

**REQUEST FOR AN  
INCIDENTAL HARASSMENT AUTHORIZATION**

**UNDER THE  
MARINE MAMMAL PROTECTION ACT**

**May 2012**

Submitted to:  
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## Table of Contents

Summary of the Request .....	3
1.1 Description of Activity.....	4
1.2 Dates, Duration, and Geographic Region.....	7
1.3 Species and Numbers of Marine Mammals.....	7
1.4 Status and Distribution .....	8
1.5 Type of Take Authorization Request.....	8
1.6 Number of Marine Mammals Potentially Affected .....	9
1.7 Anticipated Impact of Activity on Stock.....	10
1.8 Anticipated Impact on Availability for Subsistence Uses.....	10
1.9 Impact on Habitat and Likelihood of Restoration.....	10
1.10 Impact of Habitat Modification on Harbor Seals .....	10
1.11 Availability of Methods with Least Adverse Impact .....	10
1.12 Arctic Subsistence Use Areas .....	11
1.13 Monitoring and Reporting .....	11
1.14 Educational Opportunities Related to the Project.....	12
Conclusion.....	12
References .....	12

## Summary of the Request

Pursuant to section 101(a)(5) (D) of the Marine Mammal Protection Act of 1972 (MMPA), as amended (16 U.S.C. 1371(a)(5)), the Washington State Department of Natural Resources (DNR) requests that the National Oceanic and Atmospheric Administration's National Marine Fisheries Service issue an Incidental Harassment Authorization (IHA) for incidental take of harbor seals during the Woodard Bay Natural Resources Conservation Area (NRCA) derelict creosote piling, structure and fill removal project. This project is designed to restore nearshore habitat to Puget Sound.

Woodard Bay NRCA is located in Henderson Inlet near Olympia, Washington. The site was designated by the Washington State Legislature in 1987 to protect a large, intact complex of nearshore habitats and related biological communities and to provide opportunities for low-impact public use and environmental education for Washington's citizens. The site includes the former Weyerhaeuser South Bay Log Dump, which operated from the 1920s until the 1980s.

Large creosote-treated structures, which were leftover from the log dump, continue to significantly impact the nearshore and freshwater ecosystems protected by the NRCA. Among these structures are several pilings and the Chapman Bay Pier. For many years these structures have also functioned as habitat for important species like bats and harbor seals. The bats utilize a portion of the Chapman Bay Pier for a seasonal roost and the seals utilize remnant log booms connected by pilings as haul-out habitat. This proposal is part of a larger effort to restore nearshore ecosystems and to protect priority wildlife habitat.

The proposed restoration activities requested under the IHA are dependent upon funding. They include the following:

- Remove 13,000 cubic yards of fill from Woodard Bay
- Remove 325 cubic yards of fill from Chapman Bay
- Remove creosoted timber, pilings, metal scraps and concrete abutment associated with the fill in Chapman Bay.
- Remove ~10,000 sqft of pier superstructure and 470 pilings from Chapman Bay Pier
- Remove 30 anchor piles from Chapman Bay

The IHA sought would allow the incidental, but not intentional, take of harbor seals during restoration activities. Harbor seals are a non-Endangered Species Act (ESA) listed species. Potential takings of harbor seals are not likely to be lethal or to have long-term negative consequences for the populations. Any impact would be no greater than negligible. There would be no adverse impact on the availability of harbor seals for subsistence harvest by Northwest Treaty Tribes. This request is being filed to ensure that the activities described herein are conducted in compliance with the MMPA if small numbers are taken incidentally and unintentionally during the course of the Woodard Bay NRCA nearshore restoration project. This request addresses the 14 specific items for take pursuant to section 101(a)(5) (D) of the Marine Mammal Protection Act of 1972 (MMPA).

## 1.1 Description of Activity

This project is part of a comprehensive effort to restore 500 acres of nearshore habitat to Woodard Bay Natural Resources Conservation Area (NRCA), located in Henderson Inlet in southern Puget Sound Washington (Figure 1). The conservation area was designated by the Legislature in 1987 and purchased from Weyerhaeuser Timber Company in 1988 to protect a large complex of nearshore ecosystems, habitats and species. The site also provides opportunities for low-impact public use and environmental education.

Woodard Bay NRCA includes the former Weyerhaeuser South Bay Log Dump that was in operation from the 1920's until the 1980's (Figure 2). For more than 30 years harbor seals have been utilizing boom structures and pilings from the log dump as haul-out habitat (Figure 3). Currently, there are two haul-outs at the site, the north haul-out located to the north of the Chapman Bay Pier, and the south haul-out located to the east of Chapman Bay Pier (Figure 1). The south haul-out has been maintained by DNR and is considered to be an important part of the NRCA.

There are two different restoration projects proposed under this IHA (Figure 1): 1) Fill Removal (Figure 4 & Attachment A), and 2) In-Water Creosoted Pier and Pile Removal. Implementation of each action is dependent upon separate funding sources. Project #1 is currently funded and funding is still pending for Project #2. If both receive funding, they will occur during the same work window. They include the following:

**1. Fill Removal (Figure 4 & Attachment A)**

- Remove 13,000 cubic yards of fill from Woodard Bay
- Remove 325 cubic yards of fill (escarpment) from Chapman Bay
- Remove creosoted timber, pilings, metal scraps and concrete abutment associated with the fill

**2. In-Water Creosote Removal**

- Remove ~10,000 square feet of pier superstructure and 470 pilings from Chapman Bay Pier
- Remove 30 anchor piles (average size =12"x60') from Chapman Bay

1) Fill removal from Woodard and Chapman Bays will be accomplished from the uplands by earthmoving equipment and 10-15 yard haul trucks. The creosoted pilings in the fill will be removed from the uplands by a crane mounted vibratory hammer. The project is estimated to take approximately 12- 14 weeks to complete. The project will include nearly 900 haul truck trips. The material will be hauled offsite by the contractor via Whitham Road, which is the main road into the NRCA. Work will be completed primarily Monday-Friday 7am-5pm, and during some low tide night events, so that excavation below the Ordinary High Water Mark (OHWM) is accomplished in the dry. This measure is to prevent sediment from entering the bays.

2) Creosoted pilings and pier structures in Chapman Bay will be removed from the water using barges and skiffs and following the Best Management Practices (BMPs) outlined in Attachment B. The pilings will be removed by vibratory hammer, clam shell bucket, or direct pull with cables. The equipment will be suspended from a barge mounted crane. The vibratory hammer is a large steel device lowered on top of the pile. The hammer grips and vibrates the pile until it is loosened from the sediment. The pile is then pulled up by the hammer and placed on a barge. The clamshell is used to grab the pile and to pull it out of the sediment. For direct pull, a cable is set around the piling. The cable grips and lifts the pile from the sediment. Pilings that cannot be removed by hammer, clam shell or cable will have their locations

recorded via gps for divers to relocate at the final phase of project activities. The divers cut the pilings at or below the mud line using chainsaws that operate underwater. The pier superstructure materials will be removed by excavator and/or cables suspended from a barge mounted crane.

In-water work and work below the OHWM will occur between November 1, 2012 and March 15, 2013, the work period approved by the Washington State Department of Fish and Wildlife and federal services. This timing restriction is intended to minimize impacts to marine mammals, fish and forage fish spawning areas. The restriction will also avoid impacts to the maternity colony of bats, which roost in the Chapman Bay Pier during spring and summer and disperse to unknown locations by fall; and seals which pup from April to June and molt from September to October; and herons, which roost from April to July. Surf smelt may be spawning in the vicinity of Henderson Inlet and therefore all work below OHWM will be in the dry at low tide.

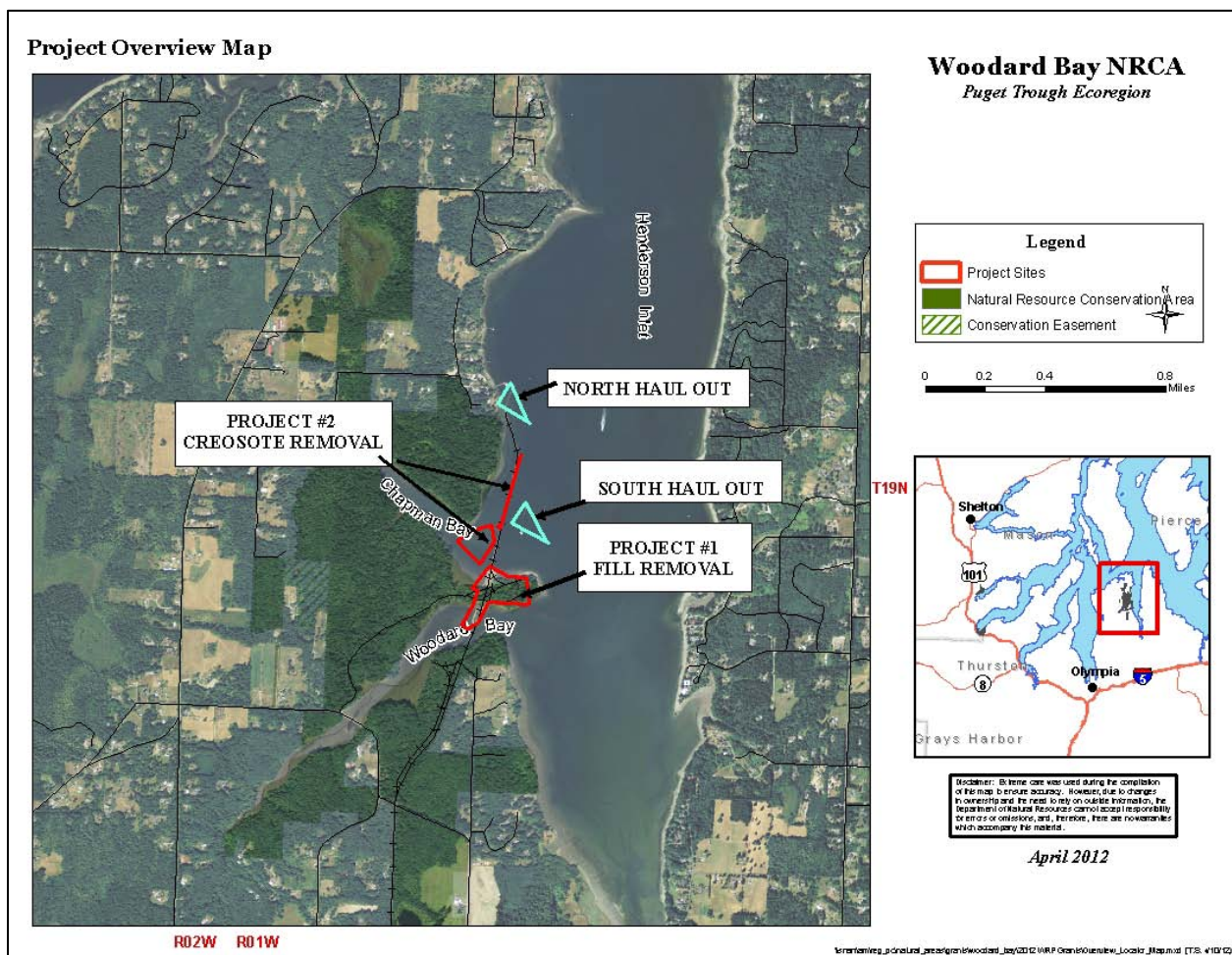


Figure 1. Woodard Bay NRCA Project Overview Map.

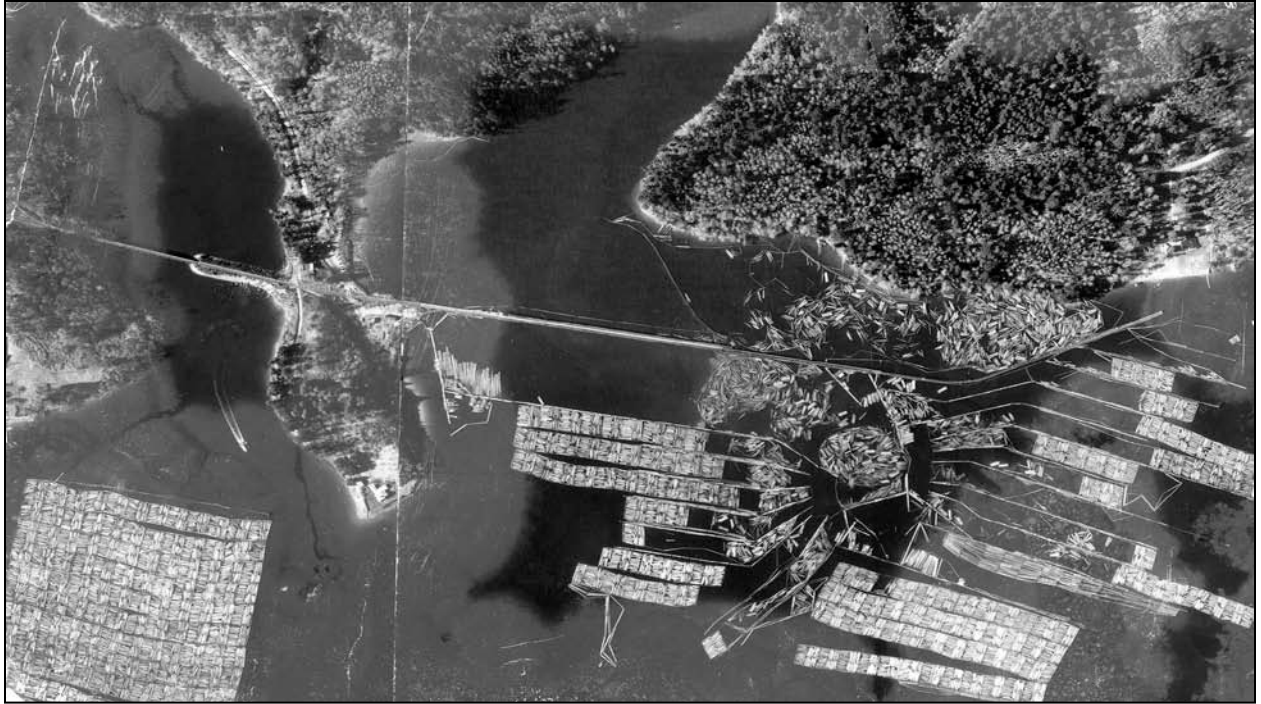


Figure 2. Weyerhaeuser South Bay Log Dump circa 1960.



Figure 3. Woodard Bay NRCA South Haul-out Habitat

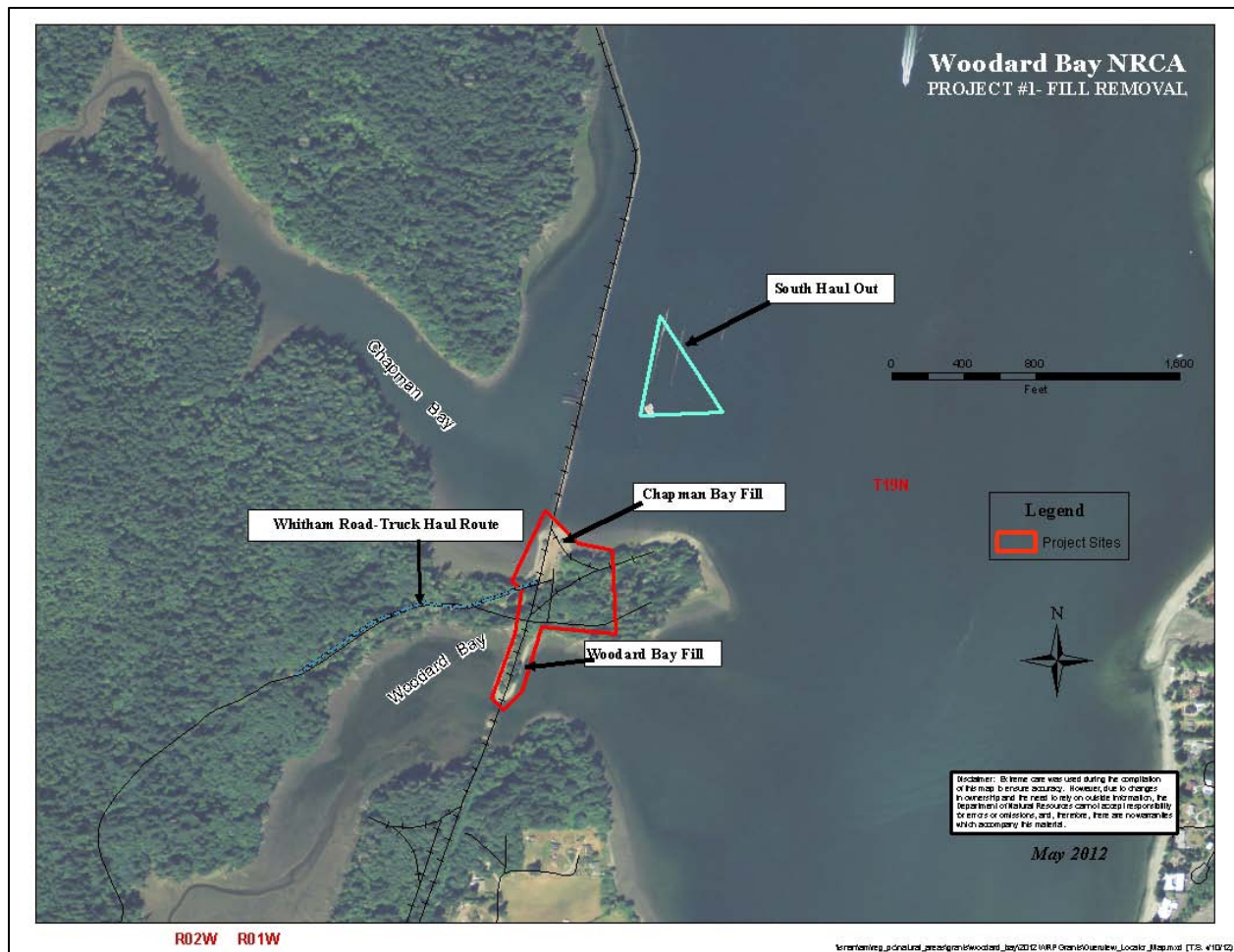


Figure 4. Project #1- Fill Removal- Restoration Site Detail Map

## 1.2 Dates, Duration, and Geographic Region

Work will be located in Henderson Inlet and Chapman and Woodard Bays, in southern Puget Sound, Thurston County, Washington. If both restoration projects are fully funded, they will occur simultaneously. Project #1-fill removal, is estimated to take approximately 60-70 working days to complete. Project #2-creosote removal, is estimated to take approximately 20 working days to complete. In-water activities and work below the OHWM will occur between November 1, 2012 and March 15, 2013, which is the work period approved by the Washington State Department of Fish and Wildlife and federal services. This timing restriction is intended to minimize impacts to marine mammals, fish and forage fish spawning areas.

## 1.3 Species and Numbers of Marine Mammals

The remnant log booms at Woodard Bay NRCA support a year-round population of harbor seals (*Phoca vitulina*). Seals utilize the boom structures for haul-out habitat to rest, molt, pup and nurse. The population is considered among the healthiest in southern Puget Sound. Seal numbers have been monitored at the site since 1977, when there were less than 50 seals. In 1996, there were 600 seals, the highest count on record. The average maximum annual count between 1977 and 2008 was 315 seals (Buettner et al. 2008).

Annual seal counts end by October and numbers of individuals are expected to decline throughout the winter. From 2006 to 2009, October counts averaged 171 and ranged between 79 and 275 (Lambourn 2010). To fulfill the requirements under the Incidental Harassment Authorization issued in 2010 for creosote removal work at Woodard Bay NRCA, the seals were monitored from November 1, 2010 to December 21, 2010. During that time total peak counts averaged 52 and ranged from 0 to 127 (Oliver and Calambokidis 2011). The seals were again monitored from November 16, 2011 to December 16, 2011 under the IHA issued for creosote removal activities in 2011. During that time the daily peak counts averaged 31 and ranged from 0 to 77 (Oliver et al. 2012).

Two Steller sea lions (*Eumetopias jubatus*) were observed swimming in Henderson Inlet during site restoration activities in 2010 and zero were observed in 2011. According to John Calambokidis of Cascadia Research Collective, there have been very few sightings of Steller sea lions in Henderson Inlet. They do not breed in Puget Sound and are not likely to be affected by restoration activities.

#### **1.4 Status and Distribution**

Harbor seals are not considered “depleted” under the MMPA or listed as “threatened” or “endangered” under the Endangered Species Act. Harbor seals are considered the most abundant resident pinniped species in Puget Sound (Lance and Jeffries 2009). In addition to the Woodard Bay haul-out, they use four primary haul-outs in south Puget Sound and number approximately 1,200 animals total (Jeffries et al. 2003).

Steller sea lions in Washington are listed as “threatened” under the Endangered Species Act and classified as “strategic stocks” considered “depleted” under the MMPA. They occur in low numbers throughout Puget Sound and are likely to be using Henderson Inlet for feeding. They have been found hauled out on buoys around Ketron Island and Fox Island, which is 10 nautical miles from Woodard Bay NRCA (Steiger and Calambokidis 1986). Steller sea lions are not known to breed in Washington State. Because of their frequency and type of use in Henderson Inlet, they are not likely to be affected by the restoration project (Calambokidis pers com 2011).

#### **1.5 Type of Take Authorization Request**

The method of take is considered a Level B take of a non-ESA listed marine mammal. DNR requests a renewal of the IHA for one year commencing November 1, 2012 for potential takings from behavioral harassment during the restoration activities at Woodard Bay NRCA. It is anticipated that DNR will continue to request an annual renewal of the IHA until the restoration project is completed. DNR is not requesting a multi-year Letter of Authorization (LOA) because the activities described herein are not expected to rise to the level of injury or death, which would require an LOA.

Project #1 is not expected to impact seal behavior. Equipment will be operated entirely from the uplands at a distance of roughly 800 feet from the nearest haul-out. This project has been included in the Incidental Harassment Authorization request because it will be occurring at the same time as the creosote removal project and therefore increases the potential for cumulative impacts to seals from restoration activities. The fill removal project includes excavation of 325 cubic yards of fill and debris from Chapman Bay and 13,000 cubic yards from Woodard Bay. Earthmoving equipment and roughly 20 haul trucks will be in the Chapman Bay area, which is located roughly 800 feet from the haul-out; and, 880 haul trucks from the Woodard Bay area will be leaving via the Whitham Road haul route, which is located roughly 1000 feet from the south haul out (Figure 4).



The creosote removal activities that have the potential to impact seal behavior include the presence of barges and skiffs, pile and superstructure removal by vibratory extraction, clam shell, direct pull, and diver cutting techniques. Behavioral harassment could also occur by airborne noise from the equipment and human work activity in proximity to movement corridors and foraging sites.

## **1.6 Number of Marine Mammals Potentially Affected**

The following information on monitoring results are from the 2010 and 2011 project final monitoring reports (Oliver and Calambokidis 2011 and Oliver et al. 2012): In 2010, the north and south haul-outs were monitored 14 days out of 35 total days of restoration activities. Monitoring was scheduled for days when restoration activities were most likely to impact the seals. The mean daily count was 52 and the mean daily take was 25. A total of 356 Incidental Harassment Takes were observed and the corrected project total was 875 (25 takes per day for 35 days).

In 2011, the north and south haul-outs were monitored 15 days out of 21 total days of restoration activities. Monitoring was scheduled for days when restoration activities were most likely to impact the seals. The mean daily count was 31 and the mean daily take was 11. A total of 172 Incidental Harassment Takes were observed and the estimated maximum project total was 634 (highest per day count of seals (77) times the number of unobserved days (6) plus the observed takes (172)).

Incidental harassment taking under this request is expected to be similar to the 2010 and 2011 results because the proposed activities are similar in scope. DNR is requesting authorization for 2170 takes. This estimate is calculated by multiplying (41.5) the average mean daily count from monitoring reported in 2010 (52) and 2011 (31) by the maximum number of expected work days (70).

Project #1, fill removal, is occurring from the uplands and the activities are not expected to impact seals on the haul out. The fill removal area in Chapman Bay is roughly 800 feet from the south haul out. The Woodard Bay fill area is roughly 1400 feet from the south haul out, and the truck haul route for the Woodard fill is roughly 1000 feet from the haul out. Mid to large sized excavation equipment and 10-15 yard haul trucks will be employed for the project. Fill removal in the Chapman Bay area is expected to take no more than one week to complete. Fill removal in Woodard Bay is expected to take 12-14 weeks to complete. Project #2, creosote removal, is expected to take no more than 20 days to complete.

The airborne sound disturbance criteria for Level A harassment is 90 dB RMS for harbor seals. Based on information on source air levels measured for vibratory hammer steel and concrete pile driving, removal of wood piles is unlikely to exceed 90 dB RMS (Miner pers. comm. 2010). In fact, this number is expected to be sufficiently less for wood piles, which is the type of pile material at Woodard Bay. The contract specifications for this project include restrictions on the power pack so that it is muffled and not to exceed 80 dB RMS.

It typically takes less than one minute for the hammer to vibrate the piling loose from the sediment. The average number of piles removed per day is 30 with a maximum of 50. It is estimated that there will be an average of 50 minutes over an 8 hour period when the noise from the hammer has the potential to disrupt the seals.

Past disturbance observations at Woodard Bay NRCA have shown that harassment was more likely to occur from non-motorized boats like kayaks and canoes at greater distances from the haul-out than from motorized boats, which can be more readily detected by the seals at longer distances from the haul-out (Calambokidis 1991, Buettner et al. 2008). In addition, during restoration operations in 2010

and in 2011, seals were observed hauling out during peak contractor activities. This reaction was also observed by a contractor in 2008 during emergency maintenance of the haul out (Osborne pers comm. 2008).

During restoration activities in 2010, divers cutting underwater pilings discovered a deceased young harbor seal entangled in a buoy line (Oliver and Calambokidis 2011). The line was placed during the start of the project to mark the location of a broken piling. This incident was considered to be an unusual occurrence and is unlikely to happen again. Nonetheless, contractors will be required to record broken piling locations for divers using gps instead of marking pilings with buoys or flags.

### **1.7 Anticipated Impact of Activity on Stock**

No significant impacts on the population of harbor seals at Woodard Bay NRCA are anticipated from restoration efforts. The seals are likely to occasionally flush from the haul-out when in-water creosote removal restoration activities are occurring. Based on previous restoration monitoring, the seals appear to acclimate quickly to the presence of the contractor.

### **1.8 Anticipated Impact on Availability for Subsistence Uses**

There are no anticipated adverse impacts on the availability of harbor seals for subsistence harvest by Northwest Treaty Tribes.

### **1.9 Impact on Habitat and Likelihood of Restoration**

The purpose of the Woodard Bay NRCA nearshore restoration project is to restore 500 acres of nearshore habitat to the Woodard Bay area. The project is planned in phases. DNR is requesting this IHA for the third phase, which is to remove structures that are not associated with critical habitat for seals. Future phases may include important improvements to the seal haul-out habitat so that it may be sustained over time and continue to support current numbers of harbor seals.

### **1.10 Impact of Habitat Modification on Harbor Seals**

Seal habitat improvements are planned as part of long-term restoration efforts at the site. Monitoring data suggests that the number of seals at Woodard Bay NRCA fluctuates in relationship to changes in haul-out size (Lambourn et al. 2009). Because the haul-out size will likely be maintained at the same size, seal population numbers will likely remain the same.

### **1.11 Availability of Methods with Least Adverse Impact**

Methods adopted to minimize adverse impacts to seals during restoration activities include timing, location and type of equipment used. The project is scheduled to occur between November and March, after the seal pupping and molting season, during the least sensitive time period for the seals at Woodard Bay NRCA. The pilings that support the seal haul-out will remain undisturbed to provide protection to the seals.

The type of equipment employed will follow the BMPs (Attachment B) and permit requirements for removal of nearshore fill and creosoted materials in the waters of Puget Sound. Preference will be given to use of the vibratory hammer to remove piles from the water. The vibratory hammer is a large steel device suspended by a cable from a crane that is stationed on a barge adjacent to the piling. The hammer, lowered on top of the pile, grips and vibrates the pile until it is loosened from the sediment. The vibration is typically less than one minute in duration. A choker is also used to lift the pile out of the water where it is placed on the barge for transport to an approved disposal site. If the piles are broken

under the water line, then a choker is set on the broken pile and a diver cuts the pile at or below the mudline with a saw so that it may be brought up to the barge by crane.

To minimize the risk of direct injury to seals from pilings or equipment, the contractor will be required to survey the operational area before initiating activities. If seals are present, the contractor must wait until they are a sufficient distance from the activity area (>50 feet) to begin work. The contractor will also be required to initiate a “soft start” method at the beginning of each work day. The method includes a reduced energy vibration from the hammer for the first 15 seconds and then a one minute waiting period to allow time for the seals to leave the immediate vicinity where restoration activities are occurring. This method will be repeated twice before commencing with regular operations.

## 1.12 Arctic Subsistence Use Areas

This project is located in Washington State and does not fall within an arctic subsistence use area.

## 1.13 Monitoring and Reporting

Seal monitoring and research has been occurring at Woodard Bay since the 1970’s and has included seal ecology, population dynamics and disturbance behavior (Newby 1970, Calambokidis et al. 1991, Buettner et al. 2008, Lambourn et al. 2009). The following protocols for monitoring and reporting disturbance to seals from restoration activities are taken from monitoring protocols implemented during restoration actions in 2010 and 2011:

*Schedule.* The frequency of monitoring will depend upon which restoration projects occur. If the fill removal project (#1) is the only project funded, then monitoring will occur on the south haul-out only and will be for 10 out of the 70 work days: the first 2 days of the project, each day that excavation is occurring in Chapman Bay (estimated at 5 days), and the remaining days are to be decided when the work schedule is provided by the contractor. The reason for this reduced level of monitoring is that fill removal activities are not expected to impact the seals at the north haul out and are expected to have only negligible impacts to the seals at the south haul out.

If both projects (#1 and #2) are funded, then monitoring of both the north and south haul-outs will occur 20 out of the 70 work days: During the first 5 days of project activities, during each day when the contractors are removing the fill in Chapman Bay (~5 days); during 5 days when activities are occurring within 100 yards of the haul out areas; and during 5 additional days, to be decided when the schedule of work is provided by the contractor.

*Data Collected:* Information collected will include observation dates, times and conditions, and estimated takings, which will be recorded as number of seals flushed from the haul-out. This information will be determined by recording the number of seals using the haul-out on each monitoring day prior to the start of restoration activities for that day and recording the number of seals that flush from the haul-out (as the difference in seals using the haul-out), when a disturbance has occurred. Comments on the cause of the disturbance and, if applicable, the proximity in meters of the disturbance source will also be noted. In addition, as part of their contract stipulations, the contractor will be required to report any incidents that they observe of behavioral changes to the seals. Data collected will also include any other marine mammal species observed.

*Reporting:* Within 30 days of the completion of the project, DNR will forward a monitoring report to NMFS that will include copies of field data sheets and relevant daily logs from the contractor.

## 1.14 Educational Opportunities Related to the Project

Woodard Bay NRCA was designated by the state legislature to provide opportunities for research and environmental education. Research and monitoring of the seal population has been occurring on the site for more than 30 years. Regional representatives from NOAA NMFS, Washington Department of Fish and Wildlife and Cascadia Research Collective participated in the development of the restoration alternatives for the site. Stakeholders are encouraged to implement monitoring and research efforts on marine mammals at Woodard Bay and will be contacted prior to the commencement of work at the site.

## Conclusion

Based on the information provided, DNR has determined that restoration activities, including piling removal, may result in Level B harassment to harbor seals at Woodard Bay NRCA. The actions will be occurring during a time when the seals are least susceptible to harm. No injury or mortality is anticipated and behavioral harassment takes will be minimized to the lowest practicable level by employing the mitigation measures described above.

## References

- Buettner, E., J. Hackett, L. Hiam, M. O'Connor, B. Schreiner 2008. *Project: Population Dynamics, Disturbances and Vigilance Behavior of Harbor Seals (Phoca vitulina) at Woodard Bay, WA*. Conducted as part of a group contract from The Evergreen State College with John Calambokidis, Cascadia Research, Olympia, WA.
- Calambokidis J. , G.H. Steiger, J.R. Evenson, S. J. Jeffries. 1991. Censuses and Disturbance of Harbor Seal at Woodard Bay and Recommendations for Protection. Final Report for Washington Department of Natural Resources Olympia WA. 45 pp.
- Calambokidis J. 2011. Personal communication by telephone between John Calambokidis (Cascadia Research Collective and Michele Zukerberg (Washington Department of Natural Resources Natural Areas Manager) June 2011.
- Lambourn, D. 2010. Unpublished count data for October 2006 through October 2009. Washington Department of Fish and Wildlife Olympia WA.
- Lambourn D., S.J. Jeffries, H. R. Huber, 2009. Observations of Harbor Seals in Southern Puget Sound during 2009. Contract Report to National Oceanic and Atmospheric Administration Award No. AB133F09SE2836F. Washington Department of Fish and Wildlife, Olympia WA.
- Lance, M.M., and S.J. Jeffries. 2009. Harbor seal diet in Hood Canal, South Puget Sound and the San Juan Island archipelago. Contract Report to Pacific States Marine Fisheries Commission for Job Code 497; NOAA Award No. NA05NMF4391151. Washington Department of Fish and Wildlife, Olympia WA. 30 pp.
- Miner, R. 2010. Personal communication between Robert Miner (President of Robert Miner Dynamic Testing Inc. ) and Michele Zukerberg (Washington Department of Natural Resources Natural Areas Manager). June 2010.

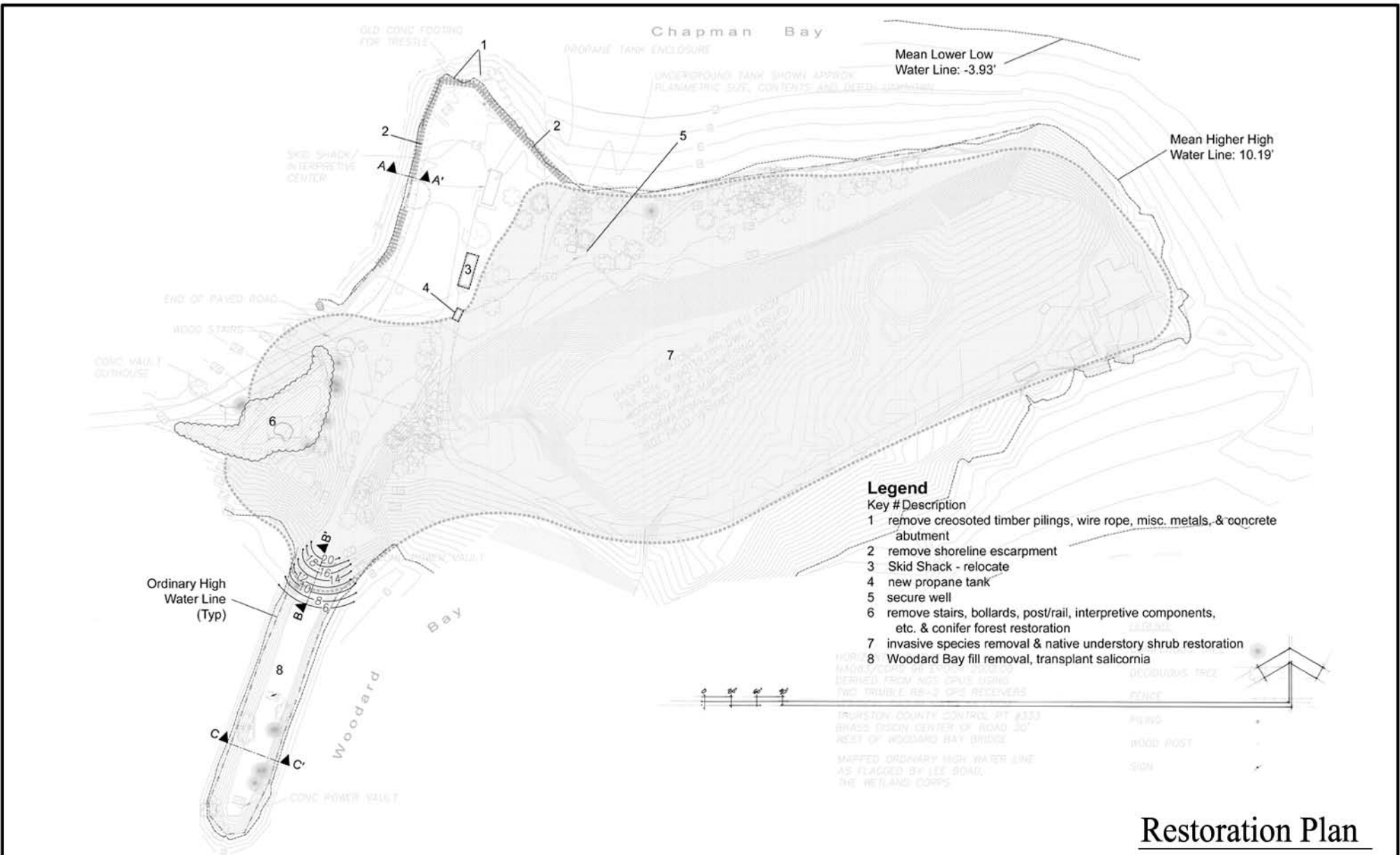
Newby, T.C. 1971. Distribution, Population Dynamics and Ecology of the Harbor Seal (*Phoca vitulina richardii*) of the Southern Puget Sound, Washington. MS Thesis University of Puget Sound. 75 pp.

Oliver J.S and J. Calambokidis. 2011. Final Report: Monitoring Incidental Harassment of Harbor Seals (*Phoca vitulina*) at Woodard Bay Natural Resources Conservation Area during Derelict Creosote Piling and Structure Removal, 1 Nov. to 21 Dec. 2010. Conducted for Department of Natural Resources, Olympia WA. Unpublished.

Oliver J.S., B.A. Diehl and S.J. Jeffries. 2012. Final Report: Monitoring Incidental Harassment of Harbor Seals (*Phoca vitulina*) at Woodard Bay Natural Resources Conservation Area during Derelict Creosote Piling and Structure Removal between 16 November and 14 December 2011. Conducted for Department of Natural Resources, Olympia WA. Unpublished.

Osborn, M. 2008. Personal communication between Mark Osborne (Osborne Marine Inc.) and Michele Zukerberg (Washington Department of Natural Resources Natural Areas Manager) 2008.

Steiger, G.H. and J. Calambokidis. 1986. California and northern sea lions in southern Puget Sound, Washington. *Murrelet* 67:93-96.



## Restoration Plan

**PURPOSE:** TO REMOVE EXISTING FILL MATERIAL & ESCARPMENT IN ORDER TO RESTORE THE NATURAL SHORLINE.

**LOCATION:** LAT 47D 08' N, LON 122D 50' W

HORIZONTAL DATUM NAD83/CORS 96 EPOCH 2002.00 DERIVED FROM NGS OPUS USING TWO TRIMBLE R8-2 GPS RECEIVERS. VERTICAL DATUM NAVD 88 FROM THURSTON CO CONTROL PT #333 BRASS DISC IN CNTR OF ROAD 30' WEST OF WOODARD BAY BRIDGE.

## Woodard Bay NRCA

DWG NAME: RESTORATION PLAN

PROPOSED RESTORATION OF SITE AND SHORELINE.  
 SECTION 17, TOWNSHIP 19, RANGE 1W  
 COUNTY OF: THURSTON, WA  
 APPLICATION BY: WA STATE DEPT NATURAL RESOURCES  
 SHEET: 1 OF 4  
 DATE: 5/7/12

**Washington Department of Natural Resources  
Puget Sound Initiative – Derelict Creosote Piling Removal  
Best Management Practices  
For Pile Removal & Disposal**

The following Best Management Practices (BMPs) are adapted from EPA guidance (2005), Washington State Department of Transportation (WSDOT) methods and conservation activities as included in Joint Aquatic Resources Protection Application (JARPA) 2005, and Washington State Department of Resources (WADNR) “Standard Practice for the Use and Removal of Treated Wood and Pilings on and from State-Owned Aquatic Lands” 2005, as well as WADNR’s practical experience through managing piling removal projects since 2006.

The purpose of these BMPs is to control turbidity and sediments re-entering the water column during pile removal, and prescribe debris capture and disposal of removed piles and debris.

**BMP 1. PILE REMOVAL**

Crane operator shall be experienced in pile removal. Piles will be removed slowly. This will minimize turbidity in the water column as well as sediment disturbance. Pulled pile shall be placed in a containment basin to capture any adhering sediment. This should be done immediately after the pile is initially removed from the water.

**A. Vibratory extraction**

- 1) This is the preferred method of pile removal. Vibratory extraction shall always be employed first unless the pile is too decayed or short for the vibratory hammer to grip. After consultation with WADNR, the alternative options listed below may be used.
- 2) The vibratory hammer is a large mechanical device (5-16 tons) that is suspended from a crane by a cable. The hammer is activated to loosen the piling by vibrating as the piling is pulled up. The hammer is shut off when the end of the piling reaches the mudline. Vibratory extraction takes approximately 15 to 30 minutes per piling depending on piling length and sediment condition.
- 3) Operator will “Wake up” pile to break up bond with sediment.
  - Vibrating breaks the skin friction bond between pile and soil.
  - Bond breaking avoids pulling out a large block of soil – possibly breaking off the pile in the process.
  - Usually there is little or no sediment attached to the skin of the pile during withdrawal. In some cases material may be attached to the pile tip, in line with the pile.

**B. Direct Pull**

- 1) This method is optional if the contractor determines it to be appropriate for the substrate type, pile length, and structural integrity of the piling. Vibratory extractor must be attempted first unless there is risk of greater disturbance of sediments.

2) Pilings are wrapped with a choker cable or chain that is attached at the top to a crane. The crane pulls the piling directly upward, removing the piling from the sediment.

C. Clamshell Removal

1) Broken and damaged pilings that cannot be removed by either the vibratory hammer or direct pull may be removed with either a clamshell bucket or environmental clamshell.

2) A clamshell is a hinged steel apparatus that operates like a set of steel jaws. The bucket is lowered from a crane and the jaws grasp the piling stub as the crane pulls up.

3) The size of the clamshell bucket shall be minimized to reduce turbidity during piling removal.

4) The clamshell bucket shall be emptied of material onto a contained area on the barge before it is lowered into the water.

D. Cutting

1) Is required if the pile breaks at or near the existing substrate and cannot be removed by other methods.

2) If a pile is broken or breaks above the mudline during extraction, all of the methods listed below should be used to cut the pile.

a. The pile should be cut 1 foot below the mudline.

b. Piles shall be cut off at lowest practical tide condition and at slack water. This is intended to reduce turbidity due to reduced flow and short water column through which pile must be withdrawn.

c. In subtidal areas, if the piling is broken off at or below the mudline, the piling may remain. In intertidal areas, seasonal raising and lowering of the beach could expose the pilings above the mudline and leach out PAH's or other contaminants. In this case, the piling should be cut off at least one foot below the mudline.

d. No hydraulic jetting devices shall be used to move sediment away from piles.

e. The contractor shall provide the location of all the broken and cut piles using a GPS.

**BMP 2. BARGE OPERATIONS, WORK SURFACE, CONTAINMENT**

A. Barge grounding will not be permitted.

B. Work surface on barge deck or pier, or upland staging area shall include a containment basin for all treated materials and any sediment removed during pulling. Creosote shall be



prevented from re-entering the water. Uncontaminated water run-off can return to the waterway.

- 1) Containment basin shall be constructed of durable plastic sheeting with continuous sidewalls supported by hay bales, ecology blocks, other non-contaminated materials, or support structure to contain all sediment and creosote. Containment basin shall be lined with oil absorbent boom.
- 2) Work surface on barge deck and adjacent pier shall be cleaned by disposing of sediment or other residues along with cut off piling as described in BMP #4.C.
- 3) Containment basin shall be removed and disposed in accordance with BMP #4.C or in another manner complying with applicable federal and state regulations.
- 4) Upon removal from substrate the pile shall be moved expeditiously from the water into the containment basin. The pile shall not be shaken, hosed-off, left hanging to drip or any other action intended to clean or remove adhering material from the pile.

### **BMP 3. DEBRIS CAPTURE IN WATER**

- A. A floating surface boom shall be installed to capture floating surface debris. The floating boom shall be equipped with absorbent pads to contain any oil sheens. Debris will be collected and disposed of along with cut off piling as described in BMP #4.
- B. The boom may be anchored with four or fewer ½ ecology blocks or a similar anchoring device. These anchors must be removed once the project is complete. The anchor system shall be located to avoid damage from vessel props to eelgrass, kelp, and other significant macroalgae species. The line length between the anchor and surface float shall not exceed the water depth as measured at extreme high tide plus a maximum of 20 percent additional line for scope. The buoy system shall include a subsurface float designed to keep the line between the anchor and surface float from contacting the bottom during low tide cycles. The subsurface float shall be located off the bottom a distance equal to 1/3 the line length.
- C. The boom shall be located at a sufficient distance from all sides of the structure or piles that are being removed to ensure that contaminated materials are captured. The boom shall stay in its original location until any sheen present from removed pilings has been absorbed by the boom. BMP #3B may be used to keep the boom in its original location.
- D. Debris contained within boom shall be removed at the end of each work day or immediately if waters are rough and there is a chance that debris may escape the boom.
- E. To the extent possible all sawdust shall be prevented from contacting beach, bed, or waters of the state. For example, sawdust on top of decking should be removed immediately after sawing operations.
- F. Any sawdust that enters the water shall be collected immediately and placed in the containment basin.

- G. Piles removed from the water shall be transferred to the containment basin without leaving the boomed area to prevent creosote from dripping outside of the boom.

#### **BMP 4. DISPOSAL OF PILING, SEDIMENT AND CONSTRUCTION RESIDUE**

- A. Piles shall be cut into lengths as required by the disposal company.
- B. Cut up piling, sediments, absorbent pads/boom, construction residue and plastic sheeting from containment basin shall be packed into container. For disposal, ship to an approved Subtitle D Landfill.
- C. Creosote-treated materials shall not be re-used.

#### **BMP 5. RESUSPENSION/TURBIDITY**

- A. Crane operator shall be trained to remove pile from sediment slowly.
- B. Work shall be done in low water and low current, to the extent possible.
- C. Removed piles shall be placed in a containment facility.
- D. Sediments spilled on work surfaces shall be contained and disposed of with the pile debris at permitted upland disposal site.
- E. Holes remaining after piling removal shall not be filled.

#### **BMP 6. PROJECT OVERSIGHT**

- A. WADNR will have a project manager or other assigned personnel on site. Oversight responsibilities may include, but are not limited to the following:
  - 1) Water quality monitoring to ensure turbidity levels remain within required parameters
  - 2) Ensure contractor follows BMPs
  - 3) Ensure contractor is in compliance with contract and permit requirements
  - 4) Ensure correct structures are removed
  - 5) Maintain contact with regulatory agencies should issues or emergencies arise

#### **BMP 7. CULTURAL RESOURCES**

- A. In the event that artifacts (other than the pilings or materials attached to them) that appear to be 50 years old or older are found during the project, the WADNR Aquatics archaeologist must be notified in order to evaluate the find and arrange for any necessary consultation and mitigation required by law.
- B. If human remains or suspected human remains are found during the project, work in the vicinity will be halted immediately, and the County Coroner must be notified immediately. If the remains are determined to be non-forensic, then the WADNR Aquatics archaeologist will be notified to begin tribal and Washington State Department of Archaeology and Historic Preservation consultations required by law.
- C. If sediment exceeding 1 cubic meter is removed, the WADNR Aquatics archaeologist will be notified and given the opportunity to examine the sediment for cultural materials before it is removed from the containment area.