

GENERAL SITE INFORMATION, CHARACTERISTICS, AND STATUS

Project Name	<u>WYCKOFF CO./EAGLE HARBOR - PROJECT 2</u> <u>(West Harbor)</u>	ProjectID: 10-06
Last Updated:	01/19/04	
City:	Bainbridge Island	
County:	Kitsap	
State:	WA	
Country:	USA	
Bodies of Water:	Eagle Harbor; Puget Sound	
US EPA Region:	X	
Status (Active, Complete, or Monitoring Only):	Complete	
Date On NPL:	1987	
ROD/ESD Date:	1992 (OU-3); 1995 (OU-3 Amendment)	
Operable Unit:	OU-3	
Areas of Concern (length or acres):	Eagle Harbor (a Puget Sound embayment): 500 acres, comprising about 200 acres of West Harbor and 300 acres of East Harbor.	
Other Characteristics of Water Body:	The Upper Harbor is relatively shallow (0-18 ft); central channel is 20-50 feet deep. Several small creeks feed the harbor. The harbor was divided into East and West operable units because the sediments in the East Harbor have mostly PAHs, while mercury is the primary contaminant of concern in the West Harbor.	
Contaminants of Concern:	PAHs; mercury	
Source of Contamination:	Wood treating operations, including pressure treatment with creosote, at the Wyckoff Facility. Spills, leaks, drippage, wastewater discharges, and storing treated timbers in the water.	
Contaminated Area	Hot spots; Harbor sediments.	
Physical Characteristics:		
Type of Regulatory Action:	Final. Superfund. Preceded by enforcement actions in 1988 (AOC), 1991 (UAO), 1993 (AOC), and 1994 (Consent Decree)	
Overall Status Summary:	<p>Cleanup at the West Harbor Operable Unit (OU-3) was completed in Oct. 1997. The cleanup involved the full range of sediment remediation technologies including natural recovery, enhanced natural recovery, capping, dredging, CDF disposal, stabilization, and upland source control. Capping involved placement of 30,000 tons of sand – 22,600 tons over 6 acres (6-inch thick) and 7400 tons over 0.5 - 0.7 acres (3 ft. thick). A mercury containing hot spot was dredged (1350 cy) and mercury contaminated under-dock areas were wet-excavated (1000 cy), with disposal in a 1 acre nearshore CDF. Another 650 cy hot spot was wet-excavated at low tide, material was stabilized, and then disposed at an offsite commercial landfill.</p> <p>From March to September 2002, an EPA team with support from the Corps of Engineers performed a "Five-Year Review" for both the East (Project ID 10-02) and West Harbor. One pertinent finding was that an eelgrass planting site adjacent to the CDF did not survive.</p>	
Remedial Action Planned:	<input checked="" type="checkbox"/>	
Risk Assessment:	<input checked="" type="checkbox"/>	
Remedial Action Implemented:	<input checked="" type="checkbox"/>	
Status of Dredging	<input type="checkbox"/>	

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(West Harbor)

Last Updated: 01/19/04

PRPs: ☒

Contacts: ☒

References: ☒

Modeling: ☐

Fishing Advisory: ☒

Key Conditions: capping, commercial landfill, confined disposal facility, dredging, natural recovery, tidal fluctuations, wetlands

REMEDIAL ACTION PLANNED

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Target Sediment Cleanup Standards (TSCS):	Refer to "How TSCS Established"	
How TSCS Established:	<p>Source: ROD September 1992</p> <ul style="list-style-type: none">• The sediment cleanup objective for the West Harbor OU combines an overall site-specific cleanup objective developed according to the State of Washington Sediment Management Standards (Sediment Standards) with supplemental objectives developed by EPA to address specific concerns and identify areas for actions required at the site.• The intent of the Sediment Standards is for sediments within a cleanup site to ultimately meet the level of no adverse effects. Once a cleanup site has been defined, a site-specific cleanup objective is developed based on an evaluation of the net environmental benefit, cost, and implementability of remedial action. The site-specific objective must be between the no adverse effects level (SQS) and the minor adverse effects level ("minimum cleanup level," MCUL). In all cases, if both biological and chemical data are obtained, the biological information determines compliance with the site-specific cleanup objective developed under the Sediment Standards. At a minimum, sediments must meet the MCUL within ten years after active remediation is completed, unless an extension is approved.• The Sediment Standards allow a period of ten years from completion of remedial action for cleanup sites to meet the MCUL in recognition that, in certain cases, natural processes such as chemical breakdown, dispersion, or sedimentation may reduce levels of sediment contamination over time. If mathematical modeling predicts that certain areas of contaminated sediment will meet the site-specific objectives within ten years without resort to active remediation, these may be defined as "natural recovery" areas. In such areas, instead of active remediation, monitoring and compliance testing may be used to confirm the predicted recovery.• Within the framework described above, site-specific cleanup goals and objectives were developed for the West Harbor OU. Consistent with the intent of the State Standards, achievement of the SQS and reduction of contaminants in fish and shellfish to levels protective of human health and the environment are long-term goals of sediment remedial action in the West Harbor OU. While these goals represent a conceptual target condition, the measurable site-specific objective is the MCUL, and achievement of the MCUL is the primary focus. The MCUL must be achieved in the top ten centimeters of sediment throughout the West Harbor within ten years after the completion of active sediment remediation or, in areas where natural recovery is predicted based on accepted mathematical modeling, within ten years from control of significant sources to such areas.• Existing data indicate that adverse biological effects in the West Harbor are associated with heavily contaminated areas near the former shipyard. These data also suggest that adverse biological effects predicted in areas marginally above the MCUL chemical criteria may not be occurring. For this reason, in West Harbor areas below the MCUL chemical criteria, adverse biological effects are not expected. In addition, because there are no rivers or other major sources of clean sediment to Eagle Harbor, achieving the SQS would require active cleanup in areas below the MCUL chemical criteria. The potential benefits of cleanup are not believed to outweigh the costs and potential environmental impacts of remediation in such areas.• In order to define areas requiring specific types of remedial action the above site-specific objective developed according to the Sediment Standards is supplemented by three EPA	

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	objectives:	
	<ul style="list-style-type: none">• (1) to address sediments containing 5 ppm (dry weight) or more of mercury ("Mercury Hot spot"), as a means of source control;• (2) to address intertidal sediments containing 1,200 ppb (dry weight) or more of high molecular weight PAHs ("HPAH"). Shellfish in such areas contained carcinogenic HPAH above EPA acceptable levels for protection of human health;• (3) to address predicted biological impacts, minimize potential sediment resuspension, and limit biological uptake in areas where sediment concentrations of mercury exceed 2.1 ppm mercury dry weight ("Mercury HAET Areas"). The sediment concentration of 2.1 ppm (dry weight) is more than three times the MCUL and is the High Apparent Effects Threshold (HAET) for mercury. (This is the sediment concentration of mercury above which Puget Sound test sediments have always failed acute toxicity tests for both amphipods and oyster larvae and have demonstrated chronic benthic effects).• Although these additional objectives do not alter the requirement of achieving the MCUL throughout the West Harbor, areas defined by the three chemical objectives must be specifically addressed. On the basis of RI/FS information and natural recovery modeling to date, EPA and Washington Dept. of Ecology believe that natural recovery will occur in intertidal areas described under the second EPA objective, but is unlikely in the Mercury Hot spot and Mercury HAET areas.	
Target Bank and Floodplain Cleanup Levels (if applicable):	N/A	
Other Target:	N/A	
Environmental Sample Data References:	Reference A-32 (ROD September 1992)	
	<ul style="list-style-type: none">• Sediment:• Water:• Fish:	
Estimated Target Volume:	12.5 - 31 subtidal acres and 3.5 intertidal acres above the MCUL for mercury; 5 intertidal acres above the MCUL for PAHs.	
Planned Disposal Method:	Nearshore CDF for majority of sediments; offsite commercial landfill for small volume of sediments exceeding Washington State Dangerous Waste criteria.	
Estimated Calendar Time to Implement Remedy:	Not provided	
Estimated Time to Implement Remedy:	Not provided	
Estimated Cost to Implement Remedy:	In 1992 ROD, \$5-15 million (depending on 1300 cy vs. 9200 cy); includes \$2.5-11.7 million for hot spot removal/disposal and \$2.6-3.2 million for capping. In 1995 ROD Amendment, \$3.8 million, including the CDF, removal of about 2000 cy of sediments, and habitat mitigation.	

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Stated Remedial Action Objectives (and Source):	<p>Source: 1992 ROD and 1995 ROD Amendment</p> <ul style="list-style-type: none">• The selected remedy for intertidal sediments with HPAH concentrations of 1,200 ppb or more (dry weight) is natural recovery combined with institutional controls.• For sediments with mercury contamination greater than or equal to the 5 ppm criterion, the selected remedy is excavation and appropriate upland disposal. The volume of sediments exceeding this criterion is estimated to range from 1300 to 9200 cy. <p>The 1995 ROD Amendment changed the method of disposal, i.e., disposal of the hot spot sediments onsite in a nearshore confined disposal facility. Briefly, the ROD Amendment resolved a conflict between community land use preferences and the expansion of the Washington State Ferries maintenance facility, while providing protection of human health and the environment. Without the additional acre of land created by the CDF, WSF would need to relocate a private boat repair operation. The boat repair operation was operating on one of 4.5 acres of property which Washington Department of Transportation had obtained through condemnation for expansion of the adjacent WSF maintenance facility. Also, about 2700 cy of hot spot sediment was allowed to stay in place under the CDF rather than requiring removal.</p> <ul style="list-style-type: none">• Near the mercury hot spot are areas of the harbor where sediment concentrations are greater than 2.1 ppm mercury. The value of 2.1 ppm, the High Apparent Effects Threshold (HAET) for mercury, is the concentration of mercury in sediments above which amphipod and oyster larvae acute toxicity and benthic effects have always been observed in Puget Sound studies. The selected remedy for addressing predicted or documented adverse impacts to aquatic life in such areas in an in situ sediment cap no less than 1 meter thick. <p>Further mathematical modeling of the potential for natural recovery, in accordance with the Sediment Standards, will not be considered for this area, because concentrations of mercury are not expected to decline sufficiently over ten years of meet the MCUL. However, biological testing may be conducted in accordance with the Sediment Standards. If these tests show that the sediments meet the MCUL biological criteria, the contingent remedy will be precision placement of 15 to 30 centimeters of clean sediment (to provide coverage of at least 15 cm) to minimize any remobilization and/or bioaccumulation.</p> <ul style="list-style-type: none">• The selected remedy for areas above the MCUL chemical criteria but meeting all other site objectives is enhancement of natural recovery by means of low-impact capping/thin layer placement.	
Measures of Success to be Used:	Below (Planned Monitoring and Restoration:)	
Planned Monitoring and Restoration:	<p>Monitoring plans to address these objectives will be developed during remedial design. Monitoring efforts will be focused primarily on the first ten years after completion of remedial action. Final cleanup areas must be determined, and baseline conditions must be established prior to remedial action. Any sampling necessary to further characterize source control needs will also be conducted during remedial design.</p> <p>During excavation, dredging, or placement of clean materials, monitoring will be conducted to evaluate short-term effects on the environment and to assure accurate and adequate materials placement.</p>	

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If monitoring after remedial action documents compliance with the MCUL by or before the tenth year, the type and frequency of monitoring may be adjusted, or monitoring may be phased out provided continued compliance with the objectives is assured. If monitoring indicates that the MCUL may not be attained within ten years, EPA will evaluate the need for additional remedial action during the CERCLA five-year review.

Periodic monitoring for chemical contaminants in fish, crabs, and clams from Eagle Harbor will be used to assess public health risks and evaluate the success of remediation in reducing contaminant concentrations in edible seafood. A detailed monitoring plan will be completed during remedial design.

During remedial design, additional contaminants of potential concern, including PCBs, dioxins and furans, will be monitored in seafood at least once to determine if further monitoring for these contaminants is needed.

At the CERCLA five-year review and ten years after completion of remedial action in the West Harbor, EPA will evaluate the need for continued monitoring of fish and shellfish tissues. If tissue monitoring does not indicate a trend toward decreasing concentrations of site contaminants ten years after completion of all final remedial actions in Eagle Harbor, EPA will evaluate the need for additional action.

Agency Position on Sediment Removal (and Source):

Source: ROD, September 1992:

- Investigation and remediation of sediment contamination pose inherent challenges, as briefly indicated below:
 - the accumulation of contaminants at the sediment-water interface, a significant zone for habitat and food sources, creates complex and sensitive ecological conditions and can lead to contaminant transfers through the food chain;
 - contaminants that accumulate in sediments are generally dispersed from their sources, resulting in relatively large areas of low level contamination;
 - surface sediment contamination reflects both historical and on-going contamination, because marine biological activity in the biologically active top layer mix recently deposited sediments with existing sediments and because disturbances from currents or propeller wash can redistribute surface contamination;
 - the relatively large volumes of sediments requiring remediation can present problems regarding disposal site availability and capacity;
 - underwater conditions compound the technical challenges associated with assessing, controlling, and remediating contamination of environmental media; and
 - ongoing active use of the harbor complicates implementation of remedies.

An interesting comment re natural recovery from the 1992 Responsiveness Summary:

- Comment: Explain why natural recovery for subtidal sediments containing metals is not an acceptable alternative. This alternative should not be rejected as a potentially acceptable long-term solution.

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- Comment: Capping is inappropriate because of the high cost and documented ecological damage associated with capping large aquatic areas.
 - EPA Response: Any active remediation of a large area is likely to have impacts on the harbor. However, capping is one of the least costly alternatives available for managing contaminated sediments and it provides a clean substrate for benthic organisms to recolonize. Studies of sediment caps show that benthic recolonization occurs fairly readily, although the larger the cap is, the greater the short-term impacts are expected to be. To address concerns about capping large areas of the harbor, the selected remedy for most West Harbor subtidal sediments is thin-layer placement. Thin-layer placement is expected to have less impact than other remedies on the existing benthic communities.

RISK ASSESSMENT

Project Name ***WYCKOFF CO./EAGLE HARBOR - PROJECT 2 (West Harbor)*** ***ProjectID:*** 10-06

Last Updated: 08/11/98

RA Type: Human Health and Ecological

RA Status: Complete

RA Objectives:

Company CH2M Hill

Performing RA:

RA Reference Report:

RA Summary and Source: ROD September 1992.

Conclusions:

Two data sets (1988 and 1990) were used in estimating the total excess lifetime cancer risks for consumption of clams. The highest risk of 10-3 was associated with clams collected from adjacent to the Wyckoff Facility. Background clam tissues collected near the mouth of Eagle Harbor produced risks from 1 x 10-4 to 5 x 10-4.

A single data set from 1990 was available to evaluate cancer risks from consumption of fish and crabs. Risk levels depended on the type of tissue (whole fish, fish muscle, crab muscle, hepatopancreas). The highest risk for this route was 1 x 10-3 for consumption of whole perch. For all other tissues both Eagle Harbor and background samples produced results in the 10-4 range; however, the fish tissue data for the PAH contributing most to the risk were qualified as estimates in these samples.

Summary: The risk assessment discussed uncertainties associated with the calculated risks. Among the uncertainties are the absence of complete toxicity information for all chemicals measured, uncertainties and variability in site data, the potential presence in seafood of other contaminants that may not be site-related, and uncertainties associated with exposure assumptions. The uncertainties can result either in underestimates or overestimates of the true health risks associated with the site.

In summary, chemical concentrations in Eagle Harbor sediments and seafood are elevated with respect to background locations. However, human health risk estimates for exposure to sediment contaminants through dermal contact and sediment ingestion are within or below WPA's range of acceptable risks. For seafood ingestion, calculated cancer risks are generally between 10-4 and 10-6 at both Eagle Harbor and background locations. Consumption of shellfish from specific areas (such as East Harbor areas near the former Wyckoff Facility) results in risks above 10-4. While similar cancer risk estimates were obtained for tissues such as whole perch, sole muscle, and crab hepatopancreas, uncertainties in these data should be considered. Noncancer hazard indices for seafood consumption at both Eagle Harbor and background locations were as high as 1 based on 1988 data, but subsequent data resulted in significantly lower values, suggesting similar uncertainties in data.

Human health risks for Eagle Harbor are thus primarily associated with the consumption of contaminated shellfish. For the East Harbor, specifically, cancer risks in the 10-3 range were associated with clam tissues from beaches adjacent to the Wyckoff Facility.

The assessment of ecological risks relied on the "triad approach" which links contamination to specific adverse ecological effects using a preponderance of field and laboratory evidence. The three elements are (1) sediment concentrations, (2) lab toxicity tests, and (3) abundance of benthic organisms.

The bioassays for acute toxicity indicated that sediments from many sampled locations in the East Harbor were toxic to amphipods, oyster larvae, or both. The bioassay responses were most severe in areas of high PAH contamination, such as areas of the East Harbor north of the Wyckoff Facility. Bioassays on

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benthic infauna are valuable indicators because the organisms live in direct contact with the sediments, are relatively stationary, and are important components of estuarine ecosystems. If sediment-associated impacts are not present in the fauna, then it is unlikely that such impacts are present in other biotic groups such as fish or plankton ; unless contaminants are bioaccumulating at levels significant for higher food-chain organisms.

Additional evidence of biological effects in Eagle Harbor includes the prevalence of liver lesions and tumors in English sole, as documented by NOAA (Malins, 1985). The high incidence of such effects in Eagle Harbor relative to other Puget Sound embayments was confirmed in the Puget Sound Ambient Monitoring Program, 1991 sampling. This and laboratory research citing the effects of PAH and other sediment contaminants on marine organisms add to the preponderance of evidence already indicating potential damage to Eagle Harbor marine life.

In addition, PAH and metals in the tissues of fish and shellfish indicate uptake of sediment contamination. Mercury tends to bioaccumulate in fish, while PAHs can bioaccumulate in some invertebrates.

In summary, biological risks due to contamination in the West Harbor are evidenced by documented acute toxicity of sediments near the former shipyard and at some locations in the central channel, by predicted adverse effects of other sediments above AETs, and by the widespread presence of mercury and PAHs which can accumulate in the tissues of food chain organisms.

Actual or potential releases of hazardous substances from the West Harbor OU, if not addressed by implementing the remedial action selected in this ROD, may present an imminent and substantial endangerment to public health or welfare, or the environment.

Based on the RI, the risk assessments, and available information, cleanup of the West Harbor OU is warranted. Consumption of shellfish from certain intertidal locations of the West Harbor pose a human health risk above the acceptable risk range. Sediment cleanup is expected to result in reductions of contaminant levels in fish and shellfish, and over the long term, sediment cleanup and natural recovery may eventually reduce risks to levels comparable to background. However, the correlation between fish or clam tissue contamination and sediment chemical concentrations is not sufficient to develop sediment cleanup levels corresponding to specific reductions in human health risks.

Adverse biological effects have been documented in portions of the West Harbor and are predicted by the contaminant concentrations present. Most of the biological effects observed are associated with areas of heavy sediment contamination. Potential redistribution of contaminants through sediment redistribution from heavily contaminated areas is also of concern, as is the potential for uptake by marine organisms. Where chemical information predicts significant adverse effects on benthic organisms but redistribution and biological uptake are not of concern, cleanup is warranted unless the absence of adverse biological effects at levels of concern is documented.

REMEDIAL ACTION IMPLEMENTED

Project Name:	<u>WYCKOFF CO./EAGLE HARBOR - PROJECT 2 (West Harbor)</u>	ProjectID: 10-06
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Physical Target:	Mercury-contaminated underdock area; three mercury-contaminated hot spots; 6.7 acres of surface sediments targeted for capping; all in the West Harbor of Eagle Harbor.	
Goals:	<ul style="list-style-type: none">• Construct a nearshore CDF, confining roughly half of the targeted sediment in place and increasing the usable upland area for the adjacent terminal maintenance facility by 20%.• Remove mercury hotspots (>5 ppm) and dispose of the sediments into the CDF.• Construct a thick cap (3 feet) over surface sediments >2.1 and <5 ppm mercury.• Construct a thin cap (6 inches) over surface sediments exceeding the MCUL of 0.59 ppm mercury.	
Primary Contractor:	Wilder Construction (Everett, WA); General Construction (Seattle)	
Other Contractors:	CH2M Hill (RI/FS); Hartman Consulting; Hart Crowser; Anchor Environmental; de maximus	
Generic Remediation Method:	Mechanical dredging; wet excavation; capping, including enhanced natural recovery.	
Equipment:	For underdock areas, land-based track excavator. For open water dredging, 5 cy roundnose clamshell bucket; for open water capping, the same 5 cy clamshell bucket; for capping underdock areas, a centrifugal pump mounted on a flat deck barge.	
Material Handling:	<p>The 650 cy were excavated at low tide using land-based equipment. Excavated sediments were stockpiled on site, and stabilized by mixing them with a Portland cement mixture, similar to the stabilization of upland soils. The stabilized mix was allowed to cure on site for an approximate 48-hour period and was then sampled to determine the leachability characteristics. The stabilized material was transported to Olympic View Landfill for disposal.</p> <p>For the underdock areas, the contractor used land-based equipment during the tidal cycle of June 18-26, 1997. This period offered the lowest tides, during which time the contractor's equipment could access the lower elevations within the underdock limits.</p> <p>One small track excavator was used to excavate and place the contaminated dredge material in a Bobcat unloader. The Bobcat unloader transported the material from underdock to a lowered 330 excavator bucket, which was stationed on top of the dock. The 330 excavator transferred material into the bucket of a Cat 966 loader for transport and temporary stockpiling upland.</p> <p>For open water dredging with the clamshell, the bucket unloaded onto a flat deck barge moored alongside. Removed material was barged to the CDF. Sediment resuspension was minimized by reducing the rate of retrieval of the full bucket. One silt curtain was in-place around the perimeter of the dredging operation.</p> <p>Water depths in areas of capping ranged from depths of zero to 45 feet.</p>	
Volume Removed:	3000 cy, including 1350 cy by mechanical dredging and 1,650 cy by wet excavation; 0.5 - 0.7 acres capped with 7400 tons of quarry material; 6 acres thinly capped with 22,600 tons of quarry material to enhance natural recovery.	
Calendar Time:	Mobilization began April 1997 and project completed October 1997.	

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Time To Implement:	7 months	
Total Cost:	\$3.0 million.	
Dredging Cost:	\$1.5 million; \$500 per cy.	
Disposal of Sediment:	Disposal into a nearshore CDF (2350 cy) and an offsite commercial landfill (650 cy).	
Volume of Water:	Gravity dewatering from temporary storage pad and CDF; no volumes identified.	
Method of Water Treatment:	No method of treatment used; water discharged directly to open waters maintaining specific mixing limits..	
Water Discharge Limit:	N/A	
Air Monitoring During Remediation:	None performed.	
Water Monitoring During Remediation:	Water monitoring for turbidity, temperature, DO, and contaminants performed at various locations during dredging operations. Sampling points were located using GPS.	
Outcome:	Completed as described above. For the 650 cy removal, composite verification sediment samples were collected from the sidewalls and bottom. Post verification samples were also collected from the other two hotspots to determine if additional dredging was required (wasn't).	
Restoration and Post-Monitoring:	Mitigation for the project included construction of a 2 acre intertidal wetland approximately 2 miles from the CDF and planting of 0.6 acres of eelgrass. Actual wetland mitigation costs unavailable, but were estimated to be much more than original estimated cost of \$250K. Post monitoring in year 2 for the thin cap areas will reportedly include water chemistry, surface sediment samples, and bathymetry.	
Site-Specific Difficulties:	<ol style="list-style-type: none">(1) Underdock area access complicated by the presence of pilings supporting an active pier; also tide swings of as much as 12 feet.(2) Sloughing of material occurred in newly excavated areas underdock over the course of the first tidal cycle. To compensate, the contractor backfilled excavated areas daily with clean gravel.(3) Post-capping survey records identified 16 discrete capped areas within the overall capped area that did not have a minimum cap thickness. A different dredge was mobilized and an additional 1000 cy of material was placed to increase the depth of the low spots.	

Monitoring Data

References:

- *Sediment*
- *Water:*
- *Fish:*

POTENTIALLY RESPONSIBLE PARTIES

Project Name WYCKOFF CO./EAGLE HARBOR - PROJECT 2 (West Harbor)

ProjectID: 10-06

PRP Name: PRP INFORMATION NOT RELEASED

PRPID:

Street Address:

City:

State:

KEY CONTACTS

Project Name WYCKOFF CO./EAGLE HARBOR - PROJECT 2 (West Harbor)

ProjectID: 10-06

Last Name: KEY CONTACT INFORMATION NOT RELEASED

Contact ID:

First Name:

Title:

Company:

Address:

City:

State:

Postal Code:

Work Phone # :

Other Phone #:

Fax # :

Email Address:

REFERENCES

Project Name WYCKOFF CO./EAGLE HARBOR - PROJECT 2 (West Harbor)

ProjectID: 10-06

Reference Type: A

ReferenceID: 30

Title: *Superfund Fact Sheet - the Proposed Plan for Cleanup of Eagle Harbor*

Location: AEM

Category: Site Update

Prepared by/Author: US EPA Region X

Preparer/Author Address: 1200 Sixth Avenue
Seattle, WA 98101

Prepared For: General Public

Date Published: December 16, 1991

Key Words and Phrases:

Reference Type: A

ReferenceID: 32

Title: *Record of Decision: Wyckoff/Eagle Harbor Superfund Site - West Harbor Operable Unit*

Location: AEM

Category: ROD/Proposed Plan/Action Memo/Decision Document

Prepared by/Author: US EPA Region X

Preparer/Author Address: 1200 Sixth Avenue
Seattle, WA 98101

Prepared For: General Public

Date Published: September 1992

Key Words and Phrases:

REFERENCES

Project Name WYCKOFF CO./EAGLE HARBOR - PROJECT 2 (West Harbor)

ProjectID: 10-06

Reference Type: A

ReferenceID: 33

Title: *Amended Record of Decision
Decision Summary and Responsiveness Summary
West Harbor Operable Unit
Wyckoff/Eagle Harbor Superfund Site*

Location: AEM

Category: ROD/Proposed Plan/Action Memo/Decision Document

Prepared by/Author: US EPA Region X (PB96-963101)

**Preparer/Author
Address:** 1200 Sixth Avenue
Seattle, WA 98101

Prepared For: General Public

Date Published: December 8, 1995

**Key Words and
Phrases:**

Reference Type: A

ReferenceID: 1039

Title: *Five-Year Review Report (Draft)*

Location: AEM

Category: Monitoring, Post

Prepared by/Author: US EPA Region X

**Preparer/Author
Address:**

Prepared For: General Public

Date Published: August 26, 2002

**Key Words and
Phrases:**

Reference Type: B

ReferenceID: 255

Title: *Environmental Effects of Dredging
Eagle Harbor Superfund Project*

Location: AEM

Category: Dredging: Miscellaneous

Prepared by/Author: Eric E. Nelson, Amy L. Vanderheiden and David Schuldt

**Preparer/Author
Address:** U.S. Army Corps of Engineers
Seattle District

Prepared For: Public Information Bulletin

Date Published: July 1995

**Key Words and
Phrases:**

REFERENCES

Project Name WYCKOFF CO./EAGLE HARBOR - PROJECT 2 (West Harbor)

ProjectID: 10-06

Reference Type:

B

ReferenceID: 256

Title:

EPA National Priorities List: Wyckoff Co. / Eagle Harbor

Location:

AEM

Category:

Site Update

Prepared by/Author:

US EPA Region X

Preparer/Author

EPA Website

Address:

Seattle, WA

Prepared For:

Public

Date Published:

March 1996

**Key Words and
Phrases:**

Reference Type:

C

ReferenceID: 56

Title:

Wyckoff demo set for next month

Location:

AEM

Category:

Site Update

Prepared by/Author:

Preparer/Author

Address:

Prepared For:

Superfund Week

Date Published:

August 25, 1995

**Key Words and
Phrases:**

Reference Type:

C

ReferenceID: 60

Title:

Wyckoff / Eagle Harbor ROD signed (West Harbor)

Location:

AEM

Category:

Site Update

Prepared by/Author:

Preparer/Author

Address:

Prepared For:

Superfund Week

Date Published:

October 23, 1992

**Key Words and
Phrases:**

REFERENCES

Project Name WYCKOFF CO./EAGLE HARBOR - PROJECT 2 (West Harbor)

ProjectID: 10-06

Reference Type: C

ReferenceID: 153

Title: *Wyckoff / Eagle Harbor to get near-shore fill*

Location: AEM

Category: Site Update

Prepared by/Author:

Preparer/Author

Address:

Prepared For: Superfund Week

Date Published: January 19, 1996

**Key Words and
Phrases:**

Reference Type: C

ReferenceID: 154

Title: *EPA to change Wyckoff sediment cleanup (West Harbor)*

Location: AEM

Category: Site Update

Prepared by/Author:

Preparer/Author

Address:

Prepared For: Superfund Week

Date Published: September 29, 1995

**Key Words and
Phrases:**

Reference Type: C

ReferenceID: 251

Title: *PRPs sign on to Wyckoff sediment cleanup*

Location: AEM

Category: Capping/Placement

Prepared by/Author:

Preparer/Author

Address:

Prepared For: Superfund Week

Date Published: April 18, 1997

**Key Words and
Phrases:**

REFERENCES

Project Name WYCKOFF CO./EAGLE HARBOR - PROJECT 2 (West Harbor)

ProjectID: 10-06

Reference Type: C

ReferenceID: 252

Title: *Cap likely at Wyckoff/Eagle Harbor*

Location: AEM

Category: Capping/Placement

Prepared by/Author:

Preparer/Author

Address:

Prepared For: Superfund Week

Date Published: July 11, 1997

**Key Words and
Phrases:**

Reference Type: C

ReferenceID: 253

Title: *Natural sediment recovery cleanup option for shallow bays*

Location: AEM

Category: Site Update

Prepared by/Author: Clayton R. Patmont

Preparer/Author Hart Crowser, Inc. (Seattle)

Address:

Prepared For: Hazmat World

Date Published: March 1991

**Key Words and
Phrases:**

Reference Type: C

ReferenceID: 255

Title: *Wyckoff may need new g.w. treatment plant*

Location: AEM

Category: Site Update

Prepared by/Author:

Preparer/Author

Address:

Prepared For: Superfund Week

Date Published: August 5, 1994

**Key Words and
Phrases:**

REFERENCES

Project Name WYCKOFF CO./EAGLE HARBOR - PROJECT 2 (West Harbor)

ProjectID: 10-06

Reference Type: C

ReferenceID: 256

Title: *PRPs settle damages with land*

Location: AEM

Category: Site Update

Prepared by/Author:

Preparer/Author

Address:

Prepared For: Superfund Week

Date Published: May 27, 1994

**Key Words and
Phrases:**

Reference Type: C

ReferenceID: 257

Title: *Removal to resume at Wyckoff*

Location: AEM

Category: Site Update

Prepared by/Author:

Preparer/Author

Address:

Prepared For: Superfund Week

Date Published: May 7, 1993

**Key Words and
Phrases:**

Reference Type: C

ReferenceID: 259

Title: *Wyckoff weighs high-dollar groundwater fixes*

Location: AEM

Category: Site Update

Prepared by/Author:

Preparer/Author

Address:

Prepared For: Superfund Week

Date Published: April 17, 1998

**Key Words and
Phrases:**

REFERENCES

Project Name WYCKOFF CO./EAGLE HARBOR - PROJECT 2 (West Harbor)

ProjectID: 10-06

Reference Type: C

ReferenceID: 826

Title: *Wash.: Thermal Treatment Tested*

Location: AEM

Category: Site Update

Prepared by/Author:

Preparer/Author

Address:

Prepared For: Hazardous Waste/Superfund Week

Date Published: March 4, 2002

**Key Words and
Phrases:**

Reference Type: C

ReferenceID: 964

Title: *Wash.: Injection Plant Operates*

Location: AEM

Category: Site Update

Prepared by/Author:

Preparer/Author

Address:

Prepared For: Hazardous Waste/Superfund Week

Date Published: September 9, 2002

**Key Words and
Phrases:**

REFERENCES

Project Name WYCKOFF CO./EAGLE HARBOR - PROJECT 2 (West Harbor)

ProjectID: 10-06

Reference Type: E

ReferenceID: 36

Title: *Eagle Harbor West Harbor Operable Unit Case Study: The Successful Implementation of a Contaminated Sediment Remedial Action*

Location: AEM

Category: Site Update

Prepared by/Author: (1) John Verduin, (2) Mark Valentine, (3) Clay Patmont, (4) John Lally, (5) Steve Liikala, (6) Rod Gowdy, (7) Mike Whelan and (8) Rick Singer

Preparer/Author Address: (1 and 3) Anchor Env.
(2) de maximus
(4) Hartman Consulting Corporation
(5) Wilder Construction
(6) General Construction
(7) Hart Crowser, Inc. and
(8) WA DOT

Prepared For: 15th World Dredging Congress

Date Published: June 28 - July 2, 1998

Key Words and Phrases:

Reference Type: E

ReferenceID: 40

Title: *Eagle Harbor Superfund Project*

Location: AEM

Category: Dredging: Miscellaneous

Prepared by/Author: Eric E. Nelson, Amy L Vanderheiden and A. David Schuldt

Preparer/Author Address: U.S. Army Corps of Engineers
Seattle District

Prepared For: Dredging 1994 - Proceedings of the Second International Conference on Dredging and Dredged Material Placement
Volumes 1 & 2

Date Published: 1994

Key Words and Phrases:

REFERENCES

Project Name WYCKOFF CO./EAGLE HARBOR - PROJECT 2 (West Harbor)

ProjectID: 10-06

Reference Type: L

ReferenceID: 42

Title: *Memo re: Project Summary for Eagle Harbor Superfund Site*

Location: AEM

Category: Site Update

Prepared by/Author: AEM, Inc.

**Preparer/Author
Address:** Malvern, PA 19355

Prepared For: Internal file

Date Published: April 10, 1992

**Key Words and
Phrases:**

Reference Type: L

ReferenceID: 128

Title: *Contaminated Sediment Projects in the U.S. Using Monitored
Natural Recovery*

Location: AEM

Category: Capping/Placement

Prepared by/Author: AEM, Inc.

**Preparer/Author
Address:**

Prepared For: Distribution

Date Published: September 25, 2001

**Key Words and
Phrases:**

Reference Type: L

ReferenceID: 150

Title: *Maximum Baseline Cancer Risks for Contaminated Sediment Sites*

Location: AEM

Category: Risk Assessment

Prepared by/Author: AEM, Inc.

**Preparer/Author
Address:**

Prepared For: Distribution

Date Published: October 22, 2001

**Key Words and
Phrases:**

FISH ADVISORIES

Project Name **WYCKOFF CO./EAGLE HARBOR - PROJECT 2 (West Harbor)** ***ProjectID:*** 10-06

Advisory: Eagle Harbor ***AdvisoryID:*** 587

Extent: Bainbridge Island

Pollutant: mercury

Species: all bottomfish

Population: NCGP

Population Definition: No Consumption-General Population: Advise against consumption by the general population.

Advisory Type: Estuary ***Advisory Number:*** 3339

Status (Active or Rescinded): Active ***Date Rescinded:***

Contact Name: Dave McBride ***Contact Number:*** 360-236-3176

Advisory: Eagle Harbor ***AdvisoryID:*** 588

Extent: Bainbridge Island

Pollutant: mercury

Species: shellfish

Population: NCGP

Population Definition: No Consumption-General Population: Advise against consumption by the general population.

Advisory Type: Estuary ***Advisory Number:*** 3339

Status (Active or Rescinded): Active ***Date Rescinded:***

Contact Name: Dave McBride ***Contact Number:*** 360-236-3176

Advisory: Eagle Harbor ***AdvisoryID:*** 586

Extent: Bainbridge Island

Pollutant: mercury

Species: shellfish-crab

Population: NCGP

Population Definition: No Consumption-General Population: Advise against consumption by the general population.

Advisory Type: Estuary ***Advisory Number:*** 3339

Status (Active or Rescinded): Active ***Date Rescinded:***

Contact Name: Dave McBride ***Contact Number:*** 360-236-3176

FISH ADVISORIES

Project Name **WYCKOFF CO./EAGLE HARBOR - PROJECT 2 (West Harbor)** ***ProjectID:*** 10-06

Advisory: Eagle Harbor ***AdvisoryID:*** 590

Extent: Bainbridge Island

Pollutant: PAHs

Species: all bottomfish

Population: NCGP

Population Definition: No Consumption-General Population: Advise against consumption by the general population.

Advisory Type: Estuary ***Advisory Number:*** 3339

Status (Active or Rescinded): Active ***Date Rescinded:***

Contact Name: Dave McBride ***Contact Number:*** 360-236-3176

Advisory: Eagle Harbor ***AdvisoryID:*** 298

Extent: Bainbridge Island

Pollutant: PAHs

Species: shellfish

Population: NCGP

Population Definition: No Consumption-General Population: Advise against consumption by the general population.

Advisory Type: Estuary ***Advisory Number:*** 3339

Status (Active or Rescinded): Active ***Date Rescinded:***

Contact Name: Dave McBride ***Contact Number:*** 360-236-3176

Advisory: Eagle Harbor ***AdvisoryID:*** 589

Extent: Bainbridge Island

Pollutant: PAHs

Species: shellfish-crab

Population: NCGP

Population Definition: No Consumption-General Population: Advise against consumption by the general population.

Advisory Type: Estuary ***Advisory Number:*** 3339

Status (Active or Rescinded): Active ***Date Rescinded:***

Contact Name: Dave McBride ***Contact Number:*** 360-236-3176
