BEFORE THE STATE OF WASHINGTON

ENERGY FACILITY SITE EVALUATION COUNCIL

IN RE APPLICATION NO. 96-1 **OLYMPIC PIPELINE COMPANY:** **CROSS CASCADE PIPELINE PROJECT**	**Exhibit: CVP-T**

Witness: Christian Pitre

ISSUE : Hydrocarbon Spill Impacts

The Olympic Pipeline Company proposes to construct the Cross-Cascade Pipeline through sensitive aquifer areas, including the Cross Valley Water District Sole Source Aquifer. The Draft Environmental Impact Statement prepared for this project does not present sufficient data or adequately discuss pipeline spills in sufficient detail for the CVWD to determine the risk posed to its drinking water supply and the adequacy of possible mitigative measures. This prefiled testimony is written to describe and explain the contaminant transport issues that must be addressed to assess the potential for contamination of this sensitive aquifer.

SPONSOR : Cross Valley Water District

EXHIBIT REFERENCE :

Groundwater Quality Issues and Risks within the Cross Valley Sole Source Aquifer Area from the Proposed Cross-Cascade Pipeline. Report to Cross Valley Water District prepared by Golder Associates Inc. (RHA-1)

CREDENTIALS

B.Sc., Geology and Chemistry, Carleton University, Ottawa, Canada, 1987.
M.Sc., Hydrogeology, University of Waterloo, Waterloo, Canada, 1994.
American Water Resources Association (WA Section Editor, and reviewer for peer-reviewed journal).
Washington Hydrologic Society (Past President).

I have worked professionally in the natural resources since 1979. I have worked specifically in water resources since 1989. I have practiced my profession in Washington State since 1992. The focus of my professional practice since 1992 has been the application of the sciences of geology, chemistry and hydrogeology to contaminant problems in soils and groundwater, and to the exploration, development and management of groundwater resources on behalf of public drinking water purveyors and private water users.

I have worked on petroleum contaminated sites throughout the State of Washington and Oregon. I have also worked on wellhead protection programs for communities.

I will addressing the inadequacy of the DEIS in describing the response and remediation actions to be taken in the event of an accidental petroleum product release from the pipeline in the aquifer source area of the Cross Valley Water District (CVWD).

DISCUSSION

<u>Synopsis of Issue</u>

OPC proposes to construct a pipeline transport gasoline and diesel over the aquifer system from which the Cross Valley Water District obtains its water supply. The applicant has failed to provide an assessment of the potential impacts that the products that are to be transported in the pipeline, and their constituents, would have on the water supply of the Cross Valley Water District should there be releases from the pipeline to the natural environment.

An evaluation of these potential impacts should consider:

- A characterization of products and constituents to be transported through the pipeline (both currently proposed and possible future products – crude and/or refined products).
- Physical properties of these constituents with respect to transport and fate in the natural environment (solubility, persistence, biodegradability)
- The toxicity of these products (MCLs, carcinogenic, acute/chronic effects)
- Ability to remediate, response time and long-term residual impacts of spills

A frequency distribution plot of the size of a spill versus the frequency of a spill should be prepared for various sections of the pipeline, and specifically for the section of the pipeline that passes through the CVWD water source aquifer area. Under various scenarios, the impacts that the range of possible spill sizes may have on the maintenance, safety, and protection of the CVWD water supply should be evaluated. Petroleum products released to the environment can present a serious threat to drinking water supplies since they can act as persistent long-term sources for the release of toxic compounds to groundwater.

If a large enough release occurs from the pipeline, the petroleum product will flow down through the ground to the water table. It will pool at the water table and slowly dissolve into groundwater. The rate of dissolution is very small. This means that if not recovered, the pool will remain as a contaminant source for a long time (e.g. decades). Even though the rate of dissolution is very small, the resulting concentrations are very high relative to Maximum Contaminant Levels (MCLs), which are the safe drinking water levels established for human consumption under the Safe Drinking Water Act.

The ability to remove and remediate a spill has not been addressed in the EIS. There is a wide range of impacts that can happen to groundwater. This range of impacts is a function of the size of the spill, the compounds that comprise the spill, the hydrogeologic setting of the spill, the timing of response, and the mitigation measures implemented. Petroleum products are generally viewed as naturally biodegradable. However various components of petroleum products biodegrade at different rates, and in general groundwater contaminant plumes exhibit degradation rates that are on the order of years to decades in aerobic environments. The time before degradation occurs is also significantly extended (e.g. decades and possibly much longer) in anaerobic environments.

Among the most toxic compounds currently recognized to be transported in the pipeline are benzene and MTBE. These compounds are proven and suspected carcinogens. Benzene is relatively biodegradable, while MTBE is recalcitrant and persistent (i.e. it lasts a long time in the natural environment). These factors highlight the importance of assessing the preparedness of responding to potential spills and assessing in the EIS the ability to mitigate adverse impacts.

Response preparedness is important because once an aquifer is contaminated, remediation within the timeframe of a human lifetime is not always possible. The ability to respond to and mitigate spills of various sizes will be a function of the hydrogeologic setting. The response time will be a critical factor since this may limit the size of the spill. The depth to water will be important since this may limit the ability to remediate the spill by excavation. The ground type (unconsolidated sediments versus bedrock) will also severely affect the ability to remediate any spill.

Traditionally, response to petroleum spills occur well after the spill has occurred. In part this is due to the ostensibly unforeseen nature of the spills. Time is generally taken to characterize a contaminated site, select a remediation technology to apply, approval of required budget by the responsible parties, and regulatory oversight. This delayed response often results in significant aggravation of the original contamination problem. Many of these steps may be conducted during the EIS to allow the quickest response possible when the need arises. Technologies that may be considered are: excavation and disposal; air sparging; pump-and-treat (hydraulic control); and others.

The distance between possible spill locations and drinking water wells and the intervening hydrogeology will quantify the time period after a spill occurs before impacts arrive at drinking water sources. Mitigation and remediation efforts should be identified that will prevent impacts to drinking water sources. If impacts to drinking water sources occur, then appropriate responses should be spelt out. These may include treatment of water to drinking water standards at the wellhead, or replacement of the drinking water sources, including abandonment of the original sources. Replacement of water sources prior to loss of drinking water sources may be by development of new wells including transmission to the existing infrastructure, or through interties with other purveyors.

Conclusions and Recommendations

The DEIS states that water rights holders would be compensated for impacts, presumably following a period of assessment of the impacts. Uninterrupted supply of public drinking water must be maintained for the health and safety of the population (fire suppression, disease control, etc.). The likelihood of the largest impacts from the pipeline (e.g. under seismic disruptions) are coincidental with the need for best ensuring continued use of public water supplies. Under any conditions, developing an alternative or backup water supply will require a significant lead time. For these reasons it is considered necessary to provide available source replacement before impacts have occurred. The DEIS does not address these issues.

The potential impacts to the drinking water supply of the CVWD has not been adequately presented in the DEIS to evaluate the risk posed by construction and operation of the pipeline. The range of potential spill scenarios has not been quantitatively identified.

The DEIS states that a response plan will be developed in conjunction with the CVWD. These plans should be developed as an intrinsic part of the EIS. Detailed monitoring plans that reasonably and adequately address identified spill scenarios should be developed. Specific response actions should be developed for such spill scenarios.

If certain spill scenarios are identified in which remediation efforts of contaminant sources may not be effective, then the continued use of drinking water sources under these scenarios should be addressed. Direct impacts to drinking water sources may require treatment of water at the wellhead. The viability of such treatment technologies from both a technical and economic perspective should be explicitly realized.

The potential impacts that various spill scenarios may have should be quantified. The probability of different degrees of impact occurring should be recognized so that the CVWD can reasonably asses the risk posed to their water supply by the pipeline.

Contingency plans should be developed now to address potential loss of capacity.

Better consideration of transport is warranted.