

## **Commencement Bay Superfund Site —Hylebos Waterway**

### **Site Description**

The Hylebos Waterway is part of the Commencement Bay Nearshore/Tideflats Superfund site (CB/NT Site), in Tacoma, Washington at the southern end of the main basin of Puget Sound. The Hylebos Waterway is part of the CB/NT Site Sources Operable Unit 5 (OU 5), which includes six waterways; Hylebos Waterway is the northernmost of the six waterways. It is bounded by the Blair Waterway on the southwest and Marine View Drive on the northeast. The Hylebos Waterway is approximately 3-miles long and 200 feet wide, and is approximately 285 acres in size.

During the pre-design studies it was determined that the materials in portions of the waterway sediments were different from the materials present in the rest of the waterway sediments therefore the Hylebos Waterway was divided into two problem areas: the Head of the Hylebos Waterway and the Mouth of the Hylebos Waterway. The Head of the Hylebos Waterway consists of the upper one-third of the waterway including the turning basin. The Mouth of the Hylebos Waterway consists of the lower two-thirds of the waterway including the middle of the waterway and the entrance where the waterway meets Commencement Bay. The two problem areas were further divided into five segments during the design phase (segments 1 to 5). In addition to the two problem areas, “Area 5106 and Embankment Study Area” was identified as a subtidal area that required treatment of sediments before disposal and was administered under a separate AOC.

### **Potential Responsible Parties (PRPs)**

The U.S. Environmental Protection Agency (EPA) and a group of Hylebos Waterway PRPs known as the Hylebos Cleanup Committee, consisting of Asarco, Inc., Elf Atochem North America, Inc. (now Arkema), General Metals of Tacoma, Inc., Kaiser Aluminum and Chemical Corporation, Occidental Chemical Corporation, and the Port of Tacoma, signed an Administrative Order on Consent (AOC) for pre-design studies in 1993 (EPA, 2004b). Zidell Marine Corporation signed a Consent Decree in 2006 that required a cashout settlement payment of \$3,239,973.38 to the United States Treasury (U.S. Treasury) for past Response Costs and for future Response Costs to be incurred at or in connection with all areas in which sediments are located at and adjacent to the Mouth and Head of the Hylebos Waterway.

## **Site History**

In August 2000, EPA signed an Explanation of Significant Differences (ESD) that finalized the cleanup plan for the Head and Mouth of the Hylebos Waterway problem areas. The two problem areas were further divided into five segments: Head of the Hylebos Waterway (segments 1 and 2) and Mouth of the Hylebos Waterway (segments 3, 4 and 5).

In March 2002, EPA issued three Unilateral Administrative Orders (UAOs) requiring four responsible parties to continue the cleanup of sediments in the Hylebos Waterway at a cost, estimated by EPA to be approximately \$56 million (EPA, 2004b):

1. General Metals of Tacoma and Arkema (formerly Elf Atochem) for sediments in Segments 1 and 2 (Head of the Hylebos Waterway).
2. Port of Tacoma and Occidental Chemical for Segments 3, 4 and 5 (Mouth of the Hylebos Waterway).
3. Occidental Chemical for "Area 5106 and Embankment Study Area".

## **Threats and Contaminants**

Shipbuilding, oil refining, chemical manufacturing and storage, as well as other industrial activities, have led to the presence of contamination in the Commencement Bay area. Sediments in the industrialized Hylebos Waterway contain polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), semi-volatile organic compounds (SVOCs) and volatile organic compounds (VOCs). The sediments also contain metals such as arsenic, copper, lead, mercury and zinc (EPA, 2007).

## **Cleanup Approach and Remedial Activities Since 2004**

### ***Head of the Hylebos Waterway (Segments 1 and 2)***

- Cleanup of the upper 1/3 of the waterway was conducted by Arkema Chemical and Shnitzer Steel (formerly General Metals) under a 2002 UAO converted to a Consent Decree in June 2004 (EPA, 2007). Approximately 400,000 cubic yards (cy) of sediment containing PCBs, PAHs, SVOCs and VOCs were hydraulically dredged from the waterway from 2004 to 2006 and four acres of sediment in the Head of the Hylebos Waterway were capped. The dredged

sediment was transported by rail for disposal to the Roosevelt Regional Landfill in the eastern portion of the State of Washington (EPA, 2007). An approximately 200-foot-long intertidal and subtidal cap was installed during the 2005-2006 in-water construction season at the Atofina Southeast Shoreline area (Arkema intertidal area) (EPA, 2004b). The EPA estimated the cost of the project to be \$30 million (U.S. DOJ, 2004).

- Intertidal excavation at the Head of the Hylebos Waterway was completed during the 2003 – 2004 season. In order to avoid capping and long-term monitoring, 1.5 acres were excavated (7,400 cy of sediment exceeding the sediment quality objective) at the Head of the Hylebos Waterway and backfilled with clean sand and gravel (EPA, 2004b). The General Metals' graving slip, J&G Property, Arkema intertidal shoreline and Dunlap Log Haul out area were excavated in the dry using upland excavation equipment then clean "fish mix" (rocks and sand no larger than two inches in diameter) was placed to improve habitat. (EPA, 2004d).
- In 2005 EPA reviewed data from year 0 to year 5 of the monitoring of the General Metals cap; a 3-foot thick cap, constructed of sand, gravel and a geotextile liner was installed in the late 1990s along 800 ft of shoreline under the piers. EPA reported that the cap continues to function as expected, as evidenced by lead line and diver surveys that demonstrate the cap thickness remains as designed (EPA, 2004b).
- All dredging and capping within the Head of the Hylebos Waterway was completed in February 2006 before the close of the 2005-2006 in-water construction season (EPA, 2007b).
- Additional remedial action is required to address arsenic-containing groundwater that is discharging into the waterway from the Arkema site (EPA, 2007b).

### ***Mouth of the Hylebos Waterway***

- Cleanup of the lower 2/3 (middle and mouth) of the waterway was performed by Occidental Chemical Corporation and the Port of Tacoma. The lower 2/3 of the waterway was remediated from 2003 through 2005 under a 2002 UAO converted to a Consent Decree in 2005 (EPA, 2007).

- All dredged sediment from the Mouth of the Hylebos Waterway was placed in Blair Slip 1 nearshore confined disposal (NCD) facility and the Dredged Materials Management Plan open-water disposal site in Commencement Bay (EPA, 2007). Blairslip 1 NCD was scheduled for closure in 2005 (EPA, 2004b).
- Intertidal cleanup actions were implemented at Sound Refining, Murray Pacific, and Taylor Way properties. Excavation, bulkhead removal, regrading and backfilling have been completed at the Murray Pacific and Sound Refinery properties. Mechanical dredging and excavation of about 50,000 cy at the Taylor Way property was completed in 2005.
- In the Fall of 2004, approximately 130,000 cy of sediment was dredged from the waterway from the 11<sup>th</sup> Street Bridge to the Murray Pacific Property. The sediment was disposed of in Blair Slip 1 NCD. Other activities included capping Murray Pacific and Taylor Way embankments with several feet of sand and rip rap to physically and chemically isolate impacted sediments during the 2004-2005 in-water construction season. Under the February 2005 Consent Decree, Occidental Chemical Corporation, the Port of Tacoma, Mariana Properties, Inc., and Pioneer Americas were required to complete the cleanup of the sediments from the Mouth of the Hylebos Waterway. The Consent Decree required the removal of 625,000 cy of sediment and the capping of four acres. The EPA estimated cost of the project was \$36.5 million (U.S. DOJ, 2005). The remaining remedial action to be completed in the Mouth of the Hylebos Waterway is sediment capping beneath Piers 24 and 25, as required by the 2005 Consent Decree. Capping began in October 2007 and is scheduled for completion in February 2008 (EPA, 2007b).

### **Occidental Site – Area 5106**

The Occidental Site is the former chlor-alkali plant facility along the Hylebos Waterway, presently owned and operated by Pioneer Americas LLC. The removal and treatment of Area 5106 by Occidental cost an estimated \$10 million.

Two non-time-critical removal actions were conducted by Occidental Chemical Corporation in 2003 under a UAO: the Area 5106 Removal Action and the Embankment Area Removal Action.

- Area 5106 Removal Action - Approximately 36,000 cy of sludge-like sediment containing VOCs and SVOCs associated with perchloroethylene

and trichloroethylene production waste at Area 5106 were hydraulically dredged with a specialty dredge known as a 'Toyo', piped to an on-site treatment facility where the sediment was heat treated to reduce VOC mass, and then disposed of in the Blair Slip 1 NCD (EPA, 2004b).

- The Embankment Area Removal Action is EPA's proposed removal action alternative consisting of capping the embankment and preventing the migration of COCs from the embankment area. Groundwater impacted from passing through the embankment area is discharging into the waterway. The removal action led to the draft design of a permeable cap constructed of a gravel leveling layer over the embankment, followed by a geotextile fabric, and a sand layer (EPA, 2001) to cover the intertidal and subtidal embankment to the toe of the slope at about -40 feet mean lower low water. EPA and WA DOE determined that better characterization of the area was needed prior to completing design and construction of the cap (EPA, 2004b).

In March 2004, EPA and WA DOE agreed that a Remedial Investigation/Feasibility Study and Remedial Design/Remedial Action were needed to address the remaining impacted soil, groundwater and sediment at the Embankment Area site in an integrated manner. EPA, WA DOE and Occidental conducted upland and waterway field investigations throughout 2004.

The Area 5106 non-time critical removal action UAO was terminated and the remaining work was incorporated into the amended Occidental Site AOC and the associated Statement of Work (SOW) in February 2005 to address the remaining field investigations, site characterization, remedy evaluation and selection and remedial design work. The amended AOC between EPA, WA DOE and Occidental encompassed the Embankment Area and Area 5106 removal actions (EPA, 2004b). Negotiations of an Occidental Site CD, if it occurs concurrently with the remedial design, may be concluded in 2010 or 2011 (EPA, 2007b).

A schedule for implementation of the selected remedy will be established through a Consent Decree to be negotiated with Occidental and Pioneer Americas, the current owner of the former Occidental facility, upon the completion of the remaining tasks in the SOW. Implementation of the Occidental site remedy is expected to be completed before the next five year review (third 5-year review expected to be completed by November 15, 2009) (EPA, 2007b).

The Occidental Site work is at the end of the remedial investigation stage. A draft site characterization report will be completed in 2008, EPA and WA DOE will select a remedy in September 2009, at that point remedial alternatives to address soil, groundwater and sediment will be evaluated (EPA, 2007b).

From 2005 to 2007, 90 sediment borings were collected in the waterway and 42 sediment borings were collected from the upland portion of the site (EPA, 2007).

### **Habitat Mitigation**

“Two mitigation projects, Clear Creek Phase 2 and Blair Slip 5, were approved by EPA to offset impacts from filling Blair Slip 1, which converted 14 acres of primarily subtidal aquatic habitat to uplands. The Clear Creek project restored two-acres of habitat along the Puyallup River to provide habitat for juvenile salmonids. This Phase 2 project expands the mitigation site previously developed by the Port of Tacoma as part of the Sitcum Waterway project. The second mitigation project, Blair Slip 5, located adjacent to the Blair Slip 1 NCD facility, is intended to convert 7 acres of subtidal habitat to protected, intertidal habitat more conducive to migrating juvenile salmonids. The 2-acre Clear Creek restoration was completed in early 2004 and significantly improves the lower reach of Clear Creek for salmon migration and habitat for upland species. The second phase of the Slip 5 subtidal mitigation project will also be completed by February 15, 2005, providing low-bank foraging habitat for migrating fish species” (EPA, 2004b).

### **Hylebos Waterway Recent Activities**

In April 2006 the United States and Zidell Marine Corporation proposed a settlement to resolve liability for sediment cleanup in the Hylebos Waterway; the proposed settlement became a final Consent Decree in January 2006. Zidell Marine Corporation is one of several parties partly responsible for the release of hazardous substances within the three-mile long Hylebos Waterway. The final Consent Decree required a cashout settlement. It required Zidell to pay \$3,239,973.38 to the U.S. Treasury for past Response Costs and for future Response Costs to be incurred at or in connection with all areas in which sediments are located, intertidal and subtidal, that require remedial action at and adjacent to the Mouth and Head of the Hylebos Waterway (EPA, 2006).

Final dredge volumes and as-built information will be summarized in the next five-year review expected to be completed November 15, 2009.

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