

Appendix A

Regulatory Framework, Standards, and Criteria

This document provides information and technical assistance to the public and employees of the Department of Environmental Quality regarding the Department's cleanup program. The information should be interpreted and used in a manner that is fully consistent with the state's environmental cleanup laws and implementing rules. This document does not constitute rulemaking by the Environmental Quality Commission, and may not be relied upon to create a right or benefit, substantive or procedural, enforceable in law or equity, by any person, including the Department. The Department may take action at variance with this document.

This page left intentionally blank

Appendix A Regulatory Framework, Standards, and Criteria

This section describes an overview the regulatory framework that will be used to identify and control sources of contamination to Portland Harbor. It focuses on the State of Oregon's environmental cleanup authority and the regulatory framework for controlling point and non-point discharges to Portland Harbor. This appendix is provided for informational purposes only and is not intended to be comprehensive.

A.1 Regulatory Framework for Oregon's Environmental Site Cleanups

Upland cleanup sites are identified, investigated, and cleaned up by the DEQ under Oregon Revised Statute (ORS) 465 and Oregon Administrative Rules (OAR) Chapter 340 Division 122 (Hazardous Substance Remedial Action Rules). The majority of upland investigations and cleanups are carried out under Voluntary Cleanup Letter Agreements, Voluntary Cleanup Agreements, Consent Orders, and Unilateral Orders funded by responsible parties. When the responsible party is unknown, unwilling, or unable to undertake the required removal or remedial action activities, DEQ may use funds from its Orphan Site Account to perform the work itself. The DEQ plans to use its removal authority to implement source control measures for most Portland Harbor upland cleanup sites.

Oregon's environmental cleanup law is generally modeled after the federal cleanup requirements specified in the National Contingency Plan (NCP). In both cases, a remedial investigation is completed to characterize the site, a risk assessment is performed to determine the risk to human health and the environment and establish risk-based cleanup goals, a feasibility study is performed to evaluate remedial action alternatives that ensure protection of human health and the environment, and a Record of Decision is issued describing the selected remedial action. There are some differences between the two cleanup programs, as described in the following sections.

A.1.1 Protection of Human Health and the Environment

Oregon's environmental cleanup law requires all remedial actions to be protective of human health and the environment. DEQ remedial actions must meet the following acceptable risk levels:

- An excess lifetime cancer risk (ELCR) 10^{-6} for human exposure to individual carcinogens;
- An ELCR of 10^{-5} for human exposure to multiple carcinogens;
- A Hazard Index of 1 for human exposure to non-carcinogens;
- A Toxicity Index of 1 for threatened or endangered (T&E) species; and
- Less than a 10% chance that more than 20% of the population of a non-T&E ecological receptor will be exposed to unacceptable levels.

These acceptable risk levels are based on exposures resulting from current and reasonably likely future land and water uses.

Under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as "Superfund," EPA requires all remedies to meet two threshold criteria: (1) overall protection of human health and the environment and (2) compliance with applicable and relevant or appropriate requirements¹ (ARARs). Factors considered in determining overall protection include achieving a protective risk range of 10^{-4} to 10^{-6} for known or suspected carcinogens, a Hazard Index of 1 for non-carcinogens, and no significant adverse impact on ecological receptors. Potential ARARs may include the Safe Drinking Water Act maximum contaminant levels (MCLs), water quality criteria established under the Clean Water Act, and state of Oregon cleanup criteria specified in OAR 340-122-115. ARARs may be waived by EPA in some cases.

A.1.2 Remedy Selection Balancing Factors

Under Oregon's environmental cleanup law, remedial actions are selected on the basis of effectiveness, long-term reliability, implementability, implementation (short-term) risk, and reasonableness of cost. Following identification of a proposed remedy, the law requires a minimum 30-day period for public notice and comment.

The balancing factors specified in the NCP are long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost. In addition, EPA applies two important modifying criteria: community and state acceptance.

A.1.3 Hot Spots of Contamination and Principal Threats

Oregon's environmental cleanup law requires that hot spots of contamination be treated or excavated and disposed of in a secure off-site location whenever feasible. Hot spot analyses are typically performed following a site-specific risk assessment in the feasibility study as a means of identifying if the type of remedial action is appropriate. The definition of a hot spot depends on the medium being treated:

- For groundwater or surface water, hot spots of contamination are defined as hazardous substances having a significant adverse effect on beneficial uses of water or waters to which the hazardous substances would be reasonably likely to migrate and for which treatment is reasonably likely to restore or protect such beneficial uses within a reasonable time, as determined in the feasibility study.
- For media other than water, hot spots are generally defined as hazardous substances that exceed hot spot concentrations or are not reliably containable as determined in the feasibility study. Hot spot concentrations are generally 100 times the acceptable

¹ Section 121(d) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires that on-site remedial actions attain or waive Federal environmental ARARs, or more stringent State environmental ARARs, upon completion of the remedial action. The 1990 National Oil and Hazardous Substances Pollution Contingency Plan (NCP) also requires compliance with ARARs during remedial actions and during removal actions to the extent practicable. ARARs are identified on a site-by-site basis for all on-site response actions where CERCLA authority is the basis for cleanup (see EPA website <http://www.epa.gov/superfund/action/guidance/remedy/arars.htm> for further information).

risk level for human exposure to each individual carcinogen and 10 times the acceptable risk level for human exposure to each individual non-carcinogen and for ecological receptors.

Principal threats, as defined in the NCP, are similar to hot spots of contamination and must be treated wherever practicable. Principal threats are generally defined as areas contaminated with high concentrations of toxic compounds, liquids and other highly mobile materials or contaminated media that pose significant risk of exposure, or media containing contaminants several orders of magnitude above health-based levels.

A.1.4 DEQ Removal Authority

Under OAR 340-122-0070, the DEQ has broad authority to use removal actions to expedite cleanup activities when necessary. Removals may be performed as necessary to “prevent, minimize, or mitigate damage to the public health, safety and welfare, and the environment that might result from the release or threat of release of hazardous substances.” Removals may be undertaken at any time from the discovery of a release or threat of a release through the completion of a remedial action. Removal actions are typically performed to address emergency situations or to perform interim cleanup actions that are not expected to be the final action at a site. Removal actions do not require a public notice and comment period. However, public notice is typically provided and, in some cases, an opportunity for public comment is provided for removal actions.

Although the DEQ does not generally distinguish between time-critical and non-time-critical removal actions, it does recognize that emergency (*i.e.*, time-critical) removal actions may be required to address some contaminant releases to Portland Harbor. Time-critical removal actions are those actions that are required to address visible exceedances of narrative water quality criteria or other indications of imminent threat. Time-critical removal actions that may be applicable to Portland Harbor include the installation of sorbent booms or barrier walls to address product seeps to the Willamette River, the posting of warning signs, cleanup actions associated with spills and other direct discharges to the river, and bank stabilization efforts. Although not required by law, public notification of the time-critical removal action should be provided whenever possible.

For non-time-critical removal actions, the evaluation and selection of source control measures should be based on a focused feasibility study (*e.g.*, similar to the EPA EE/CA process) performed under DEQ’s cleanup rules. Under this approach, a limited number of alternatives, including any presumptive remedies, are selected for detailed analysis. Only the most qualified technologies that apply to the media or source of contamination should be discussed. Evaluation of three alternatives is usually sufficient. (See Section 4 of the JSCS for more information).

A.2 Regulatory Framework for Point Source Discharges

Point source discharges are one of the identified contaminant migration pathways to the Willamette River and are regulated under the Clean Water Act through NPDES permits. Over 250 outfalls and about 100 facilities have NPDES permits have been identified within or near Portland Harbor. The Portland Harbor Programmatic Work Plan (LWG, 2004) lists the upland

sites within Portland Harbor that have NPDES permits for the discharge of storm water to the Willamette River. A number of shoreline and upland sites do not have discharge permits because the activities described for their operations do not match the specific federal Standard Industrial Classification (SIC) codes that require a permit. Furthermore, since NPDES permits require monitoring of paved areas associated with industrial activities, but not general parking lot areas, contaminant transfer from these areas is not covered, even at permitted sites.

Permitted point source discharges within Portland Harbor include storm water discharges, industrial discharges, treated groundwater discharges, non-contact cooling water and boiler blow-down water. General permits have also been issued for construction activities within Portland Harbor. In most cases, construction activities are not expected to result in the discharge of hazardous substances to Portland Harbor. Some industries discharge their treated effluent to the City of Portland's Columbia Boulevard Treatment Plant, which discharges to the Columbia River upstream from the mouth of the Willamette River.

A.2.1 Individual NPDES Permits

There are 10 individual NPDES permits within or near Portland Harbor. These include:

- Ash Grove Cement Company;
- ATOFINA Chemicals;
- Aventis CropScience (a.k.a. Rhone Poulenc);
- Cascade General (a.k.a. Portland Shipyard);
- Kinder Morgan;
- Koppers Industries;
- Oregon Steel Mills;
- Vopack USA; and
- Siltronic Corporation.

The discharges allowed under these permits are a mix of production effluent, storm water discharges, and treated groundwater discharges.

A.2.2 General Industrial Storm Water Permits

In November 1990, EPA adopted regulations requiring NPDES permits for storm water discharges from certain industrial sites. Permits are required for specific industry classifications as established by EPA or if storm water leaves a site through a "point source" and reaches surface waters either directly or through storm drainage. A point source discharge refers to a natural or human-made conveyance of water through pipes, culverts, ditches, catch basins, or any other type of channel. Permits are also required for construction activities that disturb one or more acres.

Regulated industries are generally identified by a standard industrial code (SIC). Under the federal "no exposure" conditional exclusion, any facility covered by the storm water rules can

receive an exemption from permitting requirements if they can certify that no industrial equipment or materials are exposed to storm water. To get an exclusion, a facility must submit a certification form to DEQ, which will then conduct or have the City of Portland conduct selected compliance visits to verify that the no-exposure criteria have been met. The City of Portland administers, on behalf of DEQ, the NPDES 1200-Z industrial storm water permits as part of its NPDES Municipal Storm Water Permit program through a Memorandum of Agreement with DEQ.

DEQ has developed a series of five general permits to address the particular industrial activities specified by EPA. These permits are grouped by activities:

- 1200-C for construction activities that disturb one or more acre;
- 1200-CA for public agencies that are involved in construction activities that disturb one or more acres;
- 1200-A for non-mineral mining activities (primarily sand and gravel mining);
- 1200-Z for the remaining industrial activities; and
- 1300-J for facilities with discharges from oil/water separators and other oily discharges.

Key elements of the general storm water permits include:

Storm Water Pollution Control Plans: A Storm Water Pollution Control Plan (SWPCP) must be prepared and submitted to DEQ within 90 days after issuance of a new permit or a renewal permit with new requirements. The SWPCP must include a complete description of the industrial activities at the site along with drainage maps that show the location of facilities, impervious areas, and point source discharges. In addition, the SWPCP must discuss measures that will prevent and/or treat storm water pollution. Except for site controls that require capital improvements, the SWPCP must be implemented within 90 days. Site activities that require capital improvements (*e.g.*, treatment BMPs; manufacturing modifications; pads, dikes, and other structures used for the transfer of storm water; and roofs and appropriate covers for manufacturing areas) must be completed in accordance with the schedule set forth in the SWPCP.

Semi-Annual Monitoring: General storm water permits require semi-annual monitoring for contaminants specified in the permit. The DEQ recommends that monitoring occur in the fall, when runoff first occurs, and in the spring. In addition, visual observations of drainage areas must be made monthly when a precipitation event has produced runoff. Storm water monitoring data are evaluated against benchmarks to assess the effectiveness of the SWPCP. Storm water benchmarks for industrial general permits are set at 130 milligrams per liter (mg/l) total suspended solids (TSS), 10 mg/l oil and grease, 0.1 mg/l total copper, 0.4 micrograms per liter (µg/l) total lead and 0.6 mg/l total zinc. Occasional exceedances of storm water benchmarks have occurred at many facilities within Portland Harbor. However, an exceedance of a benchmark is not a violation. Rather, facilities that exceed benchmarks must review their SWPCP within 60 days of receiving sampling results. The purpose of the review is to determine if the plan is being followed and to determine if any additional site controls are necessary to

improve the quality of storm water discharges. Any newly-identified site controls must be implemented in a timely manner and incorporated into the SWPCP as an update

Best Management Practices (BMPs): SWPCPs must include a description of all storm water BMPs needed to comply with the permit. Permittees are required to maintain existing controls and/or develop new controls appropriate for the site to minimize the exposure of pollutants to storm water. BMPs must be employed if technically and economically feasible. BMPs are typically required in response to an exceedance of industrial storm water benchmarks in order to improve storm water quality. In addition, the DEQ has the authority to require implementation of additional BMPs to address contaminants detected in storm water or storm water sediment (e.g., catch basin, or conveyance line sediments) above concentrations that suggest an adverse effect on beneficial water uses. DEQ and the City of Portland have developed guidance on BMPs for storm water discharges, which include:

- Containment or storage of all hazardous materials in a manner designed to prevent leaks and spills from contaminating storm water;
- The use of oil/water separators, booms, skimmers, or other methods to eliminate or minimize oil and grease contamination of storm water;
- Proper disposal or recycling of wastes in a manner to eliminate or minimize exposure of pollutants to storm water;
- Erosion and sediment control to minimize sediment loads in storm water discharges;
- Debris control to eliminate or minimize debris in storm water discharges;
- Storm water diversion away from fueling, manufacturing, treatment, storage, and disposal areas to prevent exposure of uncontaminated storm water to potential pollutants;
- Covering of fueling, manufacturing, treatment, storage, and disposal areas to prevent exposure of uncontaminated storm water to potential pollutants;
- Sweeping;
- Loading and unloading materials;
- Emergency response and spill cleanup plans;
- Above ground storage tanks;
- Outside manufacturing activity;
- Vehicle and equipment washing;
- Vehicle and equipment maintenance;
- Sandblasting and painting operations;
- Inspection and monitoring activities;
- Dust control; and
- Erosion and sediment control.

Other SWPCP Requirements: Other SWPCP requirements include the development and implementation of spill prevention and response procedures, preventative maintenance programs, and employee education programs. In addition, SWPCPs require permittees to maintain records of programs and other activities required by the SWPCP, and spills or leaks of material that impacted or had the potential to impact storm water or surface waters.

A.2.3 City of Portland MS4 Program

The 1987 amendments to the CWA required EPA to include non-point source pollution under its permitting program. Phase I of the NPDES Storm Water Program, developed in 1990, requires permit coverage for storm water discharges from medium and large municipal separate storm sewer systems (MS4s) located in incorporated places or counties with populations of 100,000 or more.

The Phase I regulations (40 CFR 122.26(d)(2)) require regulated municipalities to develop adequate legal authority, perform source identification, and develop a management program to reduce the discharge of pollutants to the maximum extent practicable using management practices, control technologies, and system design and engineering methods and other such provisions that are appropriate. With regard to industrial controls, the management plan must include a description of a program to monitor and control pollutants in storm water discharges to municipal systems from municipal landfills, hazardous waste treatment, disposal and recovery facilities, industrial facilities that are subject to section 313 of title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA), and industrial facilities that the municipal permit applicant determines are contributing a substantial pollutant loading to the municipal storm sewer system. The program has to: (1) identify priorities and procedures for inspections and establishing and implementing control measures for such discharges; and (2) describe a monitoring program for storm water discharges associated with industrial facilities.

In accordance with the regulatory requirements [40 CFR 122.26(d)], MS4s must:

- Obtain coverage under an NPDES storm water permit; and
- Develop and implement a storm water management program that uses BMPs to effectively reduce or prevent the discharge of pollutants into receiving waters to the “maximum extent practicable.”
- The program must include measures to:
 - Identify major outfalls and pollutant loadings;
 - Detect and eliminate non-storm water discharges to the system;
 - Reduce pollutants in runoff from industrial, commercial, and residential areas; and
 - Control storm water discharges from new development and redevelopment areas.

DEQ enforces NPDES regulations in Oregon. On September 7, 1995, DEQ issued a five-year NPDES storm water permit for the Portland urban services boundary to the City of Portland and its co-permittees: Multnomah County, the Port of Portland, the Oregon Department of

Transportation (ODOT), Multnomah Drainage District #1, and Peninsula Drainage Districts #1 and #2.

At the end of the first five-year cycle, the City and its remaining co-permittees (Multnomah County and the Port of Portland) submitted a permit renewal package to DEQ. The permit was renewed for a second term in March 2004. DEQ subsequently reconsidered the second-term permit and reissued a modified permit in July 2005. The permit expires on February 28, 2009.

As part of its MS4 NPDES permit (See Appendix A), the City of Portland has developed a comprehensive storm water management program to reduce the discharge of pollutants into receiving waters to the maximum extent practicable. Key elements of the storm water management program (*i.e.*, source control activities) include:

- **Development Standards:** The City of Portland developed a storm water manual, which outlines the implementation of measures to control storm water in conjunction with new development or redevelopment projects. The manual was last revised in September 2004 and will continue to be updated as development standards are revised. In addition, the city has developed erosion control guidelines that require all sites with ground-disturbing activities to meet a “no visible or measurable” standard.
- **Industrial and Commercial Controls:** The city administers NPDES permits on behalf of DEQ, providing oversight for facilities that discharge to the Willamette River and the municipal storm sewer system under the 1200-Z and 1300J- general storm water permits. City oversight includes review of Storm Water Pollution Control Plans (SWPCPs) and technical assistance. SWPCPs must be reviewed, and revised as necessary, in response to an exceedance in storm water benchmarks. The storm water management plan will include additional triggers for the review and revision of SWPCPs.
- **Illicit Discharge Controls:** The city developed an Illicit Discharge Elimination Program to prevent, identify, and control illicit discharges to the city’s storm water systems and surface water. Elements of the program include verification of commercial and industrial connections to the storm system, dry weather monitoring, and evaluation of non-storm water discharges. The city also maintains a 24-hour pollution complaint hotline, at 503-823-7180.
- **Structural Controls:** The city constructed or upgraded a number of storm water pollution control facilities. In addition, the city encourages activities that control storm water runoff such as routing roof runoff to vegetated swales or other landscape features, replacing pavement with porous materials, and regrading paved areas to prevent drainage to the storm sewer system.
- **Operations and Maintenance:** The city is currently evaluating a variety of maintenance practices for city buildings, structures, parks, and publicly held rights-of-way.
- **Planning/System Preservation and Development:** The protection of natural areas can lead to improvements in water quality through restoration of natural functions. Efforts to protect natural areas include the expansion of environmental overlay zones to protect waterways and other natural areas, land acquisition for the purpose of flood

storage and resource protection, and code changes to minimize discharges to the city's storm sewer system.

- **Public Involvement and Education**: The City of Portland offers a wide variety of public involvement and education programs on storm water to residential, commercial, and industrial users and the general public to control activities that could pollute storm water.

A.2.4 Combined Sewer Overflows

The City of Portland is currently under a 1991 Stipulated Order for the control of combined sewer overflows (CSOs). The order requires the city to control CSOs such that no more than four combined sewer overflows occur annually during the winter and no more than one combined sewer overflow occurs every three years during the summer. The city is required to achieve this performance standard by 2011.

The city's CSO effort has two main elements:

- **Inflow Reduction** – Remove storm water from the system by separating storm water sewers from sanitary sewers, installing sumps to allow storm water to infiltrate, and encouraging businesses and residents to disconnect downspouts from the storm water system.
- **Duplicative Capacity** – Create a duplicative system that receives the overflows and routes them to a treatment plant.

Within Portland Harbor, 7 of the 21 outfalls owned by the City of Portland were CSOs. Five of the seven CSOs were located on the east side of the Willamette River in the St. Johns neighborhood. Two of the five are now separated and the other three receive a high level of control. The storm water in the St. Johns area that was separated from the combined system is now discharged through treatment facilities before discharging to the river.

The two remaining CSOs were located on the west side of the Willamette River in the northern portion of Portland Harbor. One of these outfalls has been abandoned and the other may discharge CSO under large rain events. The combined sanitary and storm water flow from these outfall basins is now directed to the Columbia Boulevard wastewater treatment plant.

The majority of outfalls upstream of Portland Harbor are CSOs. These CSOs are expected to be controlled as proposed CSO facilities come online by 2006 (for the west side) and 2011 (for the east side). Key CSO facilities include the Westside CSO tunnel, the SW Parallel Interceptor, and the Eastside CSO tunnel. Because CSO controls have significantly reduced the volume of sewage entering Portland Harbor through the CSO outfalls, DEQ source control efforts will focus on storm water discharges.

A.2.5 Portland Harbor Outfall Project

The City of Portland, in addition to its MS4 permit and CSO order requirements and NPDES activities under the Municipal Storm Water Permit program, entered into an Intergovernmental Agreement (IGA) with DEQ for Remedial Investigation and Source Control Measures of city

storm water conveyances within Portland Harbor. The objectives of the RI include: evaluating the potential for upland discharges to contribute to Willamette River sediment contamination; identifying significant sources of upland contaminants being discharged to the river; and collecting and evaluating data for each City outfall to determine whether source control measures are needed.

Under the IGA, BES and DEQ will work together to achieve the following:

- Identify all hazardous substance source areas or discharges to City of Portland (City) owned storm water outfalls in or near the Portland Harbor Initial Study Area (“City outfalls”). Source areas shall be identified through a review of historical information and, when feasible, the collection of environmental samples for chemical, physical, and other analyses. The evaluation of source areas shall focus on upland operations that may have resulted in a release of hazardous substances discharging to the city storm water system.
- Evaluate all contaminant migration pathways to the City’s storm water system in or near the Portland Harbor Initial Study Area. Key elements relevant to contaminant migration include, but are not limited to storm water discharge to the City outfall system, and potential groundwater discharge to the outfall system.
- Collect sufficient data and historical information to allow the identification of possible upland areas contributing to sediment contamination adjacent to the City outfalls. Areas of potential sediment contamination shall be characterized through the Portland Harbor Sediment RI/FS. Data collection and evaluation shall consider the potential for contaminant migration to the Willamette River from the City outfalls.
- Generate or use data of sufficient quality for outfall basin characterization, and identifying and developing appropriate upland source control measures. Using BES and DEQ authorities implement or require source control measures to protect river sediment and surface water quality.

The City of Portland outfalls drain approximately 35% of the total area draining to the Portland Harbor ISA. The city has collected information on each of its outfalls within the harbor. This information is summarized in two reports prepared by the city:

- *Preliminary Evaluation of City Outfalls, Portland Harbor Study Area, (Eastshore), July 2000; and*
- *Preliminary Evaluation of City Outfalls, Portland Harbor Study Area, (Westshore), November 2000.*

The Preliminary Evaluation reports contain basin maps, storm water data, and a summary of current and historic operations located within each basin. This basin information is also used to facilitate DEQ site discovery efforts.

The “*Programmatic Source Control Remedial Investigation Work Plan*” (CH2M Hill, 2004) for the City of Portland Outfalls Project describes the City of Portland’s approach for evaluating the storm water discharges to the Willamette River through city outfalls. The work plan contains sediment data collected off of 18 city-owned outfalls. This data and the data in the preliminary

basin evaluations were used by the City to prioritize the outfalls for further characterization and evaluation.

As part of the RI, the City completed pilot studies of two outfall basins. The pilot focused the identification of COIs, contaminant migration pathways, and upland contaminant sources. In addition, the City performed near-shore sediment sampling, collection of sediment samples from storm water conveyance lines, historical research, contaminant-specific research, storm water inspections, development of catch basin sampling procedures, coordination with DEQ on site discovery efforts, coordination with DEQ Hazardous Waste Technical Assistance personnel, and various other tasks.

Remedial investigation activities on the City outfalls within the Portland Harbor ISA are ongoing.

A.2.6 Storm Water Management Planning

DEQ's Cleanup and Water Quality Programs are working together to evaluate regulatory options to prevent storm water discharges from recontaminating Willamette River sediments. Options that are being considered include expanding storm water permitting for unpermitted facilities that discharge storm water to the harbor and developing a new storm water permit that could more effectively monitor and control the discharge of COIs into Portland Harbor. The DEQ may also consider additional triggers for the review and revision of Storm Water Pollution Control Plans (SWPCPs). Use of DEQ's cleanup authority will also be considered to manage storm water discharges on a site-by-site basis. DEQ will require parties under cleanup agreements to evaluate storm water quality following the "*Framework for Portland Harbor Storm Water Screening Evaluations*" (see Appendix D). In addition, storm water discharges will be monitored to determine if the source control actions taken to control discharges of contaminants are effective in protecting the Willamette River. Enforcement actions may be taken by DEQ's Cleanup or Water Quality Programs, as appropriate, to ensure that the storm water discharges are protective of the river.

A.3 Regulatory Framework for Non-Point Source Discharges

Non-point sources of pollution refer to those pollutants that occur over a wide area and are often associated with particular land uses as opposed to individual point sources like discharges through sewers and pipes. Non-point source pollutants reach the waters of the State through runoff (e.g., stormwater discharge exempt from permit coverage) during rain events or groundwater discharge. Within Portland Harbor, non-point sources are generally limited to groundwater discharge and sheet flow across sites adjacent to the Willamette River. These sources will be evaluated and controlled as necessary through the DEQ upland site assessment and cleanup programs. However, other non-point sources may enter Portland Harbor from upstream areas within the Willamette Basin.

The most common non-point source pollutants are temperature, turbidity, bacteria, and nutrients. Since these pollutants are not hazardous substances they are not addressed in the JSCS. Non-point source pollutants may also include hazardous substances such as pesticides, herbicides, and petroleum products that may enter the Willamette River from urban and agricultural areas.

The DEQ has developed a Non-Point Source Management Plan as required under Section 319 of the Clean Water Act. The goal of this plan is to prevent and eliminate water pollution from non-point sources in all water bodies in the state. The overall strategy of this plan is for DEQ to enhance its own and other agencies' or individual's capabilities for dealing with non-point sources. The plan emphasizes watershed protection and enhancement, voluntary stewardship, and partnerships between all watershed stakeholders. Oregon's strategy includes interagency partnerships between agencies such as the Department of Transportation, Department of Agriculture, and Department of Forestry.

The Non-Point Source Program identified ten elements necessary for an effective non-point-source control/watershed-management program:

1. **Standards:** The desirable and/or minimally acceptable conditions necessary to support sensitive beneficial uses (*e.g.*, standards, criteria, or benchmarks for water quality, erosion, riparian condition, upland vegetation, or other watershed condition parameters).
2. **Assessment:** Condition of the water specifically and of the watershed as a whole, focusing on the standards established above.
3. **Coordinated Watershed Planning:** The joint and cooperative evaluation by all watershed stakeholders of needs, opportunities, constraints, and options for sound watershed management; the production of a practical and implementable action plan.
4. **Education:** The delivery of information about watershed functions, values, conditions, responses, and management techniques; offered to land managers and the general public; intended to direct attitudes, beliefs, and actions toward improved watershed management practice.
5. **Demonstration Projects:** Relatively small-scale projects designed to demonstrate the viability of sound watershed management techniques; sited widely throughout the state to promote best management practices and to help galvanize local activism.
6. **Technical Assistance:** Field-based experts and literature resources provided to help land managers select and implement best management practices suited to their eco-region, land use, style of operation, and other management goals.
7. **Cost-Share Assistance:** Financial assistance and incentives for implementation of watershed enhancement practices on private lands; coupled with contractual agreement by landowners to maintain the enhancements for an extended period.
8. **Stewardship:** The adoption by local groups of responsibility for the condition of their watershed resources; active local promotion of the concept of watershed enhancement and the protection of sensitive beneficial uses.
9. **Watershed Enhancement Projects:** Coordinated enhancement and protection projects covering whole watersheds and sustained over a number of years; perhaps initiated sooner or more densely in higher priority areas but also implemented in every eco-region and geo-political area of the state.

10. **Enforcement:** The field-based capability to investigate and remedy the violation of applicable standards or regulations.

A.4 Regulatory Framework for Prevention of Future Releases

A.4.1 Spill Program

The DEQ has developed hazardous substance spill rules under OAR 340-108 and regulations pertaining to oil spills under OAR 340-047. In addition, the EPA has developed the Oil Pollution Prevention Regulation to address the oil spill prevention provisions in the Clean Water Act. The purpose of state and federal spill requirements are to prevent the spill of oil and other hazardous substances to navigable waters and to identify the emergency response actions, reporting obligations, and follow up actions required in response to a spill or release, or threat of spill or release, of oil or hazardous materials. The DEQ recently revised its spill rules to address oil spill planning, vessel fees, ballast water, and hazardous materials spill guidance.²

A.4.2 Spill Prevention

Spills within Portland Harbor present a potential threat to aquatic life, birds, waterfowl and habitat. The great majority of spills involve petroleum products. While some are spills of cargo, many others are spills of a vessel's own fuel. Oil spills to surface water can result from causes as varied as collisions, equipment failure, overfilling of vessel or facility tanks, pumping bilge water contaminated with oil, and other operator error. A spill of a few hundred gallons of oil in a river is a serious matter, and can have effects not only on the environment but also on commerce. In a sufficiently large spill, shipping lanes might be closed in order to avoid contamination and help contain the oil. The volume of petroleum and petroleum products that are handled within Portland Harbor is large. In 1995, the Port of Portland handled more than 6 million tons of petroleum and petroleum products.

As part of the Portland Harbor Source Control Strategy, DEQ will evaluate current practices at upland sites with regard to spill prevention and response to ensure compliance with EPA's spill prevention control and countermeasures program and DEQ's spill prevention and preparedness program. Summaries of these programs are provided below.

A.4.3 EPA Oil Spill Prevention, Control and Countermeasures Program

As a cornerstone of EPA's strategy to prevent oil spills from reaching our nation's waters, EPA requires that certain facilities develop and implement oil spill prevention, control, and countermeasures (SPCC) plans. SPCC plans are required for non-transportation-related facilities that:

- Have an aboveground storage capacity of more than 660 gallons in a single tank, an aggregate aboveground storage capacity of more than 1,320 gallons, or a total underground storage capacity of 42,000 gallons; and
- Could reasonably be expected to discharge oil in harmful quantities into navigable waters of the United States.

² See OAR 141, 142, and 143.

Unlike oil spill contingency plans that typically address spill cleanup measures after a spill has occurred, SPCC plans ensure that facilities put in place containment and other countermeasures that would prevent oil spills from reaching navigable waters. The SPCC plans are required to address design, operation, and maintenance procedures established to prevent spills from occurring, as well as countermeasures to control, contain, clean up, and mitigate the effects of an oil spill that could affect navigable waters.

Each SPCC plan, while unique to the facility it covers, must include certain standard elements to ensure compliance with the regulations. An SPCC Plan should include the following information in the sequence outlined below:

- A written description of each spill, corrective action taken, and plans for preventing recurrence for all spill events that occurred within twelve months prior to the effective date of the plan;
- Prediction of the direction, rate of flow, and total quantity of oil that could be discharged where experience indicates a potential for equipment failure;
- A description of containment and/or diversionary structures or equipment to prevent discharged oil from reaching navigable waters;³
- Where appropriate, a demonstration that containment and/or diversionary structures or equipment are not practical, a strong oil spill contingency plan, and a written commitment of manpower, equipment, and materials to quickly control and remove spilled oil.
- A complete discussion of the spill prevention and control measures applicable to the facility and/or its operations.

A.4.4 DEQ Spill Prevention Efforts

The Oregon Department of Environmental Quality spills program has developed a prevention and preparedness program. Elements of the program include the following:

- Vessel Plans - Vessels traveling the Columbia and Willamette rivers are required to carry spill response plans that provide clear instructions for dealing with a spill. DEQ reviews and approves the plans. Twenty-four companies have submitted vessel plans to DEQ. Most have contracted with one of several response and cleanup providers.
- Facility Plans - Certain facilities are also required to have oil spill prevention and emergency response plans that are reviewed and approved by DEQ. There are twenty-two such facilities in Oregon, mostly in the Portland area.
- Geographic Response Plans - Geographic response plans detail geographic information, equipment requirements and locations, and preferred response activities for particular sections of the Willamette and Columbia Rivers and the coast. Each plan is for a specific river segment, and includes identification of aquatic and wildlife

³ For on-shore facilities, one of the following should be used at a minimum: dikes, berms, or retaining walls; curbing; culverts, gutters, or other drainage systems; weirs, booms, or other barriers; spill diversion ponds; retention ponds; sorbent materials.)

habitats and water withdrawal points and uses, resource protection and spill containment strategies, maps, locations of necessary materials, and other information. Geographic Response Plans are developed cooperatively by government agencies, river users, and response providers. Some sections of the rivers do not yet have Geographic Response Plans.

- Drills - DEQ attends scheduled response and cleanup exercises as an observer or active participant. In the next biennium, DEQ expects to attend at least one "major" and four "significant" drills. Responders and DEQ also gain valuable training and insights from actual incidents.

Facilities requiring oil spill prevention and emergency response plans are limited to facilities that:

1. Are located on or near the navigable waters of the state;
2. Produce, store, handle, transfer, process, or transport oil in bulk;
3. Transfer, process, or transport oil in bulk;
4. Are capable of storing or transporting 10,000 or more gallons of oil; or
5. Receive oil from tank vessels, barges, or pipelines.

Plan requirements are specified in OAR 340-047-0150. The following eleven facilities within Portland Harbor have oil spill prevention and emergency response plans:

- Arco,
- GATX (a.k.a., Kinder Morgan),
- McCall,
- ExxonMobil,
- Olympic Pipeline,
- Owens Corning,
- Santa Fe Pacific Pipeline,
- Texaco terminal and pipeline,
- Time Oil Linnton,
- Time Oil Northwest Terminal, and
- The Willbridge bulk fuel facility.

A.4.5 Technical Assistance for Hazardous Waste Management

The DEQ Toxics Use/Waste Reduction Assistance Program (TUWRAP) provides technical assistance to businesses and other organizations throughout Oregon. TUWRAP provides technical assistance to help facilities reduce their use of toxic chemicals and their generation of

hazardous waste, and to develop better waste management practices. The program also offers suggestions to help facilities come into compliance with Oregon's Toxics Use Reduction and Hazardous Waste Reduction Act (TURHWRA), and state and federal hazardous waste regulations. The program staff provides free on-site consultations, conducts training sessions, responds to facility inquiries, and implements facility planning and reporting provisions under TURHWRA.

The DEQ will be providing increased technical assistance to facilities within Portland Harbor. Facilities will be identified by SIC code and State Fire Marshall records will be reviewed to prioritize businesses for technical assistance. The focus of the technical assistance will be on activities that are not regulated under hazardous waste regulations. Due to the number of businesses that operate in the vicinity of the harbor, businesses will be targeted on a geographical basis (e.g., by City of Portland outfall basins). Site visits will be conducted and recommendations will be made for implementing improved waste handling procedures. A summary of general practices, successfully implemented BMPs, and practices likely to impact Portland Harbor will be provided in a report prepared for each basin.

A.4.6 Public Education

The DEQ recognizes that educational activities are a key component of an effective source control strategy. Therefore, its technical assistance program will work together with the City of Portland's administration of storm water permits to prevent industrial releases to Portland Harbor via storm water discharges. In addition to working with the industrial community, the DEQ is developing ways to inform the public about methods to prevent contamination from entering the city's storm water system. An example project is the city's Clean River Plan. The Clean River Plan is designed to identify citizen behaviors that are currently causing water pollution in the Portland metropolitan area, develop a strategy to change these behaviors, and identify measures of success. The DEQ expects to make use of local media and its website to encourage individuals to reduce the amount of pollution entering Portland Harbor.

A.5 Other Potential Regulatory Requirements

A summary of key federal, state and local requirements under other laws is provided below. This list is not intended to be comprehensive; it is the PRP's responsibility to comply with all local, state, and federal regulations during investigations and remedial actions.

EPA and Corps Clean Water Act: Section 404 of the Clean Water Act requires approval before the discharge of dredged or fill material into waters of the United States.

US Army Corps of Engineers – Rivers and Harbors Act, Section 10: Various sections within the Rivers and Harbors Act of 1899 establish permitting requirements to prevent unauthorized obstruction or alteration of any navigable water of the United States. This authority covers construction, excavation or deposition of materials in, over or under navigable waters, or any work that would affect the course, location condition or capacity of those waters.

United States Coast Guard – River and Harbors Management Act: USCG has permitting authority over marine events that are of short duration.

Federal Emergency Management Agency – National Flood Insurance Program: The Federal Emergency Management Agency (FEMA) requires the evaluation of the effect of cleanup measures on the 100-year flood plain. Actions that increase the river stage under a base flood condition constitute a floodway encroachment. If a floodway encroachment is anticipated, the encroachment must either be mitigated such that there is no net increase in river stage or the floodway must be modified in consultation with FEMA, the City of Portland Office of Planning and Development Review (OPDR) and Metro.

United States Fish and Wildlife Service – Endangered Species Act, Section 7 and Essential Fish Habitat: Coordination with USFW is required to ensure compliance with the requirements of the Endangered Species Act.

National Marine Fisheries Service – Endangered Species Act, Section 7: Coordination with NMFS is required to ensure compliance with the requirements of the Endangered Species Act.

Oregon Department of Environmental Quality – National Pollution Discharge Elimination System (NPDES): Source control measures that include groundwater extraction and treatment will require a NPDES permit for discharge of treated groundwater to the Willamette River.

Oregon Department of Environmental Quality – Clean Water Act, Section 401: Section 401 of the federal CWA requires that any applicant for a federal license or permit to conduct any activity that may result in a discharge to waters of the state must provide the licensing or permitting agency with a certification from DEQ stating that activity meets state water quality standards.

Oregon Division of State Lands – Oregon Removal-Fill Law: Oregon’s Removal-Fill Law requires DSL to issue removal-fill permits to conserve, restore, and maintain the health of Oregon’s waters.

Oregon Department of Fish and Wildlife – Oregon Removal-Fill Law: DSL coordinates with ODFW during the removal-fill permitting process to evaluate potential impacts on sensitive fish, wildlife, and plant species. ODFW established two in-water work windows for the lower Willamette River: July 1 to October 31 and December 1 to January 31.

City of Portland Office of Planning and Development Review – National Flood Insurance Program: The Office of Planning and Development Review (OPDR) regulate structures and property impacts for activities within the Willamette River floodplain. The City administers the permitting in coordination with FEMA.

City of Portland Office of Planning and Development Review – Greenway Regulations: City of Portland Greenway regulations are in effect along the riparian zone of the Lower Willamette River. Greenway regulations are intended to protect, conserve, enhance, and maintain the natural, scenic, historic, economic, and recreational qualities of lands along Portland’s rivers. DEQ and the city are currently working on an intergovernmental agreement to streamline the review process.

Under Oregon cleanup law the on-site portion of DEQ approved remedial or removal actions may be exempt from the permitting and procedural requirements of state and local law. As a result, only the substantive requirements apply. Responsible parties are required to notify and consult with other jurisdictions concerning all permitting and procedural requirements that they propose to exempt, and to demonstrate compliance applicable substantive requirements. Federal permits will generally be required.

A.6 Potentially Applicable Standards and Criteria

This section describes potentially applicable standards and criteria that may apply to Portland Harbor sites.

A.6.1 Ambient Water Quality Criteria

Ambient Water Quality Criteria (AWQC) are established under section 304(a) of the Clean Water Act. They include acute and chronic criteria for the protection of aquatic life, criteria for the protection of human health based on fish consumption, and criteria for the protection of human health based on combined fish and drinking water consumption.

DEQ last revised Oregon's criteria for toxic pollutants in 1991 and is currently in the process of revising the criteria to incorporate the latest scientific information, including the most recent (2002) federally recommended criteria for approximately 167 toxic pollutants. The Oregon Environmental Quality Commission approved the revised criteria on May 21, 2004. However, the EPA must also approve the revised criteria before they become effective. Their decision on the new standards is not expected until 2006.

A.6.2 Narrative Water Quality Criteria:

ORS Chapter 340, Division 41 contains a number of narrative water quality criteria for surface water. Examples of narrative standards potentially applicable to the Portland Harbor Superfund site include:

- The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish may not be allowed;
- The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry may not be allowed;
- Objectionable discoloration, scum, oily sheens, or floating solids, or coating of aquatic life with oil films may not be allowed; and
- Aesthetic conditions offensive to the human senses of sight, taste, smell, or touch may not be allowed.

Exceeding narrative water quality criteria (*e.g.*, a groundwater discharge that contains a noticeable sheen) is a sign of gross contamination and may mean that the contamination poses an imminent threat to human health or the environment.

A.6.3 DEQ Level II Ecological Screening Level Values for Surface Water

Because AWQC are not available for all COIs in Portland Harbor, DEQ developed Level II screening level values (SLVs) for surface water. These can be found in *Guidance for Ecological Risk Assessment* (DEQ, 2001). Level II SLVs are intended for the protection of ecological receptors only and are based on AWQC or surface water criteria developed by the Oak Ridge

National Laboratory (ORNL). These SLVs were developed for screening purposes only and are not promulgated standards.

A.6.4 Level II Screening Level Values for Freshwater Sediment

DEQ's *Guidance for Ecological Risk Assessment* (DEQ, 2001) provides Level II SLVs for freshwater sediment. The Level II SLVs for freshwater sediments are based on a number of published data including:

- Threshold Effects Levels (TELs) developed by the National Oceanic and Atmospheric Agency (NOAA), Coastal Resource Coordination Branch (1999);
- Upper Effects Threshold (UELs) developed by the National Oceanic and Atmospheric Agency (NOAA), Coastal Resource Coordination Branch (1999);
- Threshold Effects Concentrations (TECs) developed by Smith, MacDonald, Keenleyside, Ingersol, and Field (1996); and
- Lowest Apparent Effects Thresholds (LAET) developed by the state of Washington Department of Ecology (1997).

These SLVs were developed for screening purposes only and are not promulgated standards.

A.6.5 Evaluation of PBTs

The bioaccumulation of contaminants from sediment through the food chain into fish or shellfish may pose a threat to humans or wildlife that consume fish. In addition, OAR 340-122-084(2)(d) and OAR 340-122-084(3)(d) require that special attention be given to chemicals capable of bioaccumulation.

A.6.6 Background Concentrations

DEQ uses naturally occurring background concentrations to evaluate sediment data. Although no background metals data are currently available for Portland Harbor, background sediment concentrations developed by the U.S. Geological Service (USGS) and background soil concentrations developed by state of Washington Department of Ecology for Clark County⁴ may be used to provide an initial comparison to natural background levels. Final background levels for the Portland Harbor in-water cleanup will be developed in the Portland Harbor RI/FS.

⁴ See www.ecy.wa.gov/programs/tcp/pu94115.htm.

This page left intentionally blank