WEEKLY PROGRESS REPORT
SEPTEMBER 6 – SEPTEMBER 9, 2005

REMOVAL ACTION
NW NATURAL "GASCO" SITE

Prepared for Submittal to

U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue
Seattle, Washington 98101

Prepared by

Anchor Environmental, L.L.C.
6650 SW Redwood Lane Suite 110
Portland, Oregon 97224

On behalf of

NW Natural
220 NW Second Avenue
Portland, Oregon 97209

September 13, 2005

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1 INTRODUCTION

This weekly progress report is a requirement of the U.S. Environmental Protection Agency (EPA) approved Removal Action Project Plan (RAPP) and Section II.5 of the EPA Statement of Work (SOW) for the removal action at the "Gasco" site (Site). The RAPP was prepared to comply with requirements described in the EPA Administrative Order on Consent (Order) for the Site. Consistent with the schedule submitted to EPA (Appendix I of the RAPP), the construction contractor (Sevenson Environmental Services [SES]) initiated construction activities at the Site on August 22, 2005 following the pre-construction meeting. The remainder of this progress report documents the removal action activities that were conducted during the week of September 6 – September 9, 2005.

2 CONSTRUCTION ACTIVITIES

The following section describes the construction activities conducted at the Site from September 6, 2005 through September 9, 2005.

2.1 Site Construction Activities

2.1.1 Containment Structure Installation

SES completed the following activities related to the containment structures required for the inner removal area configuration on September 6, 2005:

- Completed installation of the secondary containment "oil boom," which lies outside of the bubble curtain (previously installed). The secondary containment boom was secured into place using a series of heavy boat anchors.
- Installed sorbent oil booms, which were attached directly to the inside of the inner removal area silt curtain.
- Began 24-hour continuous operation of the bubble curtain system.
- Completed deployment of the inner removal area silt curtain.
- Installed lighted "no wake zone" buoys to protect the containment system.

2.1.2 Fish Seining

According to procedures outlined in the Removal Action Environmental Protection Plan (Appendix E of the RAPP), staff from Anchor Environmental performed a fish seining operation within the inner removal area after the silt curtain had been deployed. Seven seine net sets were deployed in areas without obstructions (e.g., piling) over the entire area of inner containment. The fish were taken from the net, placed into containers and transported to outside of the containment area and released into the Willamette River. No endangered species were captured during the seining procedure. Approximately 164 fish consisting of eight different species were captured and released. The specific species and quantity captured and released were as follows:

- Shad—94
- Yellow Perch—19
- Small mouth bass—45
- Large mouth bass—1
- Starry flounder—2
- Sculpin—1

- Crayfish—1
- Larval shrimp—1

2.1.3 In-Water Construction Activities

SES conducted the following in-water construction activities:

- Dredging began on September 7, 2005. Approximately 600 – 700 cubic yards of material were dredged from the inner removal area.
- Dredging continued on September 8 – 9, 2005. Approximately 1,100 – 1,200 cubic yards of material were dredged from the inner removal area during these two days of operation.
- Drying agent (Portland cement) was added to the dredged materials on the haul barge at a rate of approximately 5 percent.
- Approximately 1,700-1,900 cubic yards of material was loaded onto the 2200 cubic yard-capacity barge (approximately 85 percent full). The barge was prepared for transport to the off loading facility on September 9, 2005.
- A one-piece tarp was placed and secured over the barge, completely covering the dredged material.

2.2 Problems Encountered and Proposed Solutions

2.2.1 Spill Plate Configuration

During the dredging operations, it was noted that there was a potential for dredged material to fall beneath the spill plates installed between the inner removal area and the transfer barge; and between the drying agent barge and haul barge. Hickey Marine staff installed drapes of heavy geo-textile material to ensure that dredged material could not fall into the water in these two locations.

2.2.2 Dredge Bucket Selection

Dredging began utilizing a 15-cubic yard "environmental" or "closed-cable arm" bucket. The bucket performed well on the outer edges of the dredge prism. As the operator began removing stiffer material near the center of the dredge prism on September 7, 2005, the environmental bucket became ineffective. With verbal coordination with EPA, dredging was continued using a heavier 8-cubic yard digging bucket. The top of the bucket has been outfitted with "mud flaps" to reduce material loss.

3 MONITORING ACTIVITIES

3.1 Dredge Monitoring – Field Parameter Results

In accordance with Appendix D (i.e., Construction Water Sediment Monitoring Plan [WSMP]) of the RAPP, water quality monitoring for field parameters (turbidity, temperature, dissolved oxygen, pH, and visual monitoring for sheens) occurred during dredging operations. Field parameters were monitored hourly for the first four hours of dredging and every four hours thereafter at one upstream station 300 feet from the inner containment area and three downstream stations 150 feet from the inner containment area. Samples were collected at three depths—1 foot below the surface, mid-depth, and one foot above the bottom.

In Table 1, the field parameter results are summarized and compared to the triggers (from Table E-1 of the Removal Action Environmental Protection Plan [RAEPP]). No exceedances were identified for dissolved oxygen (DO), temperature, or pH parameters during the monitoring events for this time period.

During the first monitoring event on September 7, turbidity exceedances occurred at station RAA-WCD1 at all three depths. This station is the closest station to the shore in the arc configuration described in the WSMP. Per procedures identified in the RAEPP and the WSMP, the Construction Quality Assurance Officer (CQAO) was notified as soon as the turbidity exceedances were identified. The CQAO notified the contractor of the exceedances and work was paused long enough to discuss operational controls that could be implemented. Although these procedures were followed, it was determined in coordination with EPA that turbidity triggers were not related to the dredging operation. During this event, river conditions were rough and wind generated waves were hitting the shoreline causing increased turbidity in inshore waters adjacent to the compliance sampling stations. The Project Coordinator contacted John Malek of the EPA to discuss the turbidity results. Given the river conditions, it was agreed that the turbidity exceedances were not related to the dredging and that dredging operations could continue without modification. Similar exceedance conditions were identified and noted during three separate monitoring events on September 7 and 8, 2005. Additional turbidity monitoring was conducted 150 feet downstream to very close to the containment to determine if the activities behind the curtain might be a source of the turbidity. These transects indicated that there was no consistent

difference between turbidity measurements close to and further away from the primary containment. No turbidity exceedances were identified during the one sampling event conducted on September 9, 2005 when conditions on the river were much calmer.
During a few of the monitoring events, access to some of the downstream sample locations (arc formation shown on Figure D-2 of the WSMP) was not possible due to the presence of barges at the FAMM dock. Therefore, the number of downstream monitoring stations ranged from one to three throughout the time period.

3.2 Dredge Monitoring – Laboratory Parameter Results

In accordance with the WSMP, water quality monitoring for laboratory parameters (PAHs [anthracene, benzo(b)anthracene, benzo(a)pyrene, dibenzofuran, fluoranthene, fluorene, naphthalene, and phenanthrene] and cyanide) also occurred during the dredging operation. Samples for laboratory analyses were collected once a day for the first three days of dredging (September 6 through 9, 2005) at one of the downstream sampling stations at three different depths (one foot below the surface, mid-depth, and one foot above the bottom). Results of the laboratory parameters had not been received from the laboratory as of the writing of this report on September 12, 2005.

3.3 Dredge Monitoring – Silt Curtain-Mudline Interface

In addition to the collection of water samples for field and laboratory parameters, water samples were collected at the inner containment silt curtain-mudline interface on September 8, 2005 to monitor the effectiveness of the curtain at the mudline interface. One water sample was collected upstream and one downstream from just outside of the primary curtain. Both sample descriptions indicated some particulate matter and green algae floating in the water. Neither sample contained evidence of any tar. The field crew also noted that the area within the silt curtain was noticeably more turbid than the area outside of the curtain. Water samples were not collected on September 7 or 9 because dredging had stopped after field and laboratory parameters had been collected but before the grab samples could be collected.

4 PROPOSED WORK FOR WEEK OF SEPTEMBER 12, 2005

The following activities are proposed for the week beginning September 12, 2005:

- The first loaded barge of dredged material and drying agent will be moved off-site and be transported to the Tidewater facility located at the Port of Morrow near Boardman, Oregon. The waste material will be offloaded into trucks and transported to Chemical Waste Management Landfill near Arlington, Oregon.
- Anchor Environmental will begin the required water quality and conduct the baseline soil monitoring at the offloading site. Anchor Environmental staff will also perform quantity tracking of the loads as they are moved to the landfill facility.
- Dredging within the inner removal area will continue with associated regular water quality monitoring activities. Haul barges will be loaded to 85 percent of capacity with dredged material and drying agent, tarped at the Gasco site, and transported to the off-loading facility.

TABLES

Table 1
Water Quality Monitoring Results Compared to Triggers - Gasco Site
September 6 through 9, 2005

Station ID	Date	Time	Latitude (dd)[1]	Longitude (dd)	Depth (ft)	DO (mg/L)	DO Triggers[2]		Temp (deg C)	Temperature Triggers[2]		Turbidity (NTU)	Turbidity Triggers[2]		pH	pH Triggers[2]	
							Event Specific Background	Pre-construction Background		Event Specific Background	Pre-construction Background		Event Specific Background	Pre-construction Background		Event Specific Background	Pre-construction Background
RAA-WCU[3]	9/7/2005	1350	45.57954	122.75578	1	8.63	NA	NA	21.34	NA	NA	5	NA	NA	7.30	NA	NA
RAA-WCU	9/7/2005	1350	45.57954	122.75578	10	8.41	NA	NA	21.12	NA	NA	5	NA	NA	7.26	NA	NA
RAA-WCU	9/7/2005	1350	45.57954	122.75578	20	7.94	NA	NA	20.88	NA	NA	13	NA	NA	7.18	NA	NA
RAA-WCD1	9/7/2005	1415	45.58060	122.75912	1	8.3	<6.5	<6.5	21.02	21.64	22.59	**13**	8	11.29	7.19	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD1	9/7/2005	1415	45.58060	122.75912	17	8.22	<6.5	<6.5	21.00	21.42	22.32	**16**	8	12.63	7.18	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD1	9/7/2005	1415	45.58060	122.75912	37	8.15	<6.5	<6.5	20.99	21.18	21.84	**19**	16	18.56	7.16	<6.5 or >8.5	<6.5 or >8.5
RAA-WCU	9/7/2005	1610	45.57954	122.75578	1	8.75	NA	NA	21.33	NA	NA	5	NA	NA	7.31	NA	NA
RAA-WCU	9/7/2005	1610	45.57954	122.75578	17.5	8.4	NA	NA	21.11	NA	NA	5	NA	NA	7.22	NA	NA
RAA-WCU	9/7/2005	1610	45.57954	122.75578	34	7.64	NA	NA	20.79	NA	NA	18	NA	NA	7.07	NA	NA
RAA-WCD2	9/7/2005	1635	45.58085	122.75897	1	8.33	<6.5	<6.5	20.97	21.63	22.59	**18**	8	11.29	7.17	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD2	9/7/2005	1635	45.58085	122.75897	21.5	8.26	<6.5	<6.5	20.92	21.41	22.32	**18**	8	12.63	7.15	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD2	9/7/2005	1635	45.58085	122.75897	42	8.16	<6.5	<6.5	20.85	21.09	21.84	15	21	18.56	7.15	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD3	9/7/2005	1625	45.58096	122.75883	1	8.33	<6.5	<6.5	20.84	21.63	22.59	**13**	8	11.29	7.16	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD3	9/7/2005	1625	45.58096	122.75883	22.5	8.28	<6.5	<6.5	20.87	21.41	22.32	**17**	8	12.63	7.15	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD3	9/7/2005	1625	45.58096	122.75883	43	8.19	<6.5	<6.5	20.86	21.09	21.84	15	21	18.56	7.16	<6.5 or >8.5	<6.5 or >8.5
RAA-WCU	9/7/2005	1700	45.57954	122.75578	1	8.52	NA	NA	21.07	NA	NA	6	NA	NA	7.26	NA	NA
RAA-WCU	9/7/2005	1700	45.57954	122.75578	19	8.22	NA	NA	20.99	NA	NA	7	NA	NA	7.20	NA	NA
RAA-WCU	9/7/2005	1700	45.57954	122.75578	32	7.74	NA	NA	20.64	NA	NA	20	NA	NA	7.11	NA	NA
RAA-WCD2	9/7/2005	1730	45.58085	122.75897	1	8.43	<6.5	<6.5	21.04	21.37	22.59	8	9	11.29	7.21	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD2	9/7/2005	1730	45.58085	122.75897	22	8.31	<6.5	<6.5	21.03	21.29	22.32	10	10	12.63	7.20	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD2	9/7/2005	1730	45.58085	122.75897	43	8.13	<6.5	<6.5	20.92	20.94	21.84	15	23	18.56	7.16	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD3	9/7/2005	1715	45.58096	122.75883	1	8.39	<6.5	<6.5	21.11	21.37	22.59	10	9	11.29	7.21	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD3	9/7/2005	1715	45.58096	122.75883	22	8.27	<6.5	<6.5	20.99	21.29	22.32	12	10	12.63	7.18	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD3	9/7/2005	1715	45.58096	122.75883	43	8.16	<6.5	<6.5	20.92	20.94	21.84	15	23	18.56	7.15	<6.5 or >8.5	<6.5 or >8.5
RAA-WCU	9/7/2005	1745	45.57954	122.75578	1	8.57	NA	NA	20.98	NA	NA	19	NA	NA	7.22	NA	NA
RAA-WCU	9/7/2005	1745	45.57954	122.75578	18	8.43	NA	NA	21.06	NA	NA	15	NA	NA	7.18	NA	NA
RAA-WCU	9/7/2005	1745	45.57954	122.75578	39	8.37	NA	NA	21.04	NA	NA	19	NA	NA	7.18	NA	NA
RAA-WCD2	9/7/2005	1752	45.58085	122.75897	1	8.35	<6.5	<6.5	21.02	21.28	22.59	8	22	11.29	7.20	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD2	9/7/2005	1752	45.58085	122.75897	22	8.3	<6.5	<6.5	21.05	21.36	22.32	9	18	12.63	7.19	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD2	9/7/2005	1752	45.58085	122.75897	43	8.21	<6.5	<6.5	21.02	21.34	21.84	9	22	18.56	7.17	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD3	9/7/2005	1750	45.58096	122.75883	1	8.52	<6.5	<6.5	21.02	21.28	22.59	8	22	11.29	7.28	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD3	9/7/2005	1750	45.58096	122.75883	22	8.34	<6.5	<6.5	21.02	21.36	22.32	7	18	12.63	7.21	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD3	9/7/2005	1750	45.58096	122.75883	44	8.02	<6.5	<6.5	20.80	21.34	21.84	14	22	18.56	7.16	<6.5 or >8.5	<6.5 or >8.5
RAA-WCU	9/8/2005	915	45.57954	122.75578	1	8.09	NA	NA	20.58	NA	NA	8	NA	NA	7.22	NA	NA
RAA-WCU	9/8/2005	915	45.57954	122.75578	15	8.04	NA	NA	20.58	NA	NA	10	NA	NA	7.21	NA	NA
RAA-WCU	9/8/2005	915	45.57954	122.75578	34	7.95	NA	NA	20.57	NA	NA	11	NA	NA	7.20	NA	NA
RAA-WCD1	9/8/2005	1010	45.58060	122.75912	1	8.11	<6.5	<6.5	20.59	20.88	22.59	**14**	11	11.29	7.20	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD1	9/8/2005	1010	45.58060	122.75912	17	8.07	<6.5	<6.5	20.59	20.88	22.32	**17**	13	12.63	7.19	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD1	9/8/2005	1010	45.58060	122.75912	33	8.02	<6.5	<6.5	20.59	20.87	21.84	18	14	18.56	7.20	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD2	9/8/2005	940	45.58085	122.75897	1	8.08	<6.5	<6.5	20.62	20.88	22.59	10	11	11.29	7.20	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD2	9/8/2005	940	45.58085	122.75897	23	8.03	<6.5	<6.5	20.61	20.88	22.32	11	13	12.63	7.19	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD2	9/8/2005	940	45.58085	122.75897	45	7.99	<6.5	<6.5	20.61	20.87	21.84	17	14	18.56	7.18	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD3	9/8/2005	930	45.58096	122.75883	1	8.09	<6.5	<6.5	20.62	20.88	22.59	10	11	11.29	7.21	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD3	9/8/2005	930	45.58096	122.75883	23	8.01	<6.5	<6.5	20.61	20.88	22.32	10	13	12.63	7.21	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD3	9/8/2005	930	45.58096	122.75883	46	7.95	<6.5	<6.5	20.62	20.87	21.84	12	14	18.56	7.20	<6.5 or >8.5	<6.5 or >8.5
RAA-WCU	9/8/2005	1300	45.57954	122.75578	1	8.34	NA	NA	21.30	NA	NA	4	NA	NA	7.29	NA	NA
RAA-WCU	9/8/2005	1300	45.57954	122.75578	11	7.96	NA	NA	20.63	NA	NA	9	NA	NA	7.20	NA	NA
RAA-WCU	9/8/2005	1300	45.57954	122.75578	35	7.72	NA	NA	20.59	NA	NA	20	NA	NA	7.16	NA	NA
RAA-WCD1	9/8/2005	1310	45.58060	122.75912	1	8.18	<6.5	<6.5	20.68	21.60	22.59	10	7	11.29	7.20	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD1	9/8/2005	1310	45.58060	122.75912	22	8.13	<6.5	<6.5	20.69	20.93	22.32	12	12	12.63	7.19	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD1	9/8/2005	1310	45.58060	122.75912	43	8.05	<6.5	<6.5	20.68	20.89	21.84	14	23	18.56	7.17	<6.5 or >8.5	<6.5 or >8.5

Table 1
Water Quality Monitoring Results Compared to Triggers - Gasco Site
September 6 through 9, 2005

							DO Triggers[2]			Temperature Triggers[2]			Turbidity Triggers[2]			pH Triggers[2]	
Station ID	Date	Time	Latitude (dd)[1]	Longitude (dd)	Depth (ft)	DO (mg/L)	Event Specific Background	Pre-construction Background	Temp (deg C)	Event Specific Background	Pre-construction Background	Turbidity (NTU)	Event Specific Background	Pre-construction Background	pH	Event Specific Background	Pre-construction Background
RAA-WCD2	9/8/2005	1315	45.58085	122.75897	1	8.2	<6.5	<6.5	20.71	21.60	22.59	10	7	11.29	7.24	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD2	9/8/2005	1315	45.58085	122.75897	23	8.09	<6.5	<6.5	20.66	20.93	22.32	11	12	12.63	7.19	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD2	9/8/2005	1315	45.58085	122.75897	44	8.05	<6.5	<6.5	20.66	20.89	21.84	12	23	18.56	7.18	<6.5 or >8.5	<6.5 or >8.5
RAA-WCU	9/8/2005	1700	45.57954	122.75578	1	8.89	NA	NA	21.32	NA	NA	5	NA	NA	7.42	NA	NA
RAA-WCU	9/8/2005	1700	45.57954	122.75578	15	8.17	NA	NA	21.01	NA	NA	8	NA	NA	7.23	NA	NA
RAA-WCU	9/8/2005	1700	45.57954	122.75578	31	7.62	NA	NA	20.56	NA	NA	18	NA	NA	7.11	NA	NA
RAA-WCD1	9/8/2005	1725	45.58060	122.75912	1	8.36	<6.5	<6.5	21.14	21.62	22.59	11	8	11.29	7.24	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD1	9/8/2005	1725	45.58060	122.75912	15	8.28	<6.5	<6.5	20.98	21.31	22.32	12	11	12.63	7.20	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD1	9/8/2005	1725	45.58060	122.75912	30	8.16	<6.5	<6.5	20.91	20.86	21.84	15	21	18.56	7.18	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD2	9/8/2005	1718	45.58085	122.75897	1	8.39	<6.5	<6.5	21.20	21.62	22.59	11	8	11.29	7.22	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD2	9/8/2005	1718	45.58085	122.75897	22	8.25	<6.5	<6.5	20.88	21.31	22.32	12	11	12.63	7.19	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD2	9/8/2005	1718	45.58085	122.75897	43	8.19	<6.5	<6.5	20.89	20.86	21.84	14	21	18.56	7.18	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD3	9/8/2005	1705	45.58096	122.75883	1	8.37	<6.5	<6.5	21.17	21.62	22.59	11	8	11.29	7.22	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD3	9/8/2005	1705	45.58096	122.75883	22	8.24	<6.5	<6.5	20.87	21.31	22.32	**14**	11	12.63	7.20	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD3	9/8/2005	1705	45.58096	122.75883	43	8.18	<6.5	<6.5	20.83	20.86	21.84	13	21	18.56	7.18	<6.5 or >8.5	<6.5 or >8.5
RAA-WCU	9/9/2005	1140	45.57954	122.75578	1	8.12	NA	NA	20.37	NA	NA	1	NA	NA	7.32	NA	NA
RAA-WCU	9/9/2005	1140	45.57954	122.75578	20	7.96	NA	NA	20.35	NA	NA	7	NA	NA	7.26	NA	NA
RAA-WCU	9/9/2005	1140	45.57954	122.75578	39	7.88	NA	NA	20.35	NA	NA	6	NA	NA	7.26	NA	NA
RAA-WCD1	9/9/2005	1212	45.58060	122.75912	1	8.15	<6.5	<6.5	20.37	20.67	22.59	4	4	11.29	7.26	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD1	9/9/2005	1212	45.58060	122.75912	17	8.06	<6.5	<6.5	20.38	20.65	22.32	7	10	12.63	7.25	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD1	9/9/2005	1212	45.58060	122.75912	33	8.01	<6.5	<6.5	20.38	20.65	21.84	7	9	18.56	7.23	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD2	9/9/2005	1206	45.58085	122.75897	1	8.16	<6.5	<6.5	20.38	20.67	22.59	7	4	11.29	7.26	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD2	9/9/2005	1206	45.58085	122.75897	22	8.08	<6.5	<6.5	20.38	20.65	22.32	7	10	12.63	7.23	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD2	9/9/2005	1206	45.58085	122.75897	45	8	<6.5	<6.5	20.38	20.65	21.84	8	9	18.56	7.22	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD3	9/9/2005	1159	45.58096	122.75883	1	8.11	<6.5	<6.5	20.38	20.67	22.59	6	4	11.29	7.25	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD3	9/9/2005	1159	45.58096	122.75883	23	8.03	<6.5	<6.5	20.38	20.65	22.32	6	10	12.63	7.24	<6.5 or >8.5	<6.5 or >8.5
RAA-WCD3	9/9/2005	1159	45.58096	122.75883	45	7.98	<6.5	<6.5	20.38	20.65	21.84	7	9	18.56	7.24	<6.5 or >8.5	<6.5 or >8.5

Notes: [1]Datum for coordinates is NAD 83.

[2]Trigger is exceeded where downstream conditions exceed the specified amounts relative to both the event-specific background and the pre-construction background survey (95% upper confidence limit on the mean for temperature and turbidity parameters). DO trigger is less than 6.5 mg/L; Temperature trigger is 0.3 deg C above background; Turbidity trigger is 3 NTU above background; and pH trigger is <6.5 or >8.5 units.

[3]RAA-WCU is the upstream event-specific background station.

BOLD indicates an exceedance

APPENDIX A

GASCO SITE WQ MONITORING LOG SHEETS

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Fax 206.287-9131
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Water Quality Monitoring Form

Station ID: RAA-WCU-~~1~~ 8 -050907		Date: 9/7/05	Time: 1350
Project Name: BASCO		Project Number:	
Coordinates Datum: 300 ft UPSTREAM - BACKGROUND			
Lat/Northing:		Long/Easting:	

Weather/River Stage/Flow Observations: Surface flow upstream current flow (as observed from velocity meter) → left meter onshore

Status/Description of Operation at Time of Sampling: Sunny 80°F DREDGING

Depth to Bottom: ~~28 ft~~ 21 ft (m) fluctuating b/w 10 - ~~18~~ 25 ft due to wind

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: 1 ~~(m)~~ ft	8.63	21.34	5
Depth 2: 10 ft (m)	8.41	21.12	5
Depth 3: ~~18~~ 20 (m) ft	7.94	20.88	13
Other:			

Evidence of floating or suspended materials:	algae
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	Sheen floating by
Discoloration and Turbidity:	
Velocity at stated depth:	
Color:	Dk Green
Odor:	Ø
Other Observations:	

Comments:

pH: 1 7.30 2 7.26 3 7.18

Cond: 1 ~~93~~ 8 2 93 3 94

Dredging lots of traffic in channel

Recorded by: SAPPY Other Monitoring Personnel: KT

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Water Quality Monitoring Form

Station ID: RAA-WCD1 -050907		Date: 9/7/05	Time: 1415
Project Name: GASCO		Project Number:	
Coordinates Datum:			
Lat/Northing:		Long/Easting:	

Weather/River Stage/Flow Observations:

Status/Description of Operation at Time of Sampling: Sunny hot Dredging

Depth to Bottom: 40 (m)

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: 1 (m)	8.30	21.02	13
Depth 2: 17 (m)	8.22	21.00	16
Depth 3: 37 (m)	8.15	20.99	19
Other:			

Evidence of floating or suspended materials:	
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	~~sheen pocket passing by~~
Discoloration and Turbidity:	
Velocity at stated depth:	
Color:	
Odor:	
Other Observations:	

Comments:

pH: 1 7.19 2 7.18 3 7.16

cond 94 94 94

Recorded by: KRT Other Monitoring Personnel: EA

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Water Quality Monitoring Form

Station ID: RAA-WCD3A-050907		Date: 9/7/05	Time: 16:25
Project Name: GASCO		Project Number:	
Coordinates Datum:			
Lat/Northing:		Long/Easting:	

Weather/River Stage/Flow Observations:

Status/Description of Operation at Time of Sampling: DREDGING

Depth to Bottom: 44 (m) ft

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
pH			
Depth 1: 1 (m)	8.33	20.84	13
Depth 2: 22 (m)	8.28	20.87	~~.17~~
Depth 3: 43 (m)	8.19	20.86	15
Other:			

Evidence of floating or suspended materials:	
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	
Discoloration and Turbidity:	
Velocity at stated depth:	
Color:	
Odor:	
Other Observations:	Windy/Wavy

Comments:

pH: 1 7.16 2 7.15 3 7.16

Cond: 1 95 2 96 3 96

*BARGE IN FRONT OF PIPELINE DOCK ∴ CANNOT SAMPLE AT RAA WCD1

Recorded by: BMH Other Monitoring Personnel: EA/RT

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Water Quality Monitoring Form

Station ID: RAA-WCD2 A/B 050907		Date: 9/7/05	Time: 16:35
Project Name: GASCO		Project Number:	
Coordinates Datum:			
Lat/Northing:		Long/Easting:	

Weather/River Stage/Flow Observations:

Status/Description of Operation at Time of Sampling: DREDGING

Depth to Bottom: 43 (m) ft

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: 1 (m) ft	8.33	20.97	18
Depth 2: 21.5 (m)	8.26	20.92	18
Depth 3: 42 (m)	8.16	20.85	15
Other:			

Evidence of floating or suspended materials:	
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	
Discoloration and Turbidity:	
Velocity at stated depth:	
Color:	
Odor:	
Other Observations:	

Comments:

pH: 1 7.17 2 7.15 3 7.15

Cond: 1 95 2 96 3 95

* BARGE IN FRONT OF PIPELINE ∴ COULD NOT SAMPLE RAA WCD1

Recorded by: BMH Other Monitoring Personnel: EA/KT

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Water Quality Monitoring Form

Station ID: RAA-WCU-3-050907		Date: 9/7/05	Time: 16:10
Project Name: GASCO		Project Number:	
Coordinates Datum:			
Lat/Northing:		Long/Easting:	

Weather/River Stage/Flow Observations:

Status/Description of Operation at Time of Sampling: DREDGING

Depth to Bottom: 35 (m) 57

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: 1 (m)	8.75	21.33	5
Depth 2: 17.5 (m)	8.40	21.11	5
Depth 3: 34 (m)	7.64	20.79	18
Other:			

Evidence of floating or suspended materials:	
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	
Discoloration and Turbidity:	
Velocity at stated depth:	
Color:	
Odor:	
Other Observations:	

Comments:

pH: 1 7.31 2 7.22 3 7.07

cond: 1 93 2 93 3 95

Note shoreline armored w/ rip rap to waterline → NOT MUCH Hitting shoreline & churning up sed

Recorded by: SMH

Other Monitoring Personnel: GT/KT

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Water Quality Monitoring Form

Station ID: RAA-WCU A/B 050907	Date: 9/7/05	Time: 1700
Project Name: GASCO	Project Number:	
Coordinates Datum:		
Lat/Northing:	Long/Easting:	

Weather/River Stage/Flow Observations:

Status/Description of Operation at Time of Sampling: DREDGING

Depth to Bottom: 33 (m) ft

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: 1 (m) ft	8.52	21.07	6
Depth 2: 19 (m)	8.22	20.99	7
Depth 3: 33 (m)	7.74	20.64	20
Other:			

Evidence of floating or suspended materials:	
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	
Discoloration and Turbidity:	
Velocity at stated depth:	
Color:	
Odor:	
Other Observations:	

Comments:

pH: 1 7.26 2 7.20 3 7.11

Cond 1 93 2 94 3 98

BMH

Recorded by: Other Monitoring Personnel: EA | KT

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Water Quality Monitoring Form

Station ID: *RAA-WCD3 A B C 050907		Date: 9/9/05	Time: 17:5
Project Name: GASCO		Project Number:	
Coordinates Datum:			
Lat/Northing:		Long/Easting:	

Weather/River Stage/Flow Observations:

Status/Description of Operation at Time of Sampling: DREDGING

Depth to Bottom: 44 (m) ft

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: 1 (m) ft	8.39	21.11	10
Depth 2: 22 (m)	8.27	20.99	12
Depth 3: 43 (m)	8.16	20.92	15
Other:			

Evidence of floating or suspended materials:	
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	
Discoloration and Turbidity:	
Velocity at stated depth:	
Color:	
Odor:	
Other Observations:	

Comments:

pH: 1 7.21 2 7.12 3 7.15

Cond: 1 94 2 95 3 95

* BARGE IN C STATION RAA-WCD1 ∴ COULD NOT SAMPLE

Recorded by: BMH Other Monitoring Personnel: EA/KT

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Water Quality Monitoring Form

Station ID: RAA-WCD2 A/B 050907		Date: 9-7-05	Time: 1730
Project Name:		Project Number:	
Coordinates Datum:			
Lat/Northing:		Long/Easting:	

Weather/River Stage/Flow Observations:

Status/Description of Operation at Time of Sampling:

Depth to Bottom: _____ (m)

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: 1' ~~(m)~~	8.43	21.04	8
Depth 2: 22' (m)	8.31	21.03	10
Depth 3: 42' (m)	8.13	20.92	15
Other:			

Evidence of floating or suspended materials:	
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	
Discoloration and Turbidity:	
Velocity at stated depth:	
Color:	
Odor:	
Other Observations:	

Comments:

pH: 1 7.21 2 7.20 3 7.16

Cond: 94 94 95

* BARGE IN AT RAA-WCD1 ∴ COULD NOT SAMPLE

Recorded by: BH Other Monitoring Personnel: EA/KT

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Water Quality Monitoring Form

Station ID: RAA - WCU2 050907		Date: 9-7-05	Time: 1745
Project Name:		Project Number:	
Coordinates Datum:			
Lat/Northing:		Long/Easting:	

Weather/River Stage/Flow Observations:
apparent reverse current

Status/Description of Operation at Time of Sampling:

Depth to Bottom: 40' (~~m~~)

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: 1' (~~m~~)	8.57	20.98	19
Depth 2: 18 (~~m~~)	8.43	21.06	15
Depth 3: 39 (~~m~~)	8.37	21.04	19
Other:			

Evidence of floating or suspended materials:	
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	
Discoloration and Turbidity:	
Velocity at stated depth:	
Color:	
Odor:	
Other Observations:	

Comments:

pH: 1 7.22 2 7.18 3 7.18
Cond: 95 95 95

Possible current reversal?

Recorded by: BM

Other Monitoring Personnel: EA/KT

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Water Quality Monitoring Form

Station ID: LAA-WCD3		Date: 9-7-05	Time: 1750
Project Name:		Project Number:	
Coordinates Datum:			
Lat/Northing:		Long/Easting:	

Weather/River Stage/Flow Observations:

reverse current

Status/Description of Operation at Time of Sampling:

Depth to Bottom: _____ (m)

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: 1 (m)	8.52	21.02	8
Depth 2: 22 (m)	8.34	21.02	7
Depth 3: 44 (m)	8.02	20.80	14
Other:			

Evidence of floating or suspended materials:	
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	
Discoloration and Turbidity:	
Velocity at stated depth:	
Color:	
Odor:	
Other Observations:	

Comments:

pH: 1 7.28 / 94 2 7.21 / 94 3 7.16 / 94

* BARGE IN COULD NOT SAMPLE LAA-WCD1

Recorded by: BH Other Monitoring Personnel: SA/KT

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Water Quality Monitoring Form

Station ID: LAA-WCD2		Date: 9-7-05	Time: 1750
Project Name: GASCO		Project Number:	
Coordinates Datum:			
Lat/Northing:		Long/Easting:	

Weather/River Stage/Flow Observations: reverse current ?

Status/Description of Operation at Time of Sampling: DREDGING

Depth to Bottom: 44' (m)

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: 1' (m)	8.35	21.02	8
Depth 2: 22 (m)	8.30	21.05	9
Depth 3: 43 (m)	8.21	21.02	9
Other:			

Evidence of floating or suspended materials:	
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	
Discoloration and Turbidity:	
Velocity at stated depth:	
Color:	
Odor:	
Other Observations:	

Comments:

pH: 1 7.20 2 7.19 3 7.17

Cond 94 94 94

* BARGE IN COULD NOT SAMPLE LAA-WCD1

Recorded by: BH

Other Monitoring Personnel: KT, EA

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Water Quality Monitoring Form

Station ID: RAA WCU - 3 050908		Date: 9/8/05	Time: 9:15
Project Name: GASCO		Project Number:	
Coordinates Datum:			
Lat/Northing:		Long/Easting:	

Weather/River Stage/Flow Observations: Rising tide

Status/Description of Operation at Time of Sampling: DREDGING - w/ clamshell

Depth to Bottom: 35 (~~m~~ ft)

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: 1 (~~m~~ ft)	8.09	20.58	8.0
Depth 2: 15 (m)	8.04	20.58	10.0
Depth 3: 34 (m)	7.95	20.57	11.0
Other:			

Evidence of floating or suspended materials:	
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	Ø
Discoloration and Turbidity:	
Velocity at stated depth:	
Color:	
Odor:	
Other Observations:	Calm, Sunny, ~75° ; using clam-shell bucket

Comments:

pH: 1 7.22 2 7.21 3 7.20

Cond: 1 97 2 97 3 98

Recorded by: BMH Other Monitoring Personnel: KT

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Water Quality Monitoring Form

Station ID: RAA WCD3 050908		Date: 9/8/05	Time: 930
Project Name: GASCO		Project Number:	
Coordinates Datum:			
Lat/Northing:		Long/Easting:	

Weather/River Stage/Flow Observations: Rising tide

Status/Description of Operation at Time of Sampling: Dredging w/ clamshell

Depth to Bottom: 47 (m)

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: 1 (m)	8.09	20.62	10
Depth 2: 23 (m)	8.01	20.61	10
Depth 3: 46 (m)	7.95	20.62	12
Other:			

Evidence of floating or suspended materials:	
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	Ø
Discoloration and Turbidity:	
Velocity at stated depth:	
Color:	
Odor:	
Other Observations:	

Comments:

pH: 1 7.21 2 7.21 3 7.20

Cond: 1 97 2 97 3 97

Recorded by: BMH Other Monitoring Personnel: KT

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Water Quality Monitoring Form

Station ID: RAA WCD2-B 050708		Date: 9/8/05	Time: 940
Project Name: GASCO		Project Number:	
Coordinates Datum:			
Lat/Northing:		Long/Easting:	

Weather/River Stage/Flow Observations: Rising tide

Status/Description of Operation at Time of Sampling: Dragging w/clamshell

Depth to Bottom: 46 (m) ft

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: 1 (m)	8.08	20.62	10
Depth 2: 23 (m)	8.03	20.61	11
Depth 3: 45 (m)	7.99	20.61	17
Other: 44 ft			15 NTU Note: Probe may have been on bottom

Evidence of floating or suspended materials:	
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	Ø
Discoloration and Turbidity:	
Velocity at stated depth:	
Color:	
Odor:	
Other Observations:	

Comments:

pH: 1 7.20 2 7.19 3 7.18

Cond: 1 97 2 97 3 97

Recorded by: BH Other Monitoring Personnel: KT

CHEMISTRY SAMPLES

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Water Quality Monitoring Form

Station ID: RAA ~~WQ~~ Grabs A & C 050908		Date: 9/8/05	Time: 9:55
Project Name: GASCO		Project Number:	
Coordinates Datum:			
Lat/Northing:		Long/Easting:	

Weather/River Stage/Flow Observations: HIGH TIDE

Status/Description of Operation at Time of Sampling: DRAGGING w/ clamshell

Depth to Bottom: 46 (~~m~~ ft)

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: 1 (~~m~~ ft)			
Depth 2: 23 (~~m~~ ft)			
Depth 3: 45 (~~m~~ ft)			
Other:			

Evidence of floating or suspended materials:	
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	Ø
Discoloration and Turbidity:	
Velocity at stated depth:	
Color:	
Odor:	
Other Observations:	

Comments:

pH: 1 _____ 2 _____ 3 _____

Grabs taken w/ Van Dorn at Station UCD2 for Cyanide, PAHs

Recorded by: BM Other Monitoring Personnel: KLT

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Water Quality Monitoring Form

Station ID: RAA WQ 8		Date: 9/8/05	Time: 1010
Project Name: GASCO		Project Number:	
Coordinates Datum:			
Lat/Northing:		Long/Easting:	

Weather/River Stage/Flow Observations: HIGH TIDE

Status/Description of Operation at Time of Sampling: DREDGING w/ CLAMSHELL

Depth to Bottom: 34 (m) ft

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: 1 (m)	8.11	20.59	14
Depth 2: 17 (m)	8.07	20.59	17 X
Depth 3: 33 (m)	8.02	20.59	~~17~~-18
Other:			(BMH)

Evidence of floating or suspended materials:	
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	Ø
Discoloration and Turbidity:	
Velocity at stated depth:	
Color:	
Odor:	
Other Observations:	Turbidity moving between 17-19 - not stable

Comments:

pH: 1 7.20 2 7.19 3 7.20

Cond 1 98 2 98 3 98

Curtain was opened to let tug through 30 min and through

Recorded by: BMH Sample Location Other Monitoring Personnel: KT

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Water Quality Monitoring Form

Station ID: RAA-WCU-A/B-050908		Date: 9/8/05	Time: 1300
Project Name: GASCO		Project Number:	
Coordinates Datum:			
Lat/Northing:		Long/Easting:	

Weather/River Stage/Flow Observations: Falling tide

Status/Description of Operation at Time of Sampling: DREDGING w/ CLAMSHELL

Depth to Bottom: 22 (m)

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: 1 (m)	8.34	21.30	4
Depth 2: 11 (m)	7.96	20.63	9
Depth 3: 35 (m)	7.72	20.59	20
Other:			

confirmatory reading @ 1322

Evidence of floating or suspended materials:	
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	
Discoloration and Turbidity:	
Velocity at stated depth:	
Color:	
Odor:	
Other Observations:	

Comments:

pH: 1 7.29 2 7.20 3 7.16

Cond: 1 99 2 99 3 99

Boat moved off station to deeper water for last reading

Recorded by: BMH Other Monitoring Personnel: KRT

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BMH

Water Quality Monitoring Form

WCD3

Station ID: RAA - ~~WD1~~ ~~WCD1~~ -050908	Date: 9/8/05	Time: 1310
Project Name: GASCO	Project Number:	
Coordinates Datum:		
Lat/Northing:	Long/Easting:	

Weather/River Stage/Flow Observations: Falling tide

Status/Description of Operation at Time of Sampling: DRAGGING w/ CLAMSHELL

Depth to Bottom: 46 (m)

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: 1 (m)	8.20	20.71	10
Depth 2: 23 (m)	8.09	20.66	11
Depth 3: 44 (m)	8.05	20.66	12
Other:			

Evidence of floating or suspended materials:	
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	Ø
Discoloration and Turbidity:	
Velocity at stated depth:	
Color:	
Odor:	
Other Observations:	

Comments:

pH: 1 7.24 2 7.19 3 7.18

cond: 1 99 2 99 3 99

Recorded by: BMH Other Monitoring Personnel: KT

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1423 3rd Ave., Suite 300
Seattle, Washington 98101
Phone 206.287.9130
Fax 206.287-9131
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Water Quality Monitoring Form

Station ID: RAA-WCD2-050908	Date: 9/8/05	Time: 1315
Project Name: GASCO	Project Number:	
Coordinates Datum:		
Lat/Northing:	Long/Easting:	

Weather/River Stage/Flow Observations: Falling tide

Status/Description of Operation at Time of Sampling: Dredging w/ clamshell

Depth to Bottom: 44' (m)

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU) 1st/2nd
Depth 1: 1' (m)	8.18	20.68	10/11 ⇒ back to upstream to confirm bg reading
Depth 2: 22' (m)	8.13	20.69	12/-
Depth 3: 43 (m)	8.05	20.68	14/-
Other:			

Evidence of floating or suspended materials:	
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	Ø
Discoloration and Turbidity:	
Velocity at stated depth:	
Color:	
Odor:	
Other Observations:	

Comments:

pH: 1 7.20 2 7.19 3 7.17

Cond: 1 99 2 99 3 99

along side "Double Hull" barge

Recorded by: BMH Other Monitoring Personnel: KT

VOID

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1423 3rd Ave., Suite 300
Seattle, Washington 98101
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Fax 206.287-9131
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Water Quality Monitoring Form

Station ID: RAA-WCD3-050908	Date: 9/8/05	Time:
Project Name: GASCO	Project Number:	
Coordinates Datum:		
Lat/Northing:	Long/Easting:	

Weather/River Stage/Flow Observations:

Status/Description of Operation at Time of Sampling: Barge in the way.

Depth to Bottom: _____ (m)

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: ____ (m)			
Depth 2: ____ (m)			
Depth 3: ____ (m)			
Other:			

Evidence of floating or suspended materials:	
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	
Discoloration and Turbidity:	
Velocity at stated depth:	
Color:	
Odor:	
Other Observations:	

Comments:

pH: 1 _____ 2 _____ 3 _____

Cond: 1 _____ 2 _____ 3 _____

Recorded by: Other Monitoring Personnel:

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Seattle, Washington 98101
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Fax 206.287-9131
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Water Quality Monitoring Form

Station ID: CLAATWLU-B - 050908		Date: 9/8/05	Time: 1700
Project Name: GASCO		Project Number:	
Coordinates Datum:			
Lat/Northing:		Long/Easting:	

Weather/River Stage/Flow Observations: Falling tide

Status/Description of Operation at Time of Sampling: Dredging w/ clamshell

Depth to Bottom: 31 (m)

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: 1 (m)	8.89	BMH ~~20.~~ 21.32	5 / 15
Depth 2: 15 (m)	8.17	21.01	8 / 16
Depth 3: 31 (m)	7.62	20.56	18
Other:			

1735 second readings

Evidence of floating or suspended materials:	
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	Ø
Discoloration and Turbidity:	
Velocity at stated depth:	
Color:	
Odor:	
Other Observations:	

Comments:

pH: 1 7.42 2 7.23 3 7.11

Cond: 1 105 2 103 3 98

Recorded by: BMH Other Monitoring Personnel: KT

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Water Quality Monitoring Form

Station ID: RAA-WCD3-050908		Date: 9/8/05	Time: 1705
Project Name: GASCO		Project Number:	
Coordinates Datum:			
Lat/Northing:		Long/Easting:	

Weather/River Stage/Flow Observations: Falling tide

Status/Description of Operation at Time of Sampling: Dredging w/ clamshell

Depth to Bottom: 44 (m)'

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: 1 (m)'	8.37	21.17	11
Depth 2: 22 (m)'	8.24	20.87	14
Depth 3: 43 (m)'	8.18	20.83	13
Other:			

Evidence of floating or suspended materials:	
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	Ø
Discoloration and Turbidity:	
Velocity at stated depth:	
Color:	
Odor:	
Other Observations:	

Comments:

pH: 1 7.22 2 7.20 3 7.18

Cond: 1 98 2 98 3 98

Recorded by: BMW Other Monitoring Personnel: KT

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Water Quality Monitoring Form

Station ID: RAA-WCD2-050908		Date: 9/8/05	Time: 1718
Project Name: GASCO		Project Number:	
Coordinates Datum:			
Lat/Northing:		Long/Easting:	

Weather/River Stage/Flow Observations: Falling tide

Status/Description of Operation at Time of Sampling: Dredging w/ clamshell

Depth to Bottom: 45 (m)'

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: 1' (m)'	8.39	21.20	11
Depth 2: 22' (m)'	8.25	20.88	12
Depth 3: 43 (m)'	8.19	20.89	14
Other:			

Evidence of floating or suspended materials:	
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	Ø
Discoloration and Turbidity:	
Velocity at stated depth:	
Color:	
Odor:	
Other Observations:	

Comments:

pH: 1 7.22 2 7.19 3 7.18

Cond: 1 98 2 98 3 98

Recorded by: BMH Other Monitoring Personnel: KT

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Water Quality Monitoring Form

Station ID: TWA-WCD1-050908		Date: 9/8/05	Time: 1725
Project Name: GASCO		Project Number:	
Coordinates Datum:			
Lat/Northing:		Long/Easting:	

Weather/River Stage/Flow Observations: Falling tide

Status/Description of Operation at Time of Sampling: Dredging w/ clamshell

Depth to Bottom: 31 (m)

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: 1 (m)	8.36	21.14	11
Depth 2: 15 (m)	8.28	20.98	12
Depth 3: 30 (m)	8.16	20.91	15
Other:			

Evidence of floating or suspended materials:	
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	Ø
Discoloration and Turbidity:	
Velocity at stated depth:	
Color:	
Odor:	
Other Observations:	

Comments:

pH: 1 7.24 2 7.20 3 7.18

Cond 1 98 2 98 3 98

Recorded by: SMH Other Monitoring Personnel: KT

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Water Quality Monitoring Form

Station ID: RAA-WCU-050909	Date: 9/9/05	Time: 11:40
Project Name: GASCO	Project Number:	
Coordinates Datum: NAD 83		
Lat/Northing: 45.57954	Long/Easting: 122.75570	

Weather/River Stage/Flow Observations: Tide just beginning to go out velocity = 0 fps - 0.25 fps ; 3ft of water: 0.6 fps

Status/Description of Operation at Time of Sampling: Dredging w/ clamshell

Depth to Bottom: 40 (m) ft

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: 1 (m)	8.12	20.37	1
Depth 2: 20 (m)	7.96	20.35	7
Depth 3: 39 (m)	7.88	20.35	6
Other:			

Evidence of floating or suspended materials:	green algae (duck weed)
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	Ø
Discoloration and Turbidity:	Ø
Velocity at stated depth:	surface = 0.25 fps 3 ft = 0.60 fps
Color:	Brownish Green
Odor:	Ø
Other Observations:	partly cloudy 65-70°F very calm water

Comments:

pH: 1 7.32 2 7.26 3 7.26

Cond: 1 95 2 95 3 95

Recorded by: [illegible] Other Monitoring Personnel: EA/KT/BM

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Phone 206.287.9130
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Water Quality Monitoring Form

Station ID: RAA-WCD1 AB 050909	Date: 9/9/05	Time: 1212
Project Name: GASCO C	Project Number:	
Coordinates Datum:		
Lat/Northing: 45.58060	Long/Easting: 122.75912	

Weather/River Stage/Flow Observations: Falling tide

Status/Description of Operation at Time of Sampling: Dredging had stopped ~~at 12:06~~ prior to sampling

Depth to Bottom: 34 (m)

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: 1 (m)	8.15	20.37	4
Depth 2: 17 (m)	8.06	20.38	7
Depth 3: 33 (m)	8.01	20.38	7
Other:			

Evidence of floating or suspended materials:	Ø
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	scattered sheen, ~~[illegible]~~ fluorettes of sheen (not coming from construction area)
Discoloration and Turbidity:	Ø
Velocity at stated depth:	
Color:	Greenish Brown
Odor:	None Detected
Other Observations:	Very calm waters

Comments:

pH: 1 7.26 2 7.25 3 7.23

Cond: 1 96 2 96 3 96

Recorded by: Other Monitoring Personnel: [illegible]

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Water Quality Monitoring Form

Station ID: RAA-WCD2 A B C 050909	Date: 9/9/05	Time: 12:06
Project Name: CASCO	Project Number:	
Coordinates Datum:		
Lat/Northing: 45.58085	Long/Easting: 122.75897	

Weather/River Stage/Flow Observations: Falling tide

Status/Description of Operation at Time of Sampling: Dredging w/clamshell bucket

Depth to Bottom: 46 (ft)

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: 1 (m)	8.16	20.38	7
Depth 2: 22 (m)	8.08	20.38	~~9.00~~ 7
Depth 3: 45 (m)	8.00	20.38	8
Other:			

Evidence of floating or suspended materials:	Ø
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	Ø
Discoloration and Turbidity:	Ø
Velocity at stated depth:	

Color:	Brownish Green
Odor:	None Detected
Other Observations:	very large ship barge moving through area; waves coming in

Comments:

pH: 1 7.26 2 7.23 3 7.22

Cond: 1 95 2 95 3 95

Recorded by: Other Monitoring Personnel: EA/KT/BM

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Water Quality Monitoring Form

Station ID: RAA-WCD3A B 050909	Date: 9/9/05	Time: 11:59
Project Name: BASCO	Project Number:	
Coordinates Datum:		
Lat/Northing: 45.58096	Long/Easting: 122.75883	

Weather/River Stage/Flow Observations: OUTGOING TIDE

Status/Description of Operation at Time of Sampling: Dredging w/ clamshell bucket

Depth to Bottom: 46 (~~m~~ FT)

	Dissolved Oxygen (mg/L)	Temperature (C)	Turbidity (NTU)
Depth 1: 1 (m)	8.11	20.38	6
Depth 2: 23 (m)	8.03	20.38	6
Depth 3: 45 (m)	7.98	20.38	7
Other:			

Evidence of floating or suspended materials:	No floating material
Evidence of oil/hydrocarbon sheen: (Thickness, contiguous?, size, rate of dissipation)	Ø
Discoloration and Turbidity:	Ø
Velocity at stated depth:	—
Color:	Brownish green
Odor:	Ø
Other Observations:	Very calm water

Comments:

pH: 1 7.25 2 7.24 3 7.24

Cond: 1 95 2 95 3 95

Recorded by: EAPPY

Other Monitoring Personnel: EA/KT/BH