

# Swinomish Lime Storage Site Cleanup

## Phase I Remedial Plan

June 2, 2011

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## **FIGURES**

- 1 Site Vicinity
- 2 Location of Areas above Cleanup Levels

**REMEDIATION PLAN  
LIME STORAGE SITE CLEANUP  
SWINOMISH RESERVATION  
ANACORTES, WASHINGTON**

**1.0 INTRODUCTION**

The Lime Storage Cleanup Site (Site) was formerly used as a storage facility for agricultural amendment materials and is located on the west side of the Swinomish Channel in Anacortes, Washington. The site and surrounding features are shown on Figure 1.

The site was contaminated during several decades of use as a storage facility from the mid-1960's to the early 1990's. Previous evaluations of the site now owned by the Swinomish Indian Tribal Community (Tribe) have detected soil contamination at concentrations exceeding Washington State Model Toxics Control Act (MTCA) Method A or B cleanup levels for unrestricted land use.

Information used to develop this Remediation Plan was obtained from documents received from the Tribe and site visits by Hart Crowser staff.

***1.1 Site Overview***

The site is located on tribal trust land in the northern Tribal Economic Zone of the Swinomish Indian Reservation. Contamination has been detected at the site following several decades of use as an agricultural chemical storage and processing facility. The storage site was operated on leased tribal land. The Tribe had no connection with the operation of the facility.

The use of the site as an agricultural chemical storage area likely resulted in the environmental impacts discovered during the Phase II Environmental site assessment completed in 2009.

***1.2 Purpose, Objectives, and Scope of the Remediation Plan***

This cleanup action is intended to remove and properly dispose of identified areas where soil contamination exceeds the MTCA Method A or B soil direct contact cleanup levels. Tasks addressed in this work plan include:

- Delineation of the work areas and placement of temporary erosion control measures prior to excavation;
- Removal of contaminated soil from the three impacted areas (Figure 2);

- Post excavation confirmation sampling; and
- Backfilling of the excavation.

## **2.0 SUMMARY OF SITE CONDITIONS**

### ***2.1 Site History***

The site was formerly used for the storage of agricultural amendment materials from 1964 to 1989. By the mid-1990's the facility remained in place but was no longer used for lime storage and in 2003 the building was demolished.

During operation the lime material was transported from a barge to the storage area via a conveyor belt. The building and equipment have been removed, but the concrete slab floor of the former building and concrete footings for the former conveyor system remain on the site.

### ***2.2 Current Land Use and Description***

The site is approximately 1 acre in size. A concrete slab measuring 180 ft x 60 ft and four footings, soil piles, and building debris are the only remnants of the agricultural amendment facility that remain. To the east of the site a deteriorating pier that was partially damaged by fire and a creosoted bulkhead remain.

The site is located on dredge materials from maintenance of the Swinomish Channel by the US Army Corps of Engineers before 1950 on top of either mudflats or salt marsh tidelands.

Beneath the previous location of the conveyor belt yellow material exists in the surficial soil. This material appears to be sulfur based (Figure 2 – Area C). A small stockpile to the west consists of sand and gravel with an assortment of charred wood debris (Figure 2 – Area A) and a larger stockpile consisting of debris and stained soil is located to the south of the concrete slab (Figure 2 – Area B).

The Tribe has determined that the areas intended for cleanup are unlikely to contain any cultural resources.

## **2.3 Summary of Environmental Conditions and Previous Investigations**

The areas of the site contaminated above soil cleanup levels are limited to the large debris pile and the smaller burn pile south of the foundation, and the yellow stained soil at the east end of the foundation (Figure 2).

In 2006, the project site became Tribal trust land and HWA Geosciences of Lynnwood, Washington was contracted to perform a Phase I Environmental Site Assessment (ESA).

Between 2008 and 2009, Environment International of Seattle, Washington was contracted to assist with a Phase II ESA (EI 2009) which documented several contaminants including cadmium, lead, arsenic, and dioxin/furans at levels exceeding Washington MTCA for unrestricted land use.

Results from the 2009 sampling activities confirmed the presence of impacted materials at three tested locations around the Lime Storage Area (Figure 2):

- Area A - This small stockpile to the west consists of sand and gravel with an assortment of charred wood debris. This pile had documented exceedances of dioxins/furans and cadmium.
- Area B - This central stockpile consists of debris remaining and stained soil. This pile had documented exceedances of arsenic, cadmium, and lead.
- Area C - This area is located immediately east of the on-grade concrete slab where the former conveyor belt operated. The surface soil is composed of sand and gravel and is lightly vegetated. A granular yellow material (suspected to be sulfur based) is found on the surface of this area between the slab and the bulkhead along the Swinomish Channel. This area had documented exceedances of arsenic, cadmium, and lead.

## **3.0 CLEANUP ACTIONS**

### **3.1 Site Preparation**

Prior to excavation activities a Hart Crowser representative will delineate the three impacted areas and Temporary Erosion and Sediment Control (TESC) measures will be implemented (see section 3.3).

### **3.2 Removal of Upland Debris Stockpiles and Impacted Soils**

At the direction of Hart Crowser, the subcontracted excavator operator (Arthur Fleming of Spyderman Excavation, LLC) will remove up to approximately 160 to 250 cy of contaminated soil and debris from the Lime Storage site. The locations of contaminated soils to be removed from the Lime Storage site are identified in Figure 2.

The west pile (Figure 2, Area A) consists of a small amount of sand and gravel with an assortment of charred wood debris. The central stockpile (Figure 2, Area B) represents the largest volume of material to be removed for off-site disposal and consists of soil and debris. The area immediately east of the on-grade concrete slab (Figure 2, Area C) is composed of sand and gravel and is lightly vegetated.

We estimate that the removal of the contaminated materials will take up to 3 days. The subcontractor will remove stockpiles from Areas A and B and excavate all three areas with documented contamination to a depth of 1 foot below surrounding grade. The contractor will load the excavated materials into intermodal containers which will be transported via railcar by Allied Waste (Regional Disposal Company) to the Roosevelt municipal solid waste Subtitle D Landfill in Klickitat, Washington.

During excavation activities a Hart Crowser representative will maintain erosion control measures and recommend dust suppression efforts as described in our sampling quality assurance plan (SQAP; Hart Crowser, 2011). The Hart Crowser representative will also be responsible for communicating with the project manager and the Tribal project contact to address potential issues.

### **3.3 Erosion Control**

The work area will be less than one acre in size; therefore a Construction Stormwater General Permit is not required. However, due to the proximity to Padilla Bay and the Swinomish Channel, TESC measures will be implemented.

The work will consist of removing stockpiles from Areas A and B, and excavating all three areas with documented contamination to a depth of 1 foot below surrounding grade. To the extent possible, construction activities will be scheduled during an extended dry period. If significant rainfall is expected, construction activities may be delayed.

To protect adjacent properties and to reduce the area of soil exposed to construction, the limits of construction will be clearly marked before land-disturbing activities begin. In general, natural vegetation and native topsoil shall be retained in an undisturbed state to the maximum extent possible. A silt fence will be placed along the eastern extent of the work area to prevent potential runoff from entering the Swinomish Channel.

The Best Management Practices (BMPs) that will be implemented as part of this project will include,

- Preserving Natural Vegetation (BMP C101);
- Buffer Zones (BMP C102);
- High Visibility Plastic or Metal Fence (BMP C103);
- Silt Fence (BMP C241).

Upon completion of the field effort, erosion control BMPs will be removed.

### ***3.4 Post-Excavation Confirmation Sampling***

Following excavation of Areas A, B, and C, confirmation soil samples will be collected from the in-place surface soils remaining at each area of concern:

- Area A: Four discrete soil samples and one field duplicate sample will be collected from beneath the west pile (Figure 2). These five samples will be analyzed for cadmium; and one of these samples will be analyzed for dioxins/furans.
- Area B: Four discrete soil samples and one field duplicate sample will be collected from beneath the central stockpile (Figure 2). These five samples will be analyzed for arsenic, cadmium, and lead.
- Area C: Four discrete soil samples and one field duplicate sample will be collected from beneath the area immediately east of the on-grade concrete slab (Figure 2). These five samples will be analyzed for arsenic, cadmium, and lead.

Soil grab sample collection procedures are described in detail in the SQAP. The exact location of the soil samples will be determined in the field. Soil samples will be submitted to TestAmerica in Tacoma, Washington for analysis of total metals, and subcontracted to TestAmerica in West Sacramento, California for analysis of dioxins/furans. The samples will be analyzed with a standard turnaround time.

Cleanup levels will follow the MTCA criteria for metals. Specifically, arsenic screening criteria must not exceed 7.3 ppm based on direct contact and protection of groundwater for drinking water use using procedures in WAC 173-340-747(4). The cadmium screening level is 2.0 ppm and lead is 250 ppm; both are based on MTCA Method A for unrestricted land use.

If the first round of soil sampling indicates that impacted materials above cleanup levels are still present in the soils, additional material from those areas will be excavated. Following this excavation, additional confirmation soil sampling will be conducted.

### ***3.5 Backfilling***

The excavated areas will be backfilled after conformational testing confirms that the cleanup goals have been met. Backfill materials will consist of clean fill from a Tribal stockpile located approximately 300 yards south from the site. The subcontractor will place the fill material, re-grade, and compact the backfill with the excavator bucket.

## **4.0 PROJECT PERSONEL AND SCHEDULE**

### ***4.1 Personnel Assignments***

Key Hart Crowser personnel for this project are listed below with their project functions.

- Will Abercrombie, Principal in Charge;
- Brandon Jensen, Project Manager;
- Phil Cordell, Geologist, SWPP, Field team leader;
- Anne Conrad, MS, Geochemist, Laboratory Coordination/Oversight, and Data Validation and Review;

Subcontractors will include Spyderman Excavation LLC for excavation of contaminated soil and debris and backfilling excavated areas. Chemical analysis will be performed by TestAmerica Laboratories, Inc. of Tacoma, Washington and West Sacramento, California.

## **4.2 Schedule**

The project began with a kickoff meeting on April 14, 2011. Hart Crowser has since developed and obtained approval of the SQAP Addendum and a Site Health and Safety Plan (HASP) in time to perform excavation and disposal of the contaminated materials by Mid-June, 2011. Confirmational sampling will be conducted following the excavation, and analytical laboratory results are expected within 10 to 14 days from receipt of the samples by the laboratory. Laboratory results will be sent to Jon Boe by email (jboe@swinomish.nsn.us). Following the receipt of confirmation sample results from the laboratory confirming that the excavation effort meets the cleanup goal, the excavation areas will be backfilled. It is estimated that the backfill effort will take two days and should be accomplished within two weeks of receipt of the final laboratory data.

Preparation of a draft report is scheduled to be completed within three weeks of the backfilling effort. If the analytical results from the confirmation sampling indicate that impacted materials remain on site, additional excavation and sampling will be required prior to producing the draft report. A final report will be prepared and submitted within two weeks following receipt of review comments.

## **5.0 REFERENCES**

Environmental International Ltd. (EI) (2009). Swinomish Indian Tribal Community Phase II Environmental Site Assessment Report. Prepared for the Swinomish Indian Tribal Community. September 16, 2009.

Hart Crowser 2011. Draft Addendum to the Swinomish Indian Tribal Community U.S. EPA Brownfields Assessment Grant Sampling Quality Assurance Plan. Swinomish Reservation Anacortes, Washington. Prepared by Hart Crowser, Inc. May 3, 2011.