REMEDIAL DESIGN WORK PLAN

HEAD OF HYLEBOS WATERWAY
COMMENCEMENT BAY NEARSHORE / TIDEFLATS
SUPERFUND SITE

Prepared for

- ATOFINA Chemicals, Inc.
- General Metals of Tacoma, Inc.

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Kirkland, Washington
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1 INTRODUCTION

This Remedial Design Work Plan ("RD Work Plan") for the Head of Hylebos Waterway (Figure 1-1) is submitted by ATOFINA Chemicals, Inc. ("ATOFINA") and General Metals of Tacoma, Inc. ("General Metals"), collectively referred to in this work plan as Head of Hylebos Cleanup Group ("HHCG").

This RD Work Plan is submitted to satisfy Section IV Task 1 of the Head of Hylebos Waterway Statement of Work[1] (SOW), which is Attachment 4 to the Unilateral Administrative Order for Remedial Design and Remedial Action for the Head of Hylebos Waterway (UAO).

The remedial actions planned by the HHCG for the Head of Hylebos Waterway in this plan consist of dredging of open access and isolated intertidal areas, with upland disposal. A combination of dredging and capping is planned for the dock/structure areas adjacent the ATOFINA Chemicals property. The intent of this plan is also to remediate the natural recovery areas with dredging.

This RD Work Plan includes the following information:

- Description of the sediment remediation plan implementation and management strategy for the Head of Hylebos Waterway that will be implemented in the remedial design and remedial action (Section 2)
- Presentation of the project schedule, including a timeline for completion of remedial design and remedial action tasks and submittals to EPA of interim and final deliverables. (Section 3)
- Identification of the responsibility and authority of all organizations and key personnel, with a description of the qualifications, responsibilities, and contact information of key personnel. (Section 4)

The work plan and schedule may require amendment if new information is discovered which was not anticipated at the time the plan was developed, or if a change in the

[1] Statement of Work for the Unilateral Administrative Order for Remedial Design, Remedial Action & Long-Term Monitoring. Docket No. CERCLA 10-2002-0065. Head of Hylebos Waterway Problem Area: Segments 1 and 2. Commencement Bay Nearshore / Tideflats Superfund Site. Tacoma, Washington.

management strategy is proposed. Any amendments will be subject to EPA comment and will require EPA approval in writing.

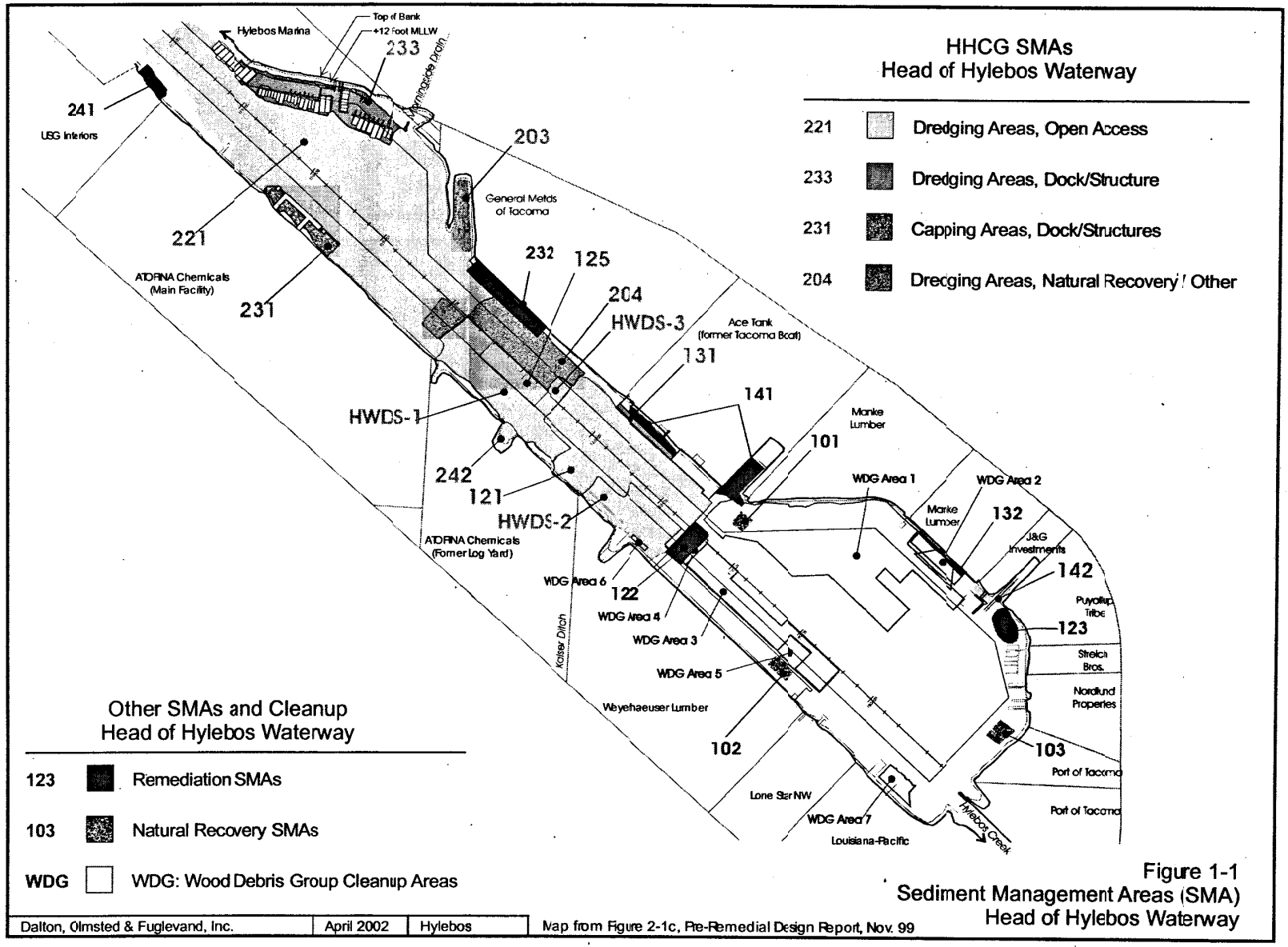

Figure 1-1
Sediment Management Areas (SMA)
Head of Hylebos Waterway

Dalton, Olmsted & Fuglevand, Inc.	April 2002	Hylebos	Map from Figure 2-1c, Pre-Remedial Design Report, Nov. 99

2 IMPLEMENTATION & MANAGEMENT STRATEGY

The following principals summarize the HHCG implementation strategy for the cleanup at the Head of Hylebos Waterway:

- **Get it all, once and done.** The plan is to dredge the impacted sediment within the Head of Hylebos Sediment Management Areas (SMAs) identified in 2000 ESD for active remediation and natural recovery[2]. This approach does not rely on a remedy of natural recovery for ten years after remediation. With all SMAs cleaned up as part of the remedial action, there are no issues regarding potential lingering or future impacts from subsurface sediment, thereby eliminating the need for long-term monitoring.

- **Upland disposal.** The plan is for dredged material to be disposed at an existing permitted upland landfill operated by the Regional Disposal Company (RDC) in Klickitat County Washington. The RDC landfill is currently permitted to receive dredged material. There are no Section 404 Clean Water Act issues or Endangered Species Act issues that would delay disposal. A pilot dredging – transportation – disposal program completed in December 2001 demonstrated the viability of the cleanup and disposal plan.

- **Precision dredging.** The plan will utilize precision dredging methods to assure removal of the impacted sediment.

- **Experienced design team.** The remedial design team will consist of the same professionals involved in the extensive pre-remedial design studies completed for the Hylebos Waterway AOC.

- **Clearly defined methods.** The remedial design will be streamlined by establishing clearly defined remedial methods in this RD Work Plan. Establishing these methods now will greatly reduce, and possibly eliminate, the need for re-design following EPA's review of the design submittals.

- **Active Communications.** The HHCG will meet bi-weekly with EPA to discuss and resolve design and remedial action issues. The HHCG will work jointly with EPA to communicate with the business community surrounding the Head of Hylebos Waterway in order to limit disruption to the normal use of the waterway, as well as coordinate the remedial action with other cleanup activities in Hylebos Waterway.

[2] General Metals has already completed cleanup and capping at their dock area, and Atofina has similar capping plans for their dock. Dredging is planned for all other areas of this plan.

2.1 REMEDIAL METHODS

This RD Work Plan is designed to implement the requirements of the SOW. The SOW provides a detailed description of the following:

- Description of Remedial Action
- Performance Standards
- Work to be Performed by Respondents
- RD/RA Schedule of Deliverables and Milestones

The contents of the SOW are not repeated in this RD Work Plan. The following sections describe specific remedial methods and details that further clarify the application of the SOW to the Head of Hylebos Waterway[3].

2.1.1 SMAs To Be Remediated

As stated in the SOW, the Head of Hylebos Waterway Problem Area, located within the Commencement Bay Nearshore/Tideflats (CB/NT) Superfund Site in Pierce County, Washington is shown on Figure 1-1. Using the delineation of Hylebos Waterway segments developed during the Hylebos Cleanup Committee's pre-remedial design activities, Segments 1 and 2 of the Hylebos Waterway are depicted in Figure 1-1 and include the Upper Turning Basin at the southernmost end of the waterway, extending through the neck of the waterway, and ending at the northernmost end of the lower turning basin, including the area designated SMA 221. The SOW does not include those portions of Segment 1 located in the Upper Turning Basin designated as Sediment Management Area (SMA) 103 and 123, which are being addressed under UAO No. CERCLA 10-2002-0064 (Mouth of Hylebos Waterway Problem Area). SMAs 101, 102, 122, and 132 are currently being addressed by the Wood Debris Group agreement with the Washington State Department of Ecology[4], and are not included in the RD Work Plan.

The SMAs addressed by the HHCG under this RD Work Plan are presented in Table 2-1. SMAs addressed by others are summarized in Table 2-2.

[3] Sections 2.1.2 through 2.1.11 are taken from "Dredging and Associated Monitoring Program, Head of Hylebos Waterway", Attachment A to the HHCG letter to EPA of January 18, 2002

[4] State of Washington Department of Ecology Model Agreed Order No. DE 97TC-5437, effective 1/30/98. See Section II.D of this SOW.

Table 2-1. Summary of HHCG SMAs, Head of Hylebos

SMA	Physical Setting	Area (Acres)	Planned HHCG Remedial Action
121	Open Access	6.8	Dredging
125	Open Access	0.9	Dredging
131	Dock/Structure	0.3	Dredging
142	Isolated Intertidal	0.2	Dredging
HWDS-1,2,3	Open Access	6.2	Dredging
203	Natural Recovery	2.3	Dredging
204	Natural Recovery	0.8	Dredging
221	Open Access	22.8	Dredging
231	Dock/Structure	0.8	Capping
233	Dock/Structure	3.2	Dredging
242	Isolated Intertidal	0.1	Dredging

Table 2-2. Summary of Other SMAs, Head of Hylebos

SMA	Physical Setting	Area (Acres)	Work by	Completed Remedial Action
101	Natural Recovery	0.1	Wood Debris Group	
102	Natural Recovery	0.2	Wood Debris Group	
122	Open Access	0.4	Wood Debris Group	Completed 2001
132	Dock/Structure	0.1	Wood Debris Group	
103	Natural Recovery	0.2	Port of Tacoma	
123	Open Access	0.2	Port of Tacoma	
141	Isolated Intertidal	0.8	Ace Tank	Completed 1998
232	Dock/Structure	0.2	General Metals	Completed 1999
241	Isolated Intertidal	0.3	USG	Completed 1999

2.1.2 Material to be Dredged

The impacted sediments to be dredged are characterized as black, very soft, fine-grained clay (CH) or organic silty clay (OH)[5]. In the dredging industry, such material is typically characterized as soft black muck.[6]

The clean native sediments immediately below the impacted sediment are composed of a more granular sediment matrix than the surface deposit of impacted sediment. These native sediments consist predominantly of sand with variable amounts of silt and interbedded silt and clay layers. Commonly, the interbedded silt/clay layers are rich in organic material, containing high percentages of "peaty" materials.

The impacted sediments to be dredged ("soft black muck") are distinctly different in visual appearance to the underlying native sediment. This difference in appearance is due to the different color (black muck vs. brown to olive native material), different gain size

[5] Pre-Remedial Design Evaluation Report. Hylebos Waterway Pre-Remedial Design Program. Commencement Bay Nearshore / Tideflats Superfund Site. November 1999.
[6] Muck is described as "organic soil of very soft consistency" in the USACE Dredging Desk Reference, 1993.

(silty clay vs. silty sand native material), difference in density (very soft vs. soft to medium stiff native material). This difference in appearance allowed for consistent visual differentiation of the impacted material from the native material in the sediment cores collected for the project.[7]

2.1.3 In-Water Construction Window

In-water work will be completed during an uninterrupted construction window between July 16 and the following February 14 each year. In-water work will not be performed between February 15 and the following July 15 each year to protect fisheries resources. In-water work will be allowed 24 hours per day, seven days per week during the construction window. Upland construction will be allowed year round, seven days a week, 24 hours per day.

2.1.4 Dredging

Mechanical dredging equipment will be used to remove the soft impacted sediment, which overlies the denser native sediment. The dredging equipment will be configured to limit the removal of excess amounts of the native material. One example of a mechanical dredge is derrick barge with a rehandling clamshell bucket, which is designed to cut on a fairly level surface, and tends to ride on top of more dense native material. Another example is a backhoe dredge, possibly configured with a horizontal profiling bucket that can also cut a fairly level surface.

Precision navigation methods will be utilized to reduce overdredging and consequently reduce the total dredging volume. Contractors will be required to utilize real time, integrated, computerized horizontal and vertical (x,y,z) positioning systems during dredging to control accuracy of dredging and reduce excess dredging volumes.

The dredging plan will incorporate components intended to reduce the potential for recontamination of remediated areas due to sloughing from adjacent impacted material, and to limit the development of a contaminated fluff layer above the native sediments. For example the thicker deposits of impacted material (ten to fifteen feet thick) found outside the navigation channel would be dredged first, leaving a more uniform two to three foot thick layer of impacted material throughout the cleanup area. A second dredging pass would then remove the remaining impacted sediment down to native material, with a reduced chance of recontamination from sloughing. Also, dredging would generally proceed from top of slope down, to further reduce the impacts of sloughing.

The use of precision navigation methods will allow the use of relatively small dredging management units (DMUs) in the dredging plan, ranging in size from 25'x25' to 50'x100'. The depth of dredging will vary from DMU to DMU in order to closely track

[7] Event 1A and 1B Data Report. Hylebos Waterway Pre-Remedial Design Program. Striplin Environmental Associates, Inc. June 1996.

the depth of impacted sediment in the waterway. The use of relatively small DMUs will result in irregular bottom conditions from the variable dredge depths. Consequently the bottom will be regraded with sand following completion of dredging.

When the precision navigation methods indicate the dredging is approaching the design depth, ongoing visual observations will be made of the dredged material as it is placed in the haul barge to provide immediate indications of the success of the remediation program and to make appropriate adjustments of the dredge depth (see Type 1 Observations, Performance Monitoring of Dredged Areas).

2.1.5 Offloading

Dredged material will be placed on barges for transport to the offloading site. Dredged material will be transferred from haul barges to upland at a waterfront offload facility located at the ATOFINA Chemicals property. The waterfront offload facility will be designed to limit loss of sediment during transfer and stockpiling, including potential losses from sediment drainage and rainfall runoff. Several different methods may be utilized to offload sediment, including clamshell dredge, submersible pump, conveyor belts, and rubber tired loaders. Debris encountered during dredging will also be sent to the Landfill, with the exception of easily segregated metal, which will be delivered to General Metals for recycling.

2.1.6 Transportation to Landfill

Dredged material will be transported by rail to Roosevelt Regional Landfill. Dredged material will be transferred into open-top 20-foot long shipping containers for transport to the landfill. Each shipping container will be lined with a pre-formed plastic bag intended to prevent dredged material from spilling over the top of the container during transport, and to facilitate emptying of the container, as was successfully demonstrated in the Head of Hylebos Pilot Remediation Program conducted during December 2001.

Once at the landfill intermodal facility, the loaded containers will be moved to trucks, transported to the landfill working face and tipped. The dredged material and liners will be disposed at the landfill. Empty containers will be returned to the intermodal yard, placed back on railcars and returned to the Hylebos dredge site. New liners will be used for each loading cycle.

2.1.7 Sand Grading

The use of relatively small DMUs will result in irregular bottom conditions due to the variable dredge depth of each DMU. Consequently sand will be placed on the bottom following completion of dredging to smooth out the shape of the bed. A deposit of sand will be placed across the bottom, and the existing hydrodynamic conditions in the waterway (both natural and shipping traffic) will subsequently redistribute the sand into the pockets in the bottom and eventually create more natural bottom contours.

Sand grading of DMUs will be initiated once dredging is considered to be complete (by Condition B or C, Type 2 Observations, Performance Monitoring of Dredged Areas).

Sand grading will consist of the placement of a layer of sand on the bottom with a volume that is at least equal to the area of the DMU by six inches in depth. The contractor will be allowed to place up to twice the specified volume of sand. For example, a DMU that is 50 feet wide by 100 feet long would be graded with 90 to 180 cubic yards of sand. (50' x 100' x 0.5' = 2500 cf, = 92 cy) In addition, sand grading will be constrained to a bottom elevation, within the navigation channel, that is deeper than –32 feet MLLW. While the contractor will be directed to generally place the sand evenly across the site, the only performance criteria will be the placement of a volume within a DMU that is within the prescribed volume range.

The material used for sand grading, shall meet the WSDOT Select Borrow gradation specification[8,9]

Sieve Size	Percent Passing
6" square	100%
US No. 40	50% max
US No. 200	10% max

2.1.8 Performance Monitoring of Sediment in Dredged Areas

Performance monitoring of sediment within dredged areas will consist exclusively of the following methods. As discussed in Section 2.1.2, readily observed characteristics are displayed by the impacted sediment and native sediment. These differences will be used for field verification that impacted material has been removed.

Type 1 – Visual Observations During Dredging. When the precision navigation methods indicate the dredging is approaching the design depth, ongoing visual observations will be made of the dredged material as it is placed in the haul barge to provide immediate indications of the success of the remediation program. The presence of native material in a dredge bucket will be a positive indication that the dredging is sufficiently deep at that location to remove the impacted sediment. On the other hand, the presence of only soft black muck in a dredge bucket will be an indication that the dredging has not advanced deep enough to remove the impacted sediment at that location. This visual data will be utilized to adjust the depth of dredging to assure removal of the impacted sediment in the waterway.

Type 2 – Visual Classification of Post-Dredge Samples. The effectiveness of the cleanup within each DMU will be verified based on visual classification of a surface sample

[8] Washington State Department of Transportation Standard Specifications for Road, Bridge and Municipal Construction, 1996.
[9] The specified material does assist in providing suitable habitat for prey items of juvenile salmonids.

within the DMU. A surface sample (approximately eight inches deep) will be collected in each DMU and visually classified into one of three conditions as follows:

Condition A: Undisturbed layer of soft black muck the full depth of the sample, or as a surface layer greater than two inches thick overlying native sediment. Condition A requires additional dredging to remove the impacted sediment (soft black muck), followed by additional Type 2 sampling and visual classification until Condition B or C is achieved.

Condition B: Disturbed layer of residual material consisting of a blend of soft black muck and native sediment overlying native sediment. This residual layer, which will appear as a mixture of the impacted sediment and the native sediment, is the typical condition that results from dredging, and is a condition that is virtually unavoidable in dredging projects. The Head of Hylebos project will be completed using methods specifically intended to reduce the thickness of this residual layer (see Dredging). If the residual layer is less than six inches thick, then dredging will be complete. If the residual layer is greater than six inches thick, then the respondents will have the option of performing testing to demonstrate satisfaction of the SQO criteria or natural recovery criteria (concentrations no greater than 2-times SQO), or of completing another dredging pass. The respondents can utilize the PSDDA open-water disposal site for the cleanup dredging if PSDDA criteria are met. Any additional dredging will be followed by additional Type 2 sampling and visual classification, and possible subsequent remediation, until Condition B or C is achieved.

Condition C: Native material at the surface. Dredging is complete.

2.1.9 Water Quality Management

All previously performed dredging elutriate tests from the Head of Hylebos Waterway showed no exceedances of applicable marine water quality criteria[10]. Therefore water quality management and associated testing will focus on turbidity during dredging and offloading.

Water that accumulates in the haul barge during dredging and prior to offloading will be allowed to discharge back into the waterway as return water. Prior to return to the waterway, the barge overflow water will pass through straw bales or similar filter media to reduce turbidity effects. Water that accumulates at upland holding facilities will be collected and held overnight while fines settle out and then will be pumped back into

[10] Dredging Elutriate Test, Head of Hylebos Waterway. March 9, 2001. Dalton, Olmsted & Fuglevand, Inc.

Hylebos Waterway as return water of the dredging program (column settling tests show turbidity levels at less than 10 NTU after 12-24 hours)[11].

Water quality standards pertaining to the marine waters of Hylebos Waterway (Class C) shall apply to this project except in the authorized dilution zone. For this project, the entire remediation area plus the water area within 300 feet of the remediation boundary is authorized as the dilution zone for this action. Water quality monitoring shall consist of measuring turbidity and dissolved oxygen. Monitoring will be performed at 1/3 and 2/3 of the water column depth based on mean lower low water (MLLW). The dissolved oxygen criterion is 3.5 mg/l. For Class C water bodies, WAC 173-201A –030 (4)(v) states that turbidity shall not exceed 10 NTU above background when background turbidity is 50 NTU or less. If background turbidity is greater than 50 NTU, turbidity cannot be increased more than 20% above background.

If exceedances of the criteria are detected, dredging and/or sediment management procedures will be modified to maintain water quality within acceptable levels. EPA will be notified of exceedances and corrective actions implemented.

2.1.10 Long-Term Operations, Maintenance & Monitoring

The HHCG plan is to remove all problem sediment within the Head of Hylebos SMAs, including natural recovery areas, with the exception of one cap to be constructed at SMA 231, the dock/structure area at ATOFINA Chemicals (see Table 2-1). This extensive removal plan results in no lingering or future impacts from questionable subsurface sediment. Consequently the need for long-term monitoring is generally eliminated (except for capping at SMA 231), as any existing sediment sources of recontamination will have been removed from the waterway, as follows:

- Capping area SMA 231 will be subject to a Long-Term Operations, Maintenance & Monitoring Program as defined in the SOW.

- Dredging areas designated as complete by Condition B or C under Type 2 Performance Monitoring will not be subject to a Long-Term Operations, Maintenance & Monitoring program.

- Dredging areas designated as Natural Recovery (see Condition B Type 2 Performance Monitoring), if any, will be subjected to a Long-Term Operations, Maintenance & Monitoring program. No such areas are currently anticipated in the HHCG plan.

The types of monitoring will be limited to:

- Visual Observations

[11] Turbidity measurements from the Hylebos column settling tests were generally less than 10 NTU after 12-24 hours of settling. Section 3.3.3.3 of Round 1 Data Report. March 20, 1998. Striplin Environmental Associates.

- Bathymetry
- Sediment chemistry (indicator chemicals from Pre-Remedial Design[12])
- Biological Tests (Table 2 of SOW)

2.1.11 Habitat Impact Avoidance and Mitigation

The 2000 ESD findings conclude that the dredging and capping activities in the waterway will result in improved habitat quality throughout the waterway, with the resulting substrate greatly benefiting fish and wildlife resources. The ESD also determined that the performance of the remedial actions is not likely to jeopardize the continued existence of any federally listed or threatened endangered species or result in the destruction or adverse impacts to critical habitat for these species.

The SOW identifies conservation measures to avoid and minimize adverse impacts to the aquatic environment resulting from implementation of the remedial action. The remedial design will apply the following avoidance and compensatory mitigation measures:

- In order to protect listed or threatened endangered species, in-water remedial construction will not be allowed during fish-critical activity periods, defined as February 15 through July 15 each year.

- There will be no net loss of aquatic habitat area due to performance of the remedial action, measured as the area of the bed of the Head of Hylebos Waterway below elevation 11.8 feet MLLW.

- There will be no net conversion of the intertidal habitat (based on the total pre and post cleanup area between elevation -4 to +11.8 feet MLLW) and shallow subtidal habitat (based on the total pre and post cleanup area between elevation -10 to -4 feet MLLW) to subtidal habitat (elevation deeper than -10 feet MLLW) from the remedial action, while maintaining the existing overall habitat characteristics (slope, area, substrate) at the Head of Hylebos Waterway.

- In the event that a net conversion of intertidal habitat and shallow subtidal habitat to subtidal habitat is unavoidable, then compensatory mitigation will be required. If required, the compensatory mitigation plan will be based on the following:

    - Compensatory mitigation plans will be submitted with the remedial design to restore intertidal and shallow subtidal habitat to acreages existing prior to remediation.

    - The preference for compensatory mitigation will be in-kind to the loss (slope, area, substrate), located on site (in or adjacent to the Head of Hylebos Waterway).

[12] Indicator Chemicals are defined in Round 2 SAP Addendum, Hylebos Waterway Pre-Remedial Design Program. Striplin Environmental Associates. 1998.

- When in-kind on-site compensatory mitigation is not possible, mitigation plans will be developed in accordance with the criteria and findings of the Simenstad report.

- Capping and sand grading material that is placed in intertidal habitat (between elevation –4 to +11.8 feet MLLW) will assist in providing suitable habitat for prey items of juvenile salmonids.

2.2 REMEDIAL DESIGN DATA AND STUDIES

Because of the extensive work completed for the Pre-Remedial Design, only a limited amount of additional data collection activities and studies may be needed for remedial design.

2.2.1 Sediment Coring

No additional sediment coring is currently planned for the open access dredging. Subsurface sediment cores may be collected following dredging, if needed, to determine if remaining sediment is suitable for open water disposal at the Commencement Bay PSDDA site.

Capping and/or dredging is under consideration at four isolated SMAs, as follows:

- Dock/structure SMA 231 at ATOFINA Chemicals. Capping
- Dock/structure SMA 131 at former Tacoma Boat. Dredging
- Dock/structure SMA 233 at Hylebos Marina. Dredging
- Natural recovery SMA 203 at General Metals graving slip. Dredging

Remedial design for these areas will include input from property owners on their planned upgrades (if any) to existing structures, coordination of the remedial action with ongoing operations, and provisions for long-term protection of sediment if left in place. It is possible that sediment coring may be completed to refine the remedial design of these areas. The need for sediment coring would be made at the time of the 30% design submittal.

2.2.2 Water Quality

The water quality evaluation presented in the November 1999 Evaluation Report was based on a chemical mobility program completed as part of the Round 1 sampling and analysis. The Dredged Material Sampling and Analysis program initiated by the PCW in December 2000 generated additional water quality data at the Head of Hylebos Waterway in the form of the dredging elutriate tests. The data from those tests show that no

exceedance of the applicable water quality criteria is expected during dredging. Consequently no additional water quality testing is planned for remedial design.

2.3 DEVELOPMENT PROJECTS

The HHCG is not currently aware of development projects anticipated on or near intertidal properties that are subject to work under the SOW.

3 SCHEDULE

The schedule for submission of major deliverables to EPA is described in detail in Section V of the SOW. This RD Work Plan adopts the SOW schedule. The scope of the deliverables is defined in Section IV of the SOW, Work to be Performed by Respondents. When a conflict exists between Section IV and V regarding the content of deliverables, Section IV will take precedent.

The HHCG plans to submit one set of design deliverables. However the HHCG may choose to submit separate remedial design deliverables for discrete elements of dredging or capping, as provided for in the SOW.

The timeframes set forth in the SOW for major deliverables have been converted to an estimated calendar schedule for remedial design, as summarized in Table 3-1. This conversion required the assumption of durations of EPA reviews of the major deliverables. Thirty days were assumed for the earlier EPA reviews, with fifteen to twenty days assumed for the later reviews.

Table 3-1 shows receipt of EPA approval of the RA Work Plan by the end of March 2003, which should provide sufficient time to prepare for initiation of in-water construction work by July 16, the start of the In-Water Construction Window. However the SOW schedule does not allow for any construction in 2002.

If, as the SOW allows, the 30% design were eliminated for a discrete element to accelerate that element of the cleanup, the approval of the RA Work Plan for that element would be 90 days earlier than shown in Table 3-1, or December 26, 2002. This provides only 50 days before the close of the In-Water Construction Window on February 15. The 50 days is not sufficient to award a construction contract, have a pre-construction meeting 15 days after award, and initiate construction of any meaningful task. Consequently the SOW schedule does not allow for accelerated design to facilitate implementation of a discrete remedial element during the 2002 In-Water Construction Window.

Table 3-1. SOW Remedial Design Schedule, Head of Hylebos Waterway

EVENT	DEADLINE	DAYS FROM EFFECTIVE DATE OF UAO	COMMENTS
Effective Date of Order	April 15, 2002	0	
Written notice of intent to comply	April 25, 2002	10	10 days after the effective date of the UAO
Remedial Design Workplan	April 30, 2002	15	5 days after notifying EPA of intent to comply. RD Workplan needs to move forward in advance of the notification.
Receipt of EPA comments on RD Workplan	May 30, 2002	45	30 days after submittal.
30% Design	July 24, 2002	100	100 days after the effective date of the UAO.
Receipt of EPA comments on 30% Design	August 23, 2002	130	30 days after submittal.
90% Design	October 22, 2002	190	60 days after EPA comments on 30% Design received.
Receipt of EPA comments on 90% Design	November 21, 2002	220	30 days after submittal.
Final Design	January 5, 2003	265	45 days after EPA comments on 90% Design received.
Receipt of EPA approval of Final Design	January 25, 2003	285	20 days after submittal.
RA Workplan	March 11, 2003	330	45 days after EPA approval of Final Design.
Receipt of EPA approval of RA Workplan	March 26, 2003	345	15 days after submittal.
Award construction contract	May 25, 2003	405	NLT 60 days after EPA approval of RA Workplan.
Pre-construction meeting	June 9, 2003	420	15 days after award of construction contract.
Initiate construction	July 14, 2003	455	NLT 50 days after award of construction contract.

4 PROJECT TEAM AND RESPONSIBILITIES

The project team consists of the HHCG representatives and the remedial design team. The qualifications of the remedial design team are presented below, along with the responsibility, authority, and contact information for key personnel.

4.1 HHCG REPRESENTATIVES

The designated representatives of the HHCG members are:

- Fred Wolf, Regional Remediation Manager for ATOFINA Chemicals, Inc.
- Mat Cusma, Environmental Administrator for General Metals of Tacoma

Only the HHCG representatives collectively have the authority to enter into or to modify any agreements with EPA or other parties regarding the activities covered by this RD Work Plan.

4.2 REMEDIAL DESIGN TEAM

The remedial design technical team consists of companies and individuals with extensive experience at Hylebos Waterway, as well as remedial design of sediment dredging and capping projects. Dalton, Olmsted & Fuglevand, Inc. (DOF) is the prime design contractor, supported by Striplin Environmental Associates (SEA) and DMD, Inc. (DMD) for sediment sampling and data validation.

The technical team is organized around the three major components of the remedial design: project management; remedial design; sampling and monitoring. Each component is discussed below.

Project Management / Project Coordinator: The project manager will be responsible to HHCG for the technical implementation of the work plan, coordination of the technical team, and will act as the Project Coordinator with EPA for HHCG. Paul Fuglevand (DOF) is the designated project manager / project coordinator for the project. He has been project coordinator for the pre-remedial design (Hylebos Cleanup Committee) since 1993. He is responsible for the following tasks:

- Project Management
- Project Coordination with EPA
- Work Plan Preparation
- Submission of Progress Reports

Remedial Design & Construction Oversight: The remedial design manager will be responsible for preparation of the plans and specifications, construction quality plans (CQAP, WQMP, OMMP), and construction oversight. Rob Webb (DOF) is the remedial design manager for the project. He has been providing design services to the HHCG for

the past year, and has considerable experience in the design and implementation of dredging and capping projects for sediment cleanup. He is responsible for the following tasks:

- Remedial Design
- Construction Quality Assurance Plan
- Water Quality Monitoring Plan
- Operation, Maintenance & Monitoring Plan
- Construction Oversight
- Cost Estimating
- Report Preparation

Sampling and Monitoring: The sampling and monitoring manager will be responsible for overseeing the collection of sediment/water data for design and monitoring, preparation of SAP/QAPP/HSP plans, and preparation of sampling and monitoring data reports. Rob Webb (DOF) will serve as sampling and monitoring manager, with assistance provided by Sandy Browning (SEA) and Raleigh Farlow (DMD). Sampling and monitoring tasks are:

- Sampling Plans
- Performance Monitoring
- Long-Term Monitoring
- Sediment Sampling and Analysis
- Data Evaluation
- Report Preparation
- Analytical Laboratory Oversight
- Data Validation and Evaluation
- Report Preparation

4.3 CONTACT INFORMATION FOR KEY PERSONNEL

The contact information for key personnel is provided below.

Name Company Responsibility	Address	Phone Numbers V = voice. F = fax M = mobile	email
Fred Wolf ATOFINA HHCG Rep.	Fred Wolf ATOFINA Chemicals 2901 Taylor Way Tacoma, WA 98421-4330	V 253 627-9101 Ext 10 F 253 627-0554	Fredrick.wolf@atofina.com
Mat Cusma General Metals HHCG Rep.	Mat Cusma General Metals of Tacoma P.O. Box 10047 Portland, OR 97201	V 503 286-6944 F 503 286-6948 M 503 209-6057	mcusma@schn.com
Paul Fuglevand DOF Proj. Coordinator	Paul Fuglevand Dalton, Olmsted & Fuglevand, Inc. 10827 NE 68th St. Kirkland, WA 98033	V 425 827-4588 F 425 739-9885 M 206 660-3079	pfuglevand@dofnw.com