Lower Willamette Group

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February 27, 2003

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Dear Chip and Terra:

As you requested, enclosed is the Summary of Round 1 and Round 1A Field Activities. This document summarizes all Round 1 and 1A field sampling and reconnaissance work that EPA previously approved either by e-mail correspondence or by field approvals. As discussed, EPA will confirm in writing its approval of this work, which will constitute approval of the field work itself. Reports presenting the results of Round 1 and 1A field work are in preparation and will be submitted to you in a separate document.

If you have any questions, please call.

Very truly yours,

Bob Wyatt

Mark Lewis

SUMMARY OF ROUND 1/1A FIELD ACTIVITIES

PORTLAND HARBOR RI/FS

February 28, 2003

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Prepared for:
The Lower Willamette Group

Prepared by:
Striplin Environmental Associates, Inc.
Olympia, WA

INTRODUCTION

This document provides a summary of the Portland Harbor RI/FS Round 1/1A field sampling and reconnaissance activities that were conducted from June 24 through December 20, 2002. A Round 1 Field Sampling Report, which contains the details of the various field programs, is in preparation.

Except where noted in the Round 1 Field Sampling Report or as modified by subsequent correspondence between the LWG and EPA (e.g., EPA letter dated 20 September 2002), all sample collection activities followed the procedures described in the Round 1 and Round 1A Field Sampling Plans (FSP; SEA et al. 2002a,b) and the Fish Tissue Sampling Standard Operating Procedure (SOP; SEA et al. 2002c). Fish tissue sample processing, including compositing, homogenization, and shipping, followed the procedures detailed in the Fish Tissue Compositing and Homogenization SOPs (SEA et al. 2002d, SEA 2002a). All laboratory analyses have or are following the EPA-approved project Quality Assurance Project Plan (QAPP; SEA 2002b).

SUMMARY OF ROUND 1A FIELD ACTIVITIES

The following tasks were carried out per the Round 1A FSP. The Round 1A FSP was approved by EPA on May 5, 2002.

- **Juvenile Salmonid Mark/Recapture Pilot Study**. A pilot study to gather information on mark/recapture methods was conducted July 8 and 9, 2002. Juvenile salmonids were also collected for tissue analysis during this time. The study was halted when water temperature in the lower Willamette River had increased to levels that were stressful to juvenile salmonids held in buckets prior to being marked. Agency representatives did not observe this brief study.
- **Collection of Fish Tissue for Chemical Analysis**. The fish tissue collection program was approved as part of Round 1A. Juvenile salmonids were collected for tissue analysis during June 24 –27, 2002. The collection of other fish and crayfish occurred between July 22 and November 10, 2002. Details, including agency observers, are provided below.
- **Hard Bottom Benthos Sampling Using Multiplates**. Multiplates were deployed July 15-16, 2002 and were retrieved August 27-28, 2002. No regulatory agency representatives were present as observers.
- **Aquatic Plant And Amphibian Reconnaissance**. The survey was conducted 26-28 June 2002. David Terpening and Joseph Goulet from EPA, Helen Hillman from NOAA, and Jeremy

Buck from USFWS , observed the nighttime frog call procedures at one sampling location on the evening of June 26.

- **Adult Lamprey Harvest Reconnaissance Survey.** LWG consultants observed lamprey harvests by the Confederated Tribes of Siletz on 26 June 2002, and by the Yakama Nation on 22 July 2002. Because these harvest dates were not fixed in advance and required attendance on very short notice, neither DEQ nor EPA technical staff were able to observe
- **Nearshore Deposition/Erosion Monitoring Using Sediment Stakes.** Stakes were installed in July and measured once a month from 17 July to 12 December 2002. No regulatory agency representatives were present as observers.
- **Summer 2002 Bathymetry Survey.** The summer 2002 bathymetric survey was conducted in two phases. RM 2 to 11 were surveyed between July 3 and 18, 2002. Following a review of these data, RM 0 to 2.5 and 10.5 to 15.6 were surveyed between September 16 and 20, 2002. This bank-to-bank survey was conducted during the low water season to obtain summertime riverbed elevations for comparison with the riverbed elevation data collected during December 2001 and January 2002

In addition, the following two activities were performed:

- **Seep Reconnaissance Survey**. As requested by EPA in their September 20, 2002 letter, the LWG conducted a seep reconnaissance survey on October 7 and 8, 2002. Representatives from the Oregon Department of Environmental Quality (Eric Blischke) and the EPA (Renee Fuentes) accompanied representatives of the LWG on a subsequent tour of the identified seep areas on October 24, 2002.
- **Juvenile Lamprey And Benthic Infaunal Biomass Reconnaissance Surveys**. During the fish tissue sampling program, the LWG became concerned that juvenile lamprey were not being collected using proposed techniques. The LWG conducted a reconnaissance survey for juvenile lamprey based on grab sampling at 21 of the 22 co-located sediment and tissue sampling stations originally identified in the June 2002 LWG Field Sampling Plan on September 16 and 17, 2002. Concurrently, the LWG collected benthic samples to assess the potential success of the benthic infauna tissue collection program. On October 8 and 9, 2002 a field team consisting of two lamprey biologists from the Umatilla tribe (Aaron Jackson

and Brandon Trelor), Hellen Hillman of NOAA, and LWG consultants visited 11 Lower Willamette sites for a follow-up reconnaissance using specialized lamprey electroshocking equipment. EPA approved the plan for this task in its September 20, 2002 letter to the LWG.

Details of the sampling associated with most of the tasks listed above is described in individual task reports that are being provided to EPA under separate cover. The status of these reports is:

- Aquatic Plant and Amphibian/Reptile Reconnaissance Survey (submitted)
- Preliminary Assessment of Epifaunal and Infaunal Benthic Communities (in preparation)
- Technical Memorandum: Adult Lamprey Reconnaissance Survey (submitted)
- Sediment Stake Erosion/Accretion Analysis (in preparation)
- Lower Willamette River Summer 2002 Multibeam Bathymetric Survey (submitted)
- Results of Seep Reconnaissance Survey RM 2-10.5 Lower Willamette River (submitted)
- Technical Memorandum: Lamprey Ammocoete and Benthic Infaunal Biomass Reconnaissance Surveys of the Lower Willamette River (submitted).

Fish tissue data will be reported in the Round 1 Site Characterization Report.

SUMMARY OF ROUND 1 FIELD ACTIVITIES

Round 1 field activities included the following tasks which were approved in EPA's September 20, 2002 letter:

- Collection of sediments at sculpin, crayfish and benthic infauna stations
- Collection of composited beach sediments
- Collection of benthic infauna
- Collection of clams for tissue analysis.

Each of these collections is described in more detail in the following section. Results of these tasks will be provided in the Round 1 Site Characterization Report.

SEDIMENT SAMPLING

To support the human health risk assessment, composite surface beach sediment samples were collected at twenty beaches in Portland Harbor as described in the Round 1 FSP and EPA's letter of September 20, 2002. Beach sediment sampling occurred from October 9 through 14. At each beach, samples were generated by combining randomly-selected individual 0-15 cm surface samples into a single composite. All sediments were collected using stainless-steel hand corers. Mike Poulsen (ODEQ) participated in the beach sediment collection and modified the definition (start or end point) of some target beaches during the field sampling.

Surface sediments (0-15 cm) collected for chemical analyses to support the ecological risk assessment were collected at two types of stations. First, as described in the FSP, co-located sediments were collected at all nearshore sculpin and/or crayfish tissue sampling stations. Second, surface sediments for chemical analysis were also collected at ten benthic infauna stations to provide additional information on the distribution of benthic infauna in Portland Harbor. These stations were situated in both nearshore areas and in the navigation channel to supplement the distribution of the twenty-seven sculpin/crayfish co-located stations. The co-located surface sediment samples were collected from October 16 through 25, with an additional sampling day on November 12

All surface sediments were collected using either a 0.1 m^2 van Veen grab sampler provided by SEA or a 0.3 m^2 hydraulic power grab sampler provided by Marine Sampling Systems. A minimum of three samples were composited for each station. Co-located surface sediment sample collection procedures were observed by Dana Davoli (EPA), Helen Hillman (NOAA), and Jennifer Peterson (ODEQ).

BENTHIC INFAUNA/CLAM SAMPLING

Soft-bottom benthic samples were collected from twenty-two stations in the LWR. Benthos were collected at twelve of the sculpin/crayfish co-located sediment stations and at the ten additional stations in both nearshore areas and the navigation channel. Infauna were collected with a 0.1 m^2 van Veen grab sampler and sieved through a 0.5mm sieve box. A single replicate was collected at each location to provide a qualitative indication of the benthic infaunal assemblages throughout the harbor for the ecological risk assessment. Benthic infauna were sampled from October 22 through 25.

During the juvenile lamprey/benthic infauna reconnaissance survey conducted in September 2002 (reported under separate cover), it was determined that the non-native bivalve species *Corbicula fluminea* was likely the only soft-bottom organism that could be found in sufficient abundance and size in Portland Harbor for benthic tissue chemical analyses. Clams were collected by repeated casts of a 0.1 m^2 van Veen grab sampler at each target location. Also, at one location, an unsuccessful attempt was made to rake clams from a shallow subtidal beach. Clam collection was attempted at

five stations over multiple sampling days. After considerable total effort (over 500 van Veen casts), two locations near the center of the ISA yielded more than 150 grams of tissue, which is the minimum biomass required to conduct tissue analyses for a full suite of target analytes. Fifty-three grams were collected at a third station, while the remaining two stations yielded only nominal amounts. Clam sampling occurred from October 29 through November 5, with an additional day on November 12

FISH AND CRAYFISH SAMPLING

Before fish tissue sampling began, the LWG established a fish sample processing field laboratory and field equipment storage area, located in former laboratory space at the decommissioned ATOFINA plant in Portland OR. This field laboratory was outfitted with a water de-ionizing unit, venting hood, two sinks, and all laboratory safety equipment listed in the SOP. David Terpening (EPA) visited and approved the use of the field laboratory space. In addition, he observed a "dry run" of the fish processing procedures and approved the methodology being used. EPA project managers Wallace Reid, Chip Humphrey and Tara Karamas conducted a final visit to the laboratory, where the fish processing team from Fishman Environmental Services (FES) clarified any additional questions about fish processing procedures.

For the ecological and human health risk assessments, eleven fish species and one crayfish species were targeted for tissue analyses. The target species for the ecological risk assessment (ERA) were northern pikeminnow, smallmouth bass, sculpin, subyearling chinook salmon, peamouth, largescale sucker, lamprey ammocoetes, and crayfish. For the human health risk assessment (HHRA) the target species were carp, black crappie, bullhead, smallmouth bass and crayfish. In addition, walleye and largescale sucker were collected as alternative species for bullhead and carp, respectively. These alternate species were not used for tissue analyses because adequate numbers of bullhead and carp were collected.

During the Round 1A collection of subyearling chinook salmon from June 24 through June 27, 2002, beach seining and dip netting were the only fishing techniques used. The beach seining procedure was observed by David Terpening and Joe Goulet from EPA, Helen Hillman from NOAA, and Jeremy Buck from USFWS. The intended mark and recapture pilot program for subyearling chinook salmon was halted after signs of heat stress were observed in fish held in buckets prior to marking.

During the Round 1 collection of all other species from July 22 through November 10, 2002, a total of six fishing techniques were used. These included beach seining, boat electrofishing, backpack electrofishing, trot line, angling, and crayfish traps. At the beginning of Round 1 field program, fishing techniques, sample handling and fish processing were observed in the field by David Terpenning (EPA) and Eric Blischke (ODEQ). Subsequent visits were made by Joseph Goulet (EPA) and Helen Hillman (NOAA), who, along with LWG consultant field managers and field crew, helped clarify issues such as station definitions and appropriate fishing methods.

The LWG field teams collected fish in the LWR for a total of 79 days and both day and night fishing was conducted. A total of 1870 fish were collected including 863 sculpin, 419 crayfish, 128 largescale sucker, 90 smallmouth bass, 78 carp, 92 subyearling chinook salmon, 64 brown bullhead, 35 northern pikeminnow, 48 black crappie, 30 peamouth, 18 yellow bullhead, 3 lamprey ammocoetes, and 2 walleye. Forty-two individuals participated in the fish tissue collection effort. Striplin Environmental Associates staff coordinated the effort, which was carried out by personnel from Ellis Ecological Services, Fishman Environmental Services, Windward Environmental, Kennedy/Jenks Consultants, and Anchor Environmental. All people directly involved with the fishing effort were authorized to collect fish under the scientific taking permit granted by the Oregon Department of Fish and Wildlife to Ellis Ecological Services. With the exception of juvenile lamprey, the 2002 fish sampling program was successful in collecting all target species at all target locations in the LWR to satisfy the Round 1 data needs of the human health and ecological risk assessments.

Fish samples were processed at the field laboratory by a field laboratory staff led by Fishman Environmental personnel. Fish specimen sample handling and processing procedures followed those detailed in EPA-approved project SOPs and QAPP. Following final agreement with EPA on fish sample compositing schemes, frozen samples were shipped to Axys Analytical Services Ltd. (Sidney, B.C., Canada) for tissue homogenization.

REFERENCES

Striplin Environmental Associates, Inc.; Windward Environmental L.L.C.; Anchor Environmental, L.L.C.; and Kennedy/Jenks Consultants. 2002a. Round 1 Field Sampling Plan Portland Harbor RI/FS, Draft. Prepared for Lower Willamette Group, Portland OR. June 14, 2002.

Striplin Environmental Associates, Inc.; Windward Environmental L.L.C.; Anchor Environmental, L.L.C.; and Kennedy/Jenks Consultants. 2002b. Field Sampling Plan Round 1A Portland Harbor RI/FS, Draft. Prepared for Lower Willamette Group, Portland OR. April 22, 2002.

Striplin Environmental Associates, Inc.; Windward Environmental L.L.C.; and Kennedy/Jenks Consultants. 2002c. Fish Tissue Sampling SOP Round 1A Portland Harbor RI/FS. Prepared for Lower Willamette Group, Portland OR. August 28, 2002.

Striplin Environmental Associates, Inc.; Windward Environmental L.L.C.; and Kennedy/Jenks Consultants. 2002d. Fish Tissue Compositing and Shipping SOP Round 1A Portland Harbor RI/FS. Prepared for Lower Willamette Group, Portland OR. August 28, 2002.

Striplin Environmental Associates, Inc. 2002a. Fish Tissue Homogenization and Shipping SOP Round 1 Portland Harbor RI/FS. Prepared for Lower Willamette Group, Portland OR. August 28, 2002.

Striplin Environmental Associates, Inc. 2002b. Portland Harbor RI/FS Round 1 Quality Assurance Project Plan Final Report. Prepared for Lower Willamette Group, Portland OR. November 22, 2002.