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

In the Matter of Application No. 96-1,
Olympic Pipe Line Company
Cross Cascade Pipeline Project

EXHIBIT _____ (BR-T)

**PREFILED DIRECT TESTIMONY
WASHINGTON DEPARTMENT OF FISH & WILDLIFE
WITNESS: BRENT RENFROW**

(Fish and Wildlife Habitats and Project Impacts From Snoqualmie Pass to Columbia River)

PRE-FILED TESTIMONY OF BRENT RENFROW

1
2 My name is Brent Renfrow. My business address is 201 North Pearl Street, Ellensburg,
3 Washington 98926. I am an Area Habitat Biologist for the Washington Department of
4 Fish and Wildlife (WDFW), Region 3, stationed in Ellensburg. My duties include
5 reviewing and analyzing potential impacts of private and public development projects on
6 fish, wildlife and their habitats, and recommending mitigation measures to reduce adverse
7 environmental impacts of such projects. In the course of these duties I check
8 watercourses for the presence of fish, identify wetlands, and assess the quality of fish and
9 wildlife habitat. I was appointed to serve on two federal advisory committees which
10 provide land/resource management recommendations for lands which may be affected by
11 the proposed pipeline project (i.e. the Cultural and Natural Resources Committee
12 established by the U.S. Army Yakima Training Center and the Conservation Advisory
13 Group established by the USDI Bureau of Reclamation). As part of my duties I provide
14 information and technical assistance for persons or entities interested in restoration or
15 enhancement of fish and wildlife habitat. I review, condition and issue permits
16 (Hydraulic Project Approvals) for work within the ordinary high water mark of rivers,
17 streams and lakes; inspect the quality of this work; and prescribe remedial action or
18 recommend law enforcement action as appropriate. I have worked for WDFW since
19 1985.
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25 I have a B.S. degree in Wildlife Biology from Colorado State University, and a M.A.
26 degree in Educational Media (outdoor/environmental education) from the University of

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Northern Colorado.

Geographic Area of Testimony

The area of my testimony is for the proposed pipeline route in Kittitas County, or that portion of the project from Snoqualmie Pass to the Columbia River.

I. Pipeline Construction

1. Disposal of excess trench spoil.

Issue of Concern: The pipeline itself will displace a considerable amount of soil which will require disposal. Moreover, the pipeline is bedded in gravel to protect the pipe, and this creates additional displacement. This combined displacement of the pipeline plus bedding material is a substantial amount of waste earth, rock and gravel which requires disposal.

Disposal of this material is by itself a potentially serious environmental impact and should be reviewed as part of the EIS and License Application. The pipeline route runs through numerous critical areas (e.g. wetlands, shorelines, floodplains, watercourses, geologic hazard areas). There is a high likelihood that this waste material will be used to legally and illegally fill critical areas and cause significant adverse impacts to fish, wildlife and water quality.

The DEIS is silent as to the combined width of the pipe and bedding material in the

1 trench. If it is two feet wide, there will be approximately 180,000 cubic yards of excess
2 spoil over 231 miles after the trench is closed. If the pipe and bedding material is three
3 feet wide, there will be an excess of 400,000 cubic yards. This is a substantial amount of
4 fill material which will likely be made available to property owners (potentially delivered
5 free of charge) who will ignorantly or willfully fill Critical Areas such as wetlands and
6 floodplains. Filling of Critical Areas will cause irreparable harm to fish, wildlife,
7 wetlands, water quality and floodplain functions. Adverse environmental impacts can be
8 expected regardless of whether such fill is or is not in violation of local, state and federal
9 laws.
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13 This problem was experienced in Kittitas County where Puget Sound Energy is installing
14 a 16 inch gas pipeline. Disposal of excess spoil is the responsibility of the excavation
15 contractor, and such disposal may cost the contractor a substantial amount of money if it
16 requires a significant haul distance. Under such an arrangement, it is advantageous to the
17 contractor to deliver and install the material for nearby landowners for free or at low
18 cost. Shortly after the Puget Sound Energy project began, the contractor delivered and
19 placed trench spoil material in the channel, associated wetlands and floodplain of
20 Manastash Creek, a shoreline of Kittitas County. Before this work was discovered and
21 halted by WDFW, over 1,000 cubic yards of this material was installed. Puget Sound
22 Energy subsequently took steps through its contractual agreements with the excavation
23 contractor to better control selection of disposal sites. WDFW has not been able to do
24 additional follow-up work to determine how much fill has been placed in other wetlands
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26

1 as a result of this project. However, fill is evident in floodplains and irrigated pastures
2 which are known to have wetlands.

3
4 Kittitas County does not have a clearing and grading ordinance and therefore placement
5 of fill per se does not require county review and approval. There is no assurance that a
6 fill site will be screened for wetland concerns by a qualified person. Floodplain projects
7 may receive review under County floodplain or critical area ordinances, but compliance is
8 problematic. Small amounts of fill in the floodplain (20 cubic yards per homesite per
9 year) are considered permitted uses and therefore not subject to regulation. The
10 cumulative impact of multiple small wetland fills that could potentially result from this
11 project is substantial and would cause significant adverse impacts to fish and wildlife.
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15 **Relief Requested from EFSEC:** The license should require that disposal sites be
16 identified, reviewed under SEPA/NEPA and approved by EFSEC in advance of
17 construction. No disposal should be permitted within wetlands, floodplains or within
18 Critical Areas designated by local government under GMA or within the WDFW
19 recommended Priority Habitats and Species (PHS) buffers for these Critical Areas or the
20 local government designated buffers, whichever buffer area is greater.
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23 **2. Alteration of Hydrology of Wetlands, "Riparian" Draws Without Perennial**
24 **Surface Water, and Type 1-4 Watercourses (WDNR classification or**
25 **equivalent).**
26

1 **Issue of Concern:** As noted in the DEIS, pipeline trenching through or adjacent to
2 wetlands could disrupt the present hydrology and drain the wetland either because of
3 preferential flow of water into the pipeline trench, or because excavation of the pipeline
4 trench penetrated a confining soil layer which controlled the wetland hydrology. The
5 same is true of perennial water courses (DNR Type 1-4 streams or equivalent) and
6 ephemeral streams and draws (seasonal or intermittent flow, frequently with hydrology
7 sufficient to support a riparian plant community important to wildlife). This is of
8 particular concern in the Kittitas Valley which has a high water table, both from natural
9 sources and from augmentation by irrigation water conveyance and application.
10 Disruption of the existing hydrology by ditching will likely result in de-watering or
11 draining some areas and increasing the water table or flow in others. It will be difficult to
12 predict what will occur without detailed ground water, soils and geological information.
13 It is highly unlikely that chance alterations of hydrology will not adversely affect fish,
14 wildlife and wetland functions. Unless there is detailed information to the contrary, it
15 should be presumed that all impacts will be negative.
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20 **Relief Requested from EFSEC:** The license should require a detailed ground water
21 study which identifies flow patterns and predicts pipeline impacts. Such a study would
22 serve as a foundation for mitigation of hydrology impacts, monitoring for leaks and
23 mitigation of spills. Based on information provided by the study, impermeable barriers
24 must be installed in the pipeline trench to prevent preferential flow along the trench,
25 prevent groundwater from being unintentionally transferred from one watercourse to
26

1 another, and prevent adverse impacts to hydrology. If EFSEC cannot require a detailed
2 groundwater study, then as a pragmatic alternative to mitigate impacts to hydrology
3 EFSEC should require impermeable barriers constructed in the pipeline trench between
4 all adjacent watercourses so as to contain ground water within its present course.
5

6
7 **3. Fish Presence (Water Typing) May Not Be Accurately Determined for Small**
8 **Streams, Therefore Supplemental Criteria Are Needed for Construction.**

9 **Issue of Concern:** Proposed project construction standards and practices for stream
10 crossings are based in part on the presence or absence of fish. Unfortunately, the
11 available information about the presence or absence of fish in the smaller streams is
12 inadequate to be used with any degree of confidence. There is no exhaustive stream
13 “catalog” or inventory in the Yakima Basin and ground truthing has demonstrated that the
14 DNR Water Type Maps commonly mislabel fish-bearing streams as “type 4” waters not
15 used by fish. WDFW and the Yakama Indian Nation (YIN) commonly find that
16 watercourses classified as “non fish-bearing” streams in fact are used by fish during
17 favorable periods of each year or during favorable years. The seasonal use of tributary
18 streams can be very important for spawning and rearing of salmonids. I am particularly
19 concerned about the possibility of fish in streams indicated as unnamed in the Applicant's
20 Map Atlas.
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25 Until a comprehensive inventory is completed which takes into consideration fish use
26 during favorable seasons and favorable water years, all streams which meet the Forest

1 Practices Board 1998 Water Type Emergency Rule (WAC 222-16-030) criteria should be
2 considered to be fish-bearing streams for the purposes of construction, and should be
3 presumed to potentially harbor sensitive or ESA listed species of fish.
4

5
6 **Relief Requested from EFSEC:** The license should require all water courses which
7 have a width of 2 feet or greater, a stream gradient 20 percent or less, and a contributing
8 watershed larger than 50 acres be treated as fish bearing streams for construction
9 purposes. The construction standards, specifications, mitigation measures and best
10 management practices for work in fish-bearing streams should also be applied to streams
11 which meet these criteria.
12

13
14 **4. Stream Crossings.**

15 **Issue of Concern - Crossing Method:** In addition to the construction impacts, the
16 pipeline crossing of streams will have permanent, long term adverse impacts on fish and
17 wildlife, and in Kittitas Valley will further adversely affect species with depressed
18 populations due to habitat loss/degradation. The project as currently proposed provides
19 no significant mitigation for these permanent adverse impacts. Permanent pipeline
20 impacts include the increased likelihood for catastrophic damage from petroleum product
21 leaks into ground and surface water, and the requirement for a 60 foot cleared
22 construction corridor and a perpetual 10-30 foot cleared maintenance corridor through
23 every riparian zone (even those of streams with temperature and flow problems -
24 including Federal Clean Water Act 303(d) listed streams for flow and temperature
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1 impairment) and the resulting permanent loss of shade, organic input to the food chain
2 (such as leaf litter and insects), and large woody debris recruitment in streams which are
3 already impaired by a lack of healthy riparian zones and large woody debris.
4

5
6 I believe that the best recourse is to construct pipeline bridges across all major streams
7 (DNR Type 1-3 waters or equivalent) and/or route the pipeline across existing bridges
8 (such as those on the John Wayne Trail) as appropriate. This action would ensure
9 pipeline leaks would be readily detectable and would negate the need for perpetual
10 riparian zone clearing. Where this is not feasible, the Applicant should be required to
11 install large woody debris in the stream to mitigate impacts caused by the stream crossing
12 construction, associated riparian zone clearing for construction and perpetual riparian
13 clearing of the maintenance corridor.
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16 **Relief Requested from EFSEC:** The license should require that all crossings of DNR
17 Type 1-3 waters or equivalent be on constructed pipeline bridges or existing bridges. If
18 EFSEC determines that this is not feasible, the license should require the Applicant
19 develop and implement a riparian area restoration and mitigation plan, which includes
20 installation of large woody debris structures in each fish-bearing stream crossed by the
21 pipeline. This plan and its implementation should be subject to the approval of EFSEC in
22 consultation with WDFW.
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26 **Issue of Concern - Waste Water Management and Disposal :** Stream crossings

1 constructed by open cut trench or boring methods involve excavating a trench or pit
2 deeper than the streambed. This deep trench or pit intercepts the ground water (water
3 table) associated with the watercourse. Despite the use of containment measures, a
4 substantial amount of water typically infiltrates into the work area and must be pumped
5 out to a disposal site in order to allow work. This will be particularly a problem when
6 crossing the Yakima River and when crossing streams in the irrigated areas of the Kittitas
7 Valley, which have a high water table throughout the construction season. Depending
8 upon the permeability of the gravels and the amount of water present at a work site, de-
9 watering a trench or pit and disposing of that waste water can be a significant challenge.
10 Work in the pit or trench (particularly excavation) mixes mud and silt with the infiltration
11 water. Thus there is a high potential for pipeline trench excavation to result in discharge
12 of mud and silt to watercourses which support fish.
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16 **Relief Requested from EFSEC:** The license should require that for every crossing site,
17 a water management and disposal plan be prepared which identifies and prescribes a
18 suitable water disposal site and disposal technique, and fully ensures that water quality
19 and aquatic life will be protected.
20

21
22 **Issue of Concern - Channel Grade Control in High-gradient streams:** Many of the
23 stream crossings in the Upper Kittitas County are through streams where the gradients are
24 steep (in excess of 2 percent slope) and the streams exhibit a “stair-step” profile. These
25 stair steps are critical to stream channel stability (energy dissipation) and upstream
26

1 passage of fish. The “stair steps” also form pool habitat which is essential to fish in the
2 stream. See Exhibit _____ (BR-1). (Exhibit _____ (BR-1) is a diagram I copied from a
3 paper entitled “Living With Fluvial Systems - an Introduction to River Mechanics” by Dr.
4 Donald Reichmuth of GEOMAX, P.C.)
5

6
7 In streams where the pipeline crossing is constructed by trenching (or any channel bed
8 disturbing technique), it is imperative that the channel hydraulic control features (i.e. the
9 “stair steps”) be protected and/or restored to preconstruction condition before the
10 contractor leaves a site. Failure to preserve and restore the stair steps in a fish passable
11 configuration and in a manner that is structurally sound to at least the 100-year peak flow
12 design will potentially result in channel instability, loss of habitat, the loss of fish
13 passage, and irretrievable damage to the channel, bank, and instream and shoreline
14 habitat. Moreover, any channel degradation will exacerbate bank erosion which in turn
15 increases sediment pollution downstream in the tributary stream and ultimately in the
16 mainstem Yakima River.
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20 In my experience, excavation contractors, heavy equipment operators and the majority of
21 civil engineers have little knowledge of river and stream mechanics, and cannot identify
22 natural channel grade controls in the field. Most cannot identify habitat features
23 important to fish. Reconstructing in-channel structures is essentially an art as much as
24 science because of the many variables in site conditions and materials. Unlike bricks,
25 bolts and I-beams; stream boulders and rootwads do not come in standard dimensions that
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1 facilitate construction by novices. Such stream work must be performed by and or with
2 the supervision of people who have specific experience, training and skill with instream
3 structures.
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6 **Relief Requested from EFSEC:** The license should require that for all streams with
7 gradients greater than 2 percent which are crossed using techniques that disturb the banks
8 or channel, the stream grade controls shall be restored to a stable profile, which is
9 configured to be passable to fish and designed and installed to be structurally stable to at
10 least the 100-year peak flow design. All in-channel structures shall be designed by a firm
11 with expertise and experience in stream channel restoration for salmonids.
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14 **Issue of Concern - Need to Install Pipeline Below Scour Depth:** The proposal is to
15 install the pipeline two feet below the scour depth of the stream or river. The scour depth
16 must be determined for the probable depth of local scour, rather than simply the
17 calculated scour depth for the full channel cross-section. The Yakima River and
18 tributaries in Kittitas County are subject to ice jams, and log or debris jams, which can
19 constrict flood flows and cause deep local scour. It should be noted that the footings of
20 many of the Interstate 90 bridge piers (designed to be below scour depth) have been
21 exposed by flood flows which have occurred since 1990. Repairs have been necessary to
22 prevent bridge failure. Scour and exposure of the pipeline may cause rupture and
23 catastrophic failure. At a minimum, exposure of the pipeline will necessitate repair work
24 and additional impacts to the bed and shoreline.
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Relief Requested from EFSEC: The license should require that the pipeline be installed below scour depth calculated for local scour around probable sized debris and ice jams for the watercourse being crossed. For the Yakima River, the license should require analysis of bridge scour information from WSDOT. The pipeline should be installed under the Yakima River two feet below the maximum calculated local scour depth or two feet below the maximum observed scour depth, whichever is greater.

Issue of Concern - Streambank Restoration: Kittitas County extends from the Cascade Crest to the Columbia River. Vegetation varies dramatically across this climatic gradient (i.e. subalpine forest in the 100-inch per year rainfall zone to “desert” shrub steppe in the 7 inch per year rainfall zone). Stream channel morphology (type) varies considerably across the pipeline route. A simple generic restoration plan is inadequate to protect restore and protect the stream channel and fish and wildlife habitat at the crossing sites. Restoration plans should be developed based on local plant associations and the character of the actual channel. The channel classification system described by Dave Rosgen in his 1996 book entitled “Applied River Morphology” could be used for this purpose.

Relief Requested from EFSEC: The license should require that the Applicant develop and submit to EFSEC and WDFW for approval, a stream bank revegetation and stabilization plan, which specifies generic prescriptions by ecozone and includes protocol for determining when the generic prescriptions are potentially inadequate and customized, site specific measures are required (i.e. the equivalent of an individual HPA). The license

1 should require that all customized revegetation and stabilization work be approved by
2 EFSEC in consultation with WDFW or a qualified environmental firm with five or more
3 years of experience in biotechnical streambank stabilization.
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6 **5. Salvage of all trees and Large Organic Debris for Use in Stream Restoration**
7 **and Require Mitigation for Permanent Loss of Future Recruitment.**

8 **Issue of Concern:** Most streams in the Yakima River Basin are in need of more large
9 woody debris (e.g. large logs with root wads still attached, log jams, etc.). Prior to the
10 settling of the Kittitas Valley and the extensive logging, channel clearing and
11 channelization of this century, the river and stream channels included a lot of complex
12 large woody debris. Large woody debris helps control stream energy and erosion; it helps
13 shape the channel and create side channels and backwater habitat; it sorts stream gravels
14 which create spawning areas for fish; it creates habitat features such as deep scour pools
15 and complex cover needed by both juvenile and adult fishes; it provides organic material
16 and habitat for aquatic organisms which are in turn food for fish, etc.. Retaining what is
17 left of the remaining large woody debris in the river system; adding additional large,
18 complex woody debris to replace that which was removed this century; and ensuring
19 future recruitment of large woody debris are important elements of on-going river/stream
20 restoration efforts to benefit salmonids.
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25 The construction of the pipeline through riparian zones and streams will require removal
26 of trees and shrubs. This is counter productive to the stream restoration efforts needed

1 and currently underway. Removal of these trees will reduce future recruitment of large
2 diameter trees, snags and woody debris to the stream channel and riparian zone. This
3 lack of recruitment will contribute to long term degradation of channel stability and
4 riparian and instream habitat for fish and wildlife. To mitigate this impact, all trees
5 which must be removed should be removed in one piece with rootwads attached. These
6 trees and any existing large woody debris must all be reinstalled in the riparian zone as
7 part of the revegetation effort, and where appropriate for the site conditions they should
8 be installed in the stream as large woody debris in a configuration which provides fish
9 habitat.
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13 **Relief Requested from EFSEC:** The license should require that the Applicant prepare a
14 woody plant and debris salvage plan for approval by EFSEC in consultation with
15 WDFW, and that all salvageable woody material be installed within the floodplain and
16 stream channel as mitigation for impacts to woody debris recruitment.
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19 **6. Additional Stream Crossing Concerns Specific to the Crossing of the Yakima**
20 **River.**

21 **Issue of Concern - Crossing Method:** The license application currently proposes
22 installing the pipeline under the Yakima River by excavating an open trench.
23 Construction will require coffering and excavation of a deep trench which will result in
24 substantial disturbance of the river bottom and floodplain. The deep trench will get large
25 amounts of infiltration water, and work and excavation in this trench will create large
26

1 amounts of silty waste water. If properly managed, much of the infiltration water can be
2 kept clean and separate from construction activities. The discharge of infiltration water -
3 both clean and silty waste water - unless disposed of properly, will adversely affect water
4 quality in the river.
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7 As noted in number 4 above (Streams Crossings), I believe that the best recourse is to
8 construct a pipeline bridge across the Yakima River. This action would ensure pipeline
9 leaks would be readily detectable and would negate the need for perpetual riparian zone
10 clearing.
11

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13 **Relief Requested from EFSEC:** The license should require that the Yakima River
14 crossing be on a constructed pipeline bridge. If EFSEC determines that this is not
15 possible, then the license should require the preparation of the following plans which
16 should be made subject to the review and approval of EFSEC in consultation with
17 WDFW: 1) detailed plan of construction which identifies and prescribes site specific
18 construction methods, work sequence, and measures to protect fish, water quality, and
19 instream and shoreline habitat; 2) water management and disposal plan which identifies
20 and prescribes coffer dam construction, suitable water disposal site(s) and disposal
21 technique for waste water; and 3) spill prevention and containment plan for construction.
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23
24 In addition, to offset the permanent adverse impacts of construction, operation and
25 maintenance of the pipeline crossing under the river and the associated permanent loss of
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1 large shoreline trees, the license should require both on-site and off-site mitigation which
2 restores fish and wildlife habitat on the Yakima River. At a minimum this should
3 include: 1) full restoration of the disturbed shoreline at the crossing site to natural
4 conditions, 2) construction of two large woody debris jams which provide optimal habitat
5 for juvenile salmonids, in the vicinity of the pipeline crossing, and 3) off-site
6 enhancement of river or side channel habitat for juvenile salmonids and permanent
7 protection of the enhanced area through acquisition in fee title or deed restriction.
8

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10 **7. Knowledgeable, Independent Construction Monitoring Personnel are**
11 **Essential for Stream Crossing Work.**
12

13 **Issue of Concern:** Environmental protection cannot be assured unless independent field
14 inspectors, knowledgeable about Yakima Basin watercourses and their fish species, are
15 available full time during construction of stream crossings to ensure compliance with
16 License/HPA/EIS provisions. Even more important, knowledgeable field inspectors are
17 needed to ensure that sound field decisions are made by construction workers.
18

19 Environmental monitoring and inspection during construction should be provided by
20 WDFW or a qualified, mutually acceptable, independent third party.

21 While the generic plan for crossings is reasonable, the amount of individual variables in
22 any one stream crossing is great. Very few streams will look like the “typical crossing
23 drawing”. Crossing construction will be complicated by instream habitat variables, stair-
24 step stream profiles (a matter critical to fish passage and channel stability), site-specific
25 riparian considerations, stream channel instability, associated wetlands and side channels,
26

1 high groundwater that must be pumped out and discharged to environmentally suitable
2 locations, etc.. Construction crews faced with a job that does not match the “typical”
3 drawings and site conditions will still, of course, construct the project. Machine operators
4 will make critical environmental decisions in ignorance - the default choice being what
5 seems the easiest way to build the crossing at the moment. While skilled operators with
6 local knowledge may actually do a good job making such environmental decisions, it
7 would be foolish to leave this to chance. Failure to exercise good judgment in field
8 decisions (and/or failure to immediately inspect/correct the work while equipment is still
9 available to make corrections) will assuredly result in loss of habitat and it is highly likely
10 to also result in direct mortality of aquatic life and permanent loss of fish passage. There
11 is potential for irreparable environmental harm. I have worked on stream projects in the
12 Yakima Basin for 12 years - with companies and contractors both good and bad - and
13 have learned by trial and error that there is no substitute for having knowledgeable people
14 out in the field at the time of construction.

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16
17 The shear number of watercourses to cross makes inspection/monitoring a substantial
18 task. The fact that many watercourses are not “fish bearing” does not eliminate the need
19 for field inspection. Non fishbearing streams may in fact have fish, and regardless, and
20 even stream crossings where fish are not present need to be inspected to ensure channels
21 do not erode or degrade and discharge sediment to fish-bearing waters downstream.

22
23 Project construction timing will require that multiple crossings will be constructed at the
24 same time.
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1 **Relief Requested from EFSEC:** The license should require that qualified, independent
2 environmental inspectors, knowledgeable about construction of hydraulic projects and
3 Yakima Basin watercourses and their fish species, are present on site during all river and
4 stream-related work. The inspectors shall have the authority to stop work and specify
5 corrective/restorative actions to be taken. The inspectors chosen must be acceptable to
6 WDFW.
7

8
9 **8. Failure of trench on steep slopes - Particularly Yakima River Crossing.**

10 **Issue of Concern:** The pipeline route at the crossing of the Yakima River, crosses a
11 landslide-prone slope with an active slide on the river's right bank and crosses an ancient
12 land slide with large fissures on the left bank. A landslide a short distance downriver
13 caused the failure of the Kittitas Reclamation District Main Canal and appeared to have
14 pushed mud and debris from the slide all the way across the river. The proposed crossing
15 of the river has been selected for its location under an existing utility right-of-way rather
16 than geologic stability. Additional analysis of pipeline safety with regard to landslides is
17 warranted. Supplemental safety systems such as automatic shut-off valves at the top and
18 bottom of the canyon slopes, reinforcing of the pipeline, and application of construction
19 techniques for unstable slopes are needed.
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23 **Relief Requested from EFSEC:** The license should require that the Applicant submit
24 to EFSEC for approval in consultation with WDFW and Washington Department of
25 Natural Resources (DNR), a slope stability and pipeline construction report prepared by a
26

1 qualified, independent geotechnical engineering firm for the Yakima River Crossing site,
2 detailing an analysis of the landslide potential of the site, the suitability of the site for the
3 pipeline, and if suitable, the design and construction details for the pipeline.

4 The license should require special protective measures for the crossing site including
5 automatic shut-off valves at the top and bottom of both slopes leading to Yakima River
6 crossing.
7

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9 **9. Shrub Steppe damaged by pipeline cannot realistically be restored.**

10 **Issue of Concern:** The pipeline route crosses shrub steppe habitat, much of which has
11 shallow soils where bedrock lies within two feet of the ground surface. Practically
12 speaking, shrub steppe plant communities within the proposed routes cannot be restored
13 to original condition because of the loss of the cryptogam layer (soil lichen), harsh
14 environmental conditions, unavailability of native seed except for a few select species and
15 competition from exotic weeds and cheatgrass. While once a dominant feature in eastern
16 Washington, shrub steppe is a vanishing plant association/habitat type. Species which
17 were once ubiquitous (e.g. sage grouse and sharp-tailed grouse) are now rare or
18 candidates for ESA listing. Wildlife that use shrub steppe include those adapted to an
19 environment which historically was a large, unfragmented expanse. Important shrub
20 steppe species have been seriously harmed by the fragmentation of this habitat.
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25 Regrettably, the pipeline corridor preferred route runs through (and will therefore likely
26 degrade) part of the largest remaining blocks of shrub steppe in the state of Washington.

1 This is entirely unnecessary as the pipeline could follow existing disturbed corridors such
2 as the John Wayne Trail (the old Milwaukee Railroad grade), Interstate 90, county roads,
3 etc.
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6 **Relief Requested from EFSEC:** The pipeline route should be required to follow
7 existing disturbed corridors through shrub steppe plant communities, particularly in the
8 area east of the crossing of Park Creek (stream crossing number 205). If EFSEC
9 determines that this is not possible, then EFSEC should require restoration of the
10 disturbed corridor to the best plant community practicable which approximates the
11 wildlife functions and values of native shrub steppe. EFSEC should also require that the
12 Applicant acquire or permanently protect one or more blocks of shrub steppe at risk of
13 damage or conversion, which are in or adjacent to large (unfragmented) shrub steppe
14 parcels. Acquisition and permanent protection of shrub steppe should be at a ratio of six
15 or more acres protected for each acre damaged, as mitigation for permanent damage to
16 shrub steppe.
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20 The license should also require that all construction in shrub steppe be confined to the
21 narrowest corridor feasible, and all areas for equipment staging or stockpiling of materials
22 be specifically designated in advance and delineated in the field to the smallest operable
23 area possible.
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26 **10. Need Customized Revegetation Prescription for Each Plant Community**

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Crossed By the Pipeline.

Issue of Concern: Kittitas County extends from the Cascade Mountain Crest to the Columbia River. Climate and vegetation varies dramatically across this climatic gradient (i.e. subalpine forest in the 100-inch per year rainfall zone to “desert” shrub steppe in the 7 inch per year rainfall zone). Each plant community has associated wildlife species and habitat functions. The pipeline corridor is a significant impact to these communities (60 feet wide across the entire county).

Because the pipeline disturbance corridor encompasses such a wide range of climate and plant communities from the Cascade Crest to the Columbia River, a few generic restoration prescriptions cannot address the wide range of conditions found along this route. Revegetation prescriptions should be developed specific for the soil, moisture and native plant community that naturally occurs on the site of the disturbance. This is especially important for the dry, shrub steppe portions of the county.

Relief Requested from EFSEC: The license should require that the Applicant develop and submit to EFSEC for approval in consultation with WDFW and DNR, a revegetation/restoration plan with specific revegetation prescriptions developed for each of the native plant communities that naturally occurs on the pipeline corridor. Prescriptions shall take into consideration soils and moisture regimes, site preparation and weed control.

1 The license should require successful site restoration. Monitoring of site restoration by
2 an independent third party should be required for at least five years. This should include
3 monitoring and documenting the restoration work performed and the success or failure of
4 that work. Remedial work should be required until all sites area successfully restored.
5 Weed control is essential and must be required on a regular basis for a 5-year vegetation
6 establishment period for dry eastern Washington sites, as well as a perpetual weed
7 control obligation for the life of the project.
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10 **II. Pipeline Operations**

11 **11. Sensitive Area Map of the Pipeline route is Needed for Future Monitoring**
12 **and Spill Response.**

13
14 **Issue of Concern:** Effective monitoring of a large project such as this requires
15 monitoring the most sensitive, vulnerable or irreplaceable areas more often than other
16 areas. Similarly spill response must be prioritized to protect the most valuable and/or
17 vulnerable areas first. Environmentally sensitive areas in the vicinity of the pipeline route
18 need to be identified and mapped on an atlas so this information is readily accessible to
19 personnel working in environmental monitoring and spill response. An analogous
20 mapping effort was done by WDFW for coastal wildlife resources vulnerable to oil spills.
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23 **Relief Requested from EFSEC:** The license should require that the Applicant publish
24 an atlas of the pipeline route (level of resolution 1:24,000 scale or better) which depicts
25 the location of all environmentally sensitive sites within a mile of the pipeline route and
26

1 describes spill response protocol associated with each site.
2

3 **12. Impacts of spill to Hyporheic Zone of Yakima River and fish-Bearing**
4 **Tributary Streams.**
5

6 **Issue of Concern:** The interaction of shallow ground water with surface water and the
7 ecology of salmonids has become of increasing concern. Studies have demonstrated the
8 interconnectedness of shallow ground water and rivers/streams, and the importance of
9 groundwater upwelling areas to salmonid fishes. Spills and leaks from the underground
10 pipeline can affect an expansive ecosystem of shallow groundwater interconnected to
11 upwelling areas in the Yakima River and its tributary streams. See Exhibit _____ (BR-2).
12 (I copied Exhibit _____ (BR-2) from the publication entitled “Return to the River:
13 Restoration of Salmonid Fishes in the Columbia River Ecosystem”, prepared by the
14 Independent Scientific Group for the Northwest Power Planning Council, Richard N.
15 Williams, ISG Chair et al. 1996.). This system is critical to the maintenance and recovery
16 of salmonid fish populations in the basin.
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20 **Relief Requested from EFSEC:** The license should require systematic monitoring of
21 shallow ground water wells, down-gradient from the pipeline. Shallow ground water
22 monitoring wells should be located downstream from the pipeline crossing of each fish-
23 bearing stream (DNR Water Type 1-3). Monitoring of these wells should be required at a
24 frequency appropriate for the age of the pipeline, but not less than once per year.
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13. Leakage Below Auto-Detection Threshold.

Issue of Concern: The DEIS tells us that, over time, the pipeline will operate at between 2.5-4.6 million gallons of finished product per day. If the threshold of leak detection is 1/2 of one percent, leaks less than 12,500-23,000 gallons/day would be undetected by the automatic (SCADA) system. Such leaks would be detected only well after the fact. My understanding is that finished petroleum products (gasoline, diesel, kerosene, etc.) are much more toxic to fish than crude oil. I also understand finished product are harmful to vegetation. Studies associated with the EXXON Valdez spill show that PAH concentrations in the parts per billion range are detrimental to aquatic life. Consequently, leaks below the auto-detection threshold are very significant to fish and wildlife.

Because the route through Kittitas County crosses many water courses and wetlands, the potential for a leak to contaminate surface or ground water and travel beyond the pipeline right of way is great. The pipeline crossing of the irrigated areas of Kittitas County where ground water is high, and the areas west of Easton where there are a number of wetlands in proximity to the pipeline route, are a particular concern for trans-watercourse contamination. Petroleum product leakage may be carried in groundwater flowing preferentially along the pipeline trench and introduced into adjacent watercourses and aquatic sites.

Relief Requested from EFSEC: The license should require a monitoring scheme which

1 includes systematic testing of ground water in each watershed, and pumping/testing (or
2 automated testing) of water preferentially flowing through the pipeline trench. Testing
3 should be conducted at intervals appropriate for the age of the pipeline but not less than
4 once per year.
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7 The license should require that “trench blocks” (cut-off walls) be installed in the pipeline
8 trench between all watercourses between Meadow Creek (stream crossing number 99
9 adjacent to Lake Keechelus Dam) and Tillman Creek (stream crossing number 133 near
10 the town of South Cle Elum) and the from the crossing of Dry Creek (stream crossing
11 number 156 north of Ellensburg) to the crossing east of Park Creek (stream crossing
12 number 208 near where the pipeline route leaves the irrigated portion of the Kittitas
13 Valley).
14

15
16 **14. Winter Snow Depth and Remote Location Make Pipeline Monitoring and**
17 **Access to Spill Locations Problematic.**
18

19 **Issue of Concern:** Winter conditions coupled with the remote location of the pipeline
20 will make it difficult to monitor the condition and operation of the pipeline in upper
21 Kittitas County. Aerial inspection will not be effective during periods of deep snow
22 cover. Any kind of visual check for leaks will be ineffective from November until spring
23 snow melt (April to June). Approximately one half of the operating year it will not be
24 possible to visually detect pipeline leaks within a portion of the right-of-way because of
25 snow cover, even if those leaks are large enough to show up on the ground surface or in
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surface water during other times of the year. Even if such leaks were detected, snow cover will make it difficult to mobilize personnel and materials to the site, and will make it difficult to excavate the pipeline and remediate the spill.

Relief Requested from EFSEC: The license should require a monitoring scheme which ensures testing and sampling during every month of the year the pipeline is in operation. The spill prevention and containment plan must include contingencies for detecting and responding to spills located in remote locations covered by deep snow.

END OF DIRECT TESTIMONY

I declare under penalty of perjury that the above testimony is true and correct to the best of my knowledge.

EXECUTED this _____ day of February, 1999, at Olympia, Washington.

BRENT RENFROW