

June 16, 2005  
10077.009

Oregon Department of Environmental Quality  
Northwest Region  
2020 SW Fourth Avenue  
Suite 400  
Portland, Oregon 97201-4987

**VIA Email**

**Attention: Anna Coates**

**Subject: Progress Report – May 2005  
Remedial Investigation/Feasibility Study/Interim Removal Action**

**Measures**

**Astoria Area-Wide Petroleum Site  
Astoria, Oregon  
DEQ ECSI File #2277**

Dear Ms. Coates:

This letter presents the progress made by the PRP Group during May 2005 on the RI/FS and IRAM development at the Astoria Area-Wide Petroleum Site in Astoria, Oregon. This work is being conducted in response to DEQ Order No. ECSR-NWR-01-11.

### **WORK COMPLETED DURING MAY 2005**

The work plan for sub-slab sampling at the Port office building was completed for PRP Group review. Field work related to the upgrade of the HVAC system at the Port office building was initiated and expected to take about seven working days to complete.

Cowlitz Clean Sweep (CCS) of Astoria, Oregon, maintained the product absorbent socks in nine site monitoring wells containing measurable product. These monitoring wells are located upland of Slip 2 and at the Delphia Oil site. The socks are weighed upon removal from the monitoring well to develop an understanding about the product recovery rates. The enhanced synthetic and floating absorbent boom system installed in Slip 2 was inspected.

Work on the ecological risk assessment work plan was initiated and communications with DEQ regarding the scope of the in-water characterization effort were begun.

The human health risk assessment work plan was initiated.

A meeting of the PRP Group representatives was held on May 10. A meeting between the PRP Group representatives and DEQ representatives was held on May 12.

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## **WORK PLANNED FOR JUNE AND JULY 2005**

The updated project schedule is attached to this monthly progress report. Active project work tasks include the following:

- Completion of a work plan for sub-slab sampling at the Port office building;
- Preparation for field work to implement the work plan for sub-slab sampling at the Port office building;
- Completion of the installation of equipment and adjustment the HVAC system in the Port office building;
- Product recovery via absorbent socks in monitoring wells upland of Slip 2 and at Delphia Oil;
- Maintenance of the absorbent boom system in Slip 2;
- Completion of the technical memorandum presenting the data collected upland of the hydrocarbon seep at Slip 2;
- Completion of a work plan for conduct additional characterization in the area upland of the hydrocarbon seep at Slip 2;
- Preparation for field work to implement the work plan to conduct additional characterization in the area upland of the hydrocarbon seep at Slip 2;
- Acquisition of proposed building plans for the development at the former Mobil/Niemi bulk plant;
- Finalization of the proposed RI report outline for submittal to DEQ (The draft outline is attached to this monthly progress report for DEQ review. In the RI report, some figures may be combined and other minor modifications to text or tables may also occur for overall clarity and/or consistency);
- Compilation of data elements for the RI report;
- Preparation of the work plan for human health risk assessment; and
- Preparation of the work plan for ecological risk assessment.

An estimate of the percent complete for each of the tasks on the schedule is provided. The status of each task will be updated monthly on the project schedule for submittal to DEQ.

## **PROBLEMS ENCOUNTERED AND RESOLUTIONS**

There are no problems requiring resolution in May.

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**CLOSING COMMENTS**

Please call me at (503)768-5121 if you have any questions or comments regarding this progress report.

Sincerely,  
*EnviroLogic Resources, Inc.*

*Thomas J. Calabrese*

Thomas J. Calabrese, RG, CWRE  
Principal/Hydrogeologist  
Project Manager

cc: Distribution list attached

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**ASTORIA AREA-WIDE PETROLEUM SITE  
Distribution List**

- 1 Anna Coates, DEQ Project Manager, Site Response
  - 1 Mike Lilly, Attorney for Port of Astoria
  - 1 Peter Gearin, Port of Astoria
  - 1 Tom Calabrese, *EnviroLogic Resources, Inc.*, Consultant for PoA and AAW PRP Group
  - 1 Max Miller, Tonkon Torp, Attorney for McCall Oil and Chemical Corporation
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  - 1 Cary E. Bechtolt, Niemi Oil Company
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  - 1 Kurt Harrington, AMEC, Inc., Consultant for Niemi Oil Company
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  - 1 Rick Glick, Davis Wright Tremaine, Attorney for Shell Oil Company
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  - 1 Brian Harris, Harris Enterprises
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  - 1 David Bartz & Laura Maffei, Schwabe Williamson & Wyatt, Attorney for Flying Dutchman
  - 1 Jerry Hodson, Miller Nash, Attorney for Harris Enterprises
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  - 1 Chuck Smith, Attorney for Delphia Oil Company
  - 1 Alistaire Clary, Maul Foster Alongi, Consultant for Delphia Oil Company
  - 1 Darin Rouse, ChevronTexaco Products Company
  - 1 Jon Robbins, Attorney for ChevronTexaco Products Company
  - 1 Gerry Koschal, SAIC, Consultant for ChevronTexaco Products Company
  - 1 Brian Jacobson, Qwest Communications International, Inc.
  - 1 David Bledsoe, Perkins Coie LLP, Attorney for Qwest Communications International, Inc.
  - 1 Donna LaCombe, Tetra Tech EM, Inc., Consultant for Qwest Communications Intl
  - 1 Anita W. Lovely, Lovely Consulting, Inc., Consultant for Exxon Mobil Corporation
  - 1 Information Repository
-

**UPDATED SCHEDULE (6/7/05)**

**Remedial Investigation/Feasibility Study  
Astoria Area-Wide Petroleum Site  
Astoria, Oregon**

ID	Task Description	Duration	Start	Finish	Complete	Predecessors
1	ASTORIA AREA-WIDE PETROLEUM STUDY	1169 days	1/9/2002	9/1/2006		
2						
3	R/FS and IRAM PROPOSAL	11 days	1/9/2002	1/21/2002	100%	
4						
17						
18	R/FS and IRAM DEVELOPMENT WORK PLAN	124 days	1/9/2002	7/1/2002	100%	
19						
58						
59	PHASE 1/2 R/FS and IRAM WORK PLAN IMPLEMENTATION	1041 days	1/9/2002	3/2/2006		
60						
61	SOURCE/SOIL CHARACTERIZATION	709 days	1/9/2002	11/1/2004	100%	
62	Phase 1 Source/Soil Characterization	269 days	1/9/2002	1/27/2003		
99	Phase 2 Soil Characterization	375 days	4/30/2003	11/1/2004		
124						
125	GROUND-WATER CHARACTERIZATION	574 days	8/12/2002	11/23/2004	100%	
126	Water-Level Measurement Program	524 days	8/12/2002	9/14/2004		
157	Beneficial Ground Water and Land Use Studies	126 days	8/27/2002	2/21/2003		
164	Monitoring-Well Installation Program	365 days	8/20/2002	2/5/2004		
185	Quarterly Ground-Water Monitoring Program	281 days	10/8/2003	11/23/2004		
230	Hydraulic Characterization Program (NOT CURRENTLY PLAI	46 days	3/1/2004	5/4/2004		
238						
239	STORM/SURFACE WATER CHARACTERIZATION	586 days	8/19/2002	12/20/2004	100%	
240	Storm Water Monitoring Plan	117 days	8/19/2002	1/31/2003		
244	Quarterly Storm Water Monitoring Program	309 days	9/23/2003	12/20/2004		
289						
290	SEDIMENT CHARACTERIZATION	179 days	6/13/2003	3/8/2004	100%	
291	PHASE 1 SEDIMENT CHARACTERIZATION	100 days	6/13/2003	11/4/2003		
302	PHASE 2 SEDIMENT CHARACTERIZATION	1 day	3/8/2004	3/8/2004		301FS+30 edays
304						
305	IRAM DEVELOPMENT	952 days	5/13/2002	3/2/2006		
306	INDOOR AIR QUALITY IRAM DEVELOPMENT	773 days	12/27/2002	2/1/2006		
307	Comparison of Soil Data to Screening Levels	10 days	12/27/2002	1/10/2003	100%	81
308	Indoor Air IRAM Development	687 days	4/30/2003	2/1/2006		
309	Air Quality Sampling Work Plan	299 days	4/30/2003	7/15/2004	100%	
316	Vapor Intrusion Pathway Sampling	180 days	8/20/2004	5/9/2005	100%	167
336	Sub-Slab Sampling	129 days	4/18/2005	10/19/2005	10%	
337	Draft Sub-Slab Sampling Work Plan Preparation	32 days	4/18/2005	6/1/2005	100%	
338	PRP Group Review	5 days	6/2/2005	6/8/2005	100%	337
339	Final Sub-Slab Sampling Work Plan	10 days	6/9/2005	6/22/2005		338
340	Submittal to DEQ	1 day	6/23/2005	6/23/2005		339
341	Sub-Slab Probe Installation	3 days	8/9/2005	8/11/2005		340FS+30 days
342	Soil Vapor Sampling	2 days	8/12/2005	8/15/2005		341
343	Laboratory Analyses	10 days	8/16/2005	8/29/2005		342
344	Data Validation	5 days	8/30/2005	9/6/2005		343
345	Analytical Data Compilation	5 days	9/7/2005	9/13/2005		344
346	Draft Sub-Slab Sampling TM	15 days	9/14/2005	10/4/2005		345
347	PRP Group Review	5 days	10/5/2005	10/11/2005		346
348	Final Sub-Slab Sampling TM	5 days	10/12/2005	10/18/2005		347
349	Submittal to DEQ	1 day	10/19/2005	10/19/2005		348
350	Air Quality Reporting and IRAM Work Plan	70 days	10/20/2005	2/1/2006	0%	
351	Air Quality Evaluation	10 days	10/20/2005	11/2/2005		336
352	Technology Screening (if necessary)	15 days	11/3/2005	11/23/2005		307,351
353	Detailed Evaluation of Alternatives (if necessary)	15 days	11/28/2005	12/16/2005		352
354	Implementation Plan Proposal (if necessary)	30 days	12/19/2005	2/1/2006		353
355	Prepare Draft Document	10 days	11/3/2005	11/16/2005		351
356	PRP Group Review	5 days	11/17/2005	11/23/2005		355
357	Final Air Quality TM or IRAM Work Plan	5 days	11/28/2005	12/2/2005		356
358	Submittal to DEQ	1 day	12/5/2005	12/5/2005		357
359	HVAC Adjustments	86 days	2/28/2005	6/28/2005	75%	
360	Contracting	40 days	2/28/2005	4/22/2005		
361	HVAC Adjustment	32 days	4/25/2005	6/8/2005		360
362	Prepare Documentation of Adjustment	5 days	6/9/2005	6/15/2005		361
363	PRP Group Review	5 days	6/16/2005	6/22/2005		362
364	Final Documentation	3 days	6/23/2005	6/27/2005		363
365	Submittal to DEQ	1 day	6/28/2005	6/28/2005		364
366	HYDROCARBON SEEP IRAM DEVELOPMENT	678 days	6/12/2003	3/2/2006		
367	Bail-Down Testing	3 days	6/12/2003	6/16/2003	100%	139
368	Water Quality Sampling at Seep MWs	2 days	6/17/2003	6/18/2003	100%	367
369	Product Removal	125 days	6/16/2003	12/15/2003	100%	
377	2004 A Product Removal	107 days	1/12/2004	6/10/2004	100%	
384	2004 B Product Removal	106 days	7/19/2004	12/16/2004	100%	
391	2005 Product Removal	232 days	3/30/2005	3/2/2006	30%	
392	2005 Product Removal 1	3 days	3/30/2005	4/1/2005		
393	2005 Product Removal 2	3 days	5/2/2005	5/4/2005		
394	2005 Product Removal 3	3 days	5/31/2005	6/2/2005		
395	2005 Product Removal 4	3 days	6/30/2005	7/6/2005		
396	2005 Product Removal 5	3 days	8/1/2005	8/3/2005		
397	2005 Product Removal 6	3 days	8/30/2005	9/1/2005		
398	2005 Product Removal 7	3 days	9/30/2005	10/4/2005		
399	2005 Product Removal 8	3 days	10/31/2005	11/2/2005		
400	2005 Product Removal 9	3 days	11/30/2005	12/2/2005		
401	2005 Product Removal 10	3 days	12/30/2005	1/4/2006		
402	2005 Product Removal 11	3 days	1/30/2006	2/1/2006		

**UPDATED SCHEDULE (6/7/05)**

**Remedial Investigation/Feasibility Study  
Astoria Area-Wide Petroleum Site  
Astoria, Oregon**

ID	Task Description	Duration	Start	Finish	Complete	Predecessors
403	2005 Product Removal 12	3 days	2/28/2006	3/2/2006		
404	<b>Hydrocarbon Seep IRAM Work Plan</b>	<b>67 days</b>	<b>6/17/2003</b>	<b>9/22/2003</b>	<b>100%</b>	
410	<b>Hydrocarbon Seep IRAM Implementation</b>	<b>551 days</b>	<b>11/24/2003</b>	<b>2/10/2006</b>		
411	<b>IRAM Design/Build</b>	<b>206 days</b>	<b>11/24/2003</b>	<b>9/24/2004</b>	<b>100%</b>	
420	<b>O&amp;M 2005 Month</b>	<b>233 days</b>	<b>3/10/2005</b>	<b>2/10/2006</b>	<b>35%</b>	
421	O&M 2005 Month 1	4 days	3/10/2005	3/15/2005		
422	O&M 2005 Month 2	1 day	4/11/2005	4/11/2005		
423	O&M 2005 Month 3	1 day	5/10/2005	5/10/2005		
424	O&M 2005 Month 4	1 day	6/10/2005	6/10/2005		
425	O&M 2005 Month 5	1 day	7/11/2005	7/11/2005		
426	O&M 2005 Month 6	1 day	8/10/2005	8/10/2005		
427	O&M 2005 Month 7	1 day	9/12/2005	9/12/2005		
428	O&M 2005 Month 8	1 day	10/10/2005	10/10/2005		
429	O&M 2005 Month 9	1 day	11/10/2005	11/10/2005		
430	O&M 2005 Month 10	1 day	12/12/2005	12/12/2005		
431	O&M 2005 Month 11	1 day	1/10/2006	1/10/2006		
432	O&M 2005 Month 12	1 day	2/10/2006	2/10/2006		
433	<b>Upland Data Collection</b>	<b>363 days</b>	<b>1/23/2004</b>	<b>6/30/2005</b>		
434	<b>UDC Work Plan</b>	<b>141 days</b>	<b>1/23/2004</b>	<b>8/12/2004</b>	<b>100%</b>	
439	<b>UDC Implementation</b>	<b>71 days</b>	<b>9/13/2004</b>	<b>12/22/2004</b>	<b>100%</b>	
440	Mobilization/Demobilization	5 days	9/13/2004	9/17/2004		438FS+30 edays
441	LNAPL Delineation	5 days	9/20/2004	9/24/2004		440
442	Potential Conduits Evaluation	3 days	9/27/2004	9/29/2004		441,415
443	Aquifer Testing via Tidal Evaluation	58 days	9/30/2004	12/22/2004		442
444	Treatment System Evaluation	60 days	9/27/2004	12/21/2004		441
445	<b>UDC Technical Memorandum</b>	<b>131 days</b>	<b>12/23/2004</b>	<b>6/30/2005</b>	<b>95%</b>	
446	Draft UDC TM Preparation	115 days	12/23/2004	6/8/2005	100%	443
447	PRP Group Review	10 days	6/9/2005	6/22/2005		446
448	Final UDC Technical Memorandum	5 days	6/23/2005	6/29/2005		447
449	Submittal to DEQ	1 day	6/30/2005	6/30/2005		448
450	<b>Additional Product Characterization</b>	<b>179 days</b>	<b>2/24/2005</b>	<b>11/7/2005</b>		
451	<b>Work Plan Preparation</b>	<b>90 days</b>	<b>2/24/2005</b>	<b>6/30/2005</b>	<b>90%</b>	
452	Draft Product Characterization Work Plan	75 days	2/24/2005	6/9/2005		620FS+10 days
453	PRP Group Review	5 days	6/10/2005	6/16/2005		452
454	Final Product Characterization Work Plan	9 days	6/17/2005	6/29/2005		453
455	Submittal to DEQ	1 day	6/30/2005	6/30/2005		454
456	<b>Field Preparation</b>	<b>11 days</b>	<b>7/5/2005</b>	<b>7/19/2005</b>	<b>0%</b>	
457	DEQ Approval of Work Plan	1 day	7/19/2005	7/19/2005		455FS+10 days
458	Utility Clearance Survey	5 days	7/5/2005	7/11/2005		455
459	<b>Drilling Program</b>	<b>3 days</b>	<b>7/19/2005</b>	<b>7/21/2005</b>	<b>0%</b>	
460	Mobilization/Demobilization	1 day	7/19/2005	7/19/2005		458FS+5 days
461	Install/Sample Borings	2 days	7/20/2005	7/21/2005		460
462	<b>Analytical Program</b>	<b>40 days</b>	<b>7/22/2005</b>	<b>9/16/2005</b>	<b>0%</b>	
463	Laboratory Analyses	20 days	7/22/2005	8/18/2005		461
464	Data Validation	10 days	8/19/2005	9/1/2005		463
465	Analytical Data Compilation	10 days	9/2/2005	9/16/2005		464
466	<b>Reporting</b>	<b>179 days</b>	<b>2/24/2005</b>	<b>11/7/2005</b>	<b>0%</b>	
467	Draft Product Characterization TM	15 days	9/19/2005	10/7/2005		465
468	PRP Group Review	10 days	10/10/2005	10/21/2005		467
469	Final Product Characterization TM	10 days	10/24/2005	11/4/2005		468
470	Submittal to DEQ	1 day	11/7/2005	11/7/2005		469
471	Project Management	109 days	2/24/2005	7/29/2005		452SS
472	<b>TANK-BOTTOM WASTE IRAM DEVELOPMENT (McCALL BP)</b>	<b>750 days</b>	<b>5/13/2002</b>	<b>5/10/2005</b>	<b>95%</b>	
473	Technology Screening	10 days	5/13/2002	5/24/2002		44
474	Detailed Evaluation of Alternatives	10 days	5/28/2002	6/10/2002		473
475	Implementation Plan Proposal	5 days	6/11/2002	6/17/2002		474
476	Review IRAM Implementation Report	5 days	5/4/2005	5/10/2005		167FS+500 days
477	<b>FORMER MOBIL/NIEMI BULK PLANT IRAM</b>	<b>325 days</b>	<b>9/7/2004</b>	<b>12/21/2005</b>		
478	<b>IRAM Work Plan</b>	<b>120 days</b>	<b>9/7/2004</b>	<b>3/1/2005</b>	<b>100%</b>	
479	Draft IRAM Work Plan Preparation	46 days	9/7/2004	11/9/2004		
480	PRP Group Review	10 days	11/10/2004	11/23/2004		479
481	Final IRAM Work Plan	15 days	11/24/2004	12/16/2004		480
482	Submittal to DEQ	1 day	12/17/2004	12/17/2004		481
483	Work Plan Revisions	45 days	12/20/2004	2/24/2005		482
484	DEQ Approval	3 days	2/25/2005	3/1/2005		483
485	<b>UST Removal</b>	<b>48 days</b>	<b>9/20/2004</b>	<b>11/24/2004</b>	<b>100%</b>	
503	<b>IRAM Implementation</b>	<b>183 days</b>	<b>4/1/2005</b>	<b>12/21/2005</b>		
504	<b>Vapor Barrier/Extraction Design</b>	<b>85 days</b>	<b>4/1/2005</b>	<b>8/2/2005</b>	<b>0%</b>	
505	Acquire Building Plans	50 days	4/1/2005	6/10/2005		
506	Draft Vapor Barrier/Extraction Design	15 days	6/13/2005	7/5/2005		505
507	PRP Group Review	5 days	7/6/2005	7/12/2005		506
508	Final Vapor Barrier/Extraction Design	5 days	7/13/2005	7/19/2005		507
509	Submittal to DEQ	5 days	7/20/2005	7/26/2005		508
510	DEQ Approval	5 days	7/27/2005	8/2/2005		509
511	<b>Vapor Barrier/Extraction Construction</b>	<b>12 days</b>	<b>9/15/2005</b>	<b>9/30/2005</b>	<b>0%</b>	
512	Mobilization/Demobilization	2 days	9/15/2005	9/16/2005		510FS+30 days
513	Drilling/SVE Well Installation	5 days	9/19/2005	9/23/2005		512
514	Vapor Barrier Construction Oversight	10 days	9/19/2005	9/30/2005		512
515	<b>Soil Management Plan</b>	<b>31 days</b>	<b>6/13/2005</b>	<b>7/27/2005</b>	<b>0%</b>	
516	Draft Soil Management Plan Preparation	20 days	6/13/2005	7/12/2005		505
517	PRP Group Review	5 days	7/13/2005	7/19/2005		516
518	Final Soil Management Plan	5 days	7/20/2005	7/26/2005		517
519	Submittal to DEQ	1 day	7/27/2005	7/27/2005		518

**UPDATED SCHEDULE (6/7/05)**

**Remedial Investigation/Feasibility Study  
Astoria Area-Wide Petroleum Site  
Astoria, Oregon**

ID	Task Description	Duration	Start	Finish	Complete	Predecessors
520	<b>IRAM Implementation Technical Memorandum</b>	<b>56 days</b>	<b>10/3/2005</b>	<b>12/21/2005</b>	<b>0%</b>	
521	Draft IRAM Implementation TM Preparation	40 days	10/3/2005	11/29/2005		514
522	PRP Group Review	10 days	11/30/2005	12/13/2005		521
523	Final IRAM Implementation TM	5 days	12/14/2005	12/20/2005		522
524	Submittal to DEQ	1 day	12/21/2005	12/21/2005		523
525	<b>COMMUNITY RELATIONS ACTIVITIES</b>	<b>585 days</b>	<b>4/30/2003</b>	<b>9/2/2005</b>		<b>167</b>
526						
527	<b>PROJECT MANAGEMENT</b>	<b>862 days</b>	<b>7/10/2002</b>	<b>12/15/2005</b>		
528	Phase 1 PM	257 days	7/10/2002	7/15/2003	100%	
549	Phase 2 PM	164 days	4/30/2003	12/30/2003	100%	
572	2004 A PM	242 days	1/5/2004	12/16/2004	100%	
573	<b>PRP Group Meetings 2004</b>	<b>102 days</b>	<b>1/15/2004</b>	<b>6/8/2004</b>		
574	PRP Group Meetings 2004 1	1 day	1/15/2004	1/15/2004		
575	PRP Group Meetings 2004 2	1 day	2/10/2004	2/10/2004		
576	PRP Group Meetings 2004 3	1 day	3/9/2004	3/9/2004		
577	PRP Group Meetings 2004 4	1 day	4/13/2004	4/13/2004		
578	PRP Group Meetings 2004 5	1 day	5/11/2004	5/11/2004		
579	PRP Group Meetings 2004 6	1 day	6/8/2004	6/8/2004		
580	<b>PRP Group Meetings 2004</b>	<b>108 days</b>	<b>7/13/2004</b>	<b>12/14/2004</b>		
587	DEQ Meetings 2004A	109 days	1/9/2004	6/11/2004		
594	DEQ Meetings 2004B	108 days	7/15/2004	12/16/2004		
601	Monthly Progress Reports 2004 A	107 days	1/12/2004	6/10/2004		
608	Monthly Progress Reports 2004 B	107 days	1/12/2004	6/10/2004		
615	Schedule/Budget Tracking	189 days	1/5/2004	9/30/2004		
616	Project Coordination	189 days	1/5/2004	9/30/2004		615SS
617	<b>2005 PM</b>	<b>588 days</b>	<b>8/8/2003</b>	<b>12/15/2005</b>	<b>33%</b>	
618	<b>PRP Group Meetings</b>	<b>234 days</b>	<b>1/11/2005</b>	<b>12/13/2005</b>	<b>60%</b>	
631	DEQ Meetings	234 days	1/13/2005	12/15/2005	60%	
644	Monthly Progress Reports	234 days	1/10/2005	12/12/2005		
657	Schedule/Budget Tracking	126 days	1/4/2005	6/30/2005		
658	Project Coordination	126 days	1/4/2005	6/30/2005		
659	Response to Subpeona	473 days	8/8/2003	6/30/2005		
660						
661	<b>REMEDIAL INVESTIGATION REPORT PREPARATION</b>	<b>378 days</b>	<b>11/10/2004</b>	<b>5/15/2006</b>	<b>5%</b>	
662	RI Report Outline	150 days	11/10/2004	6/16/2005		574FS+208 days
663	RI Data Elements Compilation	90 days	2/24/2005	6/30/2005		662SS+70 days,204
664	Data Interpretation	75 days	7/5/2005	10/18/2005		663,120,263,298,204,446S
665	Draft RI Report	42 days	10/19/2005	12/19/2005		664
666	PRP Group Review	20 days	12/20/2005	1/19/2006		665
667	Final Draft RI Report	20 days	1/20/2006	2/16/2006		666
668	DEQ Review	30 edays	2/16/2006	3/18/2006		667
669	Final RI Report	20 days	3/20/2006	4/14/2006		668
670	DEQ Approval	1 day	5/15/2006	5/15/2006		669FS+30 edays
671						
672	<b>RISK ASSESSMENT</b>	<b>574 days</b>	<b>3/1/2004</b>	<b>6/9/2006</b>		
673	<b>HUMAN HEALTH RISK ASSESSMENT</b>	<b>156 days</b>	<b>5/19/2005</b>	<b>1/4/2006</b>	<b>5%</b>	
674	<b>Human Health Risk Assessment Work Plan</b>	<b>66 days</b>	<b>5/19/2005</b>	<b>8/23/2005</b>		<b>81,193,298,252</b>
675	Scoping/Data Management	20 days	5/19/2005	6/16/2005	70%	663FS-30 days
676	Draft HHRA Work Plan	25 days	6/17/2005	7/25/2005	30%	675
677	PRP Group Review	10 days	7/26/2005	8/8/2005		676
678	Meeting with DEQ	2 days	8/9/2005	8/10/2005		677
679	Final Draft HHRA Work Plan	10 days	7/26/2005	8/8/2005		676
680	PRP Group Review	5 days	8/9/2005	8/15/2005		679
681	Final HHRA Work Plan	5 days	8/16/2005	8/22/2005		680
682	Submittal to DEQ	1 day	8/23/2005	8/23/2005		681
683	<b>Risk Assessment Report</b>	<b>156 days</b>	<b>5/19/2005</b>	<b>1/4/2006</b>		
684	Draft HHRA Report	30 days	10/19/2005	12/1/2005		682,664
685	PRP Group Review	10 days	12/2/2005	12/15/2005		684
686	Final HHRA Report	10 days	12/16/2005	1/3/2006		685
687	Submittal to DEQ	1 day	1/4/2006	1/4/2006		686
688	Project Management	91 days	5/19/2005	9/28/2005		675SS
689	<b>ECOLOGICAL EVALUATION</b>	<b>446 days</b>	<b>3/1/2004</b>	<b>12/6/2005</b>		
690	<b>Level 1 Ecological Evaluation</b>	<b>185 days</b>	<b>3/1/2004</b>	<b>11/18/2004</b>	<b>100%</b>	
691	Source Document Compilation	5 days	3/1/2004	3/5/2004		574FS+30 days
692	Preliminary Field Assessment	15 days	3/29/2004	4/16/2004		691FS+15 days
693	Level 1 Status Meeting	1 day	4/19/2004	4/19/2004		692
694	L1 Eco Project Management	20 days	3/1/2004	3/26/2004		691SS
695	L1 ERA Report	45 days	4/19/2004	6/21/2004		692
696	PRP Group Review	15 days	6/22/2004	7/14/2004		695
697	Submittal to DEQ	10 days	7/15/2004	7/28/2004		696
698	Responses to DEQ	80 days	7/29/2004	11/18/2004		697
699	<b>Ecological Risk Assessment Work Plan Development</b>	<b>61 days</b>	<b>4/18/2005</b>	<b>7/14/2005</b>	<b>50%</b>	
700	Draft Ecological Risk Assessment Work Plan	45 days	4/18/2005	6/20/2005		698FS+100 days
701	PRP Group Review	10 days	6/21/2005	7/6/2005		700
702	Final Ecological Risk Assessment Work Plan	5 days	7/7/2005	7/13/2005		701
703	Submittal to DEQ	1 day	7/14/2005	7/14/2005		702
704	<b>Level 2 Ecological Evaluation</b>	<b>194 days</b>	<b>3/8/2004</b>	<b>12/11/2004</b>		
705	<b>Level 2 Ecological Evaluation Work Plan (REPLACED)</b>	<b>194 days</b>	<b>3/8/2004</b>	<b>12/11/2004</b>	<b>xx</b>	
706	Data Gaps Analysis	5 days	9/10/2004	9/16/2004		697FS+30 days
707	Problem Formulation	5 days	9/17/2004	9/23/2004		706
708	Draft L2 Eco Evaluation Work Plan	15 days	9/24/2004	10/14/2004		707
709	PRP Group Review	10 days	10/15/2004	10/28/2004		708
710	Final L2 Eco Evaluation Work Plan	10 days	10/29/2004	11/11/2004		709

**UPDATED SCHEDULE (6/7/05)**

**Remedial Investigation/Feasibility Study  
Astoria Area-Wide Petroleum Site  
Astoria, Oregon**

ID	Task Description	Duration	Start	Finish	Complete	Predecessors
711	DEQ Review	30 edays	11/11/2004	12/11/2004		710
712	L2 Eco Project Management	81 days	3/8/2004	6/29/2004		691
713	<b>Ecological Risk Assessment</b>	<b>70 days</b>	<b>8/26/2005</b>	<b>12/6/2005</b>		
714	Level 2 Ecological Field Program	30 days	8/26/2005	10/7/2005		703FS+30 days
715	Exposure Assessment	10 days	10/10/2005	10/21/2005		714
716	Effects Assessment	10 days	10/24/2005	11/4/2005		715
717	Risk Characterization	20 days	11/7/2005	12/6/2005		716
718	<b>REPORTING (REPORTS INCLUDED IN ABOVE TASKS)</b>	<b>128 days</b>	<b>12/7/2005</b>	<b>6/9/2006</b>		
719	Draft Risk Assessment Report	60 days	12/7/2005	3/6/2006		684,717
720	PRP Group Review	15 days	3/7/2006	3/27/2006		719
721	Final Draft Risk Assessment Report	10 days	3/28/2006	4/10/2006		720
722	Submittal to DEQ	1 day	4/11/2006	4/11/2006		721
723	DEQ Review	30 edays	4/11/2006	5/11/2006		722
724	Final Risk Assessment Report	20 days	5/12/2006	6/9/2006		723
725						
726	<b>FEASIBILITY STUDY</b>	<b>189 days</b>	<b>12/2/2005</b>	<b>9/1/2006</b>	<b>0%</b>	
727	<b>Feasibility Study Work Plan</b>	<b>77 days</b>	<b>12/2/2005</b>	<b>3/24/2006</b>		
728	Establish Remedial Action Objectives	5 days	12/2/2005	12/8/2005		664,684,120,193,446
729	Identify General Response Actions	10 days	12/9/2005	12/22/2005		728
730	Determine Preliminary Remediation Goals	5 days	12/27/2005	1/3/2006		729
731	ID/Screen Remedial Technologies	10 days	1/4/2006	1/17/2006		730
732	Draft Feasibility Study Work Plan	10 days	1/18/2006	1/31/2006		731
733	PRP Group Review	10 days	2/1/2006	2/14/2006		732
734	Final Feasibility Study Work Plan	5 days	2/15/2006	2/22/2006		733
735	DEQ Review	30 edays	2/22/2006	3/24/2006		734
736	<b>Feasibility Study Evaluation</b>	<b>40 days</b>	<b>3/27/2006</b>	<b>5/19/2006</b>		
737	Assemble/Screen Remedial Alternatives	10 days	3/27/2006	4/7/2006		735
738	Detailed Analysis	15 days	4/10/2006	4/28/2006		737
739	Compare Remedial Alternatives	10 days	5/1/2006	5/12/2006		738
740	Recommend Preferred Alternative	5 days	5/15/2006	5/19/2006		739
741	<b>Reporting</b>	<b>72 days</b>	<b>5/22/2006</b>	<b>9/1/2006</b>		
742	Draft FS Report	15 days	5/22/2006	6/12/2006		740
743	PRP Group Review	10 days	6/13/2006	6/26/2006		742
744	Final Draft FS Report	10 days	6/27/2006	7/12/2006		743
745	Submittal to DEQ	1 day	7/13/2006	7/13/2006		744
746	DEQ Review	30 edays	7/13/2006	8/12/2006		745
747	Final FS Report	15 days	8/14/2006	9/1/2006		746
748						



**REMEDIAL INVESTIGATION  
REPORT OUTLINE**

**EXECUTIVE SUMMARY**

**1.0 INTRODUCTION**

Purpose of Report  
Objectives of the Remedial Investigation  
Regulatory Framework  
Site Background  
Site Description  
Site History  
Investigative Summary  
Report Organization

**2.0 STUDY AREA INVESTIGATION**

Source Characterization/Investigations  
Soil Investigations  
Ground Water Investigations  
Surface Water and Sediment Investigations  
Storm Water Monitoring  
Beneficial Land Use and Water Survey  
IRAMs

**3.0 PHYSICAL CHARACTERISTICS of the STUDY AREA**

Meteorology/Physical Setting  
Topographic Setting  
Land Use/Zoning  
Regional Hydrogeologic Setting

**4.0 LOCAL HYDROGEOLOGIC SETTING**

Site Hydrostratigraphy  
Vadose Zone  
Saturated Zone  
Seasonal Variation  
Ground water quality parameters

Hydraulic Gradients  
Aquifer Parameters  
Ground Water Flow  
Seasonal Variation

## **5.0 NATURE and EXTENT of COCs by AREA OF CONCERN**

### **5.1 Potential Sources**

- Description and/or listing of potential sources (e.g., tanks, pipelines)
- Status of potential sources (e.g., active, inactive, abandoned)
- List/describe potential hazardous substances associated with sources

### **5.2 Facility-Specific Pathways**

- Description of parcel-specific pathways (e.g., storm water drainage)

## **5.3 Nature and Extent of Hazardous Substances By Media**

### **5.3.1 Soil**

- Description of RI soil data providing location, depths, hazardous substances, and concentrations

### **5.3.2 Groundwater**

- Description of RI groundwater data providing locations, hazardous substances, and concentration trends
- Description of free phase product, providing locations, nature of product, and thickness
- Reference to Area-Wide groundwater and free-phase product data

### **5.3.3 Storm Water and Sediment**

- Reference to Area-Wide storm water and sediment data

### **5.3.4 Air/Soil Gas**

## **6.0 REMEDIAL MEASURES UNDERTAKEN**

- Overview of Remedial Activities
  - Ground Water Treatment
  - Soil Removal
  - Preferential Pathway Removal
  - Boom Replacement
- Effectiveness of Remedial Activities
- Summary

## **7.0 FATE AND TRANSPORT**

- Potential Routes of Migration
- Factors/Processes Affecting Fate and Transport
- Aqueous Phase
- Free Phase
- Chemical Characteristics and Contaminant Persistence
- Contaminant Migration and Preferential Pathways

## **8.0 BENEFICIAL LAND AND WATER USE**

## **9.0 CONCEPTUAL SITE EXPOSURE MODEL**

## **10.0 BASELINE RISK ASSESSMENT**

- Human Health Site Exposure Model
- Human Health Evaluation
- Exposure Assessment
- Toxicity Assessment
- Risk Characterization

## **11.0 ECOLOGICAL EVALUATION**

- Ecological Site Exposure Model
- Level 1 Ecological Risk Assessment
- Level 2 Ecological Risk Assessment
- Exposure Assessment
- Toxicity Assessment
- Risk Characterization

## 12.0 CONCLUSIONS

Source Characterization  
Hydrogeologic Characterization  
Geochemical Characterization  
Effectiveness of Remedial Actions  
Summary

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