

MONITORING AND MAINTENANCE PLAN

**Associated with the
Whatcom Creek Restoration Plan
Developed for the June 10, 1999
Olympic Pipe Line Gasoline Spill**

July 2003

National Oceanic and Atmospheric Administration
U. S. Fish and Wildlife Service
Washington State Department of Ecology
Washington State Department of Fish and Wildlife
City of Bellingham
Lummi Nation
Nooksack Indian Tribe

Table of Contents

Introduction.....	1
Restoration Strategy.....	1
Summary of Restoration Activities.....	2
Sampling Tasks and Contingencies.....	2
Biological Parameters.....	2
Vegetation.....	2
Fish Community.....	3
Aquatic Macroinvertebrate Community.....	4
Riparian & Terrestrial Wildlife Community.....	5
Physical and Chemical Parameters.....	6
In-Stream Hydrology and Habitat.....	6
Tree Hazard.....	6
Erosion and Slope Stability.....	7
Water Quality.....	7
Photodocumentation.....	9
Monitoring Program Administration.....	9
Responsibility.....	9
Implementation Schedule.....	9
Reporting.....	10
Program Modifications.....	10
Budget.....	11
References.....	16

Introduction

This monitoring and maintenance plan has been developed in association with the Restoration Plan and Environmental Assessment for the June 10, 1999, Olympic Pipe Line gasoline spill into Whatcom Creek, Bellingham, Washington. The purpose of this monitoring and maintenance plan is to establish the protocols for documenting environmental recovery, evaluating long-term performance, and providing a routine for appropriate maintenance activities using an adaptive management approach. The Natural Resource Trustees (Trustees) for the Olympic Pipe Line incident are: the United States Department of Commerce as represented by the National Oceanic and Atmospheric Administration (NOAA); the United States Department of the Interior (DOI) as represented by the United States Fish and Wildlife Service; the State of Washington (the State) as represented by the Department of Ecology; the City of Bellingham; the Lummi Nation of Washington; and the Nooksack Tribe of Washington. The Trustees and the Olympic Pipe Line Company have established a fund of \$500,000 from which all long-term monitoring and maintenance activities related to this incident are supported. This monitoring and maintenance plan will be implemented by the City of Bellingham, with oversight by all of the Trustees.¹

Restoration Strategy

The goals of this monitoring and maintenance plan are to ensure that restoration projects implemented under the Restoration Plan function as designed and are maintained as necessary. The proposed maintenance and monitoring activities will use typical maintenance practices and commonly accepted monitoring protocols. The designed projects are not anticipated to have significant implementation problems, or any deleterious environmental or socio-economic impacts. Unless a need for unanticipated activities is identified, the actions associated with this plan are expected to cause only minimal disturbance to the restoration sites, primarily foot traffic by scientific and maintenance crews. The occasional removal of hazardous trees may require the use of appropriate vehicles. Maintenance crews will attempt to minimize impacts to sensitive areas when such an activity is required.

The goals of this plan will be achieved by ensuring that the injured natural resources are returned to their pre-incident condition, and by ensuring interim losses of natural resources and services are compensated for during the period of recovery.

¹ This Monitoring and Maintenance Plan establishes the specific monitoring and maintenance tasks to be undertaken by the City under the Fund. Any other monitoring or maintenance tasks that may be required under permits issued for specific restoration projects are considered part of those projects and will be the responsibility of Olympic.

Summary of Restoration Activities

Of 34 potential restoration alternatives and/or restoration locations, seven have been identified as preferred and are summarized in Table 1. In addition, actions taken during the emergency phase of the incident, including streambed alterations and placement of habitat structures, will also be part of this plan. In combination, these activities address injuries related to vegetation, wildlife, water quality, and recreation. Monitoring and maintenance activities include regular sampling of biological and physical parameters, the establishment of permanent photo points at each restoration and monitoring site to document seasonal and annual changes during the ten-year monitoring period, and appropriate maintenance of restoration actions.

Sampling Tasks and Contingencies

Monitoring and maintenance activities will be based upon constructed restoration projects as shown on “as-built” schematics prepared for each project by the project developer. The “as-built” schematics will include site modifications, planting locations, and locations of any installed facilities. In addition, prior to any sampling activities appropriate reference sites should be established for purposes of comparison.

The monitoring tasks are to be completed in post-construction years 1, 2, 3, 5, 7, and 10, corresponding to the years 2005, 2006, 2007, 2009, 2011, and 2014, respectively (or otherwise, depending upon project completion). Each monitoring year will begin April 1 and end March 31.

Biological Parameters

Vegetation

Biological Success Criterion 1 – Native tree and shrub species composition should be comparable to that of either an appropriate reference site (i.e., one of comparable structure and within the same watershed basin) or to existing baseline information for the site, and should not contain greater than 10% composition (by area) of non-native or invasive plant species at the end of 10 years.

Biological Success Criterion 2 – Areal extent (percent basal area [diameter at breast height] for tree trunks plus percent of ground cover for all other flora) of native vegetation should be stable or increasing within portions of the project site, and should cover not less than 90% of the upland vegetated area of each project site at the end of 10 years.

Biological Success Criterion 3 – Native plant density (individuals per square meter (m²)) should be comparable (greater than 80%) to that of reference or baseline data and/or is an improvement from the previous sampling year.

Biological Success Criterion 4 – Survival of plantings in each cover class (herb, shrub, trees) should be at least 75% at the end of three years and through the lifetime of the monitoring plan.

Transects will be established in areas of each project site to record change in species composition and extent. Transects will also be established within suitable reference sites near the project site. During the time of year when flora that is difficult to identify without flowering organs are in bloom (e.g., late spring and early summer), transects will be measured to determine species composition and density. Along each transect, 0.25 m² quadrats will be randomly distributed in order to capture a minimum of 10% of the length of each transect. All herbaceous plant species observed within each quadrat will be recorded, density measured, and percent cover estimated. Also along each transect, 5.0 m² quadrats will be randomly distributed in order to capture a minimum of 50% of the length of each transect. All tree and shrub species observed within each quadrat will be recorded, density measured, and percent canopy cover estimated.

Contingency Measures – Any occurrence of invasive species that exceeds the threshold established in Criterion 1 will be met with an immediate response of control measures as identified by the City of Bellingham. Physical removal will be undertaken prior to consideration of herbicide use. Evidence that planted vegetation fails to meet expectations will trigger consideration by and implementation of additional restoration maintenance activities by the City of Bellingham. Depending on the hypothesized reason for failure to meet success criteria, responses could include additional planting, soil amendments, herbivore exclusion, and/or focused stewardship efforts. Assumptions about appropriate plant species, transplantation locations, and property use will be applied in the redesign and implementation of additional restoration maintenance activities by the City of Bellingham.

Fish Community

Biological Success Criterion 5 – Resident and anadromous fish will utilize the project site for migration, spawning and rearing. Resident and anadromous adult and juvenile community composition (e.g., species richness, abundance, diversity, trophic structure) will show an increasing trend over a 10-year period.

Biological Success Criterion 6 – Fish spawning (e.g., redd presence and carcasses) within the project sites should show an increasing trend over a 10-year period.

Anadromous Redd Spawner Surveys:

Surveys will be conducted in Whatcom Creek at ten-day intervals from October through March during the monitoring years covered by this plan. Survey reach is from Middle Falls down to the mouth of Lincoln Creek. Live counts, carcass counts, redds and species information will be collected during each survey. Scale sampling may be conducted utilizing Washington State Department of Fish and Wildlife (WDFW) established protocols (Murphy and Willis 1996). While all species are important, species of concern include chinook, coho and sea-run cutthroat. Surveys will be conducted with a trained and specifically-assigned staff member. It is important to have one staff member assigned to this effort who is familiar with stream and redd characteristics under all flow conditions.

Resident/Juvenile Surveys:

Juvenile studies will be conducted using a combination of beach seining, minnow traps, fyke nets, or electrofishing. Beach seining, minnow traps, and fyke nets will be used by trained and specifically-assigned City of Bellingham staff to understand community composition and to determine presence/absence of species.

Electrofishing may be coordinated between the City of Bellingham and any appropriate individual(s) or agency who possess an applicable limited take allowance per the 4(d) rule of the Endangered Species Act of 1973 or who are covered by one of the 13 limits also defined in the 4(d) rule. Likely sampling locations will be: 1) above Middle Falls in gorge area, in a reasonably accessible area, 2) Woburn St. Bridge area, and 3) main-stem of Whatcom Creek near the mouth of Cemetery Creek. Additional sampling locations may be added as deemed necessary by the City of Bellingham. Surveys will be conducted during the monitoring years covered by this plan. Placement of a net which completely blocks the mouth of either off-channel habitat restoration site will be deployed. Captured fish will be briefly anesthetized, identified to species, and counted. Fork length measurements will be recorded from all salmonids. Precautions will be taken to release all captured fish unharmed. Consideration will be given to marking a subset of the captured salmonids to determine residence time.

Contingency Measures – Failure to meet the fish success criteria will trigger a re-examination by the Trustees of the project design, implementation, and site management. Failure could indicate problems associated with riparian vegetation, hydrologic regime, water quality, harvest management, sedimentation, or other disturbance factors unrelated to the project site. Additional maintenance alternatives will be defined and agreed upon by the Trustees, followed by the implementation of the accepted design by the City of Bellingham.

Aquatic Macroinvertebrate Community

Biological Success Criterion 7 – Trends in community composition and structure, functional feeding groups, taxa abundance, species richness, and other appropriate indices should show improvement or remain stable over a 10-year post-construction period as compared to previously known baseline population information.

Aquatic benthic macroinvertebrates have been collected annually at three sites within the Whatcom Creek watershed since 1998. This monitoring plan includes these three sites and will expand to include two more sites in the upper main-stem of Whatcom Creek and its tributaries, at least one of which is within the restoration area. Samples will continue to be collected during the monitoring years covered by this plan during the month of September at five sites within the Whatcom Creek watershed. The Trustees expect these sites to continue to provide insight into the recovery process following the Whatcom Creek incident in 1999. Sampling protocols will follow those outlined in Plotnikoff (1994 and 2001) and will consist of a quantitative approach. Four substrate samples will be taken within a 150m stream reach at each site using a D-frame Kicknet with a 2.0 ft² delineation square. Replicates will be kept separate and preserved in 85% ethanol. Replicates will be subsampled (500 count) and keyed to the lowest practical level as defined by Plotnikoff and White (1996).

Habitat surveys will be performed at the same time as the macroinvertebrate collection and will include the following at each sample site:

- Surface Water Quality (temperature, pH, conductivity, dissolved oxygen)
- Stream Flow
- Stream Reach Profile (cross-sectional and elevational)
- Canopy Cover
- Substrate Characterization

Contingency Measures – Failure to meet the macroinvertebrate success criteria will trigger a re-examination by the Trustees of the project design, implementation, and site management. Failure could indicate problems associated with riparian vegetation, hydrologic regime, water quality, sedimentation, and other disturbance factors. Additional alternatives will be defined and agreed upon by the Trustees, followed by the implementation of the accepted maintenance design by the City of Bellingham.

Riparian & Terrestrial Wildlife Community

Biological Success Criterion 8 – Presence and type of activity by native wildlife species at the restoration sites over the 10-year period following restoration construction should be comparable to known baseline population information.

Site-specific surveys observing wildlife species associated with both the terrestrial and riparian habitats will present mean abundance by category (i.e., terrestrial and riparian) and habitat utilization.

Contingency Measures – Low wildlife use of restored sites, relative to reference sites or previously established baseline information, may indicate a level of human use or disturbance detrimental to wildlife populations. Public access or other management activities at the site should be examined by the City of Bellingham for potential impacts to wildlife, followed by its implementation of management aimed at addressing the wildlife concern and restoring wildlife utilization to baseline values.

Physical and Chemical Parameters

In-Stream Hydrology and Habitat

Physical Success Criterion 1 – Engineered log jams and other permanent habitat features created during the *emergency phase* of restoration will maintain designed hydrologic and habitat forming functions such as pool/riffle ratios, sinuous channel characteristics, bedload transport, and cover.

Physical Success Criterion 2 – Habitat features created during the *restoration phase* (Cemetery Creek and Salmon Park) will maintain designed hydrologic and habitat forming functions such as pool/riffle ratios, sinuous channel characteristics, bedload transport, and cover.

Evaluation of the physical success criteria will be conducted during the monitoring years covered by this plan. Protocols will include point location bathymetric cross-sections at restoration sites in order to determine change in bottom contours and sediment profiles. Evaluation of in-stream woody debris will be accomplished by counting large woody debris and debris dams, as well as examining each for indication of movement and erosion/sedimentation in the immediate area to determine volume and stability.

Contingency Measures – Failure to meet either of the physical criteria will lead to reexamination of original design and possible redesign of low impact replacement of woody debris or water diversion structures. Additional maintenance alternatives will be defined and agreed upon by the Trustees, followed by the implementation of the accepted design by the City of Bellingham.

Tree Hazard

Physical Success Criterion 3 – No dead or dying trees caused either directly or indirectly by the fuel spill and burn shall constitute a public safety hazard.

Tree hazard surveys will be conducted during the monitoring years covered by this plan. Protocols will include tree surveys conducted specifically to identify the locations of dead or dying trees, whether the trees have been weakened or killed directly due to the spill/burn incident, or by other vectors such as insect infestation or root rot. Upon identification of trees posing a public safety hazard, they will be removed based on their potential threat to public safety.

Contingency Measures – Should any trees be identified as posing a public safety hazard, removal of those individual trees will be conducted if determined necessary by the City of Bellingham. Trees will be removed in such a way as to protect the natural environment whenever possible. Placement of removed trees into Whatcom Creek or its tributaries as large woody debris will also be considered.

Erosion and Slope Stability

Physical Success Criterion 4 – Sites will not possess accelerated soil mass movement characteristics due to the spill/burn incident or restoration activities.

Physical Success Criterion 5 – Sites will not possess indicator characteristics of slope instability due to the spill/burn incident or restoration activities.

Slope stability will be determined during the monitoring years covered by this plan by evaluating a combination of variables. Areas with saturated soils on slopes over 24° or unsaturated over 44°, either without a reinforcing root network or evidence of mass wasting, would indicate slope instability (Sidle *et al.* 1986).

Contingency Measures – Should either criterion fail to be met, discovery of either erosion or slope instability will trigger an examination by the City of Bellingham of the site conditions to determine the appropriate response. Planting of vegetation and placement of soil dams should be considered, as well as limiting public access until safety concerns can be addressed and met.

Water Quality

Whatcom Creek and its tributaries are designated Class A waters under Washington State surface water quality standards (WAC 173-201A-030). The water quality goal of this plan is to meet Class A water quality standards in Whatcom Creek and its tributaries. The long-term nature of this goal defines the following criteria:

(The parameters below are general water quality tests and are not designed to detect the presence or effects of a toxicant.)

Physical Success Criterion 6 – Water temperatures in Whatcom Creek and its tributaries should show a trend during the post-construction period that, when extrapolated, will meet Class A water quality standards during the 10-year post construction period.

Water temperature can be correlated with air temperature, thus any trend assessment will be required to factor in ambient air temperatures for each monitoring year. One way to assess whether post-incident temperatures observed in Whatcom Creek are similar to the pre-incident temperatures is to ensure that the post-incident temperatures can be described by the same regression equation as the pre-incident temperatures. Given that canopy coverage and native vegetation coverage is expected to be returned to pre-incident conditions, this should be achieved. Pre-incident conditions will be described on a site-by-site basis by a regression equation which will relate the summer water and air temperatures to each other.

Physical Success Criterion 7 – Turbidity in Whatcom Creek and its tributaries should show a decreasing trend that when extrapolated will meet Class A water quality standards during the 10-year post construction period.

Physical Success Criterion 8 – pH values in Whatcom Creek and its tributaries should show a trend that when extrapolated will reach pre-incident conditions during the 10-year post-construction period.

Physical Success Criterion 9 – Dissolved oxygen in Whatcom Creek and its tributaries should show a trend that when extrapolated will meet Class A water quality standards and will reach pre-incident conditions during the 10-year post-construction period.

Water quality sampling will be conducted during the monitoring years covered by this plan by the City of Bellingham state certified laboratory. Surface water measurements will be taken from sample sites previously established in the Urban Streams Monitoring Report (City of Bellingham 2001). Additional sample sites may be added as deemed necessary by the City of Bellingham. Sampling will consist of grab samples and may include *in situ* dataloggers to provide more information.

Grab samples will be taken in a section of flow, usually one to six inches below the water surface, depending on stream depth. Samples will be collected in clean and sterile 250 ml polypropylene bottles. The bottle will be put on ice during transport to the laboratory, and will be refrigerated at the appropriate temperature until analyzed. Analysis is usually done within 8 hours of collection, but always within 24 hours of collection. Analysis will be conducted by the staff at the City of Bellingham's certified laboratory, as prescribed by standard protocols (Eaton *et al.* 1995) listed in Table 2.

Quality control procedures are part of the stream sampling program. Quality control includes pre-calibration of all instruments, as well as testing calibration standards, laboratory duplicates, and field duplicates. A laboratory duplicate (one sample with two

measurements) and a field duplicate (two samples collected from the same place) are analyzed for each stream run. Laboratory duplicates serve to check the reproducibility of the technician's technique and of the instrumentation. The difference between field duplicates serves to indicate the heterogeneity and representative nature of the sample. Agreement between the duplicate samples is checked and should be within a specified range (see Table 2). Standard quality control procedures performed for each test are also listed in Table 2. When data appear questionable or when quality control data are significantly different from each other, the data are investigated. Results of the investigation are noted, and the data can be left as is, flagged, or removed, as the investigation dictates (City of Bellingham 2001).

Contingency Measures – Other tests should be chosen if any of the criteria are not met, at which time discussion will be initiated between the Trustees to determine the best course of action. Project design, maintenance, and current conditions would be reexamined.

Photodocumentation

Permanent photo points during the ten-year period of this plan will be located at each restoration or monitoring site to document seasonal and annual changes, per those established by the City of Bellingham.

Monitoring and Maintenance Program Administration

Responsibility

By agreement between the Trustees, the City of Bellingham has been given the responsibility for implementing this monitoring and maintenance plan. The responsibility includes the administration of the monitoring and maintenance fund established under the Consent Decree, implementation of monitoring and maintenance tasks, data management, preparation of monitoring, maintenance, and budget reports, and distribution of reports. Should the City of Bellingham not be willing or able to fulfill the responsibilities described in this plan, the Trustees shall replace the City with a suitable substitute for the remainder of the plan's implementation.

Implementation Schedule

Construction of restoration projects by Olympic are expected to be completed by late fall 2004 (see Table 3 for details). It is anticipated that year 1 monitoring tasks will begin in January 2005 and end in December 2005. The final year of monitoring is scheduled through post-construction year 10, or through the year 2014. The dates for project

completion are dependent upon the timing of the final approval of the Olympic Pipe Line Co. natural resource damages settlement agreement.

Reporting

In each monitoring year (post-construction years 1, 2, 3, 5, 7, and 10), the City of Bellingham will prepare a report which presents a summary and evaluation of the monitoring results and maintenance activities. At a minimum, each report will summarize:

1. Monitoring tasks completed as outlined in this plan (methods, sampling locations, dates);
2. Raw data and monitoring results (descriptive statistics such as mean, standard deviation or error depending on data type, range, and variance);
3. Status of project sites;
4. Trends shown by data, for individual sites and overall;
5. Locations triggering contingency measures and measures taken;
6. Recommendations for alternative actions;
7. Reporting of any externalities that may be influencing monitoring results; and
8. Budget status, including expenses incurred and interest earned.

By October 1 of each monitoring year, the City of Bellingham will provide a mid-year monitoring and maintenance report. The mid-year monitoring and maintenance report shall consist of a summary of the monitoring and maintenance activities up to that point, with recommendations, if necessary, as to contingency measures which may need to be taken. If there are issues which need resolution by the Trustees based on the mid-year report, the Trustees shall call a meeting to resolve any necessary issues.

A draft end-of-year report will be distributed to the Trustees for their review within one month after the completion of an annual sampling period. The Trustees shall have 30 days to provide comments to the City on the report. A final report for each sampling year, incorporating Trustees' comments and identified contingency measures, will be prepared for distribution by the City of Bellingham within one month after the receipt of the comments from the Trustees. The monitoring and maintenance report associated with the final year of monitoring and maintenance will also include a summary of all results for all monitoring years.

Program Modifications

Given the long-term nature (10 years post-construction) of the monitoring plan, it is important to provide a clear description of the tasks. It is also important to maintain a continuous data series that allows inter-site and inter-annual comparisons. In addition to the need for long-term monitoring consistency, it is also important to recognize a potential need to modify the monitoring plan. Modifications may include changes in monitoring protocols due to improvements in field and laboratory techniques or

equipment, or due to on-site experience. Elimination and/or addition of monitoring tasks may be considered if determined by the Trustees that a task was not returning useful information. The potential need to modify the monitoring plan in the future is recognized by the Trustees and will be considered as necessary. Justification must be given to and accepted in writing (signatures required) by the Trustees regarding the elimination, addition, or modification of monitoring tasks before such a change can occur.

Budget

The budget presented in Table 4 provides estimated costs pursuant to each biological, physical, and chemical sampling parameter associated with this plan. Costs are identified for field personnel, field supplies, analysis, and reporting for each sampling year. The budget assumes a 3% inflation rate. The total estimated cost of maintenance and monitoring activities identified for the project sites is \$500,000. All interest earned on the fund shall be retained by the fund for use by the City in performing monitoring and maintenance tasks identified in this Plan or otherwise agreed to by the Trustees.

By July 1 of each monitoring year, the City of Bellingham will provide a mid-year budget report as part of its interim monitoring and maintenance report. The mid-year budget report shall consist of a summary of expenses of costs, which have occurred up that point, tracked and reported by line item as identified in Table 4. If there are issues which need resolution by the Trustees based on the mid-year report, the Trustees shall call a meeting to resolve any necessary issues.

The City of Bellingham will include an end-of-year budget report as part of its end-of-year monitoring and maintenance report per the schedule provided in the preceding section (i.e., draft report within one month of sampling period end; comments within 30 days of draft; final within one month of comments). The City of Bellingham will track and report its monitoring and maintenance expenditures by line item as identified in Table 4. The draft end of year report shall also include a request for authorization for expenses the City expects to incur over the next sampling period. If the City's request for authorization for the next sampling period in the draft end of year report is within the amount shown in Table 4, the City's request shall be deemed approved by the Trustees unless the City receives a letter from the Trustees requesting a meeting for review within 30 days of the Trustees' receipt of the City's draft report. If the City's request for authorization exceeds the amount shown in Table 4, review and acceptance of the budget report by the Trustees in writing (signatures required) is required prior to the next year's authorization of funds for continuation of monitoring and maintenance activities.

Table 1. Injuries and Preferred Restoration Alternatives

Project Number	Preferred Alternative	Injury Categories	Description and Benefits
1	Completion of planting and invasive species control	Vegetation, Wildlife, Salmonids, Water Quality, Recreation	The vegetation projects implemented during Emergency Restoration Phase will be completed. The burn zone was replanted and areas dominated by invasive vegetation prior to spill were restored using native vegetation. The planting of trees and removal of invasive vegetation will have multiple benefits to the park, terrestrial wildlife, and help to protect water quality in Whatcom Creek.
2	Acquisition of 4-acre parcel along Whatcom Creek near confluence with Cemetery Creek	Vegetation, Wildlife, Salmonids, Water Quality, Recreation	Acceptance of the transfer of this parcel will help protect Whatcom Creek. This parcel was selected for acquisition for protection from development, connectivity of wildlife habitat, parks and greenways, and to leverage future restoration projects. Restoration projects conducted on this site will be specifically designed to benefit fish, wildlife and riparian habitat. Trails along the edge of the parcel will provide recreational benefits.
3	Acquisition of 9.5-acre parcel along Whatcom Creek at Woburn Street	Vegetation, Wildlife, Salmonids, Water Quality, Recreation	Acceptance of the transfer of this parcel will expand Whatcom Falls Park. The additional land will provide increased access to park trails and creek for public use such as hiking, nature watching, and fishing. The acquisition of the riparian area will preclude development and protect an important spawning and rearing area for salmonids. The acquisition will also benefit water quality, vegetation, and wildlife.
4	Recreational Improvements to 9.5-acre parcel	Recreation	Construction of a small parking lot and restrooms facility. These improvements will benefit recreational use of the park, but will use an existing access road and be designed to minimize impacts on fish and wildlife habitat.
5	Salmon Park Project	Fish, Aquatic Biota, Recreation, Wildlife, Water Quality	Construction of off-channel salmonid habitat near Racine Street will improve winter refuge habitat for juvenile salmonids and provide benefits to aquatic and terrestrial wildlife. Creation of backwater channel will also benefit public uses such as nature watching and tribal and recreational fisheries.
6	Cemetery Creek Project	Fish, Aquatic Biota, Recreation, Wildlife, Water Quality	Construction of pools, wetlands and salmonid rearing habitat on lower Cemetery Creek will benefit salmon and also provide public uses such as nature watching and tribal and recreational fisheries.
7	Monitoring and Maintenance	All	Funding for long-term monitoring of Whatcom Creek and restoration projects. Funding for maintenance of the restoration projects and parklands injured by the Incident

Table 2. Water Quality Measurement Protocols¹

	Fecal Coliform	Dissolved O ₂	Temperature	pH	Turbidity	Conductivity
Holding Time	Within 8 hrs	NONE- Field Measurement	NONE- Field Measurement	NONE- Field Measurement	Usually done within 8 hr. Up to 24 hr.	NONE- Field Measurement
Standard Method	9222 D.	4500-O G.	2550 B.	4500-H+ B.	2130 B.	2510 B.
Instrumentation		Orion 1230 Multi-meter	Orion 1230 Multi-meter	Orion 1230 Multi-meter	Hach 2100N Turbiditymeter	Orion 1230 Multi-meter
Pre-Calibration		Air-calibration. Slope of Autocal between 0.6 -1.2. If not, investigate.		Orion pH 4.00, 7.00 and 10.01 buffer. Electrode slope is between -54 to -60.4. If not, Investigate.		Orion 1413 Conductivity Standard. Cell coefficient should be 0.475 +/- 1%. If not, investigate
Check Standard or Method				Environmental Resources Associates Minerals standard. Test before run.		In-house Conductivity standard, prepared quarterly, value = 75.3 umhos/cm. Test before run.
Data Assessment and Handling	Verification of 10% of samples and adjustment of counts. Investigate if natural log of Lab or Field Duplicates are different by 10% or more.	Investigate if Lab Duplicates, Field Duplicates, or Check Standard are different by 0.5 mg/L or more.	Add or subtract Correction Factor, as necessary. Investigate if Lab Duplicates are different by 0.3C or more. Investigate if Field Duplicates are different by 0.5C or more.	Investigate -if Lab Duplicates are different by 0.05 pH units or more -if Field Duplicates are different by 0.1 pH units or more -if Check Standard is different by 0.2 pH units or more.	Investigate if Lab or Field Duplicates are different by 10% or more.	Investigate if Lab Duplicates, Field Duplicates, or Check Standard are different by 2-5% or more.
Other QC for Equipment or Technique	1x per week- Verification of fecal coliform run on environmental samples, - Membrane test on known cultures		1x per year- Calibrated against NIST traceable thermometer		Monthly- Calibration Check. Quarterly- Calibrate instrument with primary standards	

¹ Eaton *et al.* 1995.

Table 3. Restoration Project Schedule

Task #	Schedule
1	Planting and invasive control to be completed in the Autumn of 2004.
2	Acquisition of 4-acre parcel to be completed in 2004.
3	Acquisition of 9.5-acre parcel to be completed in 2004.
4	Recreational improvements to the 9.5-acre parcel to be completed in 2004.
5	Salmon Park off-channel habitat restoration to be completed in the Summer of 2004.
6	Cemetery Creek off-channel habitat restoration to be completed in the Summer of 2004.
7	Monitoring and maintenance will be accomplished in post-construction years of 1, 2, 3, 5, 7, and 10.

Dates for project completion are dependent upon final approval of the Olympic Pipe Line Co. natural resource damages settlement agreement.

Table 4. Budget

Parameter	Field Personnel	Field Supplies	Analysis	Reporting	1 st Year	2 nd Year	3 rd Year	5 th Year	7 th Year	10 th Year	Totals
Vegetation	\$4,000	\$500	\$1,000	\$1,000	\$6,500	\$6,695	\$6,896	\$7,310	\$7,748	\$8,446	\$43,594
Fish	\$4,000	\$500	\$3,000	\$750	\$8,250	\$8,498	\$8,752	\$9,015	\$9,285	\$9,564	\$53,364
Aquatic Macroinv.	\$4,000	\$500	\$2,500	\$750	\$7,750	\$7,983	\$8,222	\$8,469	\$8,723	\$8,984	\$50,130
Wildlife	\$3,000		\$500	\$750	\$4,250	\$4,378	\$4,509	\$4,644	\$4,783	\$4,927	\$27,491
Rip. & In-Stream	\$3,000		\$500	\$750	\$4,250	\$4,378	\$4,509	\$4,644	\$4,783	\$4,927	\$27,491
Tree Haz.	\$1,500		\$500	\$500	\$2,500	\$2,575	\$2,652	\$2,732	\$2,814	\$2,898	\$16,171
Erosion & Slopes	\$1,500		\$750	\$750	\$3,000	\$3,090	\$3,183	\$3,278	\$3,377	\$3,478	\$19,405
Water Quality	\$2,500	\$420	\$3,500	\$500	\$6,920	\$7,128	\$7,341	\$7,562	\$7,789	\$8,022	\$44,761
SUBTOTALS	\$23,500	\$1,920	\$12,250	\$5,750	\$43,420	\$44,723	\$46,064	\$47,653	\$49,302	\$51,246	\$282,408
OVERSIGHT (8%)					\$3,474	\$3,578	\$3,685	\$3,812	\$3,944	\$4,100	\$22,593
MONITORING TOTALS					\$46,894	\$48,300	\$49,749	\$51,465	\$53,246	\$55,346	\$305,000
MAINTENANCE TOTALS			WCC	CREWS	\$65,000	\$65,000	\$65,000				\$195,000
GRAND TOTALS					\$111,894	\$113,300	\$114,749	\$51,465	\$53,246	\$55,346	\$500,000

References

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AGREEMENT FOR PAYMENT OF FUNDS

THIS Agreement is entered into by and between Heddington Insurance (U.K.) Ltd. ("Heddington"), Noble Assurance Company ("Noble"), Olympic Pipe Line Co. ("Olympic") and Equilon Enterprises LLC dba Shell Oil Products US ("SOP US") (collectively, the "Parties").

RECITALS

A. SOP US is the owner of certain liability insurance policies issued by Heddington and Noble (the "Policies").

B. As part of the settlement of wrongful death litigation arising from the rupture of the Olympic pipeline in Bellingham, Washington, on June 10, 1999 (the "Incident"), the Parties agreed that Heddington and Noble would pay, under the Policies, the costs of natural resource damages associated with the Incident, up to a maximum of \$5,000,000.

C. On May 11, 2004, counsel for the Parties executed a Letter of Understanding with counsel for the United States on behalf of the National Oceanic and Atmospheric Administration of the United States Department of Commerce and the United States Department of the Interior, the State of Washington, the City of Bellingham, the Lummi Nation and the Nooksack Indian Tribe (collectively, the "Natural Resource Trustees").

D. The Letter of Understanding provides, *inter alia*, that all counsel will recommend to their clients that their clients agree to certain terms and conditions in settlement of all natural resources damages claims associated with the Incident, including the costs of Restoration Plan implementation. The terms and conditions of the settlement include payment by Heddington and Noble, on behalf of Olympic and SOP US, of the sum of \$3,544,000 to the Natural Resource Trustees.

E. The counsel who signed the Letter of Understanding, with the exception of counsel for Heddington and Noble, have agreed to recommend to their clients that they enter into a consent decree resolving any and all claims of the Natural Resource Trustees for natural resource damages associated with the Incident. Counsel for those parties (which do not include counsel for Heddington and Noble) have negotiated the terms and conditions of a Consent Decree and Settlement Agreement that they are willing to recommend to their respective clients (the "Consent Decree"). If approved by the Court, the Consent Decree would be entered in *In Re: The Olympic Pipe Line Company*, No. 03-14059, U.S. Bankruptcy Court, W.D. Wa. (the "Bankruptcy Proceedings").

In consideration of the covenants and promises contained herein, and for other good and valuable consideration, the Parties hereby agree as follows:

AGREEMENT

1. Heddington and Noble agree and hereby commit to timely pay to the Natural Resource Trustees, on behalf of Olympic and SOP US, the sum of \$3,544,000 (the "Settlement Amount"), in return for the Natural Resource Trustees each releasing Olympic, SOP US, Shell

Pipeline Company LP (fka Equilon Pipeline Company LLC), Shell Oil Company and Equiva Services LLC from any and all natural resource liability claims arising from the Incident, including all the natural resource damage addressed in the Restoration Plan and in the Proofs of Claim filed by the Natural Resource Trustees in the Olympic reorganization proceedings. Noble shall be responsible for paying 56% of the Settlement Amount, and Heddington shall be responsible for paying 44% of the Settlement Amount. Payment shall be made within thirty (30) days of approval and entry of the Consent Decree by the Court in the Bankruptcy Proceedings.

2. The Parties agree that the Natural Resource Trustees are third-party beneficiaries of, and have the authority to enforce, this Agreement.

3. In consideration of Heddington's and Noble's fulfillment of their payment obligation under Paragraph 1 of this Agreement, which satisfies their commitment under the terms of an April 2002 settlement agreement with Olympic to pay up to \$5 million in natural resource damages, and contingent upon the Natural Resource Trustees each agreeing to release Olympic and SOP US to the full extent set forth in paragraph 1, Olympic and SOP US each agrees to release and covenants not to sue or take any other civil or administrative action against Heddington and Noble for natural resource damages related to the Incident under the federal Oil Pollution Act of 1990 or RCW Chapters 90.48 and 90.56, subject to applicable reservations of rights set forth in Paragraph 18 of the Consent Decree.

4. This Agreement and the rights and obligations of the Parties thereunder shall be contingent upon approval and entry by the Court in the Bankruptcy Proceedings of the attached Consent Decree, in which the Natural Resource Trustees each grant Olympic and SOP US a release and covenant not to sue for natural resource damages. See Attachment A. In the event the Consent Decree is not approved and entered for any reason, this Agreement and the rights and obligations thereunder shall become nullities.

5. Olympic and SOP US agree that the payment agreed to by Heddington and Noble and described in paragraph 1 shall not be deemed a waiver or amendment of any provision, condition or exclusion contained in any insurance policies issued by Heddington or Noble. Neither Olympic nor SOP US shall claim that the payment agreed to by Heddington and Noble and described in paragraph 1 constitutes a waiver of any provision, condition or exclusion in any insurance policy issued by Heddington or Noble.

6. This Agreement shall become effective upon the date it is last signed by the Parties.

Heddington Insurance (U.K.) Ltd.

Olympic Pipe Line Company

By [Signature]
Title President
Date 10/13/04

By _____
Title _____
Date _____

Noble Assurance Company

Equilon Enterprises LLC

Pipeline Company LP (fka Equilon Pipeline Company LLC), Shell Oil Company and Equiva Services LLC from any and all natural resource liability claims arising from the Incident, including all the natural resource damage addressed in the Restoration Plan and in the Proofs of Claim filed by the Natural Resource Trustees in the Olympic reorganization proceedings. Noble shall be responsible for paying 56% of the Settlement Amount, and Heddington shall be responsible for paying 44% of the Settlement Amount. Payment shall be made within thirty (30) days of approval and entry of the Consent Decree by the Court in the Bankruptcy Proceedings.

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Heddington Insurance (U.K.) Ltd.


Olympic Pipe Line Company

By _____
Title _____
Date _____

By *Robert J. Talley*
Title President
Date 10/13/04

Noble Assurance Company

**Equilon Enterprises LLC
dba Shell Oil Products US**

By 
Title Claims Manager
Date October 8, 2004

By _____
Title _____
Date _____

Noble Assurance Company

**Equilon Enterprises LLC
dba Shell Oil Products US**

By _____
Title _____
Date _____

By *J. J. Dowdell*
Title DIRECTOR DISTRIB, SOPS
Date OCT 19 2004

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Judge: The Honorable Samuel J. Steiner
Date/time: Submitted on consent
Chapter: 11
Location: Seattle

UNITED STATES BANKRUPTCY COURT
WESTERN DISTRICT OF WASHINGTON

In Re:)
THE OLYMPIC PIPE LINE COMPANY,)
a Delaware corporation,)
Debtor)

No. 03-14059

ORDER DIRECTING THE
DEPOSIT OF NATURAL
RESOURCE DAMAGES
INTO THE REGISTRY
OF THE COURT

This Order is entered in furtherance of a Consent Decree in the above captioned matter between the United States of America, on behalf of the National Oceanic and Atmospheric Administration (“NOAA”) and the Department of the Interior (“DOI”) (collectively, the “United States”); the State of Washington, by the Department of Ecology (“State”); the Lummi Nation; the Nooksack Indian Tribe of Washington; and the City of Bellingham (“City”); and Olympic Pipe Line Company (“Olympic”); Shell Pipeline Company LP (fka Equilon Pipeline Company LLC); Equilon Enterprises LLC dba Shell Oil Products US; Equiva Services LLC; and Shell Oil Company. In connection with the Consent Decree, Olympic and Equilon Enterprises LLC dba Shell Oil Products US have entered into an agreement with insurers Heddington Insurance

ORDER DIRECTING DEPOSIT
INTO THE REGISTRY OF THE COURT - 1

U.S. Department of Justice
NOAA GC-DOJ DARC
7600 Sand Point Way NE
Seattle, WA 98115-0070
206-526-6616

1 (U.K.) Ltd. ("Heddington") and Noble Assurance Company ("Noble") ("the Insurers") under
2 which Heddington has agreed to pay \$1,559,360 and Noble has agreed to pay \$1,984,640 into
3 the Registry of the Court for use by NOAA, DOI, the State, the Lummi Nation, the Nooksack
4 Indian Tribe of Washington and the City (collectively "the Natural Resource Trustees").
5 Payment of the funds is part of the settlement of claims by the Trustees against Olympic, Shell
6 Pipeline Company LP (fka Equilon Pipeline Company LLC), Equilon Enterprises LLC dba Shell
7 Oil Products US, Equiva Services LLC, and Shell Oil Company for Natural Resource Damages,
8 as defined in the Consent Decree, arising from the June 10, 1999 gasoline spill and fire in
9 Whatcom Creek in Bellingham, Washington. This Order addresses handling and investment of
10 those funds by the Registry of the Court.

11 Pursuant to Rule 67 of the Federal Rules of Civil Procedure, 28 U.S.C. § 2041, and
12 Local Rule GR 6, and in accordance with the terms of the Consent Decree, it is hereby

13 1. ORDERED that an account shall be established in the Registry for payments
14 received in the above captioned matter, and that the account shall be titled Whatcom Creek
15 Natural Resource Restoration Account ("Whatcom Creek Restoration Account"); and it is

16 2. ORDERED that the Clerk of the Court shall administer the funds so received as
17 follows:

18 a) \$100,000 of the funds received shall be deposited in such interest-bearing
19 federally insured commercial bank account or accounts as the Clerk deems appropriate;

20 b) the balance of the funds received shall be used to purchase 91-day Treasury
21 Securities, at the highest prevailing interest rate available for such Treasury Securities;

22 c) upon maturity of the Treasury Securities referred to in subparagraph b), the
23 Clerk shall consult with counsel for the United States regarding the allocation of the proceeds of
24 such Treasury Securities between the bank account or accounts identified in subparagraph a) and
25 the purchase of additional short-term Treasury Securities. Counsel for the United States shall

26 ORDER DIRECTING DEPOSIT
27 INTO THE REGISTRY OF THE COURT - 2
28

U.S. Department of Justice
NOAA GC-DOJ DARC
7600 Sand Point Way NE
Seattle, WA 98115-0070
206-526-6616

1 consult with representatives of the Natural Resource Trustees and, depending upon the Natural
2 Resource Trustees' anticipated funding needs, shall advise the Clerk regarding the desired
3 allocation of such proceeds between the bank account or accounts and reinvestment in Treasury
4 Securities. The Clerk may make any such allocations of funds as directed by counsel for the
5 United States without further Order of the Court, and it is

6 3. ORDERED that all income earned as interest on funds so invested or deposited
7 shall be credited to the Whatcom Creek Restoration Account; and it is

8 4. ORDERED that the Natural Resource Trustees may apply to the Court for an Order
9 establishing an investment procedure or vehicle alternative to that identified in paragraph 2.b.
10 above that provides a comparable level of security and earnings potential, which application
11 may be acted upon by the Court without notice to or consent by any other Party; and it is

12 5. ORDERED that the Clerk shall prepare quarterly reports on the status and activity
13 of the Whatcom Creek Restoration Account showing payments received, disbursements made,
14 income earned, maturity dates of securities held, and principal balance, and shall distribute the
15 reports to counsel for the United States; and it is

16 6. ORDERED that funds in the Whatcom Creek Restoration Account shall remain in
17 the Registry until further order of this Court; and it is

18 7. ORDERED that the Natural Resource Trustees shall establish such decision making
19 procedures regarding expenditures of funds from the Whatcom Creek Restoration Account as
20 they deem appropriate. Applications for orders for disbursements from the Whatcom Creek
21 Restoration Account shall be made by the United States on behalf of the Natural Resource
22 Trustees. The application shall be supported by a certification of the Natural Resource Trustees
23 that their determination to make such disbursement was in compliance with said decision making
24 procedures and is consistent with the terms of the Consent Decree and other applicable law.
25 Such applications may be acted upon by the Court without notice, to or consent by any other

26 ORDER DIRECTING DEPOSIT
27 INTO THE REGISTRY OF THE COURT - 3
28

U.S. Department of Justice
NOAA GC-DOJ DARC
7600 Sand Point Way NE
Seattle, WA 98115-0070
206-526-6616

1 Party. Any of the Natural Resource Trustees may petition the Court for review of a decision by
2 the United States to seek or not to seek an application for an order for disbursement, provided
3 that the party or parties seeking review have complied with any dispute resolution provisions
4 adopted as part of the decision making procedures referred to above; and it is

5 8. ORDERED that counsel for the United States shall serve as the point of contact for
6 the Clerk on behalf of the Natural Resource Trustees, and shall distribute copies of the reports
7 referred to in paragraph 5 of this Order to the other Natural Resource Trustees; and it is

8 9. ORDERED that the Clerk is authorized and directed by this Order to deduct for
9 maintaining funds in the Registry Account the fee as authorized at 56 Federal Register 56356
10 (November 4, 1991); and it is

11 10. ORDERED that a certified copy of this Order shall be served upon the Clerk of
12 this Court.

13 Dated _____

14 _____
15 The Honorable Samuel J. Steiner
16 United States Bankruptcy Judge
17 Western District of Washington
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26 ORDER DIRECTING DEPOSIT
27 INTO THE REGISTRY OF THE COURT - 4
28

U.S. Department of Justice
NOAA GC-DOJ DARC
7600 Sand Point Way NE
Seattle, WA 98115-0070
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