BEFORE THE STATE OF WASHINGTON

ENERGY FACILITY SITE EVALUATION COUNCIL

In re Application No. 96-1 OLYMPIC PIPE LINE COMPANY CROSS CASCADE PIPELINE PROJECT,	NO. **REBUTTAL TESTIMONY OF DR. ERNEST L. BRANNON** ISSUES: IMPACTS ON SALMON AND AQUATIC LIFE SPONSOR: OLYMPIC PIPELINE COMPANY

Q: Please introduce yourself to the Council.

A: My name is Dr. Ernest L. Brannon. I reside at 3370 Blaine Road, Moscow, Idaho 83843.

Q: Please describe your professional qualifications and expertise.

A: I am currently Director, Aquaculture Research Institute, and Professor, Fisheries Resources and Animal Sciences, at the University of Idaho in Moscow – positions that I have held since 1988. I established The Center for Salmonid and Aquatic Species at Risk in 1996 (as part of the University's Aquaculture Research Institute) for the purpose of genetically identifying and preserving species of fish and aquatic species at risk of endangerment. I have a broad range of expertise in the Pacific Northwest's anadromous and resident fish populations and habitat, particularly on the Columbia, Snake and Yakima River systems and Puget Sound.

Prior to accepting my current positions at the University of Idaho, I was an Associate Professor (1975-1988) and Professor (1984-1988), School of Fisheries, College of Ocean and Fisheries Sciences, University of Washington. I received my B.S. in Fisheries (1959) and my Ph.D. (1973) from the University of Washington. Between 1959 and 1972, I worked for the International Pacific Salmon Fisheries Commission ("IPSFC") – first as a research biologist and ultimately as IPSFC's Chief Biologist. The IPSFC's principal focus was the preservation and enhancement of the Fraser River sockeye runs. By virtue of my expertise, I am regularly requested to advise government agencies, commercial aquaculturists, recreational sports organizations, Indian tribes, commercial fishing organizations and private enterprises on a wide range of fisheries issues.

Q: The proposed pipeline project and the current marine and in-land river transportation system involve risks to salmon and other fish. Have you conducted research and published on salmonid and/or freshwater resident fish endangerment?

A: Yes. I have authored or co-authored almost 100 articles, reports and presentations dealing with the status, health, habitat and characteristics of most prominent fish species in the Pacific Northwest, ranging from rainbow trout, steelhead, and chinook, sockeye and coho salmon to Columbia River sturgeon. Quite a number of reports were to governmental agencies or entities such as U.S. Department of Energy, Washington Senate Environment and Natural Resources Committee, Idaho Department of Fish and Game, and National Oceanic and Atmospheric Administration. A more detailed summary of my experience is attached as Exhibit ELB-1.

Q: What were you requested to do in this proceeding?

A: I was requested by Olympic Pipeline Company ("Olympic") to review applicable portions of the Cross Cascade Pipeline ("CCP") application, the draft EIS and pre-filed testimony by others relating to the potential impact of the CCP, and to compare and contrast the risk to salmon and resident fish populations of the CCP – in the construction and operation phases -- with the current marine and in-land river transportation system.

Q: Were you able to complete your analysis?

A; No, not as yet. The depositions of several witnesses sponsored by Council for Environment and others apparently could not be scheduled prior to the filing deadline for my testimony. I am awaiting clarifying testimony from their depositions before formulating my ultimate conclusions.

Q: Without this information, are you able to form an opinion as to which mode of petroleum transportation poses a lesser risk to salmon and resident fish populations: The current transportation system, including the marine and Columbia/Snake River transportation portion, or the CCP?

A: I am able to provide general comments regarding relative exposure levels associated with each option.

Q: And what are those comments?

A: Let me start with a very general observation. Most of the opposition to the CCP focuses rather narrowly on the possible impacts and potential risks of the project to the environment associated with oil spills and leaks. The concerns raised are legitimate and valid, and as such, deserve careful consideration by the Council. The CCP will most certainly involve new risks as it crosses lands and water that was not previously traversed.

However, I do not believe that the "bigger picture" associated with the risks of the present marine and in-land river transportation system were placed in perspective by Mr. Hughes, his NRC staff or any others opposing the CCP. For example, Mr. Hughes simply identified a rating scheme of alleged risk primarily associated with the pipeline corridor, and only parts of the current water transportation route were evaluated. As a consequence, there was no meaningful assessment of the comparative risk of the CCP versus the present system of transporting oil by water. Furthermore, besides being highly selective of only certain criteria, the risk level associated with the parameters was entirely subjective and the rating scheme totally biased in favor of the present barge routes. It was a foregone conclusion with the delineation and subjectivity of the model that the CCP would

generate the highest risk. The true and complete "risk" issues, however, have not been adequately put before the Council in a balanced manner.

Q: Would you provide some examples of glaring omissions from Mr. Hughes' matrix risk analysis?

A: Yes. Fortunately for the Council, there are some excellent resource materials available from government agencies that readily highlight the marine and aquatic risks associated with the present system. Environment Sensitivity maps (known as "ESI" or "ESA" maps) of Puget Sound, which are published by the National Oceanic and Atmospheric Administration ("NOAA")[1], and the oil spill Geographic Response Plans ("GRPs") for the outer coast of Washington and the Columbia/Snake River system are extremely helpful and illustrative. These "environmental mapping" publications[2], which I understand will be used as demonstrative exhibits at the upcoming hearing,[3] identify the location of such critical habitat as eelgrass beds, kelp beds, tidal flats and intertidal marshes along the current barge routes. Clam and oyster beds, Pacific herring spawning grounds, and the marine mammal concentration areas are also specified, as well as marine bird nesting colonies and concentration areas.[4] My point here is that current oil spill risk to the majority of these sensitive resources was conspicuously absent from Mr. Hughes' analysis – as if they did not exist or warrant consideration.

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[1] Besides NOAA, the U.S. Fish and Wildlife Service and the Washington Departments of Natural Resources and Wildlife participated in the research for the creation of the ESI maps.

[2] The stated purpose of the ESI maps is "to provide a broad, regional overview of environmentally sensitive resources . . . that would receive priority attention during oil spill planning and response."

[3] These publications, which number over 20, are large in size (approximately 2.5 feet by 3 feet), color-coded, and laminated. Due to their size, construction and expense of reproduction, I have not attached them here as exhibits. They will be available for review by the Council, however, at the upcoming hearing.

[4] Resources depicted on the maps "were chosen on the basis of high sensitivity to spilled oil, high vulnerability to oil spills, or special management status." Because of the large scale of these maps,

Some reference is made by Mr. Hughes to anadromous species in the marine context, but it was limited in scope and depth. Risk to anadromous and non-anadromous species from a petroleum product spill would include all freshwater and marine intertidal and subtidl finfish and shellfish that inhabit the waters along and adjacent to the present barge routes. The grounding of the NEW CARISSA on the Oregon Coast is an example that such an event is likely and will happen again. Species that are stationary, such as oysters and clams, and distributed close to or in the intertidal areas along the coast would be most susceptible to risk from petroleum products. If concentrations of the non-soluble petroleum material washed over the beaches it would foul shellfish and their habitat. If the petroleum did not kill the shellfish and finfish, the soluble fraction of petroleum would enter the flesh and make them unsuitable for consumption.

If a spill occurred while barges were entering the Columbia River, petroleum would be flushed through the sensitive estuary used by rearing and migratory salmonids, and estuarine fauna. Sturgeon that are numerous in the estuary and lower river would be attracted to sludge from an oil spill and would even consume the insoluble material. In the case of spills in the river, salmonid and resident species of fish would be exposed to high concentrations of petroleum. Salmon are in the Columbia River year round. At times of the year, concentrations of adult salmon and steelhead, and migrating progeny of those species, could be exposed to lethal doses, and if they eluded the high concentrations, their contaminated flesh would result in fishing closures among Native American and sport fisheries in the river system.[5]

Q: What salmon species recently listed as endangered under the Endangered Species Act

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"only those resources most likely to experience severe impacts from oil spills. . ." are identified.

[5] Indeed, the socio-economic consequences of an oil spill along the current barge route has not been addressed at all. Tourism, aquaculture operations, marinas and a myriad of marine and non-marine

("ESA") would potentially be at risk if an oil spill occurred along the current barge route?

A: Six of the seven listed chinook ESUs on the Pacific Coast could be exposed to a petroleum barge spill, as would the chum salmon ESU in Puget Sound's Hood Canal. Any of the seven listed that use Puget Sound habitat for rearing would also have a exposure risk. This habitat is an early marine feeding area, along with the numerous trunk streams that drain the coastal watershed.

All five of the ESU chinook populations in the Columbia River would be at risk to a barge spill in the river, as well as Redfish sockeye salmon and Bull trout. Finally, five steelhead ESUs in the Columbia, and especially in the lower Columbia, would be at risk from a petroleum barge spill.

Q: Do you have an opinion as to whether fish would be placed at risk during construction of the CCP?

A: Yes, I do. There is some risk to fish during the construction phase. However, crossing the larger streams would impose very low risk because of the volume of water irrigating the area. So I do not judge crossing rivers like the Tolt and Yakima as a high risk during construction. Smaller streams, in terms of relative risk, like Cherry Creek or Crab Creek would pose relatively higher risks. But these must also be judged by the characteristic of the system. Many of the smaller streams identified are drainage ditches, or seasonal streams that pose no risk during construction. If proper precautions are taken in the construction of the CCP transit system, risk to fish species during construction would be low.

Apart from potential physical damage to small juvenile species hiding close to the crossings, potential risk from construction would be in the form of silt. However, that is an uncertain risk, especially when the silt resulting from such activity would be of short-term duration. Also, in

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related businesses would be impacted.

retrospect to the normal silt load of western streams from logging and natural flood events, it would amount to a very small percentage of silt deposited annually in the streams. For example, Crab Creek carries a heavy load of silt from irrigation return water, and construction would add relatively little silt to the annual load carried by that stream, and may not even be detectable downstream from the crossing depending when construction takes place.

One must remember that silt is part of the natural habitat and is renewed every year in both the west and east side of the Cascades. Indeed, silt has positive effects on fish habitat at certain levels. The amount of silt generated from a careful excavation for the pipeline would not begin to approach the effects of natural bed-load during the spring and fall months associated with even minor flood events in the Snoqualmie and Yakima rivers. The fishing reports for recreational fishermen, for example, that notify fishermen when a river is or is not "fishable" are based on the natural silt loads the streams are carrying. Anyone who is aware of these fishing reports is also aware of how often this condition occurs naturally.

I expect the major impact from construction operations would be from well intended attempts to capture and hold fish that were in the vicinity of the crossing to keep them out of harms way. I would advise against such activity because of the damage we see from survey work by fisheries biologists that use such capture techniques. When the construction crew starts working, the fish are mobile and when disturbed they will flee from the intruder. Sculpins and small fish in the interstices at the crossing site -- that would not likely be observed -- are at highest risk of physical damage. Salmon redds will not be in harms way if the pipeline is installed before spawning season, and any silt deposited from construction would be readily cleaned away by the adult spawning salmon as she

cleans the nest sites.[6]

Q: Are there salmon species recently listed as endangered under the ESA that would potentially be at risk during construction?

A: The listed species along the CCP route would be Bull trout and chinook salmon west of the Cascades and Bull trout east of the Cascades in the Yakima River. Along the Columbia River, certain chinook and steelhead are listed as well. However, I do not have any specific concerns during the construction phase that I have not already noted above.

Q: What about during the operations phase?

A: During the operation phase of the CCP, the risk would be from wash-outs of the line or spills associated with leaks or ruptures near stream crossings. That risk will depend on the stream and the proximity of fish residing in the area. Risk to the fish in a small stream would be high if it was a major spill. The positive aspect of traversing a drainage basin is that risk is low because the probability of impact in the system is localized and the distribution of the species is spread out through the complex of tributaries the streams across the whole system.

For example, the steelhead in the Yakima River spawn and rear primarily in Toppenish and Satus Creeks, accounting for the majority of steelhead in the Yakima. Naches River, a tributary to the Yakima, also has steelhead, but all of these fish are in streams isolated from any pipeline failures except during the steelhead migratory phase, which occurs well down the river from the pipeline -- and in-so-far-as the juveniles are concerned, during high flows only. Those steelhead that will be in

[6] I do not address "scour" concerns because I assume that the interested parties can resolve this issue

the reach of river adjacent to the pipeline are in very small numbers.

Chinook in the Yakima River are localized in areas closer to the pipeline, and in tributaries on the opposite side of the river from the pipeline. These are not ESA listed chinook, and they are propagated in the Cle Elum hatchery, located above the pipeline crossing on the river. The hatchery has backup well water that would reduce the risk to hatchery fish, as well as the distribution of the acclimation ponds for hatchery fish in the basin that spreads out the risk. The advantage of hatchery programs is the buffering capacity they have to keep from losing any one year class of spawners, as well as the feature of spreading out the risk.

Those non-hatchery Chinook that spawn in the upper reaches of the Yakima river -- adjacent to where the CCP will pass -- are September spawners, and as such, eggs should not be a problem if construction in this area is competed prior to the end of August. Because fall chinook spawn primarily in the lower river, these adults and their progeny will be distant from the immediate effect of the CCP and will not be vulnerable to a spill except perhaps for very large spills between November and June. The yearling summer and spring chinook residents are primarily spawned in the mainstem of the Yakima River, 90 % of which are above the crossing of the CCP, and some will move into tributary habitat for the summer growing period out of harm's way.

Coho salmon were recently introduced into the Yakima River system. They are just taking hold from hatchery production, and over the life of the CCP, we hope the run will build to a respectable level along with chinook and steelhead. However, from a risk standpoint, their status is one of an introduced species, which is subject to replacement, enhancement, and supplementation. The level of risk to coho, therefore, is very small with respect to their origin and distribution over the

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by agreement, e.g., an agreement regarding appropriate depth or method of drilling.

river.

The rainbow trout are very successful in the Yakima River, but they are looked upon as a hybrid between introduced fish and the local variety. It has been shown by genetic assessment that they are a steelhead/rainbow mixture, resulting from hatchery steelhead residualizing and staying in freshwater. They are well distributed in the Yakima River and would be at a very low risk.

Cutthroat and Bull trout have habitat priorities based on interactions with other salmonids, and therefore, their distribution is influenced and will be influenced more by enhancement efforts with the other species. Bull trout are headwater inhabitants, generally not found in the mainstem of the river, proportionately speaking, as much as they are found in the tributaries, and they are usually in the upper regions about the other species through selective interactive forces. Bull trout, therefore, would not be expected to have as much risk associated with a spill.

Q: On balance, do you have an opinion with respect to the relative risks to salmon and aquatic life posed by the CCP and the current marine and in-land river transportation system?

A: I have talked about risk posed by the CCP in these instances, and a level of risk does exist, just as it does with road building or any other project that in some way disturbs the natural system. Comparatively, however, the risk is very much lower than the risk associated with the alternative of using the present transport system by water. The two approaches are not in any way similar in the risk associated with fisheries resources.

DATED this ___ day of March, 1999.

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Dr. Ernest L. Brannon