bluegrass (<i>Poa nervosa</i>)			•	FACU-

7.4 Preserved Wooded Area

9.4 acres of wetlands will also be preserved for mitigation. This includes 8.8 acres of palustrine forested and shrub wetlands, and a 0.64 palustrine emergent fringe. The wooded wetland area is a City of Sumas Conservancy Area, therefore adding the mitigation to the south will increase overall habitat area and guarantee a significant buffer to this existing wooded area.

7.5 Proposed Vegetative Assemblage

The proposed overall long-term vegetative assemblage for the enhanced and created areas is a mosaic of emergent, shrub and forested areas (see Table 7-2). It is expected that the proposed plant communities will be mostly influenced by the site hydrology.

Tree plantings are proposed at ten (10) foot centers and shrubs on five (5) foot centers in the areas planted. Plant individuals are to be planted in random groupings and clumps, including the enhanced buffer.

Within detention pond Cell No. 2, areas below the permanent pool elevation of 38.9' will be planted with Pacific willow, Scouler's willow and red-osier dogwood. Above this elevation the pond is to be planted with Nootka rose, snowberry, Scouler's willow and red-osier dogwood.

7.6 Proposed Soil Structure

The constructed wetland will be over-excavated by 10 inches and replaced with topsoil, possibly with existing surface soils which will be reserved for subsequent use. Soils within the constructed wetland should resemble the Sumas or Puget silt loam series, which are the soil NRCS mapped soil units for this site. These soils possess surface organic content and subsurface clay content as indicated in Table 8-3. Any surface soils removed from areas vegetated with reed canary grass will not be used for mitigation topsoil.

The surface organic content is necessary for plant nutrients, and the subsurface clay content is necessary to slow permeability. Soils in the buffer area are to be left intact and not disturbed.

The soils in the proposed enhanced farmed wetland are considered to be suitable for mitigation and will not be require alteration or amendment.

Table 8-3		
<i>Soil Unit</i>	<i>% Organic (surface)</i>	<i>% Clay (subsurface)</i>
Sumas silt loam	3 to 9	18 to 35
Puget silt loam	3 to 9	18 to 35
<i>Recommended</i>	9 to 15	18 to 35

7.7 Proposed Hydrology

A seasonally high ground water table drives the existing hydrologic regime. Permeability is poor and the surface becomes saturated near the surface during the winter and early spring, and then dissipates during the spring and summer. The groundwater at this location is not believed to be influenced by flows within the wetland ditch except during significant flood events at which time floodwaters enter and exit the site at an accelerated rate.

Hydrology within the created wetlands is to be derived from precipitation and the seasonally high ground water table. Seasonal ponding is expected with prolonged saturation through the winter and spring. The created wetland is expected to be dry to moist, but not saturated in August and September. Flows in or out of the lowered mitigation area are not proposed to connect with the realigned wetland ditch system. The existing hydrologic regime in the enhanced buffer area is adequate and is not to be modified. Once trees and shrubs are semi-mature, additional moisture will be retained from rainfall interception and decreased evaporation.

Within detention pond Cell No. 2, the permanent pool elevation is set at 38.9'. Seasonal ponding is expected up to this elevation, but is expected to decline significantly from July through September and expose the majority of the pond banks.

The southeast part of the west mitigation area will receive treated stormwater and drain into the new relocated ditch, which is similar to the existing condition.

The hydrology for the relocated wetland ditch will be slightly altered. Surface runoff will continue to be received from south of Highway 9, however after flowing under Hesselgrave Way, flow will be directed to the east into the proposed water quality and drainage channel. The existing segment of channel from Hesselgrave Way to the proposed plant site edge will remain open. The proposed water quality and drainage channel will be 880 linear feet and will accommodate existing runoff from the south and also treated plant site stormwater runoff discharged from the stormwater retention pond. Runoff from the water quality and drainage channel will outfall into the existing drainage channel at the east side of the plant site as described below.

Runoff collected at the east edge of the plant site will be directed to the south-southeast into a proposed new wetland swale aligned through the east mitigation area. The swale will reconnect to an existing storm sewer located at the northeast corner of the east mitigation. From this point the runoff flows

through approximately 400 feet of storm sewer, and hence through approximately 1,200 feet of open channel to its confluence with Sumas Creek.

The wetland swale in the east mitigation area will be 1 to 2 feet in depth, a minimum 10-foot width, and with 4:1 to 6:1 side slopes. It is expected to be inundated November through May, with only saturation, and periodic ponding from July through September.

7.8 Proposed Habitat Features

Proposed habitat features include the placement of large woody debris, such as downed logs and stumps, in the two mitigation areas. Placement is to be at a density of approximately 135m³/hectare and of a size in which 30% are at least 21cmf (8.25") in diameter (Azous, 1998). This also equates to an approximate minimum of 49 snags per hectare. This density equates to an approximate minimum of 23 downed snags or stumps per acre for a total of approximately 47 stumps or logs. This assumes a stump sized at 6 feet long by 3 diameter feet.

7.9 Sequencing and Schedule

Earthwork for the mitigation areas will likely occur at the same period when wetlands are filled if during summer months. Trees and shrubs are to be planted in the late fall, winter or early spring. Western red cedar may be planted in Year 3 in developed shade areas.

8.0 OBJECTIVES

8.1 General

The proposed mitigation should more than offset potential adverse impacts associated with the filling of plant site wetlands. The mitigation will replicate the current discharge of stormwater runoff and the existing release to the ditch system that ultimately outfalls into Sumas Creek.

The created wetland area will offset lost or impaired hydrologic and wildlife functions. The created wetland will provide additional stormwater capacity and area to entrap sediments, however the mitigation area is not intended for use as a stormwater facility. Seasonally ponded areas in the constructed wetland will offer diversity and potential amphibian habitat. The mitigation areas will receive treated stormwater and therefore provides additional water quality treatment, and resident time prior to release into the existing offsite storm water sewer.

The enhanced wetlands and associated plantings will increase wildlife functions of the 8.8-acre shrub and wooded block. Wildlife functions of the impacted farmed wetlands, PC lands and wetland ditch are low due to the agricultural setting and disturbed conditions, therefore wildlife stand to benefit through the enhancement of more functional systems, such as the 8.8 acre

block. The plantings and enhancement will provide decreased sedimentation and soil exposure, and add structural diversity for rainfall interception.

The preserved 8.8-acre shrub and wooded tract of land has been designated by the City of Sumas as a Natural System Protection Area. The block is sited in a very desirable and strategic industrial location, therefore its preservation at this opportunity is significant. This area actually totals 9.44 acres when 0.64 acres of emergent fringe is added.

8.2 Mitigation Ratios

Using the revised mapping, which includes PC lands, the combined mitigation ratio for the wetland creation and wetland enhancement is greater than 1:1. A 1:1 ratio would be appropriate in consideration of the disturbed nature of the wetland to be affected, and the 8.8-acre shrub and wooded area that are being preserved. The entire wetland mitigation area, including wetland creation/enhancement, buffers and preservation totals 19.41 acres.

9.0 PERFORMANCE STANDARDS

9.1 Vegetation

Table 10-1 represents the desired standards for the proposed mitigation area. Long-term standards, or goals, are based on a recent study under a King County grant (Azous, 1998). The percent cover values for the trees and shrubs represent plantings on 10 and 5-foot centers respectively. Trees will typically be 4 to 5 feet in height and shrubs 2 to 3 feet.

Reed canary grass (*Phalaris arundaceae*) and barnyard grass (*Echinochloa crusgalli*) are considered to be the problematic species and are to be maintained to a 10% or less cover for the duration of the monitoring period. The intent of this maintenance is to allow successful propagation of the planted trees and shrubs.

Subsequent to plant installation, personnel licensed by the state of Washington will pursue control of invasive plants on an annual basis manually and with the application of herbicide.

Table 9-1 Performance standards

Rated Item	Year 1	Year 2	Year 3	Year 5	Year 7	Year 10	Long Term
Survival (%)	100	> 80	> 80	> 80	> 80	80	natural mortality
Trees (% cover)*	< 5%	< 5%	< 5%	7%	10%	15	25-67%
Shrubs (% cover)*	< 5%	< 5%	5%	7%	7-10%	15	20-48%

Emergent (% cover)	< 50%	65%	75%	75%	75%	75	50%
Canopy closure*	< 5%	< 5%	7.5 10%	12 15%	20%	25	35-60%
Strata	1	1	1-2	2	3	3	3

* Percent cover for planted areas, e.g. tree % cover does not apply to areas designed as PSS. Natural recruitment by native species will be counted as part of the cover.

9.2 Soils

Where possible, topsoil will be taken from filled wetland areas, however, if this is not feasible, topsoil will be imported. No soils will be used from areas with reed canary grass. Based on the Soil Conservation Service soil survey (see Table 8-3), topsoil imported to the constructed wetland should possess a minimum of 10% organic matter in the top 10 inches. Soils are to be sampled and observed for hydromorphic features such as mottles and/or low matrix chromas, or oxidized rhizospheres. Existing soils within the enhanced buffer area are to remain.

9.3 Hydrology

A perched water table exists throughout the mitigation area, therefore, plants will be selected and planted according to existing topography. Created wetlands are to be saturated at or near the surface (10 inches) for no less than 5 to 12.5% of the growing season (March 30 to November 2) and are expected to remain saturated for most of November through March. Lower areas are expected to be ponded from mid-December through May, with little or no water from July to September. For October/November and June, water levels are expected to vary according to rainfall. As an indication of sufficient wetland hydrology, surface soils should exhibit hydromorphic features such as mottles and/or low matrix chromas, or oxidized rhizospheres.

A mitigating performance standard is to design the stormwater detention pond system and the mitigation areas such that stormwater runoff will be at a pre-developed quantity and rate. Floodwaters released from the site will not be significantly different than that modelled by the City's floodplain management study.

With respect to the support of stream base flow, the existing support is compromised by the fact that the runoff occurs when site conditions are saturated or ponded in the winter and spring, which is when Johnson Creek does not require support. Johnson Creek requires support in the drier summer months, which coincides with a period of little or no runoff from the site. Therefore, so as to address potential impacts to the support of stream base flow, the SE2 detention pond system and mitigation areas will be designed to release surface water to the storm sewer/ditch that connects to Johnson Creek, at a rate and quantity modelled under existing conditions.

9.4 Habitat Features

Proposed wetland habitat features include the placement of large woody debris, such as downed logs and stumps. Placement is to occur at the edges of the reduced buffer areas, within created wetlands, and within and around the ponded areas. The density is proposed at approximately 67.5m³/hectare (35.75cy/ac) at a coniferous/deciduous ratio of 7:1 to 17:1, and of a size in which at 30% are at least 21cmf (8.25") in diameter (Azous, 1998). This density equates to an approximate minimum of 23 downed snags or stumps per acre for a total of approximately 47 stumps or logs. This assumes a stump sized at 6 feet long by 3 diameter feet.

10.0 MONITORING

The site will be monitored for Years 1 through 5, 7 and 10. Monitoring is to occur in late summer or early fall of each year. Monitoring will consist a visual estimate of percent survival and also photographs taken from established photo points. In addition to the reported percent survival, an estimate of typical height will be stated with respect to the trees and shrubs.

It is proposed that the site be monitored for a period over 10 years after planting and that a letter report be submitted subsequent to each monitoring effort. An 80% survival of the planted trees and shrubs is proposed, except for Year 1 when 100% replacement will occur. At the end of the ten year monitoring, should their be less than 80% survival, then replanting and monitoring will continue until such is achieved, or a contingency plan developed, approved and functioning.

10.1 Vegetation Monitoring

Permanent sampling points are to be established in the wetland creation/mitigation area along four permanent north-south transects at 150-foot intervals. All stations are to be permanently marked with metal posts for easy identification and location. Photographs are to be taken at select points for annual comparison.

Sampling will be accomplished by recording the dominant species in each vegetation layer, trees within a 30 foot radius and shrubs within a ten foot radius. For areas planted with emergents, a 1-m² quadrants placed 1 meter from the permanent marker, and species within each quadrant will be identified and given a percentage cover score based on the proportion the of area each species occupies with in the quadrant.

10.2 Soils Monitoring

Surface soils samples will be taken at two points along each transect, one in the constructed wetland area and the other in the enhanced buffer. Soils will be inspected for hydromorphic features, color and texture. Wetland soil samples should test positive for the hydromorphic features such as dark

matrix (value of 2 or less), and possibly with mottles. The character and composition of the stream channel, at its interception with the transect, will be described and recorded. Although surface saturation is a hydrology criteria, surface saturation of the requisite duration during the growing season will be regarded as an indicator of hydric soil development.

10.3 Hydrology Monitoring

Wetland hydrology will be assessed in the soil sample pits and also through general observation of ponded or areas with apparent surface saturation. Measurements are to be taken to the depth of saturation and the depth of water. A statement or evidence on the surplus or deficiency of rainfall is to be stated. Sampling is to occur during late fall and early spring for Years 1 and 2, or until there is adequate documentation that that hydrology is sufficient to meet the performance standard. Thereafter the sampling will occur in the late fall or early spring.

Table 10-1 Monitoring Calendar

Year	1	2	3	5	7	10
Vegetation	F	F	F	F	F	F
Soils	F	F	F	F	F	F
Hydrology	F, Sp	F, Sp	F, Sp*	F, Sp*	F	F
Wildlife	F, Sp	F, Sp	F	F	F	F
Maintenance needs	Su, F	Su, F	Su, F	Su, F	Su, F	Su, F
Monitoring report due	Dec	Dec	Dec	Dec	Dec	Dec
Report Due	As built report due within 90 days of installation					

F-fall, Sp-spring, Su-summer * Spring also if required, otherwise fall only

10.4 Wildlife Monitoring

Observed bird species observed will be recorded for inclusion in the annual monitoring report. Identified nests and nesting pairs will be noted and the approximate location and habitat type recorded. Observations for birds will occur at the same inspection of the wetland mitigation monitoring. Any amphibians will also be also be noted for inclusion in the monitoring report.

11.0 REPORTING

A monitoring report is to be submitted to the Corps of Engineers, EFSEC and City of Sumas in December of each monitor year. The first years' report will include description of the initial planting, and the progress and any measures taken for maintenance and replacement. Photographs are to be taken at select points for annual comparison.

After initial installation, as built drawings will be provided to the Corps of Engineers, EFSEC and the City of Sumas.

12.0 SITE PROTECTION

Signs are to be posted around the mitigation areas designating is as a "Native Growth Protection Area", with a statement of no dumping. The mitigation area is to be placed into a permanent conservation easement and recorded with Whatcom County. The mitigation site is to be physically surrounded with barbwire fencing.

13.0 CONTINGENCY PLAN

In the event that the mitigation continually fails to meet performance standards, the Corps, EFSEC and the City of Sumas will be notified of the ongoing deficiency. The notification will include a problem statement and a recommended remedial plan if one is apparent. The plan will require Corps, EFSEC and City of Sumas approval prior to implementation. A performance bond is to be posted with the City of Sumas or the Corps of Engineers and is to be released incrementally upon successful performance.

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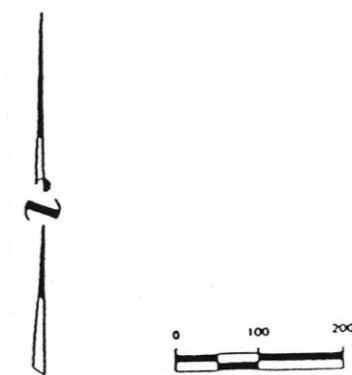
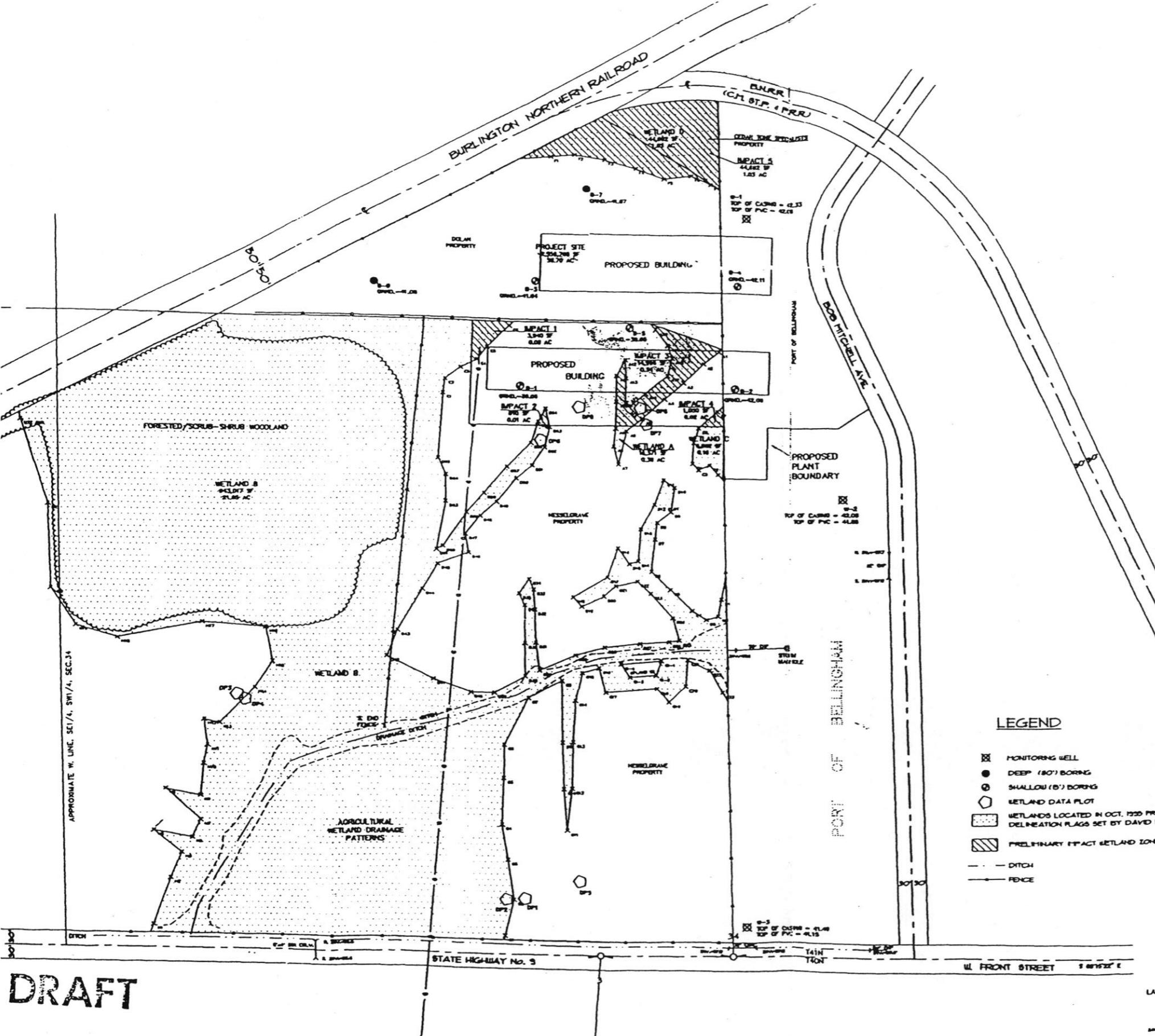
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- U.S. Department of Agriculture, Soil Conservation Service. Soil Survey of Whatcom County Area, Washington. May, 1992.
- U.S. Department of the Army, Corps of Engineers, Waterways Experiment Station. 1987. Corps of Engineers Wetlands Delineation Manual.
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Washington State Department of Ecology. 1997. Washington State Wetlands and Delineation Manual.
Publication #96-94. Olympia, Washington.

Washington Department of Ecology Characterization Inventory Methodology. Draft.

APPENDIX A

David Evans & Associates 1995 Wetland Delineation Map



Appendix A
 David Evans & Associates
 1995 Wetland Delineation Map

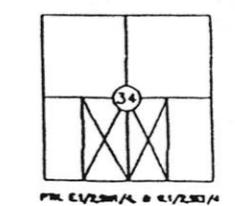
FIGURE 6
 WETLAND DETERMINATION MAP

BASIS OF BEARINGS
 CENTERLINE OF W. FRONT ST., N 89°10'22" W, PER RECORD OF SURVEY FOR THE HANK BANK OF CANADA, RECORDED UNDER APP B-10-487 RECORDS OF THE AUDITOR OF WHATCOM COUNTY, WASHINGTON

VERTICAL DATUM
 MEAN SEA LEVEL PER FEMA FLOOD INSURANCE RATE MAP FOR THE CITY OF BELLINGHAM

NOTE:
 1) LOCATION AND SIZE OF PROPOSED BUILDINGS ARE SHOWN APPROXIMATE ONLY.
 2) ELEVATIONS OF TOP OF PVC ARE WITHOUT 2" CAP

- LEGEND**
- ☒ MONITORING WELL
 - DEEP (80') BORING
 - SHALLOW (5') BORING
 - WETLAND DATA PLOT
 - ▨ WETLANDS LOCATED IN OCT. 1995 FROM DELINEATION FLAGS SET BY DAVID EVANS & ASSOC.
 - ▨ PRELIMINARY IMPACT WETLAND ZONE
 - - - DITCH
 - FENCE



DRAFT



WETLAND MAPPING			
DATE AS NOTED	APPROVED BY	DATE OF JOB	
DATE 10/16/95	DCM ST/3		
FOR BOUNDARY PAPER LIMITED			
PTN. E1/2, B6A/4 & B6/2, BEV/4 SEC. 34, T4N, R4E, S1/2 CITY OF BELLINGHAM, WHATCOM COUNTY, WA			8735

APPENDIX B

NRCS/Corps 1996 Confirmed Wetland Boundary

United States
Department of
Agriculture

Natural Resources Conservation Service
6975 Hannegan Road
Lynden, Washington 98264
(360) 354-2035

February 15, 1996

Bruce Thompson
Senior Vice President
National Energy Systems Company
335 Park Place, Suite 110
Kirkland, Washington 98033

RECEIVED

Dear Mr. Thompson,

Enclosed is the Highly Erodible Land and Wetland Conservation Determination Form SCS-CPA-026 for your property. This determination is part of the conservation provisions of the Food Security Act of 1985, as amended, and was made in response to your request for a wetland delineation verification. It was made using the procedures found in the third edition of the USDA-NRCS National Food Security Act Manual, Part 514.

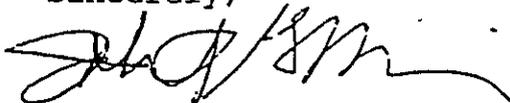
No fields have been classified as highly erodible under the current definition.

Items 11 through 26 of the SCS-CPA-026 describe any wetlands found on your property. Wetland boundaries and acreages are from maps provided by David Evans and Associates. Please note on the SCS-CPA-026 the conditions under which these areas may or may not be farmed, and contact this office if you have any questions.

This wetland delineation is good for Food Security Act and Clean Water Act purposes. It is valid for a period of five (5) years. Other state and local wetland policies may be applicable.

If you do not agree with this delineation you may request a reconsideration within 15 days of your receipt of this decision. Your request should be made to the above office address and should state the reason for the request for reconsideration.

Sincerely,



John A. Gillies
District Conservationist

Enclosures

2154
2079

T1792

65.0 Ac

PC

T3375

26.0 Ac

BARD

PC

Wooded area
not evaluated

T3378

PC

T1685

PC

PC

PC

PC

GARDEN RD

T2078
PC
5.3 Ac

7 Ac
FW
10.0 Ac

T1939

PC

OV

2.37 Ac
FWP
25.99 Ac - PC

4

FLANNÉGAN RD

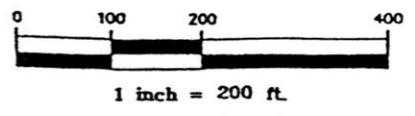
2
47

T1940

1

69

3



Appendix B
 NRCS/Corps 1996
 Confirmed Wetland Boundary

BASIS OF BEARINGS

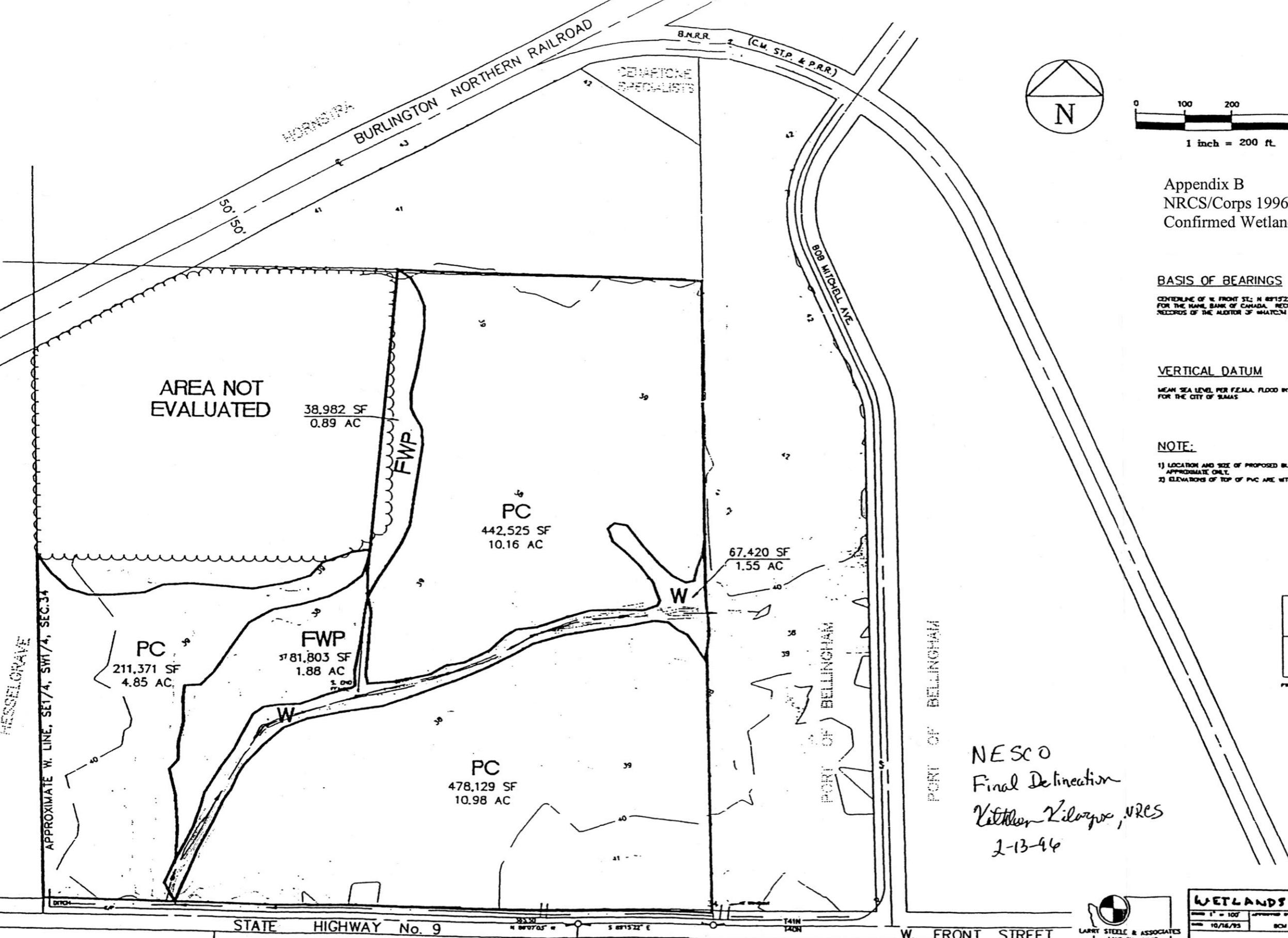
CENTERLINE OF W. FRONT ST. N 89°15'22" E, PER RECORD OF SURVEY FOR THE BANK OF CANADA, RECORD NUMBER 1542457 RECORDS OF THE AUDITOR OF WHATCOM COUNTY, WASHINGTON

VERTICAL DATUM

MEAN SEA LEVEL PER FEMA FLOOD INSURANCE RATE MAP FOR THE CITY OF SUMAS

NOTE:

- 1) LOCATION AND SIZE OF PROPOSED BUILDINGS ARE SHOWN APPROXIMATE ONLY.
- 2) ELEVATIONS OF TOP OF PVC ARE WITHOUT 2" CAP

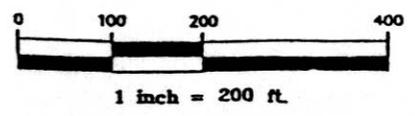
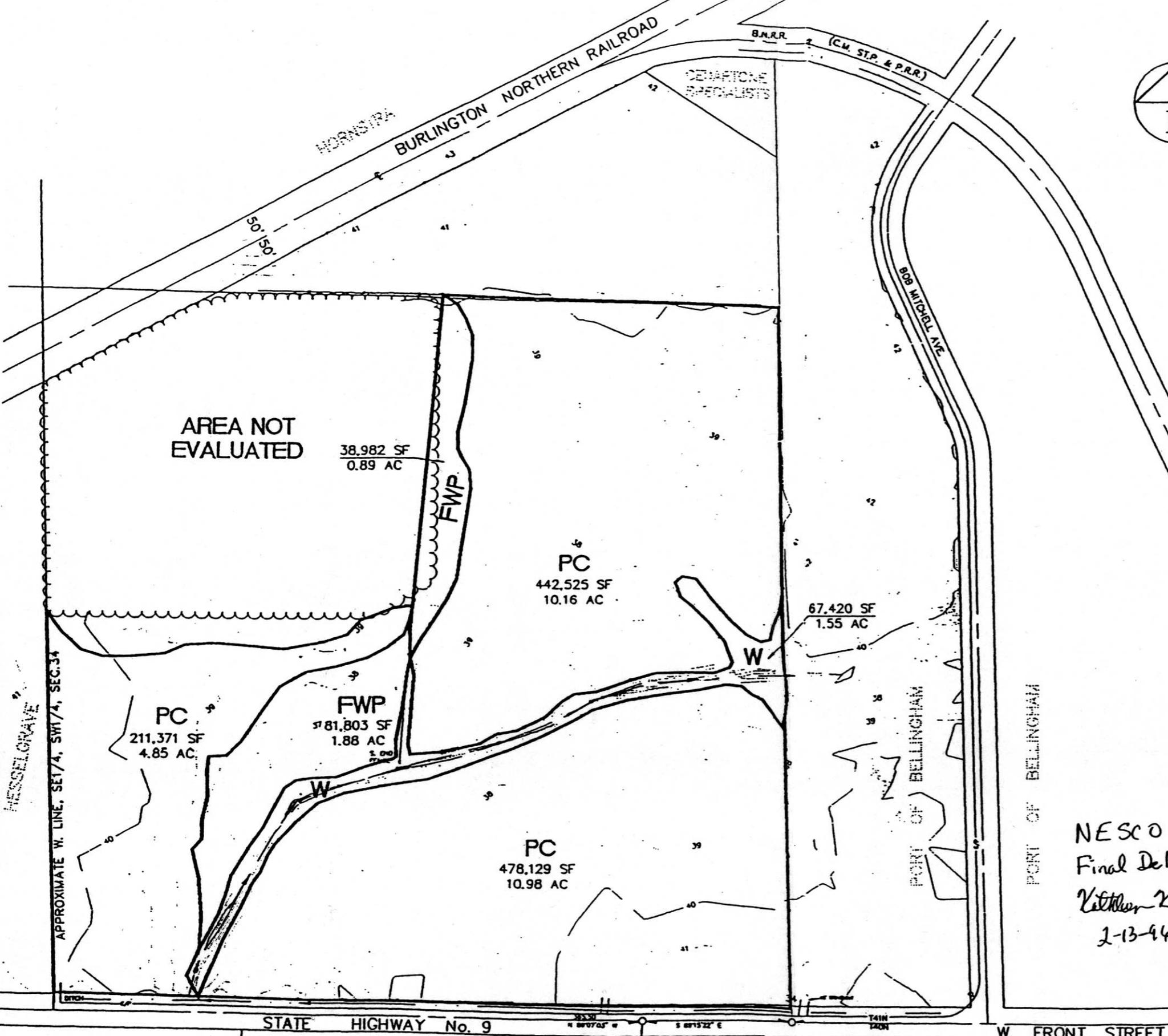


WETLANDS MAP	
SCALE 1" = 100'	DATE 10/16/93
APPROVED BY [Signature]	BY [Signature]
DATE 1/16/96	NO. 577/3
FOR BOUNDARY PAPER LIMITED	
FIG. C1/2301/4 & C1/2302/4	
SEC. 34, TWP. 41N., R. 4E., NEAR CITY OF SUMAS, WHATCOM COUNTY, WA	
11795 - 3	

DATE 1-16-96	SCALE 1" = 200'
BY [Signature]	DATE 1/16/96
NO. 577/3	DATE 1/16/96
NO. 577/3	DATE 1/16/96

APPENDIX C

**Bexar Environmental Consulting Ltd. Revised Wetland Delineation Map
(2000)**



Appendix C
 Bexar Environmental Consulting
 Ltd. Revised Wetland Delineation
 Map 2000

BASIS OF BEARINGS

CENTERLINE OF W. FRONT ST. N 89°15'22" W, PER RECORD OF SURVEY FOR THE BANK OF CANADA, RECORDED UNDER A# 1542457 RECORDS OF THE AUDITOR OF WHATCOM COUNTY, WASHINGTON

VERTICAL DATUM

MEAN SEA LEVEL PER F.E.M.A. FLOOD INSURANCE RATE MAP FOR THE CITY OF SUMAS

NOTE:

- 1) LOCATION AND SIZE OF PROPOSED BUILDINGS ARE SHOWN APPROXIMATE ONLY.
- 2) ELEVATIONS OF TOP OF PVC ARE WITHOUT 2" CAP



NESCO
 Final Delineation
 Kathleen Kilgore, NRES
 2-13-96

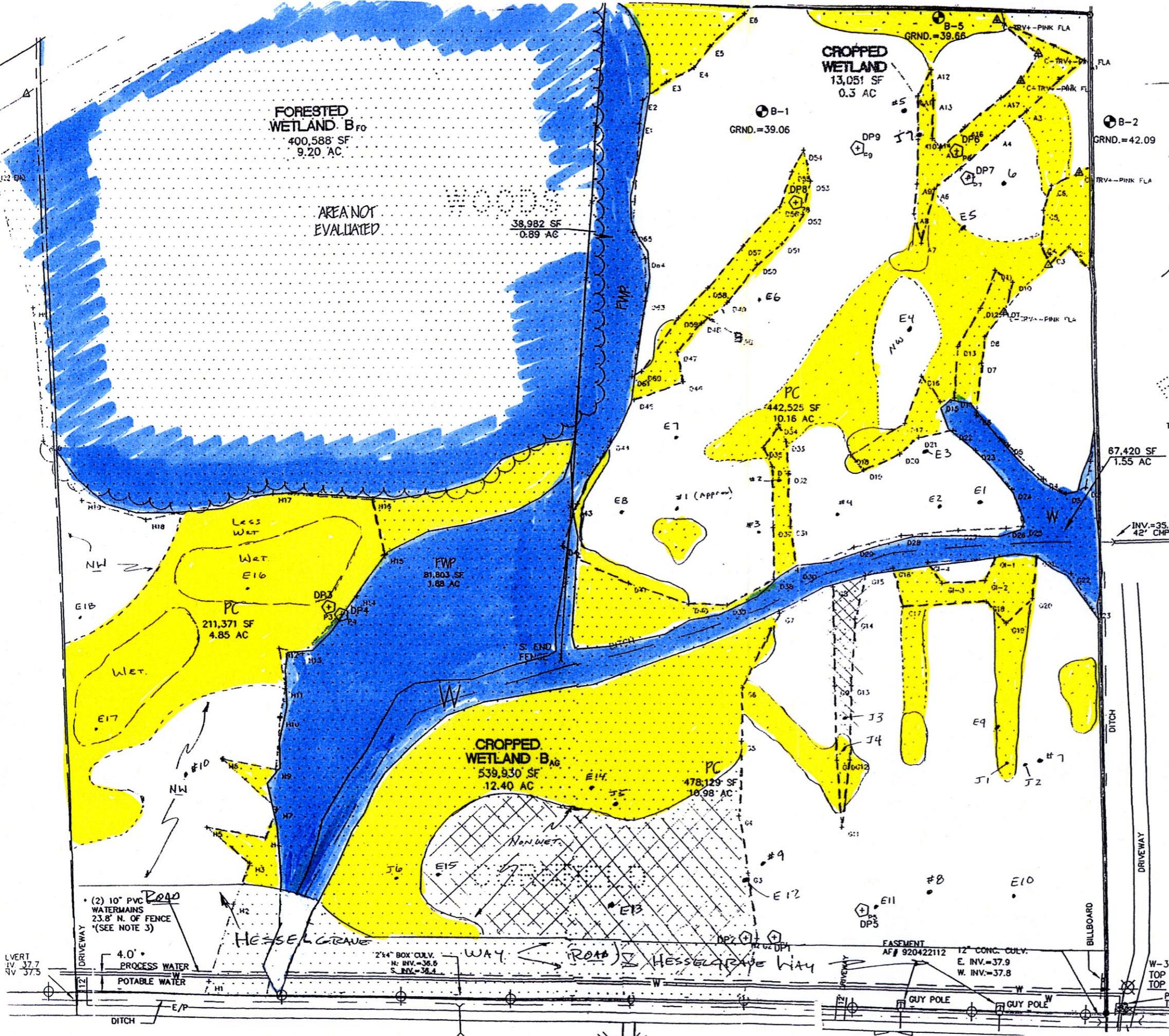


WETLANDS MAP	
Scale 1" = 100'	Approved Date 10/16/93
Scale 1" = 200'	Scale 577/3
Scale 1" = 400'	Scale 1/16/96
FOR BOUNDARY PAPER LIMITED	
FILE E172, S17/4 & W/2, S17/4 SEC. 34, T14N, R. 4E, W. 1/2, CITY OF SUMAS, WHATCOM COUNTY, WA	
11763-3	

BOUNDARY PAPER LIMITED

DAVID EVANS AND ASSOCIATES, INC.
 1001 PHOENIX ST., SUITE 200, WASHINGTON STATE PARK
 WASHINGTON, WA 98004-1001

DATE	BY	REVISION
10/16/93	LSM	1
1/16/96	LSM	2
11/7/96	LSM	3
11/7/96	LSM	4
11/7/96	LSM	5



TOTAL

4.22 ac		Corps/NRCS WETLANDS
12.69 ac		PRIOR CONVERTED (ROPLAND (DAVID EVANS & BEXAR) (4.22 ac. CORPS/NRCS INCLUDED)
10.42 ac		1995 DAVID EVANS Delineation (4.22 ac. CORPS/NRCS INCLUDED)

NOTE: ABOVE ACREAGES DO NOT INCLUDE WOODED AREA OR WETLANDS FILLED BY HESSEGRAVE WAY

Appendix C
Bexar Environmental Consulting Ltd. Revised Wetland Delineation Map 2000

Revised by BEXAR ENVIRONMENTAL Consulting 5/10/00

APPENDIX D

Table of Observed Hydrology (2000) & Rainfall Data

Observations of Near Surface Hydrology at SE2 Project Site (see Appendix C for location map)				
Sample	5/3/00	5/8/00	5/17/00	5/18/00
#1	Not recorded	Not recorded		
#2	Not recorded	Not recorded		
#3	Wtr/seep @ -4"	Wtr/seep @ -9.5"		
#4	Wtr/seep @ -6"	Wtr @ -11.5"		
#5	Wtr @ -10"	Wtr @ -10"		Seepage @ -12.5"; sat @ -10"
#6	Not recorded	Not recorded		
#7	Wtr/seep @ -2"	Wtr @ -9.5"		
#8	Wtr/seep @ -3"	Wtr/seep @ -7.5"		
#9	Wtr/seep @ -3"	No wtr @ btm-13"		
#10	Wtr @ -12"	Wtr @ -12"		
E1			No wtr @ btm. -15.5"	
E2			No wtr @ btm. -15.5"	
E3			Wtr @ -12"; seepage @ -8"	
E4			Wtr @ -11"; seepage @ -8"	
E5**			Wtr @ -13"; seepage @ -12"	
E6			Wtr @ -16"; seepage @ -15"	
E7			Wtr @ -15"; seepage @ -12"	
E8			No wtr @ btm. -16"	
E9**			Wtr @ -11.5"; seepage same	
E10			No wtr or sat @ btm. -16.5"	
E11			No wtr or sat @ btm. -15"	
E12			-11" to hardpan; no wtr	
E13			No wtr @ btm. -16"; dry	
E14			Wtr @ -7"	
E15			Wtr @ -18"; sat. @ -13.5"	
E16**			Seepage @ -5"; water also	
E17			Seepage @ -7"; wet hole	
E18			Seepage @ -12"	
J1*				Wtr @ -9"; seepage @ -8.5"
J2				No wtr or sat @ btm (-15")
J3				Seepage @ -12"
J4*				Seepage @ -8"
J5**				Seepage @ -12"; sat @ -8"
J6*				Wtr @ -9"; sat @ -7"
J7				Seepage @ -10"; sat @ -8.5"

5/3/00 and 5/17/00 samples excavated by WADOE and jointly observed by WADOE & Bexar,
5/8/00 & 5/18/00 samples excavated and observed by Bexar Environmental Consulting Ltd.

*Considered wetland sample by Bexar **Used for 5/18/00 wetland boundary by Bexar

Seepage- water observed entering soil pit; sometimes assumed that water in hole will eventually reach this level

RAINFALL DATA - CLEARBROOK STATION

March		April		May	
3/1/00	.00	4/1/00	.00	5/1/00	.25
3/2	.00	4/2	.00	401 5/2	-
3/3	.01	4/3	.00	DOE → 5/3	.38
3/4	.00	4/4	.05	5/4	.06
3/5	.09	4/5	-	5/5	.75
3/6	.02	4/6	.20	5/6	.13
3/7	.02 .02	4/7	.00	5/7	.00
3/8	.22 .00	4/8	.00	5/8	.05
3/9	.00 .01	4/9	.00	5/9	.45
3/10	.29 .00	4/10	.00	DOE → 5/10	.50
3/11	.05 .04	4/11	.00	5/11	.39
3/12	.35 .02	4/12	.00	5/12	.02
3/13	.03 .02	4/13	.02	5/13	.00
3/14	.72	4/14	1.18	5/14	.00
3/15	.00	4/15	.37	5/15	.00
3/16	.29	4/16	.19	401 5/16	.00
3/17	.05	4/17	.00	DOE → 5/17	-
3/18	.30	4/18	.00	5/18	.00
3/19	.03	4/19	.00	5/19	.13
3/20	.00	4/20	.02	5/20	-
3/21	.06	4/21	.00	5/21	.37
3/22	.60	4/22	.38	5/22	.00
3/23	.16	4/23	.37	5/23	.00
3/24	.00	4/24	.00	5/24	.00
3/25	.00	4/25	.08	5/25	.00
3/26	.00	4/26	.19	5/26	.23
3/27	.39	4/27	.29	5/27	.68
3/28	.12	4/28	.43	5/28	1.18
3/29	.06 .06	4/29	.01	5/29	.00
3/30	.00 .00	4/30	.02	5/30	.18
3/31	.00		3.80	5/31	.01
					5.71

Norm 4.27

Norm 3.33

Norm 2.85

3/24 → 4/13 (21 days) = 0.84"

3/29 → 4/13 (16 days) = 0.33"

4/14 → 5/3 (21 days) = 4.16"

5/4 → 5/17 (14 days) = 2.35"

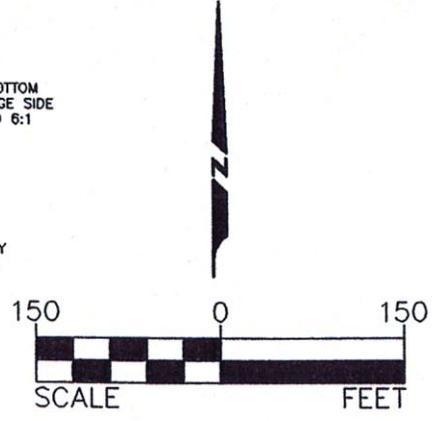
APPENDIX E

Wilson Engineering Plan of Wetland Mitigation & Stormwater Features



LEGEND	
	Existing Forested & Shrub Wetlands for Preservation
	Buffer & Detention Pond Berms
	Seasonally Saturated Wetlands (Created & Enhanced)
	Seasonally Pooled Wetlands (Created & Enhanced)
	Runoff Treatment Wet Pond (Cell #2) Planted with Wetland Plants
	Runoff Treatment Wet Pond (Cell #1) Grass Lined.

Appendix E
Wilson Engineering Plan of Wetland Mitigation and Stormwater Features



DATE	6/16/00	SCALE	AS SHOWN	SHEET	1	OF	7
SE2 PLANT SITE WETLAND MITIGATION							
WASHINGTON							
DESIGNED BY	JW	DRAWN BY	CJP	CHECKED BY			
115 DUPONT STREET BELLINGHAM WA 98225 (360) 733-6100 FAX: (360) 647-9061							
Wilson Engineering CONSULTING ENGINEERS & SURVEYORS							

APPENDIX F

May 18, 2000 Photographs by Bexar Environmental Consulting

BEXAR
Environmental Consulting

P.O. Box 3527, Blaine, WA 98231 (360) 961-3126

1242 Parker St., B.C. V4B 4S1

(604) 538-8728 fax: (604) 538-9442

Memorandum

To: File
From: John Wong
CC: K. McGaffey, T. Pors, B. Clothier, K. Chaney, B. Thompson
Date: June 16, 2000
Re: May 18, 2000 Photo Record

J1 – Photograph at J1; Water at -9.0"/seepage at -8.5"; wetland and nonwetland plants (Creeping foxtail and Western pearlywort).

J2 – Photograph at J2; no water or saturation to bottom of hole (-15"); wetland and nonwetland plants (Creeping foxtail and Western pearlywort). Other nonwetland or facultative plants are shepards purse, clover, carrot family.

J3 – Photograph at J3; seepage at -12.0"; wetland and nonwetland plants (Creeping foxtail and Western pearlywort)

J7 – Photograph at J7; seepage at -10.0"; saturation at -8.5"; located at edge of David Evans wetland boundary; wetland and nonwetland plants (Creeping foxtail, buttercup, Western pearlywort, thistle)

E18 – Photograph at E18; seepage at -12.0"; wetland and nonwetland plants (Creeping foxtail and Western pearlywort)

Panorama – Photograph taken from sample #4, looking northeast into David Evans wetland; yellow tinge is a Brassica sp., likely field mustard or rape, a nonwetland species

These are for your review. They indicate some pretty dry soils in areas. J1 and J7 are located in, or at the David Evans/Bexar wetland. J2, J3 and E18 were included by DOE as wetland.

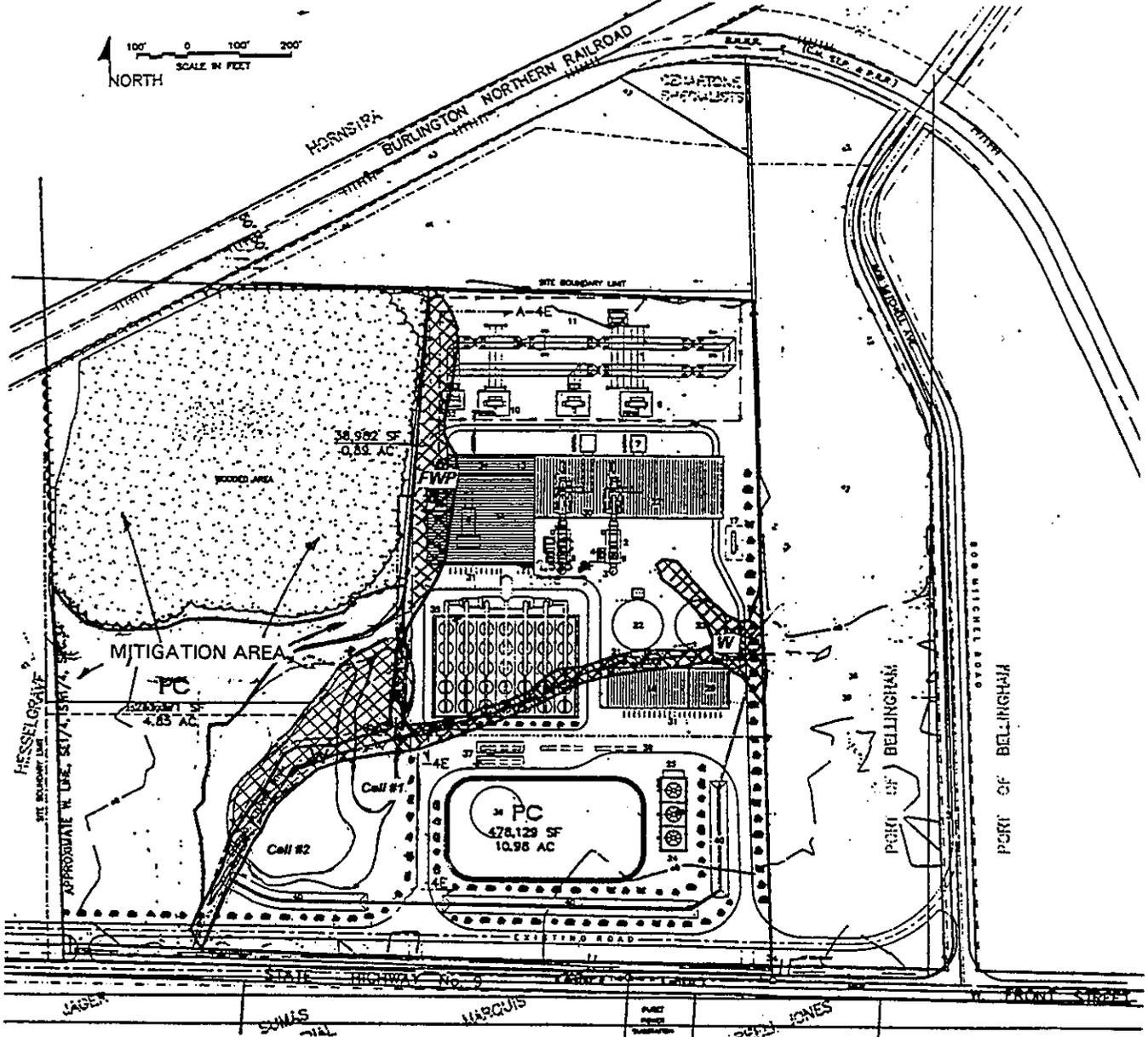
John Wong





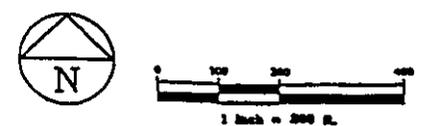
APPENDIX G

Wetland Fill in NRCS/Corps Confirmed Wetlands



WETLAND FILL Plant Site Area)
 Plant Site: 1.9 ac. PEM (1.0 ac. Farmed Wetland Pasture; 0.9 ac. Wetland ditch)
 Detention Pond Cell #1: 0.30 ac. (0.2 ac. FWP; 0.1 ac. Wetland ditch); 0.16 ac. excavation in FWP/Wetland ditch.
 Detention Pond Cell #2: 0.45 ac. (0.34 ac. FWP; 0.11 ac. Wetland ditch)

OTHER WETLAND FILL: Utility lines: 0.70 ac. (includes natural gas pipeline)



WETLAND FILL AT PROPOSED PLANT SITE

Fill 3.35 acres of Wetlands

COE No. 98-4-02021

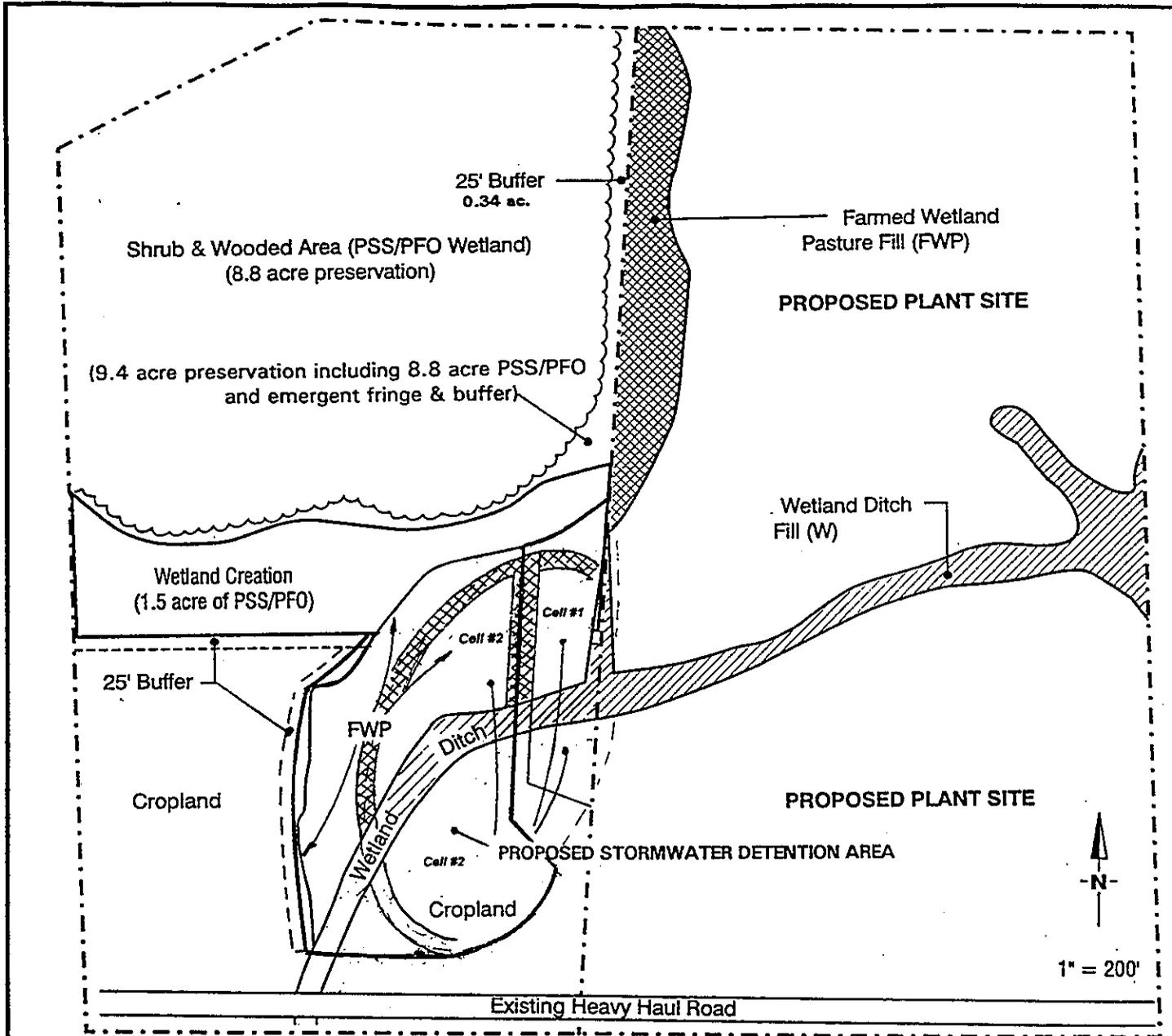
In: Wetlands within Sumas Creek and Johnson Creek watersheds

Applicant: SUMAS ENERGY 2, INC.

Proposal: Wetland Fill for Electric Generation Facility

At: Sumas, Whatcom Co., WA
 Sheet 5 of

Date Nov. 2, 1998	Rev. 4/21/00
-------------------	--------------



WETLAND FILL Plant Site Area)

Plant Site: 1.9 ac. PEM (1.0 ac. Farmed Wetland Pasture; 0.9 ac. Wetland ditch)
 Detention Pond Cell #1: 0.30 ac, (0.2 ac. FWP; 0.1 ac. Wetland ditch); 0.16 ac. excavation in FWP/Wetland ditch.
 Detention Pond Cell #2: 0.45 ac, (0.34 ac. FWP; 0.11 ac. Wetland ditch)

OTHER WETLAND FILL: Utility lines: 0.70 ac. (includes natural gas pipeline)

WETLAND MITIGATION

Wetland Creation & Enhancement (PSS/PFO/PEM/SS) 4.01 ac
 Creation outside detention pond area: 1.50 ac.
 Creation inside detention pond area 0.63 ac.
 Enhancement outside detention pond area 1.17 ac.
 Enhancement inside detention pond area 0.71 ac.

WETLAND MITIGATION AREA

Wetland Creation/Enhancement Area	4.01 ac.
South Mitigation Buffer Boundary Area	0.62 ac.
Shrub & Forested Preservation	8.8 ac.
South Emergent Fringe Preservation	0.3 ac.
East Boundary Buffer Preservation	0.34 ac.
Total	14.06 ac.

WETLAND FILL & MITIGATION FOR PLANT SITE

Fill 3.35 acres of Wetlands

Applicant: SUMAS ENERGY 2, INC.
 Proposal: Wetland Fill for Generation Facility

COE No. 98-4-02021
 In: Wetlands within Sumas Creek and Johnson Creek watersheds

Date Nov. 2, 1998 | Rev. 4/21/00

At: Sumas, Whatcom Co., WA
 Sheet 7 of

APPENDIX H

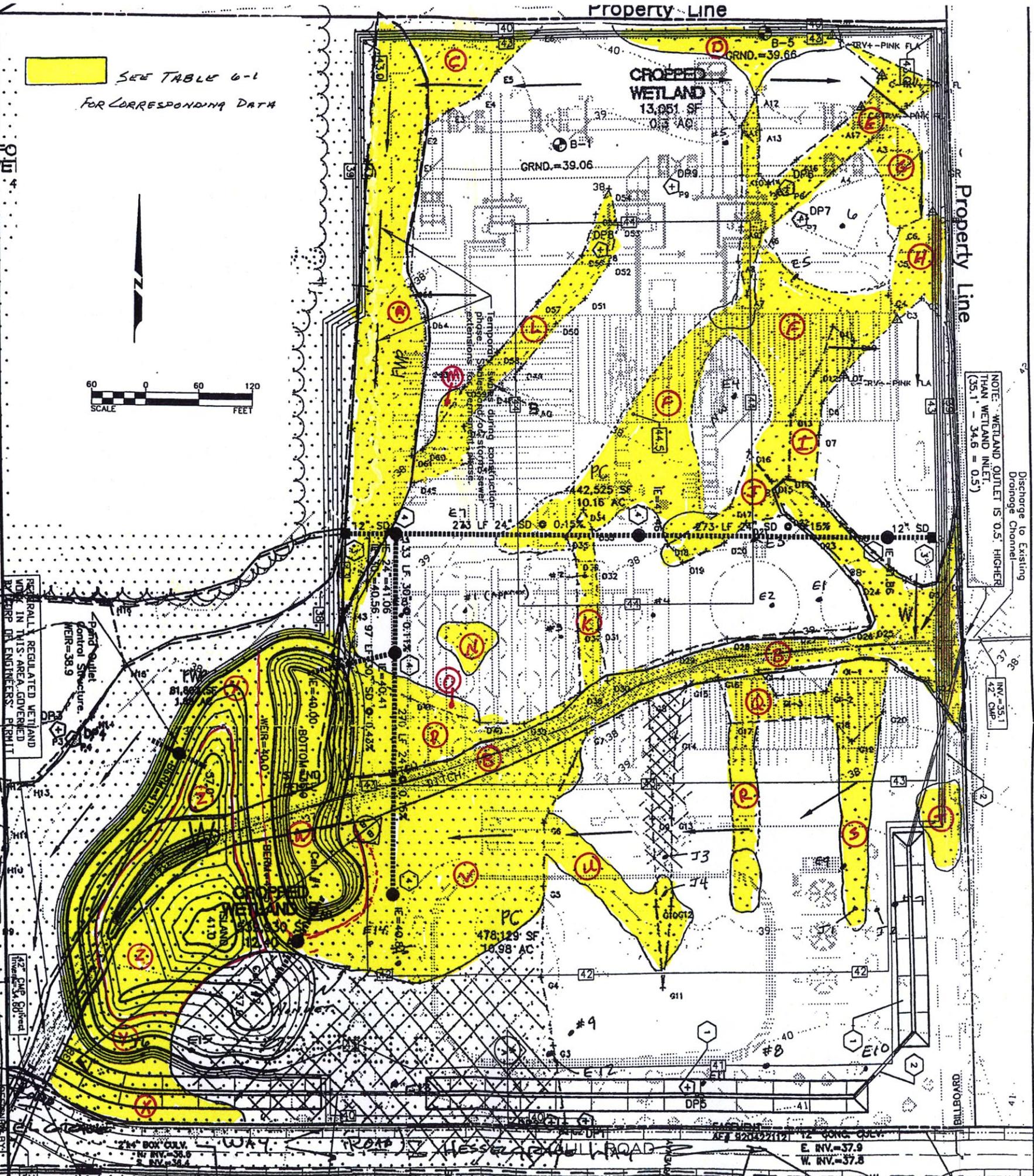
**Wetland Fill in Bexar Environmental Consulting Ltd. Revised Wetland
Boundaries**

SEE TABLE G-1
FOR CORRESPONDING DATA



Wilson Engineering & Surveyors
CONSULTING ENGINEERS & SURVEYORS

805 DUPONT STREET
BELLINGHAM, WA 98225
(360) 733-6100
FAX: (360) 647-9061



DATE: 11/11/11
DRAWN BY: [Signature]
CHECKED BY: [Signature]

Appendix H
Wetland Fill in Bexar
Environmental
Consulting Ltd. Revised Wetland
Boundaries

Table 6-1 SE2 Impact Acreage			
	Wetland Ditch	FWP*	PC land**
Area A		0.89 ac.	
Area B	1.0 ac.		
Area C			0.223 ac.
Area D			0.179 ac.
Area E			0.297 ac.
Area F			0.947 ac.
Area G			0.122 ac.
Area H			0.151 ac.
Area I			0.122 ac.
Area J			0.114 ac.
Area K			0.104 ac.
Area L			0.276 ac.
Area M			0.014 ac.
Area N			0.050 ac.
Area O			0.109 ac.
Area P			0.297 ac.
Area Q			0.202 ac.
Area R			0.129 ac.
Area S			0.158 ac.
Area T			0.086 ac.
Area U		--	0.208 ac.
Area V			0.952 ac.
Area W	0.165 ac	0.297 ac.	0.247 ac.
Area X			0.235 ac.
Area Y	0.074 ac.	0.339 ac.	0.177 ac.
Area Z	0.156 ac.	0.084 ac.	0.360
<i>Subtotal</i>	<i>1.395 ac.</i>	<i>1.61 ac.</i>	<i>5.759 ac.</i>
<i>Total - 8.764 ac.</i>			

*FWP – farmed wetland pasture

**PC lands – Impacted wet PC lands as per DEA/Bexar delineation

Exhibit 6

BEFORE THE STATE OF WASHINGTON
ENERGY FACILITY SITE EVALUATION COUNCIL

In the Matter of Application No. 99-1:

SUMAS ENERGY 2 GENERATION
FACILITY

SETTLEMENT AGREEMENT BETWEEN
WASHINGTON DEPARTMENT OF
ECOLOGY AND SUMAS ENERGY 2

I. Introduction

A. Parties

Sumas Energy 2, Inc. (SE2) is seeking a Site Certification Agreement (SCA) from the Energy Facility Site Evaluation Council (EFSEC) to construct and operate the proposed Sumas 2 Generation Facility (S2GF or Project).

Washington Department of Ecology (Ecology) was created to administer the state of Washington's water management program, including its comprehensive water quality and water resource allocation programs. Ecology also has statutory responsibilities in the matters of flood control, shoreline and coastal zone management, air quality, and environmental review and coordination, pursuant to the State's environmental policy statute. Ecology is a party to the site certification adjudication before EFSEC.

B. Purpose and Intent

SE2 and Ecology (collectively "the Parties") have been involved in discussions and negotiations related to the Project's potential effect upon water quality and wetlands. The Project consists of a 660 MW combined-cycle combustion turbine generation facility and

associated facilities, including a 4.25 mile natural gas pipeline, and a 5.9 mile, 230 kV transmission line connection facility. Through this Agreement, Ecology and SE2 set forth the obligations and restrictions that the Parties intend to have incorporated into the SCA as conditions for the Project should EFSEC recommend that the Project be certified. The obligations and restrictions set forth in the Agreement relate to resources that will be affected by construction and operation of the Project facilities at the Project site, and the construction and operation of the approximate 4.25 natural gas pipeline from the border crossing east of Sumas, Washington to the Project site, the construction and operation of the approximate 0.5 mile electrical transmission line from the Project site to the U.S.-Canadian border as these components are proposed at the time of entry of this Agreement. The Agreement does not address issues that may be raised at EFSEC or non-EFSEC proceedings outside the adjudicative hearing or other Project impacts, if any.

C. Resolution of Issues

SE2 has undertaken preliminary site impact assessments to identify the major significant water quality and wetland impacts expected from construction and operation of the Project facility, natural gas pipeline, and electrical transmission line. The Parties agree that not all impacts may be known and therefore, the Agreement contains commitments to address currently expected specific impacts and a commitment to principles of impact assessment and mitigation for potential future unknown impacts.

The Parties further agree that SE2 will comply with any conditions in any settlement agreement with any other Party to the EFSEC proceeding that set stricter standards regarding wetlands, and water quality. Finally, while Ecology has consented to entering into this Agreement as providing the minimum acceptable mitigation for the Project's impacts to wetlands for the purpose of settlement, its participation in this Agreement should not be

interpreted as representing Ecology's position in any proceeding other than the EFSEC adjudicative hearing (e.g. EFSEC's Clean Water Act Section 401 Certification).

In addition, Ecology initially raised issues with respect to air emissions and water resources. These issues have been resolved to Ecology's satisfaction and, therefore, no testimony was submitted for the adjudicative hearing.

II. SE2 Commitments

A. Water Quality

1. Wastewater Treatment

There is an existing contract between Sumas Cogeneration Company, L.P. ("SCCLP") and the City of Sumas ("City") for wastewater treatment and discharge. The City has discontinued operation of its wastewater treatment plant and, by contract, now sends its wastewater stream to the City of Abbotsford, British Columbia, Canada for processing at the Joint Abbotsford Mission Environmental System (JAMES) treatment plant (collectively, "Abbotsford"). Under the contract, Abbotsford has committed to accepting a maximum flow from the City which increases each year up to a limit of 400,000 gallons per day. Through an agreement with the City, SCCLP is permitted to discharge up to 80,000 gallons per day to the City's system. SE2 will generate a maximum of 39,000 gallons per day of wastewater. The City has consented to the transfer of all or any portion of the 80,000 gallons per day to SE2. The combined discharge from SCCLP and SE2 will not exceed the quantity of water set forth in SCCLP's existing agreement with the City (80,000 gallons per day).

SE2 further agrees that its wastewater will meet all discharge standards currently imposed on SCCLP, pursuant to the agreement between SCCLP and the City of Sumas.

2. Hydrostatic Test Water

SE2 agrees that none of the hydrostatic test water will be discharged directly into surface waters of the State and any such water discharged into a Publicly Owned Treatment Work will meet all applicable pre-treatment standards.

3. Stormwater Pollution Prevention Plans

SE2 agrees that any Stormwater Pollution Prevention Plan required by any NPDES permit required for construction and operation of the Project will be submitted to EFSEC for approval and, at the same time, will be submitted to Ecology for review and comment. Source control Best Management Practices will be selected and identified during a detailed design of the plant site, and will be included in the required Stormwater Pollution Prevention Plans.

4. Stormwater Drainage Design

SE2 agrees to prepare a stormwater drainage design plan to be submitted to EFSEC for approval and, at the same time, will be submitted to Ecology for review and comment. The stormwater drainage design will include the design of an orifice intended to permit an adequate flow of water into the created and enhanced wetland area located on the southwest portion of the site and shall include a means of directing increased stormwater flows into the proposed drainage along the north and east property lines. The design shall also include an orifice intended to permit an adequate flow of water into the created and enhanced wetland area located to the east of the site and shall include a means of directing increased stormwater flows directly into the existing 42-inch stormwater drainpipe when such increased flow would potentially create scour or erosion within the new wetland areas.

SE2 agrees to limit the peak rate of discharge from the site such that:

- (a) The peak rate of stormwater discharge from the developed site will be limited to match the peak rate of discharge prior to development for the 10-year 24-hour storm and

for the 100-year 24-hour storm in the absence of flood waters that would inundate the storm water detention pond.

(b) The rate of discharge from the 2-year 24 hour storm from the developed site will be limited to one half (1/2) of the peak rate of discharge from the 2-year 24-hour storm from the site prior to development.

(c) The limits will apply to all points of discharge from the site.

B. Wetlands

1. SE2's Commitments

SE2 agrees that it shall recommend the mitigation measures identified in the following sections of this Agreement be incorporated into the SCA as binding commitments.

2. Wetland Assessment and Mitigation

This Agreement incorporates the wetland mitigation measures set forth in the Settlement Agreement Between Washington Department of Fish and Wildlife And Sumas Energy 2. In addition, SE2 agrees, in coordination with Ecology, to develop a Performance Plan ("Plan") for its wetland mitigation. The Plan will include the following: a description of monitoring that must be performed; a monitoring schedule; submittal of monitoring reports on a prescribed schedule; performance standards for each aspect of the wetland mitigation plan; and contingencies in the event that any aspect of the wetland mitigation plan fails. Performance standards will be developed using guidance in publications available on Ecology's wetlands homepage, as well as "Success Standards for Wetland Mitigation Projects – A Guideline" (Mary Ossinger, WSDOT Environmental Affairs Office, Draft August 1999).

III. Withdrawal of Objections

Based upon the above commitments made by SE2, Ecology agrees that SE2 has addressed Ecology's water quality issues and mitigated the Project's impacts to wetlands. Therefore, based on this Agreement, Ecology stipulates to the withdrawal of all of its issues from the adjudicative hearing, and to the withdrawal of the prefiled testimony of Erik Stockdale and Steve Hood.

DATED: July 27, 2000

PERKINS COIE LLP

By 
Karen M. McGaffey
Charles R. Blumenfeld
Elizabeth L. McDougall
Attorneys for Sumas Energy 2, Inc.

WASHINGTON ATTORNEY GENERAL

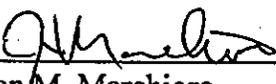
By 
Joan M. Marchioro
Assistant Attorney General
Attorney for Washington Department of
Ecology

Exhibit 9

BEFORE THE STATE OF WASHINGTON
ENERGY FACILITY SITE EVALUATION COUNCIL

In the Matter of Application No. 99-1:

SUMAS ENERGY 2 GENERATION
FACILITY

STIPULATED WITHDRAWAL OF
BONNEVILLE POWER
ADMINISTRATION

I. Introduction

Sumas Energy 2, Inc. ("SE2") is seeking a Site Certification Agreement ("SCA") from the Energy Facility Site Evaluation Council ("EFSEC") to construct and operate the proposed Sumas 2 Generation Facility ("S2GF" or "Project").

Bonneville Power Administration ("BPA") is an agency of the federal government within the U.S. Department of Energy. BPA is a federal power marketing administration that markets electric power from 29 federal hydroelectric projects and some non-federal projects in the Pacific Northwest region. BPA's service area is comprised primarily of Oregon, Washington, Idaho, and western Montana and portions of California, Nevada, Utah and Wyoming. BPA's power sales account for approximately 40% of the electric power consumed in the region. In addition, BPA owns nearly 85% of the high-voltage transmission in the region.

BPA is also one of the agencies designated to act as the United States Entity which, in conjunction with the Canadian Entity, formulates and carries out operation arrangements necessary to implement the Columbia River Treaty.

STIPULATED WITHDRAWAL OF
BONNEVILLE POWER ADMINISTRATION - 1

[31742-0001/SL003732.841]

II. Resolution of Issues

SE2 and BPA set forth the following recitals:

- Based on preliminary BPA transmission studies, SE2 acknowledges that currently there may not be sufficient available transfer capability ("ATC") to accommodate SE2's long-term firm transmission request for sales of SE2 generation into the U.S. without some non-major system upgrades. If SE2 decides to purchase such firm transmission rights over the Northern Intertie, SE2 acknowledges that it will have to pay for any upgrades or additional transmission and related facilities and services necessary, in accordance with BPA's transmission policies, to accommodate the requested firm transmission.
- Regardless of the firm transmission reserved for the return of the Canadian Entitlement, SE2 acknowledges that the current ATC coupled with any firm transmission requested by SE2 may, without sufficient upgrades to the system and given the current environment of regulatory change, be insufficient for the Canadian Entitlement obligation.

Therefore, based on these recitals, BPA stipulates to the withdrawal of all of its issues from the adjudicative hearing, and to the withdrawal of the prefled testimony of Anthony G. White.

DATED: July ____, 2000

PERKINS COIE LLP

By _____

Karen M. McGaffey
Charles R. Blumenfeld
Elizabeth L. McDougall
Attorneys for Sumas Energy 2, Inc.

BONNEVILLE POWER ADMINISTRATION

By _____

Sonya L. Baskerville
Attorney for Bonneville Power Administration

Exhibit 10

BEFORE THE STATE OF WASHINGTON
ENERGY FACILITY SITE EVALUATION COUNCIL

IN RE APPLICATION NO. 99-1

SUMAS ENERGY 2 GENERATION
FACILITY

STIPULATION AND SETTLEMENT
AGREEMENT BETWEEN
WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION
AND SUMAS ENERGY 2

Sumas Energy 2, Inc. (SE2) and the Washington Utilities and Transportation Commission (WUTC) enter into the following Stipulation and Settlement Agreement (the Agreement).

BACKGROUND

The Applicant, SE2, has filed an application with the Washington State Energy Facility Site Evaluation Council (EFSEC) requesting a site certification agreement to allow construction and operation of the proposed Sumas Energy 2 Generation Facility (the Project) in Whatcom County. The WUTC has intervened in these proceedings pursuant to RCW 80.50.030(3). SE2 and the WUTC (the Parties) have entered into this Stipulation and Settlement Agreement (the Agreement) in order to resolve the WUTC's concerns regarding potential adverse impacts the proposed Project may have on the regional transmission grid. The Parties have reached agreement on these issues and wish to present their Agreement to EFSEC for its consideration. The Parties therefore adopt the following Agreement. The Parties enter into this Agreement

STIPULATION AND AGREEMENT- 1

[31742-0001/SL003732.557]

voluntarily to resolve the matters in dispute between them and to expedite the orderly disposition of this proceeding.

AGREEMENT

Now, therefore, the Parties hereby agree as follows:

A. RESOLUTION OF ISSUES IN PENDING PROCEEDING.

1. Transmission Impacts.

The Parties agree that it is both important and appropriate that EFSEC consider all issues raised by an applicant's request for a site certification agreement to allow construction and operation of any power plant, including any potential adverse impacts a proposed project may have on the capacity and reliability of the regional transmission grid.

2. Costs of Transmission Upgrades or Enhancements.

The Parties agree that the documents described in Section C below preliminarily conclude that any transmission upgrades or enhancements necessary to interconnect and transmit SE2 power likely will be minor. The Parties acknowledge that, in the event SE2 contracts for firm service from the Bonneville Power Administration (BPA), SE2 will be required to bear the costs of any necessary transmission upgrades or enhancements, consistent with Federal Energy Regulatory Commission (FERC) and BPA policies and rules. The parties further acknowledge that in the event a purchaser of power from SE2 elects to purchase transmission service from BPA on a firm basis in order to transport power purchased from SE2, the purchaser of power will be required to bear the costs of any necessary transmission upgrades or enhancements, consistent with FERC and BPA policies and rules. On the other hand, if a purchaser of power from SE2 elects to purchase non-firm transmission service in order to transport power purchased from SE2, such service would be provided only if available, therefore no additional costs would be incurred. Consequently, the costs of transmission upgrades and enhancements made necessary by the firm transport of power generated by SE2 would, in all relevant cases, be the responsibility of either

SE2 or of a party that has entered into a transaction to purchase firm transmission service from BPA to transport power from SE2.

3. Appendices.

The following documents are incorporated herein by this reference:

(1) The Summary of Preliminary Load Flow Analysis dated December 2, 1998, and prepared by Black & Veatch LLP addressing transmission capacity from Canada into the United States (Exhibit 155.6);

(2) The SE2 System Impact Study and Summary thereof dated June 1, 2000, and prepared by the Bonneville Power Administration (BPA) (Exhibit 120.1);

(3) The "Questions and Answers" sheet dated July 7, 2000, and prepared by BPA concerning SE2's long term firm BPA transmission request (Exhibit 160.2);

(4) An excerpt from the prefiled Rebuttal Testimony of Mark Schrimp, Project Manager with Black & Veatch LLP in this proceeding (Exhibit 160 at pages 8 and 9).

B. GENERAL PROVISIONS

1. Support of Agreement.

The Parties shall cooperate in submitting this Agreement promptly to EFSEC for acceptance, and shall support adoption of this Agreement in proceedings before EFSEC, through testimony or briefing, as resolution of the issues included within this Agreement. No Party to this Agreement, or its agents, employees, consultants or attorneys will engage in any advocacy contrary to the ^{EFSEC} ~~Commission~~'s adoption of this Agreement as resolution of the issues included within this Agreement. Each Party shall make available a witness or witnesses in support of this Agreement, if a hearing is determined necessary by EFSEC. To the extent that any prefiled testimony of any Party's witness conflicts with the terms of this Agreement, the Parties agree that the terms of this Agreement supersede the recommendation in that Party's testimony.

2. **Entire Agreement.**

The Parties acknowledge that this Agreement is the product of negotiation and compromise and shall not be construed against any Party on the basis that it was the drafter of any or all portions of this Agreement. This Agreement constitutes the Parties' entire agreement on all matters set forth herein.

DATED this 28th day of July, 2000.

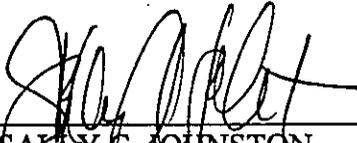
PERKINS COIE LLP

CHRISTINE O. GREGOIRE
Attorney General

By: _____


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Karen M. McGaffey
Attorneys for Sumas Energy 2, Inc.

By: _____


SALLY G. JOHNSTON
Assistant Attorney General
Counsel for Washington Utilities and
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