

SUPERFUND

Fact Sheet

WYCKOFF/EAGLE HARBOR SUPERFUND SITE

Bainbridge Island, Washington



U.S. ENVIRONMENTAL PROTECTION AGENCY

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Wyckoff/Eagle Harbor Superfund Site Update

Answering Community Questions About Wyckoff/Eagle Harbor

In June, EPA hosted a community information meeting about the Wyckoff/Eagle Harbor Superfund Site. Besides updating the community on site activities, the meeting also gave project representatives a chance to hear directly from residents about their concerns. This fact sheet summarizes issues discussed at the meeting and raised by residents in recent conversations with EPA. It also previews upcoming steam activity at Wyckoff, and includes an editorial note from the Association of Bainbridge Communities. As always, if you have a question or issue that has not yet been addressed, feel free to contact anyone listed on the last page.

Wyckoff: Ramping Up for Steam

Watch for plenty of activity at Wyckoff this fall, as EPA reaches another major milestone toward site cleanup. The pilot steam injection plant ramps up this September, beginning the study of thermal treatment. Steam will be pumped into the ground and contaminants extracted. The pilot system will run for about a year. If the test is successful, EPA will make the decision to move on to full scale cleanup.



Boiler arrives at Wyckoff Site. Steaming begins in September.

In addition to testing the technology's effectiveness, the pilot also gives EPA (and the neighboring community) a chance to learn more about practical operation issues. For example, through the test, EPA will have a better handle on noise or other nuisances, and can take measures in advance of full scale operation. In the meantime, EPA has already taken significant measures to limit noise and other potential nuisances. A surface cap has been installed to collect any vapors from the site. Truck traffic is expected to be light.

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Answering Community Questions

1. Is the new beach open for recreation? What measures will be put in place to protect the beach?

Although contamination on the western portion of the site has been removed and consolidated in the former process area, the habitat beach, and all the beaches around the site, remain part of the Wyckoff/Eagle Harbor Superfund site. For now, these beaches are restricted to public access. EPA is considering posting additional signs to alert walkers and boaters to the fact that beaches around the site are restricted.

2. Is funding for the cleanup assured?

The steam injection pilot project is fully funded, with funding assured through September of 2003. Beyond 2003, EPA will depend on yearly Congressional appropriations for continued cleanup efforts.

3. What is the cost/benefit comparison of containment versus cleanup? Why is EPA not simply capping the site as was done at Gasworks Park?

The estimated cost of containment with a sheet pile wall, a new pump-and-treat system, and surface soil cap is about \$28,500,000. This estimate includes capital costs plus 30 years of operation and maintenance (O&M). The estimated present-worth cost of full-scale thermal cleanup is about \$46,000,000 (capital plus 10 years O&M). However, this cost difference does not reflect the fact that the pump-and-treat system would need to be operated and maintained, and occasionally replaced, in perpetuity, to preserve the integrity of the containment remedy. Over the long term, it is cost effective to proceed instead with contaminant removal and cleanup.

Another part of the equation is the potential costs and inherent risk of creosote product reaching the lower aquifer. An estimated one million gallons of creosote product still remain in the ground at the site. The clay "aquitar" layer that separates the contaminated aquifer from the lower aquifer is continuous. Its thickness generally ranges from 10 to 40 feet. However, it may be as thin as four feet in isolated areas, and in some locations, contain interbedded sand layers.

There is evidence that creosote product has penetrated the aquitar through a pathway within the sand lenses, but has not reached the lower aquifer. Based on field explorations, it also appears that there is a serious aquitar structural flaw located near the center of the site, possibly due to seismic activity.

Given the magnitude of contamination at Wyckoff and the questionable integrity of the underlying aquitar layer, the containment remedy would be used only if the steam injection pilot project fails to meet performance objectives (however, only until a better technology is available that will provide a more permanent solution).

4. What will be the configuration of the site's access roads, and what traffic safety measures will be put in place?

During the steam injection phase of the pilot study (6-8 months), up to four fuel deliveries by truck will be made to the site each week. The trucks will enter the site at Creosote Place NE, the site's main access road. Given the low truck traffic volume, EPA does not plan to reconfigure the site's main access road, and no additional traffic safety measures are planned. The exact schedule of truck deliveries is not known at this time.

Answering Community Questions, *continued*

5. Is the site's water well in the same aquifer as other wells? Will monitoring occur during the pilot to ensure that nearby wells are not impacted? What about water supply if cleanup goes full-scale?

No, the well that provides water for the cleanup is in a separate aquifer from those used by local wells, except for one city well. The South Eagle Harbor Well, located on Taylor Avenue, draws water from the same aquifer (Glaciomarine Aquifer). The well at the cleanup site draws water from a small portion of the aquifer, at around 500 feet. Pump tests of the well show very minimal or no effect on nearby water supply systems. EPA monitored the Bill Point water supply system and the South Eagle Harbor well during the pumping test. Contaminants associated with the Wyckoff site were not detected in either well.

EPA plans to conduct another round of water level and chemistry sampling of the Bill Point and South Eagle Harbor wells during the steam injection phase of the pilot operation, scheduled to begin in September 2002 and continuing through spring 2003. This sampling will provide more information about any effects on nearby wells from the steam injection operations.

The onsite water supply will be used during the pilot phase of the project. EPA will re-evaluate water supply options for the full-scale project.

6. Where does the water go after it is used for treatment?

After contaminated water is treated at the site's groundwater treatment plant, it will be discharged from an outfall to Puget Sound, in the same manner as it is discharged now. The discharge will meet the substantive requirements of the state's National Pollution Discharge Elimination System (NPDES).

7. Will there be intrusive lighting at night?

No, there will not be intrusive lighting at night. There will be some minimal lighting for site safety and security purposes.

8. How loud will the diesel boiler be? How are you containing sound? Why diesel? Will it smell or harm air quality or present a health issue? How will fumes be contained? Can energy be reclaimed or reused? How much fuel will be required?

The boiler has been delivered to the site and is housed in the "boiler building." It is difficult at this time, prior to boiler startup, to predict how loud the boiler operation will be. We expect the boiler building to minimize noise. EPA is also evaluating sound mitigation measures within the building, such as constructing enclosures around the louder pieces of mechanical equipment. If noise levels still exceed state regulations, EPA will take additional measures, such as increasing the level of insulation in the entire building.

Diesel is being used because it is an efficient fuel source and is cost-effective. The fuel selected for use at this site is a low-sulfur (less than 0.5%) diesel fuel. Air emissions will be monitored within the first two weeks of boiler operation to demonstrate compliance with air quality regulations. More monitoring will be conducted if results show a potential problem with emissions. Air near the treatment plant and within the pilot area will also be monitored on a regular basis.

Initial estimates of boiler emissions are far below both Federal and State reporting requirements. In fact, many public facilities on Bainbridge Island use similar boiler plants for heating. Until recently, oil-fired boilers similar to the one at the Wyckoff site heated Bainbridge Island High School.

Answering Community Questions, *continued*

The design of the steam injection system includes features to reduce overall energy requirements. For example, hot liquids extracted from the pilot area will be used to pre-heat boiler feed water. This reduces the amount of energy required to produce steam while decreasing the energy required to cool the extracted liquids before treatment.

During pilot steam injection operations, the boiler will require a maximum of 20,000 gallons of fuel per week. The pilot study is expected to use about 200,000 gallons of fuel. At this time, our rough estimate is that at most, 15,600 gallons of fuel will be needed per day for full-scale steam injection operation.

9. How long will the sheetpile wall last?

The sheet pile wall is designed to last for 30 years. If we proceed to full-scale thermal cleanup and we meet cleanup goals, then the sheet pile wall could be cut off at the mudline or removed and the shoreline restored to its natural condition.

10. Is the pilot wall as deep as the main perimeter wall?

Both the pilot area wall and the perimeter wall are seated at least 4 to 5 feet into the upper surface of the underlying aquitard layer. Since the aquitard is sloped from south to north, the pilot area wall does not extend as deep into the subsurface. The pilot area wall is about 15 to 45 feet deep, and the perimeter wall depths vary from 25 to 90 feet.

11. How long will it take to heat the site? How long will the site take to cool down? Will Eagle Harbor be heated by the steam project? Will habitat be affected by heat or by the wall's presence?

The pilot area likely will be heated within 2 to 4 weeks after steam injection begins. Modeling data indicate that cooling down after the full-scale project would take about two years.

If full-scale steam injection takes place, conservative modeling results show that marine life could be affected by heat within 10 meters of the wall. Data from the pilot project will help quantify possible impacts of heat on intertidal habitat loss, including eelgrass beds, and changes in the way habitat is used by marine life.

The presence of the sheetpile wall may affect sediment and water, which in turn affect intertidal habitat. Effects could include scour along the base of the wall, changes in grain size, and an increase in wave energy. Of the three possible effects, scour is the least likely to occur. In general, scour troughs along vertical walls have not been observed and attempts to measure have been inconclusive. Changes in sediment grain size due to sediment movement along the wall will be analyzed. Since the sheet pile wall presents a vertical face, it is expected to divert waves away from the shoreline, changing wave patterns at high and storm tides.

Effects on eelgrass are unknown but are not expected to be large. Baseline information on the extent and density of eelgrass was collected before the sheetpile wall was installed. If eelgrass meadows appear to be changing, more extensive monitoring will occur.

Answering Community Questions, *continued*

12. How deep will steam be injected? Will heat push contaminants down into or through the protective clay barrier (aquitard)?

Steam will be injected to the surface of the aquitard layer, which in the area of the pilot study is about 10 to 40 feet deep. Laboratory tests indicate that creosote product becomes less dense when heated. That means heavier oils that otherwise tend to sink in the aquifer would become lighter and float on the aquifer table. As a result, and through careful monitoring during operations, we do not anticipate that contaminants will be pushed into or through the aquitard.

13. How long will the pilot test last? If the pilot is successful, how soon will you move on to full scale treatment? How long would full scale treatment take?

The pilot project will last about one year, from September 2002 to September 2003. If the pilot project meets project objectives, we will most likely expand the project to site-wide, full-scale steam injection (dependent on funding). Based on the best scenario, designs of the full-scale project will be performed in 2004. Operations will begin sometime in late 2005. Active steaming will take place from 2005 to 2008, followed by about 5 years of continued contaminant extraction and treatment (2008-2013).

14. What provisions have been made for historic preservation at the site?

Prior to demolition of onsite structures in 1997, EPA produced a Historic American Engineer Record report. The report included a narrative and photo documentation, although the buildings

demolished were deemed not "eligible for listing in the National Register." The documentation met the requirements of the Historic American Engineering Record standards. It also complied with EPA's Memorandum of Agreement with the Washington State Historic Preservation Officer and the Advisory Council on Historic Preservation.

Documentation was sent to the Prints and Photographs Division of the Library of Congress. A complete set of the original documentation was also provided to the Bainbridge Island Historical Society for use in their museum. An archeological assessment was also conducted in consultation with the Suquamish Tribe.

15. Is EPA still planning a potential buffer around the site?

EPA is drafting land use controls that will require any future land owner of the Wyckoff site to ensure that intertidal habitat functions are maintained and protected. A vegetated habitat buffer is an effective way to protect the intertidal area that has been remediated and enhanced as part of the Eagle Harbor cleanup. The concept of a vegetated buffer was also supported, in large part, by citizens of Bainbridge Island in response to a request for comment issued by EPA in March of 2001. Any measures that are taken to protect the intertidal habitat around the Wyckoff site, including a vegetated buffer, will be undertaken and maintained by the future owner of the site.

16. Can the stream at the west end of the site be put back on the surface?

There are no plans to put the stream back on the surface of the site.

Answering Community Questions, *continued*

17. What are the status of and future plans for the eelgrass beds in the Harbor (planted by the Department of Transportation as a mitigation requirement)?

The 0.6 acre eelgrass bed planted by the Washington State Department of Transportation in September of 1998, has been monitored regularly since its creation. Since the year 2000, no eelgrass has been observed in or near the transplant site. The failure of the eelgrass bed has been due in large part to excessive macroalgae coverage, which has prevented light from reaching the newly planted eelgrass.

In June 2001, WSDOT issued a contingent habitat mitigation screening analysis, looking at possible habitat projects that could be undertaken in place of the failed eelgrass bed. EPA has reviewed this document and provided comments to the state. The state will provide a more specific proposal by the end of the summer.

18. How is the sediment cap performing?

Monitoring of the 52-acre cap placed in 1993 has indicated that the cap is stable (remains in place) and is effectively isolating contaminants. The last monitoring was conducted in 1999, before the sheetpile wall was installed and effectively contained contamination on site. Now that cap construction is complete, monitoring of all capped areas will start up again later this summer.

19. Are there warning signs about the no-anchor zone in the harbor? Who should we notify if we see a boat anchored over the cap? How will enforcement of the no-anchor zone occur?

When the no-anchor zone was created by the U.S. Coast Guard in 1998, the perimeter of the area was effectively marked with warning signs on buoys. The buoy signs are maintained by the Coast Guard. EPA is considering posting signs on the top of the shoreline around the Wyckoff site noting the presence and location of the no-anchor zone.

The Coast Guard should be contacted if vessels are observed anchored in the restricted navigation, or no-anchor, area. The Coast Guard, with the help of local authorities, will continue to maintain and enforce the no-anchor area.

Five Year Report Available for Review Soon

EPA is conducting a "5-Year Review" of the Wyckoff/Eagle Harbor site. This review is a checkup to make sure the cleanup continues to protect people and environment. In response to community requests, EPA will make the draft 5-Year Review Report available for informal public review. Watch for notification soon to find out where to get a draft report.

Site Background

EPA listed Wyckoff/Eagle Harbor as a Superfund site in 1987. The former Wyckoff wood treating facility, located at the mouth of Eagle Harbor on Bainbridge Island, operated from the very early 1900's to 1988. Soils at the facility, and groundwater beneath the facility, are severely contaminated. Contaminants include creosote and other wood treatment compounds. About 1 million gallons of creosote product remain in the site's soil and groundwater. These contaminants pose a risk to public health and the environment.

A groundwater extraction and treatment system has been operated on site since 1990. However, contaminants were still moving into the marine environment until a sheet pile wall was installed in 2001. EPA is testing thermal treatment technologies to clean up remaining soil and groundwater contamination.

In Eagle Harbor, bottom sediments were severely contaminated with chemicals from wood-treating and shipyard operations. A public health advisory recommends against eating fish and shellfish from the harbor. From 1993 to 2002, contaminated sediments in various locations were capped with clean material.

A Note From Association of Bainbridge Communities

contributed by Dave Davison, Co-Chair, Association of Bainbridge Communities

Thermal Treatment is Least Expensive Cleanup Option in Long Run

ABC would like to respond to recent questions about a cost benefit analysis, comparing the containment alternative to the thermal cleanup alternative. Containing the site would essentially leave the contaminants in the ground. Thermal cleanup, if it works as effectively as hoped for, will remove most all of the creosote, now estimated at one million gallons.



EPA's Hanh Gold gives ABC members a site tour.

The cost for containing the contaminants at the site with a layer of impervious asphalt or plastic membrane and cover, and for building and operating a "pump and treat" system that would hold the site at pressure balance, is estimated by EPA at \$28.5 million. This continuous pump and treat process would remove perhaps a third of the creosote over time. This cost estimate is projected out for 30 years.

By comparison, the projected cost of cleanup by means of thermal treatment (steam cleaning) is about \$46 million. After 10 years of cleanup, however, it is expected that the site would be clean and would no longer pose a threat to human health or the environment. There would be only nominal continuing costs related to occasional monitoring of the site. The containment wall is included in both proposals and is already in place.

Capping the site and operating a "maintenance" pump and treat system appears to be the least expensive option in terms of dollars spent by EPA during the time frame given, but this assumption is misleading.

As EPA points out, this cost does not include the costs of continuing to operate a pump and treat system to adequately contain the site. Assuming that these costs would remain the same (and the life of the systems about the same), the cost for each 30 years would be about \$28.5 million.

Leaving the creosote product in place (containment option) with reduction by one third after 30-50 years, is also "a disaster waiting to happen." Eventually the creosote would contaminate the fresh water aquifers below the aquitard and recontaminate the marine environment. The environmental cost of that eventuality is huge and unacceptable. And there is the economic and social cost of having a permanent dead zone at Eagle Harbor's entrance.

This is an easy cost benefit analysis. Spend a little more now and save a lot in the long term, and reap the rewards of a clean site relatively soon. Refuse to spend more on thermal treatment now and be prepared to spend a lot more later, and probably have a lot bigger problem later. Questions or comments? E-mail biabc2000@yahoo.com.

For More Information

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www.epa.gov/r10earth/
click on "Index"
click on "W" for Wyckoff

Documents: The Administrative Record is a file that contains all information used by EPA to make decisions on the cleanup actions from the beginning of the site's history. The Administrative Record can be reviewed at the EPA Records Center, 7th Floor, 1200 Sixth Avenue, Seattle. Call 206/553-4494 to make an appointment. Select documents can be viewed at the Information Repository located at the Bainbridge Island Public Library, 1270 Madison Avenue North. If the library does not have the document you need, feel free to call Andrea Lindsay, EPA Community Involvement Coordinator, at (206) 553-1896.

Additional services can be made available to persons with disabilities by calling EPA toll-free at 1-800-424-4372.