U.S. OIL & REFINING CO.
SUBMITTAL AGREEMENT

I. Facility Location (Owner)

Name: U.S. Oil & Refining Co.
Mailing Address: P.O. Box 2255, Tacoma, WA 98401
Web Address: www.usor.com Email: dhy@usor.com
Telephone: (253) 383-1651
Facsimile: (253) 383-9970
Location: Refinery: 3001 Marshall Avenue, Tacoma, WA 98421
Dock Site: 1735 Port of Tacoma Road, Tacoma, WA 98421
State of Washington, County of Pierce, City of Tacoma

(b) (7)(F) [redacted]

NAICS Code: 32411 (Corresponds to SIC Code #2911)

Wellhead Protection Area: None

Starting Date of Operations:

The company, organized in 1952, began construction of its present facility in 1955 and began operations in the summer of 1957. During August 1996, U.S. Oil purchased a 14.25 mile pipeline that extends from the refinery to Joint Base Lewis-McChord. Ownership of this pipeline was established under McChord Pipeline Co., which is a wholly owned subsidiary of U.S. Oil.

Facility Type: Onshore Oil Refinery

Type & Volume Capacity of Oils Handled:

(b) (7)(F) [redacted]

II. Submitting Party (Operator)

Name: U.S. Oil & Refining Co.
The operator's street address, mailing address, telephone number, fascimile number and location are the same as the owner.

III. Plan Acceptance & Execution Commitment

I certify that I reviewed and am familiar with the information submitted in this Plan. I verify acceptance of the plan and commit to (a) a safe and immediate response to spills and to substantial threats of spills that occur in, or could impact Washington waters or Washington's natural, cultural and economic resources; (b) having an incident commander in the state within six hours after notification of a spill; (c) the implementation and use of the plan during a spill and substantial threat of a spill, and to the training of personnel to implement the plan; (d) the authority and capability to make the necessary and appropriate expenditures in order to implement plan provisions; (e) working in incident command within the incident command system to ensure that all personnel and equipment resources necessary to the response will be called out to clean-up the spill safely and to the maximum extent practicable.

Signature: Daniel H. Yoder

Name: D.H. Yoder

Title: Vice-President Manufacturing

Emergency Role: Qualified Individual

McCHORD PIPELINE CO.
SUBMITTAL AGREEMENT

I. Facility Location (Owner)

Name: McChord Pipeline Co.
Street Address: 3001 Marshall Avenue, Tacoma, WA 98421
Mailing Address: P.O. Box 2255, Tacoma, WA 98401
Web Address: www.mcchordpipeline.com Email: dhy@usor.com
Telephone: (253) 593-6085
Facsimile: (253) 572-7203
Location: State of Washington, County of Pierce, City of Tacoma

(b) (7)(F) [redacted]

NAICS Code: 48691 (Corresponds to SIC Code #4613)

Wellhead Protection Area: The McChord Pipeline Co. travels through an area designated as a sole source aquifer consisting of multiple wellhead protection areas.

Response Zone: This 14.25 mile pipeline, which is located in Pierce County, originates at U.S. Oil's refinery and terminates at Joint Base Lewis-McChord.

Starting Date of Operations:

Pipeline operations were initiated in 1967. During August 1996 this pipeline was purchased by U.S. Oil & Refining Co. Ownership of this pipeline was established under McChord Pipeline Co., which is a wholly owned subsidiary of U.S. Oil.

Facility Type: Refined Petroleum Pipeline
Petroleum Products Handled: JP-8
Pipeline Capacity: 2870 bbl
Typical Flow Rate: 650 bph

II. Submitting Party (Operator)

Name: U.S. Oil & Refining Co.
Street Address: 3001 Marshall Ave., Tacoma, WA 98421
Mailing Address: P.O. Box 2255, Tacoma, WA 98401
Telephone: (253) 383-1651
Facsimile: (253) 383-9970

III. Plan Acceptance & Execution Commitment

I certify that I reviewed and am familiar with the information submitted in this Plan. I verify acceptance of the plan and commit to (a) a safe and immediate response to spills and to substantial threats of spills that occur in, or could impact Washington waters or Washington's natural, cultural and economic resources; (b) having an incident commander in the state within six hours after notification of a spill; (c) the implementation and use of the plan during a spill and substantial threat of a spill, and to the training of personnel to implement the plan; (d) the authority and capability to make the necessary and appropriate expenditures in order to implement plan provisions; (e) working in incident command within the incident command system to ensure that all personnel and equipment resources necessary to the response will be called out to clean-up the spill safely and to the maximum extent practicable.

Signature: Daniel H. Yoder

Name: D.H. Yoder

Title: Vice- President Manufacturing

Emergency Role: Qualified Individual

PLAN AMMENDMENT LOG

Rev/ Ltr.	Date Amended	Date WDOE Notified	Person Amending Plan	Amendment Section/Description/Purpose
A	6/11/92	6/11/92	TJG	Add one hour deployment standard to Section 2.2. Add Washington Emergency Management Division phone number.
B	2/17/93	1/25/93	TJG	Facility Oil Spill Response Plan completely rewritten to incorporate U.S. Coast Guard and U.S. EPA oil spill response plan requirements.
C	4/25/94	2/23/94	TJG	Facility Oil Spill Response Plan was rewritten as necessary to incorporate Ecology and U.S. EPA comments.
D	12/5/95	12/4/95	TJG	Update phone numbers contained in Table 3-1, Appendices C and D. Replace Geographic Response Plan contained in Appendix I.
E	10/01/96	8/2/96	TJG	Facility Oil Spill Response Plan was rewritten as necessary to include the acquisition of McChord Pipeline Co., to incorporate miscellaneous plan revisions and to ensure consistency with the National as well as the Northwest Area Contingency Plan. Also, portions of the plan were reformatted to facilitate the use of a new word processing program to amend this document.
F	8/29/97	3/13/97	TJG	Facility Oil Spill Response Plan was updated to incorporate Ecology and DOT comments as well as miscellaneous plan revisions including changes to local area codes.
G	9/14/98	6/19/98	TJG	Facility Oil Spill Response Plan was updated as follows: incorporate revised GRP response strategies for Central Puget Sound and McChord Pipeline, include modifications to Lincoln Ave. Ditch, add two primary oil spill response contractors, address written Ecology and DOT comments as well as incorporate miscellaneous plan revisions.
H	6/2/99	6/2/99	TJG	Facility Oil Spill Response Plan was updated throughout to include revised phone numbers as well as miscellaneous revisions made to Chapter 4 and Section 5.2.
I	12/30/99	12/30/99	TJG	Facility Oil Spill Response Plan was updated throughout to make this document consistent with the Northwest Area Contingency Plan as well as to incorporate comments made by both Ecology and DOT-RSPA during August/September 1999.

PLAN AMMENDMENT LOG

Rev/ Ltr.	Date Amended	Date WDOE Notified	Person Amending Plan	Amendment Section/Description/Purpose
J	7/24/00	7/24/00	TJG	Facility Oil Spill Response Plan was updated to incorporate Ecology, DOT RSPA and EPA comments as well as miscellaneous plan revisions.
K	11/27/00	11/27/00	TJG	This revision consists of incorporating the risk evaluation for McChord Pipeline Co. as well as incorporating miscellaneous administrative updates necessary to prepare for U.S. Oil's tabletop oil spill drill scheduled for 12/5/2000.
L	2/9/01	2/9/01	TJG	This revision clarifies the number of U.S. Oil personnel potentially available to staff key ICS positions and includes updates to the Central Puget Sound GRP, refinery wastewater flow balance and vulnerability analysis.
M	9/6/02	9/6/02	TJG	This revision incorporates the NAICS Code throughout, expands the discussion of spill reporting requirements specific to McChord Pipeline Co., updates various phone numbers/addresses, updates the inventory of aboveground storage tanks, adds a new section 11.7 discussing USOR's Facility Security Plan, updates the contractor's letters of intent, updates Clean Sounds Cooperative Inc. equipment inventory, updates the McChord Pipeline Co. response zone appendix as well as incorporates miscellaneous administrative updates necessary to prepare for U.S. Oil's tabletop oil spill drill scheduled for 9/19/2002.
N	12/5/03	12/8/03	TJG	This revision updates the call out lists located in Section 3.1and Appendices C and D; updates the inventory of aboveground storage tanks as well as the spill history table located in Chapter 5; incorporates updates to primary response contractor capabilities located in Appendices E and F; incorporates the March 2003 revisions to the Central Puget Sound GRP as well as other miscellaneous administrative changes.
O	6/30/05	6/30/05	TJG	In order to meet EPA and Ecology 5-year plan review deadlines, a complete review was performed on the Facility Oil Spill Response Plan that serves both U.S. Oil & Refining Co. and McChord Pipeline Co. As such, miscellaneous revisions were made throughout this document to ensure that the spill response planning information is current and accurate.

PLAN AMMENDMENT LOG

Rev/ Ltr.	Date Amended	Date WDOE Notified	Person Amending Plan	Amendment Section/Description/Purpose
P	7/31/07	7/31/07	TJG	Revisions were made to most of the chapters and appendices contained within this document in order to address rule changes to the Oil Spill Contingency Plan requirements (WAC 173-182) that were adopted by the Washington Department of Ecology on September 25, 2006.
Q	7/2/08	7/2/08	TJG	Revisions were made to address Ecology's comments on our Revision P submittal, incorporate recent/ongoing improvements to U.S. Oil's crude oil handling equipment/capabilities as well as other miscellaneous changes considered to be administrative. As such, the following sections/appendices were amended: Sections 2.2, 2.4, 3.1, 3.2.2, 3.3.1, 3.5.1, 3.5.3, 3.5.7, 3.6.1, 3.6.2, 3.7.3, 5.2, 5.4, 6.1.1, 6.1.2, 6.1.5, 6.1.8, 6.1.9, 6.1.10, 6.2, 6.3, 6.4, 10.2.3, 10.2.4, 10.2.7, 10.2.9, and 10.3.2 as well as appendices B, C, D, E, F, G, H and I.
R	11/24/09	11/24/09	TJG	On 7/2/2009, revisions were made to address Ecology's 2/2/2009 comments on our Revision Q submittal as well as to incorporate other miscellaneous changes considered to be administrative. As such, the following sections/appendices were amended: Sections 2.2, 2.4, 3.1.2, 3.1.3, 3.2.1, 3.3.1, 3.3.2, 3.4, 3.5.5, 3.6.2, 4.4, 5.2, 5.8, 6.1 – 6.4, 10.2 – 10.5 as well as changes to appendices A, B, C, D, G, H and M. During July through November 2009 USOR worked closely with Ecology to finalize the planning standard spreadsheets for USOR and McChord Pipeline Co. On 11/24/2009, Ecology issued their 5-year approval of our Facility Oil Spill Response Plan based on the Revision R amendments, which also included the planning standard spreadsheets prepared by Ecology.
S	10/25/10	10/25/10	TJG	Revisions were made to address EPA's comment letter dated July 30, 2010 as well as incorporate other miscellaneous revisions throughout this document to ensure that the spill response planning information remains current and accurate. As such, the following sections, appendices, figures and tables were amended: preface, Sections 1.1 – 1.5, 2.2. 2.4, 2.5, 3.3, 3.4.3, 3.5.2, 4.4, 5.1, 5.2, 5.4, 5.8, 5.9, 6.2 - 6.4, 7.1, 7.2, 10.2.16, 11.4 and 11.5; Tables 3-1 and 8-1, Figure 3-3; Appendices A, C, D, E, G, H, J, K and N.

PLAN AMMENDMENT LOG

Rev/ Ltr.	Date Amended	Date WDOE Notified	Person Amending Plan	Amendment Section/Description/Purpose
T	8/14/13	8/14/13	TJG	Revisions were made to address Ecology's amendments to WAC 173-182, which were adopted on December 14, 2012, change the name of U.S. Oil's qualified individual as well as incorporate other miscellaneous revisions throughout this document to ensure that the spill response planning information remains current and accurate. As such, the following portions of this plan were amended: preface, Sections 1.3 – 1.5, 2.2 – 2.5, 3.1, 3.1-1 – 3.3.2, 3.5.7 – 3.5.8, 4.4, 5.1 – 5.9, 6.1, 7.2, 8.1 – 8.3, 10.2 – 10.5; added a new Chapter 12 and added new Tables 5-5A, 8-2, and 12-1; amended Appendices B, C, D, G, H – Section H-1, J, K and added new crude oil MSDS's to Appendix M.

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DEPARTMENT OF
ECOLOGY
State of Washington

Oil Spill Contingency Plan Approval Certificate

The Oil Spill Contingency Plan for

US OIL & REFINING CO.MCCHORD PIPELINE CO.

has been APPROVED pursuant to
Washington Administrative Code 173-182

November 24, 2009 November 24, 2014

Date of Approval Plan Expiration Date

Preparedness Section Manager
Washington State Department of Ecology Spill Preparedness Section

1.0 CROSS REFERENCE INDICES

1.1 EPA Emergency Response Action Plan Cross-Reference Index

Section 1.1 of 40 CFR Part 112, Appendix F provides a summary of the information required to be contained in the Emergency Response Action Plan. While much of this information is located within Chapter 3 titled "Spill Response Action Plan", some of the required components are located in other chapters and/or appendices within this document. It is important to emphasize that this document has been formatted in a manner that most effectively incorporates EPA, Coast Guard, Washington Department of Ecology and Pipeline and Hazardous Materials Safety Administration oil spill response requirements into a single comprehensive document while maintaining its usefulness in an emergency spill response situation. As such, this section provides a cross-reference identifying the location of the specific Emergency Response Action Plan components within the body of this document.

40 CFR PART 112, APPENDIX F Section 1.1 Requirement	LOCATION IN USOR OIL SPILL RESPONSE PLAN Section/Appendix Number
1. Qualified Individual Information (Section 1.2) partial	
Qualified Individual	Page i; Section 3.1.3 – Table 3-1; Section 3.2.1; Appendix C – Section C-1, List #1 and Appendix D
2. Emergency Notification Phone List (Section 1.3.1) partial	
Emergency Notification Phone List	Section 3.1.3 – Table 3-1; Appendices C and D
3. Spill Response Notification Form (Section 1.3.1) partial	
Spill Response Notification Form	Section 3.1.3 – Table 3-1; Appendix D
4. Response Equipment List and Location (Section 1.3.2) complete	
Note: This list of response equipment references equipment owned by U.S. Oil as well as for the Oil Spill Response Organizations listed in this plan. The equipment listings for both MSRC and Global Salvage and Diving can also be found on the Western Response Resource List web site located at www.wrrl.us.	
(1) Skimmers/Pumps	Section 3.3; Appendix F and G
(2) Boom	Section 3.3; Appendices F and G
(3) Chemicals Stored (Dispersants)	Section 6.1.3
(4) Dispersant Dispensing Equipment	Section 6.1.3
(5) Sorbents	Section 3.3; Appendices F and G
(6) Hand Tools	Section 3.3; Appendices F and G
(7) Communication Equipment	Sections 8.1 and 8.2
(8) Fire Fighting and PPE	Sections 3.3 and 9.1; Appendices B and G
(9) Other (e.g heavy equipment, boats and motors)	Appendices F and G

EPA Emergency Response Action Plan Cross-Reference Index (Continued)

40 CFR PART 112, APPENDIX F Section 1.1 Requirement	LOCATION IN USOR OIL SPILL RESPONSE PLAN Section/Appendix Number
5. Response Equipment Testing and Deployment (Section 1.3.3) complete	
Response Equipment Testing and	Sections 3.3, 7.1 and 7.2; Appendix G
6. Facility Response Team (Section 1.3.4) partial	
Facility Response Team	Section 3.1.3 – Table 3-1; Section 3.2; Appendix C – Section C-1, List #1
7. Evacuation Plan (Section 1.3.5) condensed	
Evacuation Plan	Section 3.4; Appendix H
8. Immediate Actions (Section 1.7.1) complete	
(1) Emergency plans for spill response	Sections 3.5 and 3.7; Appendix D
(2) Additional response training	Sections 7.1, 7.2 and 7.3
(3) Additional contracted help	Sections 3.1.3 and 3.3.2; Appendices C, E and F
(4) Access to additional response equipment/experts	Sections 3.1.3 and 3.3.2; Appendices C, E and F
(5) Response training and practice drills	Sections 7.1, 7.2 and 7.3
9. Facility Diagram (Section 1.9) complete	
(1) Site Plan Diagram	Appendix H
(2) Site Drainage Plan Diagram	Appendix H
(3) Site Evacuation Plan	Section 3.4

1.2 EPA Cross-Reference Index (40 CFR Part 112)

40 CFR PART 112.20 Section Number	LOCATION IN USOR OIL SPILL RESPONSE PLAN Section/Appendix Number
Emergency Response Action Plan	
(h)(1)(i)	Section 3.2; Appendix C
(h)(1)(ii)	Section 3.1 and 3.2; Appendix C
(h)(1)(iii)	Section 3.5.2
(h)(1)(iv)	Section 3.3; Appendix F and G
(h)(1)(v)	Section 3.2
(h)(1)(vi)	Section 3.4
(h)(1)(vii)	Section 3.5.2, 3.5.3 and 3.7; Appendix L
(h)(1)(viii)	Appendix H
Facility Information	
(h)(2)	Preface page #i; Section 2.2
Emergency Response Information	
(h)(3)(i)	Section 3.2 and 3.3; Appendix C, F, and G
(h)(3)(ii)	Appendix E
(h)(3)(iii)	Section 3.2; Appendix C
(h)(3)(iv)	Section 3.5.2; Appendix D
(h)(3)(v)	Section 3.2
(h)(3)(vi)	Section 3.3; Appendix F and G
(h)(3)(vii)	Section 3.4
(h)(3)(viii)	Appendix H
(h)(3)(ix)(A - J)	Section 3.2.1, 3.5.1 - 3.5.5 and 3.7; Appendix L
Hazard Evaluation	
(h)(4)	Section 5.1 through 5.9 and 3.7.2
Response Planning Levels	
(h)(5)(i)	Section 6.3.3
(h)(5)(ii)	Section 6.3.1
(h)(5)(iii)	Section 6.3.2
Discharge Detection Systems	
(h)(6)	Section 10.2 through 10.5

EPA Cross-Reference Index (Continued)

40 CFR PART 112.20 Section Number	LOCATION IN USOR OIL SPILL RESPONSE PLAN Section/Appendix Number
Plan Implementation	
(h)(7)(i)	Section 3.5 through 3.7; Appendix L
(h)(7)(ii)	Section 3.3 and 6.4; Appendix F and G
(h)(7)(iii)	Section 4.1 through 4.4
(h)(7)(iv)	Section 3.5 through 3.7; Appendix I and L
Self Inspection, Training, and Meeting Logs	
(h)(8)(i)	Section 10.2 through 10.5; Appendix F and G
(h)(8)(ii)	Section 7.1 and 7.2; Appendix N
(h)(8)(iii)	Section 7.1 and 7.2; Appendix N
(h)(8)(iv)	Section 7.1 through 7.3, 10.2 through 10.5; Appendix N
Diagrams	
(h)(9)	Appendix H
Security	
(h)(10)	Section 11.1 through 11.7
Response Plan Cover Sheet	
(h)(11)(i)(1 - 3)	Appendix J

40 CFR PART 112.21 Section Number	LOCATION IN USOR OIL SPILL RESPONSE PLAN Section/Appendix Number
Facility Response Training and Drills/Exercises	
(a)	Sections 3.2, 7.1 and 7.2; Appendix N
(b)(1-3)	Sections 3.2, 7.1 and 7.2; Appendix N
(c)	Sections 3.2, 7.1 and 7.2; Appendix N

1.3 USCG Cross-Reference Index

33 CFR PART 154 Subpart Number	LOCATION IN USOR OIL SPILL RESPONSE PLAN Section/Appendix Number
Introduction & Plan Content	
1035(a)(1)	Preface page #i, ii
1035(a)(2)	Section 2.2; Appendix H
1035(a)(3)	Preface page #i, ii
1035(a)(4)	Preface page #v
1035(a)(5)	Section 1.1
1035(a)(6)	Preface page #iii
Emergency Response Action Plan	
Notification Procedures	
1035(b)(1)(i)(A)	Section 3.1 and 3.2; Appendix C
1035(b)(1)(i)(B)	Section 3.1 and 3.2; Appendix C
1035(b)(1)(ii)	Section 3.1
Facility's Spill Mitigation Procedures	
1035(b)(2)(i)(A)	Section 5.9.2 and 6.2
1035(b)(2)(i)(B)	Section 5.9.2 and 6.2
1035(b)(2)(i)(C)	Section 5.9.2 and 6.2
1035(b)(2)(i)(D)	Section 5.9.2, 6.2 and 6.3
1035(b)(2)(ii)(A)	Section 3.5.1 through 3.5.5
1035(b)(2)(ii)(B)	Section 3.5.1 through 3.5.5
1035(b)(2)(ii)(C)	Section 3.5.1 through 3.5.5, 3.7; Appendix L
1035(b)(2)(ii)(D)	Section 3.5.1 through 3.5.5, 3.7; Appendix L
1035(b)(2)(ii)(E)	Section 3.5.1 through 3.5.5
1035(b)(2)(ii)(F)	Section 3.5.6
1035(b)(2)(ii)(G)	Section 3.5.1 through 3.5.5
1035(b)(2)(iii)	Section 3.2 and 3.3; Appendix F and G
Facility's Response Activities	
1035(b)(3)(i)	Section 3.2.1
1035(b)(3)(ii)	Section 3.2.1
1035(b)(3)(iii)(A - H)	Section 3.2.1
1035(b)(3)(iv)(A)(1)	Section 3.2
1035(b)(3)(iv)(A)(2)	Section 3.2
1035(b)(3)(iv)(B)	Section 3.2; Appendix F
1035(b)(3)(v)	Not Applicable to USOR

USCG Cross-Reference Index (Continued)

33 CFR PART 154 Subpart Number	LOCATION IN USOR OIL SPILL RESPONSE PLAN Section/Appendix Number
Sensitive Areas	
1035(b)(4)(i)	Section 3.6 and 3.7; Appendix I and L
1035(b)(4)(ii)(A - C)	Section 3.6 and 3.7; Appendix I and L
1035(b)(4)(iii)(A)	Section 3.3; Appendix F and G
1035(b)(4)(iii)(B)(1)(i - iv)	Section 3.2, 3.3, 5.5, 3.7.2; Appendix F and G
1035(b)(4)(iii)(B)(2)	Section 3.2, 3.3, 5.5, 3.7.2; Appendix F and G
1035(b)(4)(iii)(B)(3)	Section 3.2, 3.3, 5.5, 3.7.2; Appendix F and G
1035(b)(4)(iii)(C)	Section 3.2, 3.3, 5.5, 3.7.2; Appendix F and G
Disposal Plan	
1035(b)(5)	Section 4.1 through 4.4
Training and Drills	
Training Procedures	
1035(c)(1)	Section 7.1; Appendix M
Exercise Procedures	
1035(c)(2)	Section 7.2
Plan Review and Update Procedures	
1035(d)	Section 2.3
Appendices	
Facility-Specific Information	
1035(e)(1)(i)	Section 2.2 and 5.2; Appendix H
1035(e)(1)(ii)	Section 5.3
1035(e)(1)(iii)	Appendix H
1035(e)(1)(iv)(A - E)	Appendix M
1035(e)(1)(v)	Appendix D

USCG Cross-Reference Index (Continued)

33 CFR PART 154 Subpart Number	LOCATION IN USOR OIL SPILL RESPONSE PLAN Section/Appendix Number
List of Contacts	
1035(e)(2)(i)	Appendix C
1035(e)(2)(ii)	Appendix C
1035(e)(2)(iii)	Appendix C
Equipment Lists and Records	
1035(e)(3)(i)	Section 3.2 and 3.3; Appendix C, F and G
1035(e)(3)(ii)	Section 3.3; Appendix F and G
1035(e)(3)(iii)(A - H)	Section 3.3, 4.3, 4.4, 8.1, 8.2; Appendix F, G, and H
Communications Plan	
1035(e)(4)	Section 8.1 and 8.2
Site-Specific Safety and Health Plan	
1035(e)(5)	Section 9.1; Appendix B
List of Acronyms and Definitions	
1035(e)(6)	Appendix A
Group I-IV Petroleum Oil Response Resource Evaluation	
1045(a - m)	Section 6.2; Appendix F and G
Group V Petroleum Oil Response Resource Evaluation	
1047(a - e)	Section 3.5.7; Appendix F and G

33 CFR PART 154 Appendix C	LOCATION IN USOR OIL SPILL RESPONSE PLAN Section/Appendix Number
Guidelines for Determining and Evaluating Response Resources for Facility Response Plans	
Sections 1.1 - 9.3	Section 6.2

1.4 Ecology Cross-Reference Index

WAC 173-182 Section Number	Location in USOR's Oil Spill Response Plan Chapter/Section/Appendix Number
Part II: Section A – General Planning, Information and Timing	
110 (1)(a-d)	N/A
110 (2)(a-d)	N/A
110 (3)(a-b)	Pages i & ii
110 (4)	Pages i & ii
120 (1 – 4)	Section 2.3
130 (1)	Section 2.3
130 (2)(a)	Pages i & ii
130 (2)(b)	Chapter 12
130 (2)(c)	Section 5.2
130 (2)(d)	Section 3.1.2
130 (2)(e)	Section 6.1.3
130 (2)(f)	Section 3.5.7
130 (2)(g)	Section 3.3.1 & Appendix E
130 (3)	N/A
130 (4)	N/A
130 (5)	Section 2.3
140 (1 - 2)	Section 2.3
142	Section 2.3
145	Section 2.2
150	Section 7.3
Part II: Section B – Contingency plan Format and Content	
210 (1)	Entire Spill Response Plan
210 (2)	Entire Spill Response Plan
210 (3)	Entire Spill Response Plan
220 (1)	Pages i & ii
220 (2)(a-d)	Pages i & ii
230 (1)	Entire Spill Response Plan
230 (2)	Section 2.5
230 (3)(a)	Sections 2.1 & 2.5
230 (3)(b)(i)	Sections 2.2 and 5.9, Chapter 6, Appendix K
230 (3)(b)(ii)	N/A
230 (3)(b)(iii)	Sections 2.2 and 5.9, Chapter 6, Appendix K
230 (3)(c)	Pages iii - v
230 (3)(d)	Section 1.3
230 (3)(e)(i)	Appendices C & D
230 (3)(e)(ii)	Appendix E
230 (3)(e)(iii)	N/A

Ecology Cross-Reference Index (continued)

WAC 173-182 Section Number	Location in USOR's Oil Spill Response Plan Chapter/Section/Appendix Number
230 (3)(e)(iv)	Appendix E
230 (3)(e)(v)	Appendix E
230 (3)(f)	Chapter 4
230 (4)(a)	Pages i & ii
230 (4)(b)	Pages i & ii
230 (4)(c)(i)	Section 2.2
230 (4)(c)(ii)	Section 5.2
230 (4)(c)(iii)	Section 5.2
230 (4)(c)(iv)	Section 2.2, Appendix H
230 (4)(c)(v)	Section 2.2
230 (5)(a-h)	N/A
230 (6)(a-b)	N/A
232 (1 – 2)	N/A
240 (1)	Section 2.4, Appendix D
240 (2)(a-c)	Section 3.5.3, Appendix D
242 (1 – 2)	N/A
250 (1)	Sections 2.4 and 3.5; Appendix D
250 (2)	Section 3.5
250 (3)	Section 3.5.3 and Appendix B
250 (4)	Section 3.5.3
260 (1)	Section 3.1.2 and Appendix C
260 (2)	Section 3.1, Appendices C & D
260 (3)	Section 3.1
262 (1 – 5)	N/A
264 (1 – 2)	Section 3.1.2
270 (1)	Section 3.3, Appendices F & G
270 (2)	Section 3.3.1, Appendices F & G
280 (1)(a)	Section 3.2.1
280 (1)(b)	Section 3.2.2
280 (1)(c)	Section 3.2.1 and 3.2.2
280 (1)(d)	Section 3.2
280 (2)	Sections 7.1 & 7.2, Appendix N
280 (3)	N/A
280 (4)	Sections 3.1 & 3.2
280 (5)	N/A

Part II: Section C – Planning Standards

310 (1)	Section 6.1
310 (2)	Section 6.1

Ecology Cross-Reference Index (continued)

WAC 173-182 Section Number	Location in USOR's Oil Spill Response Plan Chapter/Section/Appendix Number
315	Section 6.1.1
317 (1 – 8)	N/A
320	Section 6.1.2
321 (1 – 4)	N/A
324 (1 – 2)	Section 3.5.7
325 (1 – 5)	Section 6.1.3
330 (1 – 5)	Section 6.1.4
335 (1)	Section 6.1.5
335 (2)	N/A
345 (1)	Section 6.1.6
345 (2)	Section 6.1.6
348 (1)	Sections 6.1.5 & 6.1.6
348 (2)	Sections 6.1.5 & 6.1.6
348 (3)(a-d)	Sections 6.1.5 & 6.1.6
348 (4)	Sections 6.1.5 & 6.1.6
349 (1 – 5)	N/A
350 (1)	Section 6.1
350 (2)	Section 6.1
350 (3)	Section 6.1
350 (4)	Section 6.1
350 (5)(a-c)	Section 6.1
355	Section 6.1.8
365 (1)(a)	Section 6.1.9
365 (1)(b)(i-iii)	Section 6.1.9
365 (2)	Section 6.1.9
365 (3)	Section 6.1.9
370	N/A
375	N/A
380	Section 6.1.8
385	N/A
390	N/A
395	N/A
400	N/A
405	N/A

Ecology Cross-Reference Index (continued)

WAC 173-182 Section Number	Location in USOR's Oil Spill Response Plan Chapter/Section/Appendix Number
410	N/A
415	N/A
420	N/A
430	N/A
450 (1-5)	N/A
Part II: Section D – Response and Protection Strategies for Sensitive Areas	
510 (1)	Sections 3.5, 3.6 & 3.7
510 (2)(a)	Sections 3.5, 3.6 & 3.7; Appendices I & L
510 (2)(b)	Sections 3.5, 3.6 & 3.7; Appendices I & L
510 (2)(c)	Sections 3.5, 3.6 & 3.7; Appendices I & L
510 (2)(d)	Sections 3.5, 3.6 & 3.7; Appendices I & L
510 (2)(e)	Sections 3.5, 3.6 & 3.7; Appendices I & L
510 (2)(f)	Sections 3.5, 3.6 & 3.7; Appendices H, I&L
510 (3)	Sections 3.5, 3.6 & 3.7; Appendices H, I&L
510 (4)	Section 3.5
520	Sections 3.3, 3.5, 3.6 & 3.7 Appendices E & F
522 (1 – 3)	N/A
530 (1)	Section 6.1.10
530 (2)	Section 6.1.10, Appendix C
540	Section 3.6.2, Appendix C
Part III: Drill and Equipment Verification Program	
700 (1)	Section 7.2
700 (2)	Section 7.2
700 (3)	Section 7.2
700 (4)	Section 7.2
700 (5)	Section 2.3 & 7.2
700 (6)	Section 7.2
710 (1)(a-c)	Section 7.2
710 (2)	Section 7.2
710 (3)	N/A
710 (4)(a-d)	Section 7.2
710 (5)	Section 7.2
710 (6)	N/A
710 (7)	N/A
710 (8)	Section 7.2
710 (9)	Section 7.2
720 (1 – 15)	Section 7.2

Ecology Cross-Reference Index (continued)

WAC 173-182 Section Number	Location in USOR's Oil Spill Response Plan Chapter/Section/Appendix Number
730 (1)(a-b)	Section 7.2
730 (2)(a-e)	N/A
740 (1-4)	Section 7.2

1.5 Department of Transportation (PHMSA) Cross-Reference Index

49 CFR Part 194 Section Number	LOCATION IN USOR OIL SPILL RESPONSE PLAN Section/Appendix Number
Worst Case Discharge	
105 (b)(1)	Section 6.4
General Response Plan Requirements	
107 (a)	Chapter 3.0, 4.0, 6.0, 10.4 and 10.5; Appendix C, F, G & I
107 (b)(1)(i)	Preface page #i, ii, Chapter 2.0, 3,1, 3.2 and Appendix D & K
107 (b)(1)(ii)	Chapter 3.4, 3.5, 3.7, 9.0, 11.0; Appendix B and D
107 (b)(1)(iii)	Section 3.2 and 3.5
107 (b)(2)(i)	Chapter 3.0, 4.0, 6.4; Appendix E and F
107 (b)(2)(ii)	Section 3.6 and 3.7; Appendix I and L
107 (b)(2)(iii)	Chapter 3.0, 4.0, 6.4, 10.4 and 10.5
107 (b)(2)(iv)	Section 3.2 and 3.5
107 (c)(1)(i)	See 113 (a) and (b) which are discussed below.
107 (c)(1)(ii)	Section 3.1 and 3.7; Appendix C, D and L
107 (c)(1)(iii)	Section 3.1, 3.5, 3.7, 10.2, 10.3, 10.4, 10.5; Appendix L
107 (c)(1)(iv)	Section 3.1, 3.2, 3.3; Appendix C, D and F
107 (c)(1)(v)	Section 3.1, 3.2, 3.3, 3.5, 3.6, 3.7; Appendix C, F, G and L
107 (c)(1)(vi)	Section 3.1, Appendix C and D
107 (c)(1)(vii)	Section 7.1, 7.2 and 7.3
107 (c)(1)(viii)	Section 3.3, 10.2 through 10.5; Appendix F and G
107 (c)(1)(ix)	Section 7.1, 7.2 and 7.3
107 (c)(1)(x)	Section 2.3
107 (c)(2)	Appendix K
107 (c)(3)	Section 3.2
Submission of State Response Plans	
109 (b)(1)	See 113 (a) and (b), which are discussed below.
109 (b)(2)	See 113 (b), which is discussed below.
109 (b)(3)	Section 3.2, 3.3, 6.1, 6.4; Appendix E, F and G
Response Plan Retention	
111	Section 2.4

Department of Transportation (RSPA) Cross-Reference Index (Continued)

49 CFR Part 194 Section Number	LOCATION IN USOR OIL SPILL RESPONSE PLAN Section/Appendix Number
Information Summary	
113 (a)(1)	Preface page #i and ii; Appendix K
113 (a)(2)	Preface page #i and ii; Appendix H and K
113 (b)(1)	Appendix K
113 (b)(2)	Preface page #i and ii; Section 3.1; Appendix C D and K
113 (b)(3)	Section 3.7 and 6.4; Appendix K and L
113 (b)(4)	Appendix H and K
113 (b)(5)	Appendix K
113 (b)(6)	Section 6.4, Appendix K
Response Resources	
115	Section 3.2, 3.3, 6.1, 6.4; Appendix E, F and G
Training	
117	Section 7.1 through 7.3: Appendix N
Submission and Approval Procedures	
119(e)	Preface page #i and ii; Appendix E
Response Plan Review and Update Procedures	
121 (a)	Section 2.3
121 (b)	Section 2.3

2.0 INTRODUCTION

2.1 Purpose

In recent years, several catastrophic oil spills have threatened marine and freshwater environments of the United States. These spills have had an extensive impact on the environment resulting in the loss of fish, wildlife and other natural resources. In response to these disasters Congress amended the Federal Water Pollution Control Act by passing the Oil Pollution Act of 1990. The Washington State Legislature, upon realizing the potential for severe damage to marine and freshwater environments as well as natural and economic resources, passed the Spill Prevention Act of 1991. Both sets of legislation established minimum requirements for the development and implementation of oil spill response plans.

This document was prepared to comply with Washington Department of Ecology regulations contained in WAC 173-182, U.S. Coast Guard regulations contained in 33 CFR Part 154, EPA regulations contained in 40 CFR Part 112 and DOT regulations contained in 49 CFR Part 194. The general intent of this plan is to provide for the containment and cleanup of potential oil spills from U.S. Oil & Refining Co. and McChord Pipeline Co. into waters of the state as well as for the protection of fisheries, wildlife, other natural resources, as well as public and private property.

2.2 Scope

U.S. Oil & Refining Co.'s (USOR) Tacoma refinery (NAICS Code 32411) is a continuous processing plant with a 42,000 barrels per day crude oil charge rate. Products produced at the refinery include gasoline, jet fuel, diesel fuel, marine fuel oils, gas oils (intermediate product), as well as emulsified, medium curing and road asphalts. (b) (7)(F) [redacted]. During August 1996, a 14.25 mile, 6" diameter pipeline that extends from the refinery to Joint Base Lewis-McChord was purchased by McChord Pipeline Co., a wholly owned subsidiary of USOR. The petroleum product slate for McChord Pipeline Co. (NAICS Code 48691), which is located within Pierce County, will be JP-8 jet fuel.

The Facility Oil Spill Response Plan covers the following geographic locations and areas of operation:

> The refinery, which consists of a crude oil processing area, tank farm, finished product loading racks, and office area, is bounded by Marshall Avenue to the South, Lincoln Avenue to the Northwest and Port of Tacoma land to the East, West, and South. The refinery's main processing units consist of one crude unit, two catalytic reformers, one diesel hydrotreater unit, sulfur processing facilities, various hydrocarbon treaters, and ancillary utilities.
>
> The second site, which is located approximately 3/4 of a mile north of the main refinery, is the refinery's marine terminal, also referred to as the dock area. This terminal is located on the Southwest side of the Blair Waterway and is bounded by Port of Tacoma's Hyundai Terminal to the Southeast, Concrete Technology to the Northwest, and Port of Tacoma Road to the Southwest. The marine terminal, which consists of two separate docks (Dock #1 and Dock #2), provides the refinery with direct access to ocean-going barges and tankers via four separate pipelines varying in size from 8 inches to 24 inches in diameter. USOR receives its crude oil via railcar at the rail car unloading facilities and marine vessels using the dock facilities. Also located at the Marine Terminal dock area are tanks representing 73,000 bbl of marine fuel storage for loading onto barges and ocean-going vessels.

Included in this document is the entire length of USOR's transfer pipeline, which extends from the refinery to the marine terminal. The following details are specific to the transfer pipelines, which consist of the following:

1. 1 - 24" line used for the conveyance of crude oil, fuel oil, cutter stocks and vacuum gas oils
2. 1 - 10" line used for the conveyance of jet fuel
3. 1 - 8" line used to convey diesel fuel
4. 1 - 8" line used to convey gasoline

These pipelines cross land through which easements have been established with the following property owners: Northwest Wire & Rope and City of Tacoma.

See Section 5.1 and Appendix H for additional information regarding pipeline capacities and locations.

The primary geographic area covered by this plan for a USOR worst case oil spill includes the Lincoln Ave. Ditch from the refinery to the Blair Waterway, Blair Waterway, Commencement Bay and adjoining waterways to Wapato Creek, Lincoln Avenue ditch from the refinery to the Blair Waterway and Commencement Bay. Additional geographic areas that could be impacted from a worst case release within the first 48 hours include those shown on Map #6 of the Central Puget Sound GRP, which is located in Appendix I.

The worst case oil spill from USOR is established as follows using the worst case spill criteria outlined in Section 5.9:

(b) (7)(F)

[redacted]

This document also covers those areas along the length of the 14.25 mile McChord Pipeline Co. that could be impacted by a release along the pipeline right-of-way. This pipeline crossed Water Resource Inventory Areas (WRIA) #10 and #12, which are depicted in Figures 2-1 and 2-2 respectively. The following key navigable waters, rivers, streams and lakes, which are included as part of this document, could be impacted by a potential release from this pipeline are included as part of this document: Blair Waterway, Commencement Bay, lower portion of the Puyallup River, Swan Creek, Clear Creek, Parkland Ditch, Clover Creek and Lake Steilacoom. Wellhead protection program requirements apply to McChord Pipeline Co. since it is located within a wellhead protection area. These wellhead protection and aquifer recharge areas are shown in Appendix H.

The worst case oil spill from McChord Pipeline Co. is 1,870 bbl based on the worst case spill of JP-8 jet fuel as determined by 49 CFR Part 194. The criteria and calculations used to determine this volume are contained in Sections 5.9.4 and 6.4 respectively. Additional discussions of worst case oil spills using individual criteria established by Ecology, U.S. Coast Guard, EPA and DOT respectively are contained in Chapter 6.

See Appendix H for plot plans of the geographic locations described in the above-mentioned paragraphs. Additional information is also illustrated in the figures located in Section 3.6.1, the Central Puget Sound GRP located in Appendix I and the McChord Pipeline GRP located in Appendix L.

The Ecology approved Facility Oil Spill Response Plan will be used throughout USOR's response to a spill or drill. Approval from Ecology will be received before any significant aspect of a spill response is conducted in a manner contrary to this plan unless:

a. Such actions are necessary to protect human health and safety, or
b. Such action must be performed immediately in response to unforeseen conditions to avoid additional environmental damage, or
c. State and Federal on-scene coordinators have directed such actions.

USOR's Facility Oil Spill Response Plan **does not** cover spills from vessels or barges since the response necessary for these types of spills is directed by vessel/barge response plan regulations. The Facility Oil Spill Response Plan will, however, serve as the lead document for spills which occur during vessel-facility transfers. See Section 5.3 for additional information regarding vessel operations including vessel sizes as well as number of transfers that can occur simultaneously.

USOR has adopted the following protocols for responding to oil spills: (1) NIIMS Incident Command System, (2) Northwest Area Contingency Plan and (3) Central Puget Sound Geographic Response Plan.

2.3 Plan Review and Update Procedures

The Facility Oil Spill Response Plan will be reviewed and updated for any of the following conditions that could significantly affect the ability of USOR or McChord Pipeline Co. to prevent or respond to an oil spill:

1. A change in the facility configuration that materially alters the information included in the response plan.

2. A change in the type of oil handled, stored, or transferred that materially alters the required response resources.

3. A change in the oil spill removal organizations that provide equipment and personnel to respond to oil spills. Response contractors as well as USOR maintenance and operations personnel will be required to immediately notify the USOR Environmental Dept. in the event there is any significant change which could affect implementation of the plan, including a substantial decrease in available response equipment and/or personnel.

4. A material change in USOR's or McChord Pipeline Co.'s spill prevention and response equipment or emergency response procedures.

5. New pipeline construction or purchase as regulated by 49 CFR Part 194.

6. Change in worst case discharge volumes.

7. Change in ownership of USOR and/or McChord Pipeline Co.

8. Change to either the National Contingency Plan or Northwest Area Contingency Plan that have a significant impact on the appropriateness of response equipment and/or response strategies.

9. Needed improvements to the Facility Oil Spill Response Plan as identified during a post-drill evaluation.

10. The name of the qualified individual.

11. Any other changes that materially affect the implementation of the response plan. For example, Ecology adopted changes to their Oil Spill Contingency Plan Rule on December 14, 2012 and included phase-in language in WAC 173-182-130 of this rule necessary for existing facilities to effectively implement the new provisions contained in this adopted rule. Ecology will allow a 30 day public comment on each plan that is updated to comply these new rule changes.

12. Minor variations in equipment, personnel characteristics, call out lists, or operating procedures will not be considered significant changes.

At any point during the five year approval period, if there is a temporary or permanent significant change in the response personnel or response equipment described in the U.S. Oil will take the following actions:

1. USOR's Environmental Department will provide written notification (facsimile or e-mail) to Ecology within 24 hours of the change.
2. Provide both a schedule for the prompt return of the Facility Oil Spill Response Plan to full operational status along with a proposal for any backfill to compensate for the temporary significant change.
3. Changes which are considered significant include the following:
   - Loss of equipment that results in being out of compliance with any planning standard.
   - If greater than ten percent of available boom, storage, recovery, dispersants, in situ burn or shoreline clean-up equipment is moved out of the homebase as depicted on the WRRL.
   - Transfers of equipment to support spill response for out-of-region spills.
   - Permanent loss of personnel designated as the binding agreement signer.
   - Changes in normal facility operating procedures as described below:
     - i. Changes in the oil types handled;
     - ii. Permanent changes in storage capacity.
     - iii. Changes in handling or transporting of any product;
     - iv. Permanent changes in oil processing;
   - Changes in equipment ownership if used to satisfy a plan holder planning standard.
   - Modification or discontinuing of any mutual aid, letter of intent or contract agreement.

2. If the changes to the plan are permanent, USOR will distribute the amended pages to Ecology for review and approval within 30 days after Ecology is notified. If Ecology finds that, as a result of a change, the plan no longer meets approval criteria, Ecology may place conditions on the plan approval or disapprove the plan.

3. USOR will revise and resubmit the Facility Oil Spill Response Plan to the EPA for review and approval within 60 days of any significant change to our oil spill prevention or response capabilities as noted earlier.

4. USOR will revise and resubmit the Facility Oil Spill Response Plan to the U.S. Coast Guard and DOT within 30 days of making any of the above-mentioned significant changes.

As required by 33 CFR Part 154 and 40 CFR Part 112, USOR will review the Facility Oil Spill Response Plan, National Oil and Hazardous Substances Pollution Contingency Plan and the Northwest Area Contingency Plan annually and revise the Facility Oil Spill Response Plan accordingly. If no revisions are necessary, the Plan Revision Log will be amended as necessary to document the completion of the annual review.

As required by WAC 173-182-120, the Facility Oil Spill Response Plan will be submitted to Ecology once every five years. At least 65 calendar days prior to the plan expiration date, USOR will submit to Ecology for re-approval a copy of the updated plan or a letter requesting Ecology to review the plan already in their possession.

As required by WAC 173-182-140, USOR will review the Facility Oil Spill Response Plan on an annual basis for accuracy then update and distribute the amended pages of the plan to Ecology for review and approval. If no plan changes are needed, a letter will be submitted to Ecology confirming that the existing plan is still accurate.

As required by 33 CFR Part 154 and 40 CFR Part 112 the Facility Oil Spill Response Plan will be resubmitted to the U.S. Coast Guard and EPA at 5 year intervals for review and approval.

As required by 49 CFR Part 194.121 (a), the Facility Oil Spill Response Plan will be reviewed at least once every 5 years from the last approval date and resubmitted to DOT RSPA for review and approval. This plan will be modified as necessary to address changes to operating conditions and plan content.

2.4 Plan Maintenance & Use

Facility Oil Spill Response Plan

The Facility Oil Spill Response Plan is accessible to all refinery personnel on U.S. Oil's intranet under the "Environmental" tab. Hard copies of the Facility Oil Spill Response Plan will also be kept at the following centralized locations, which are considered conspicuous and accessible for both USOR and McChord Pipeline Co.:

1. Environmental Manager's Office
2. Construction Manager's Office
3. Shift Supervisor's Office
4. Marine Terminal Dock Office
5. Zone #3 Operations Superintendent's Office
6. Main Control Building
7. B-Helper Area Office
8. Maintenance Supervisor's Office
9. Maintenance & Construction Manager's Office
10. Engineering Manager's Office
11. Scalehouse
12. Vice-President of Manufacturing's Office
13. McChord Pipeline Co. field truck
14. Environmental Engineer's Office
15. Laboratory Manager's Office
16. Manufacturing Secretary's Office – 2 copies

All managers, including shift and maintenance supervisors as well as operations superintendents, responsible for assuming duties as either an incident commander or spill response manager will receive initial instruction on plan location, format, usage, and implementation. Refresher instruction will occur during drill exercises, significant plan changes, or the addition of new management/supervisory personnel.

Spill Response Field Document

The Spill Response Field Document is located in Appendix D of the Facility Oil Spill Response Plans noted in the above locations as well as Appendix D of USOR's Emergency Response Plan. The Emergency Response Plan can be readily accessed throughout the refinery on USOR's computer network at F:\APPLI\ERP\Appendices\Appendix D.doc. As such, this database can be accessed by logging into one of the numerous computer work stations located throughout the refinery as well as the Marine Terminal. Additional hard copies of the spill response field document can be made from photocopiers and/or computer printers located throughout the refinery as well as the Marine Terminal.

The Spill Response Field Document is designed to allow initial response actions to be documented and also includes a copy of the ICS 201 form (Incident Briefing). The ICS 201 form will also need to be completed as it is used to provide Unified Command with basic information regarding the initial incident response.

All employees responsible for initial spill response and located at the above-mentioned areas will receive initial instruction on the location, format, usage, and implementation of the Spill Response Field Document. Refresher instruction will occur during drill exercises, significant changes to the Field Document, or the addition of new personnel responsible for initial spill response.

2.5 Relationship to Other Plans

Per the National Contingency Plan (NCP), area committees have been established for each area of the United States that has been designated by the President. The area committees are comprised of personnel from Federal and state agencies who coordinate response actions with tribal and local governments and with the private sector. Area committees, under the coordinated direction of Federal On-Scene Coordinators (FOSC) are responsible for developing Area Contingency Plans (ACPs). Area committees are also required to work with the response community to develop procedures to expedite decisions for the use of alternative response measures.

The NCP also established the National Response Team (NRT) and 13 Regional Response Teams (RRTs) who are responsible for national and reginal planning and preparedness activities before a response action and support to the FOSC and State On-Scene Coordinator (SOSC) when activated during a response. RRT membership consists of designated representatives from key federal response and support agencies together with affected states.

In the Northwest Area (defined as the coastal and inland zones of Idaho, Oregon and Washington), these two groups have joined together to accomplish all planning and preparedness activities and jointly publish the Northwest Area Contingency Plan (NWACP). The purpose of the NWACP is as follows:

1. To provide for orderly and effective implementation of response actions to protect the people, natural resources and property of the coastal and inland zones of the Northwest area, including the states of Washington, Oregon, and Idaho from the impacts of a discharge or substantial threat of discharge of oil or a release or substantial threat of a release of a hazardous substance from inland and marine sources.

2. To promote the coordination of and describe the strategy for a unified and coordinated federal, state, tribal, local, potential responsible party, response contractor, response cooperative, and community response to a discharge or substantial threat of discharge of oil or a release or substantial threat of a release of a hazardous substance from inland and marine sources.
3. To be consistent with the NCP and to be adopted as the Regional Contingency Plan (RCP) and Area Contingency Plan for the northwest.
4. To provide guidance to all Facility and Vessel Response Plan reviewers and Plan holders to ensure consistency with the ACP.
5. To be a guidance manual for responders.

The NWACP is intended for use as a guideline for response actions to spill incidents and to ensure consistency in responses to spills. Federal and state rules require that a Responsible Party (RP) be able to manage spills with a pre-designated response management organization that accommodates a unified command structure in recognition of federal, state, tribal or local jurisdiction.

In Washington, state, the NWACP serves as the statewide master oil and hazardous substance contingency plan required by RCW 90.56.060. Figure 2-3 depicts the relationship between the Facility Oil Spill Response Plan for USOR and McChord Pipeline Co. and federal, state and local oil spill contingency plans.

Figure 2-1
WRIA #10 – Puyallup-White River Watershed

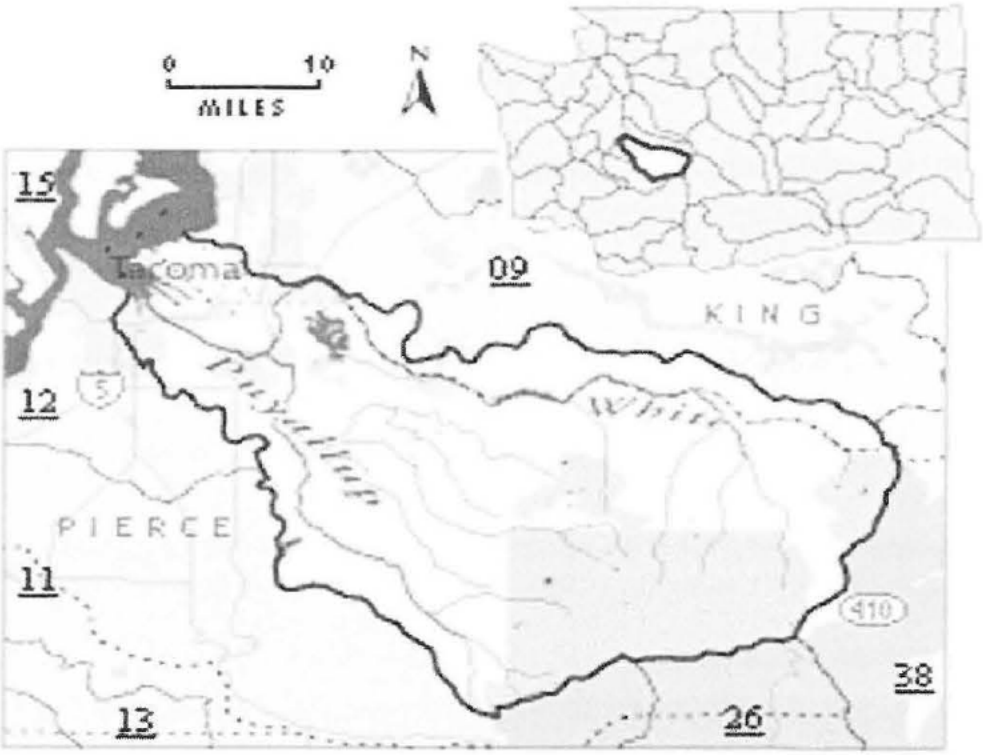


Figure 2-2
WRIA #12 – Chambers-Clover Creek Watershed

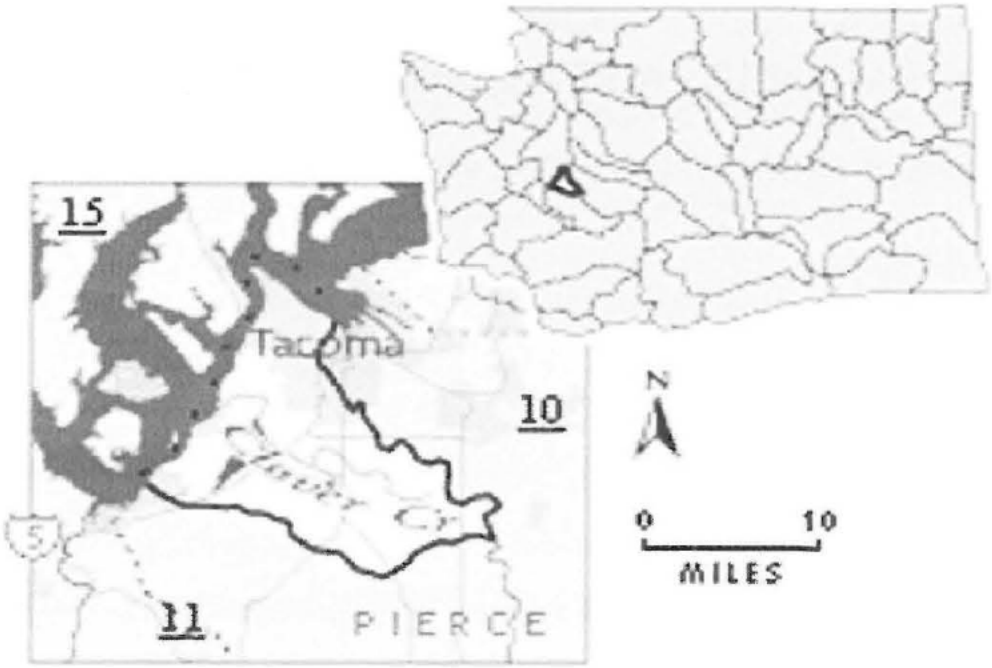
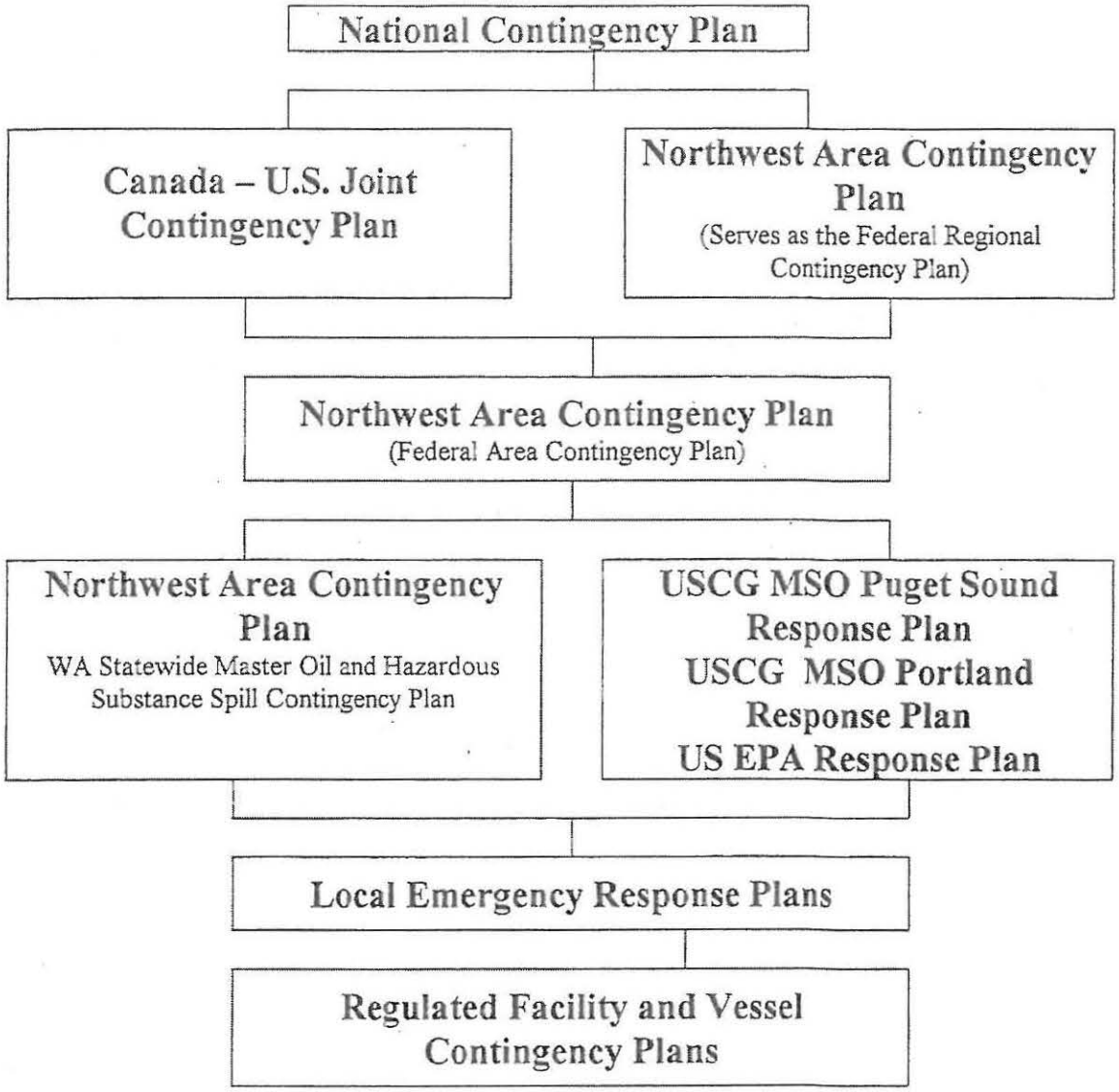


Figure 2-3

Relationship of Federal, State and Local Oil Spill Contingency Plans



3.0 SPILL RESPONSE ACTION PLAN

3.1 Spill Notification

3.1.1 Notification Procedure

Refinery personnel are required to immediately notify the on-duty Shift Supervisor upon discovering an oil spill. Figure 3-1 shows the notification procedure in order of priority that will be utilized in the event of an oil spill. For smaller spills it may not be necessary to notify everyone identified on the notification list. This decision, which will be exercised on a case by case basis, will be the responsibility of the "notified" primary supervisor, who will act as the Refinery Incident Commander after arriving on-scene. The "notified" primary supervisor is also responsible for implementing the notification process until he is replaced by a higher level manager who will then become the Refinery Incident Commander. The Refinery Incident Commander has the authority to delegate all or part of the notification responsibility to the scalehouse dispatcher, shift supervisor, another primary supervisor, or a secondary supervisor. USOR spill response personnel will provide support on behalf of McChord Pipeline Co. for oil spills affecting their facility.

An important aspect of any spill notification procedure is to ensure that all appropriate federal, state, and local agencies are immediately notified and provided as much information as possible to assist them in determining their level of involvement. All attempts will be made to provide the following information to each governmental agency that is notified. The spill form located in Table 3-1 will serve to record all spill events including initial as well as periodic follow-up notifications.

1. Spill reporter's name and contact telephone number.
2. Name of responsible party.
3. Date and time of spill.
4. Location of spill.
5. Type and quantity of spill.
6. Describe response actions taken and planned, including whether the discharge has been stopped or contained.
7. Source of the spill (If known).
8. Description of the spill incident including probable causes, any injuries, evacuations, or environmental damages
9. Weather Conditions
10. Identify regulatory agencies that have been notified of the spill.

3.1.2 Spill Reporting Thresholds

As discussed in more detail below, releases of oil, hazardous materials and dangerous wastes, which reach navigable waters or a waters of the state (including groundwater), as well as land based spills that meet federal and state/local reporting thresholds will include notifying the governmental agencies noted below.

- National Response Center
- Washington Emergency Management Division

The National Response Center then relays this information to the appropriate federal agencies (e.g. U.S. Coast Guard, EPA, etc.) whereas the Washington Emergency Management Division relays this information to the appropriate state and local agencies (e.g. Ecology, Fire Department, LEPC, etc.). Agency contact information is located in Table 3-1.

Releases to Water

Releases of any size directly to state waters such as the Blair Waterway, Lincoln Ave. Ditch, adjoining shorelines, tributaries, etc. will be immediately reported using the contact information provided in Table 3-1.

Releases to Ground

This section provides procedures for notifications for releases to ground and to permeable secondary containment that threaten to impact waters of the state. Spills to ground greater than 42 gallons (one barrel) shall be reported using the contact information in Table 3-1.

For spills to ground (i.e. soil or gravel) for which the volume cannot be reasonably estimated relative to the one barrel reporting quantity, best professional judgment will be used to assess whether the release is to be reported. The decision to report should consider whether the release:

- Is on-going, or has a yet unidentified source.
- The pathway is contained on-site (for example, is captured for routing to the refinery waste water treatment system) or threatens to move off-site or impact surface waters.
- May be mobilized by rain events that would threaten to move the spill off-site or otherwise impact surface water runoff.

A spill is considered to have not impacted the ground if it occurs on a paved surface such as asphalt or concrete. A spill to dirt or gravel is considered to have impacted ground and is reportable.

All spills are considered reportable spills except:

(i) Spills which are known to be less than forty-two gallons that do not impact surface or groundwater.
(ii) CERCLA releases.
(iii) On-facility air releases to the atmosphere only.
(iv) Releases from underground storage tanks regulated under WAC 173-360.
(v) Pre-existing sources of releases identified as RCRA solid waste management units.
(vi) Spills contained within areas controlled by NPDES permitted systems that are not likely to threaten groundwater and do not exceed applicable federal reportable quantities.

All spills involving a reportable quantity of a hazardous substance will be immediately reported using the contact information provided in Table 3-1.

Spills that have the potential to impact groundwater may be investigated using existing monitoring wells within the facility. If there are no monitoring wells in the area, the addition of a well, soil probes and/or test pits may be evaluated. Approved personnel will be used for investigating, containing and remediating/recovering spills to groundwater. A list of approved contracts is located in Appendix C.

Releases to the Atmosphere

In addition to the reporting criteria discussed above, additional reporting (i.e. Puget Sound Clean Air Agency) will be evaluated on a case by case basis in accordance with U.S. Oil's Title V Air Operating Permit for releases to the atmosphere.

Release Reporting Specific to McChord Pipeline Co.

In addition to the reporting criteria discussed above, incidents involving the McChord Pipeline will be reported in accordance with reporting requirements outlined in 49 CFR 195.50 and WAC 480-75-630. Within 2 hours of discovery of an incident involving the release of a hazardous liquid, both the Washington Utilities and Transportation Commission (WUTC) and Department of Transportation Pipeline and Hazardous Material Safety Administration (DOT PHMSA) will be notified as discussed below. The contact information for WUTC and DOT PHMSA is located in Table 3-1.

1. Spills of five gallons or more of product. (No report is required to DOT PHMSA if the release is less than 5 barrels as the result of a pipeline maintenance activity and the release meets the following criteria: not otherwise reportable per 49 CFR 195, not released to an open water body, confined to company property or the pipeline right-of-way, and it is cleaned up promptly.)
2. A fatality
3. Personal injury requiring hospitalization
4. Total combined property damage to McChord Pipeline and others exceeds $25,000. (No report is required to DOT PHMSA unless the estimated property damage, including cost of clean-up and recovery, value of lost product, and damage to the property of the pipeline operator/others exceeds $50,000.
5. Explosion or fire not intentionally set by the operator. (DOT PHMSA only requirement)
6. A significant occurrence in the judgement of the company that does not meet any of the incident reporting criteria noted above. (WUTC only requirement)
7. The news media reports the occurrence even though it does not meet any of the incident reporting criteria noted above. (WUTC only requirement)

3.1.3 Call Out List

This section references the names and phone numbers of all personnel, agencies and contractors identified in Figure 3-1 that will be notified in the event of an oil spill. The magnitude of and extenuating circumstances surrounding each oil spill will dictate the extent to which the call out list is utilized. This information, which is referred to in the following call out lists, is located in Appendix C.

List #1 Prioritized call out list of USOR spill management personnel.

List #2 Call out list of USOR spill response technicians. Call out priority will be established on a case by case basis combined with shift duty rosters.

List #3 Prioritized call out list of federal, state, and local agencies.

List #4 Call out list of primary response contractors. Call out priority will be established on a case by case basis. Included in this section is USOR's emergency phone list which also contains the names of consultants and contractors who would typically be contacted to investigate and respond to a release to groundwater.

List #5 Call out list of Joint Base Lewis-McChord fuel storage personnel as well as additional support services specific to McChord Pipeline Co. Call out priority is based on need.

List #6 Waste Disposal Location Contact List

List #7 Emergency Phone Book Call Out List. This list includes names of vendors, equipment and material suppliers, various contractors, fire and safety equipment services, vacuum and heavy trucks and resources available to investigate and respond to a variety of refinery and pipeline emergencies including oil spills and releases to groundwater.

Figure 3-1

SPILL NOTIFICATION PROCEDURE

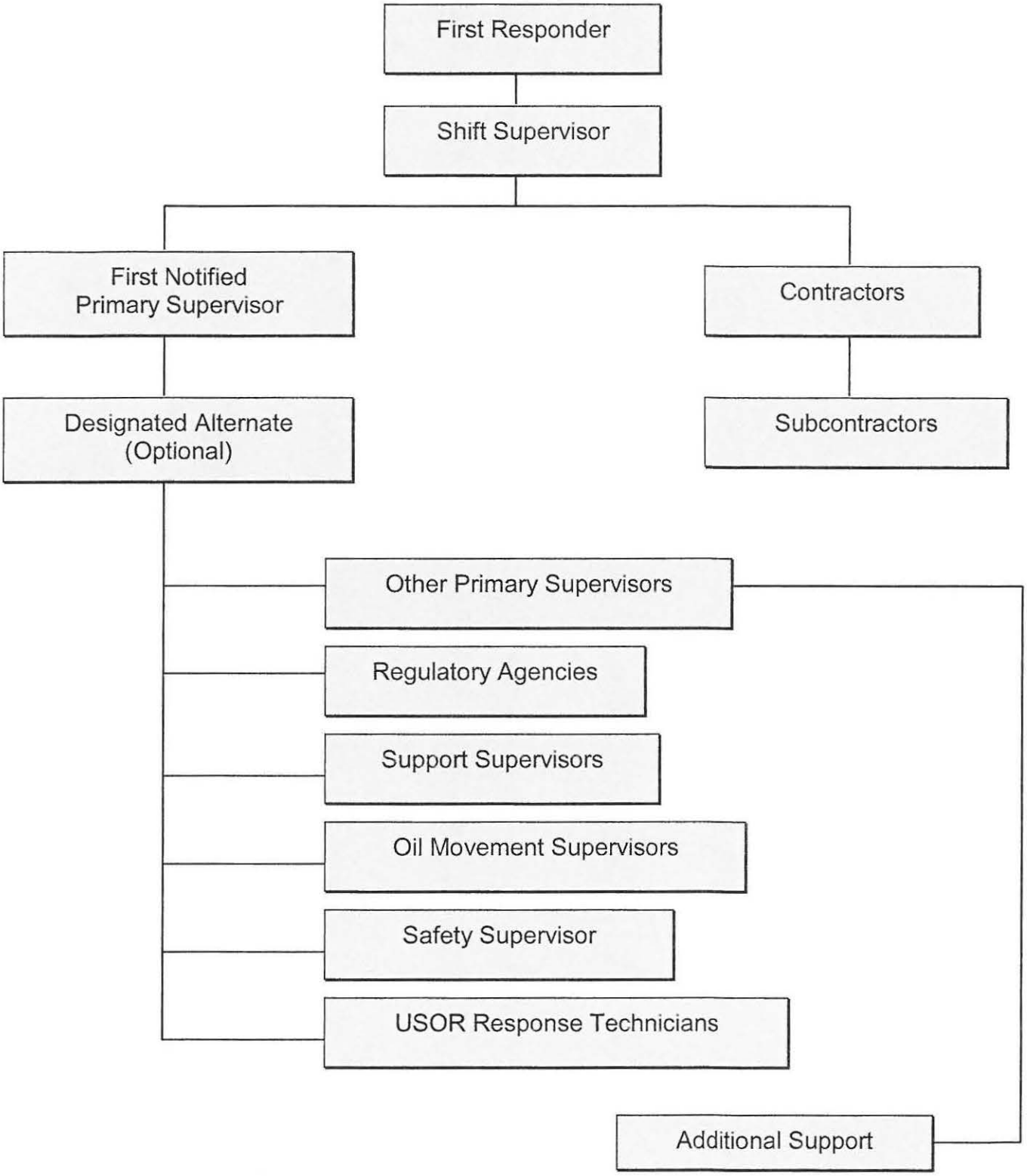


TABLE 3-1

U.S. OIL & REFINING CO. OIL SPILL NOTIFICATION FORM

Date & Time of Spill: _____

Name/Organization/Phone Number of Individual Who Reported Spill: _____

_____

Location of Spill (*note if spill reached groundwater, flowed into an offsite drainage ditch, creek or river, Blair Waterway, etc.*): _____

_____

_____

Type of Oil or Product Spilled: _____

Estimated Quantity Spilled: _____

Source of Spill (*vessel, pipeline, tank, etc.*): _____

_____

_____

Description of Spill Incident (*note probable cause, any injuries, evacuations, or environmental damages*):

_____

_____

_____

_____

_____

Describe Response Actions Taken/Planned: _____

_____

_____

_____

_____

Weather Conditions (*note temperature, wind speed/direction, cloud cover, visibility, etc.*) _____

_____

Other: _____

IT IS NOT NECESSARY TO WAIT FOR ALL INFORMATION BEFORE BEGINNING NOTIFICATIONS. SEE BACKSIDE OF THIS FORM FOR ADDITIONAL INFORMATION

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U.S. OIL PRIMARY SUPERVISOR NOTIFICATION LIST

Notification List	Phone Number	Time Called	By Whom
Shift Supervisor	(253) 383-1651	_____	_____
MPL Pager	(253) 291-2190	_____	_____
MPL Support Truck	(253) 377-0933	_____	_____
Primary Supervisors			
D.H. Yoder - (QI)	(253) 426-0838	_____	_____
G.A. Hills	(253) 377-2189	_____	_____
R.J. Mori	(253) 377-0909	_____	_____
H.R. Van	(253) 377-0902	_____	_____
R.W. Smith	(253) 377-0927	_____	_____
T.T. Hullinger	(253) 377-0921	_____	_____

PRIMARY RESPONSE CONTRACTOR NOTIFICATION LIST

Contractor	Phone Number	Time	Call Made By	Call Received By
Marine Spill Response Corporation	1-800-645-7745	_____	_____	_____
Guardian Industrial Services, Inc.	(253) 536-0455	_____	_____	_____
Global Diving & Salvage Co.	(206) 623-0621	_____	_____	_____

AGENCY NOTIFICATION LIST

Agency	Phone Number	Time Called	Call Made By	Call Received By	Case # (if any)
Notification Centers					
(1) National Response Center	1-800-424-8802	_____	_____	_____	_____
(2) WA Emergency Management Division	1-800-258-5990	_____	_____	_____	_____
Federal Agencies					
U.S. Coast Guard, MSO Puget Sound	(206) 217-6003	_____	_____	_____	_____
U.S. EPA Region 10	(206) 553-1263	_____	_____	_____	_____
U.S. EPA Spill Response Team Hotline	1-800-424-9346	_____	_____	_____	_____
DOT – Washington, DC (MPL)	1-800-424-8802	_____	_____	_____	_____
State Agencies					
WA Dept. of Ecology, SW Office	(360) 407-6300	_____	_____	_____	_____
Utilities & Transportation Comm,. (MPL)	1-888-321-9146	_____	_____	_____	_____
State Emergency Response Commission	1-800-562-6108	_____	_____	_____	_____
Local Agencies					
Tacoma Fire Dept.	911	_____	_____	_____	_____
Tacoma Fire Dept. Dispatch	(253) 591-5733	_____	_____	_____	_____
Tacoma/Pierce County LEPC	(253) 591-5798	_____	_____	_____	_____
Puget Sound Clean Air Agency	1-800-552-3565	_____	_____	_____	_____

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ADDITIONAL PHONE NUMBERS

Contractor	Phone Number	Time	Call Made By	Call Received By
Ambulance	911			
Federal Aviation Administration	(425) 227-1389			
Northwest Helicopters (ext. 112)	(360) 754-7200			
Worldwind Helicopters, Inc.	(425) 271-8441			
Insurance Representative	(253) 680-3298			
KCPQ - TV (Evacuations)	(206) 674-1313			
KIRO - TV	(206) 448-3850			
KOMO - TV	(888) 477-5666			
KKMO, KGNW, KKOL, KLFE - Radio (Evacuations)	(253) 922-5293			
KIRO - Radio (Evacuations)	(206) 726-6397			
Marine Exchange	(206) 443-3830			
National Weather Service (NOAA)	(206) 526-6087			
Pierce County Sheriff	911			
Port of Tacoma Operations				
Switchboard	(253) 383-5841			
Dayshift Superintendent on Duty	(253) 383-9420			
Off-Hours Superintendent on Duty	(253) 279-2607			
Security	(253) 279-7650			
J&B Excavation Company	(253) 606-0233			
St. Joseph Hospital	(253) 426-6660			
Tacoma City Water	(253) 502-8384			
Tacoma General Hospital	(253) 403-1050			
Tacoma Police Department	911			
U.S. Coast Guard Puget Sound VTS	(206) 217-6050			
WA Dept. of Fish & Wildlife (pager #)	(360) 534-8233			
WA United Terminals (Hyundai)	(253) 396-4913			

Note: Wellhead Protection Area maps and notification contacts are listed in Appendix C.

3.2 Response Personnel

3.2.1 Spill Response Team Organization

The overall process that will be utilized to manage a spill is consistent with the Northwest Area Contingency Plan, which is being incorporated by reference. When damage to public safety/welfare and the environment is imminent as the result of an oil spill, an Incident Command System (ICS) will be established. The ICS will operate using a Unified Command Structure involving representatives of the state (Ecology), federal government (USCG/EPA/DOT), USOR as well as representatives from the tribal and local government. USOR spill response personnel will provide support on behalf of McChord Pipeline Co. for oil spills affecting the pipeline. Spill cleanups that do not require management under the ICS will proceed under normal USOR operating and maintenance procedures. Figure 3-2 depicts the ICS Unified Command Structure that will be utilized by USOR.

When a USOR supervisor first arrives at a spill scene, that person serves as the Refinery Incident Commander (IC) pending the arrival of a state, federal and/or a USOR Primary Response Supervisor. In addition to taking necessary actions to contain the spill and shut off the source of the spill, a USOR primary supervisor will be appointed to the Refinery IC position and an incident command post will be established. In the ICS concept of teamwork, coordination and cooperation, the government On-Scene Coordinator and Refinery IC will generally share in decision making authority in the incident command post and consult with each other regarding spill response and clean-up management issues. To ensure a smooth transfer of authority, an announcement will be made to both USOR spill response personnel and regulatory agencies that there has been a change in USOR personnel filling the role of Refinery IC. This change in command will also be posted on a status board for spills that warrant the use of this communication device. In addition, the Refinery IC will be identified by a vest.

Oil spill response and cleanup involving USOR and McChord Pipeline Co. facilities is ultimately the responsibility of USOR. The Federal OSC (FOSC) has the ultimate authority in a response operation and will exert this authority if the other members of the unified command are not present or are unable to reach consensus within a reasonable time frame. The state OSC (SOSC) may engage in either a monitoring role or a response role, depending on the circumstances of the spill and on-going response efforts. In a monitoring capacity, the SOSC is responsible for ensuring that USOR properly manages the initial response and containment effort, clean-up, disposal of contaminated debris and restoration of the environment in a manner that is acceptable to the state, the local jurisdictions, and the public. In the event that USOR is unable to effectively manage a spill response, the SOSC may take over the response efforts and assume a clean-up role. As necessary, tribal and local governments may also elect to have an OSC representative within incident command to represent/protect their interests.

Flexibility is a key element of the ICS thereby allowing the command structure to be as large and sophisticated or as small and compact as the spill event requires. Delegation under the ICS is from the top down and lateral in nature so that only needed job functions are activated. When a position is activated, the assigned individual is responsible for accomplishing all corresponding tasks. As the workload increases, assigned tasks within the position can be further delegated.

Telephones, cellular phones, two-way radios, and multichannel radios are available to facilitate communications between the command post and all positions identified within the Unified Command Structure. These systems also allow for communications outside the Unified Command Structure including response contractors, regulatory agencies, refinery offices, various material suppliers, and mutual aid providers. Common frequencies have already been established and are discussed/identified in Chapter 8.

The incident command post is intended to be located as close to the spill site as practicable without interfering in the actual spill clean-up activities. See Section 3.5.4 for additional discussions regarding spill response and command post staging operations.

USOR has adopted the NIIMS ICS unified command structure as outlined in Chapters 1000 through 6000 of the NWACP. A discussion of roles and responsibilities for the NIIMS ICS positions can also be found in Chapters 1000 through 6000 of the NWACP. The following paragraphs provide additional information on key response positions within NIIMS ICS structure shown in Figure 3-2. Personnel identified to fill these response positions are available to respond to any size spill as well as protecting sensitive environmental areas.

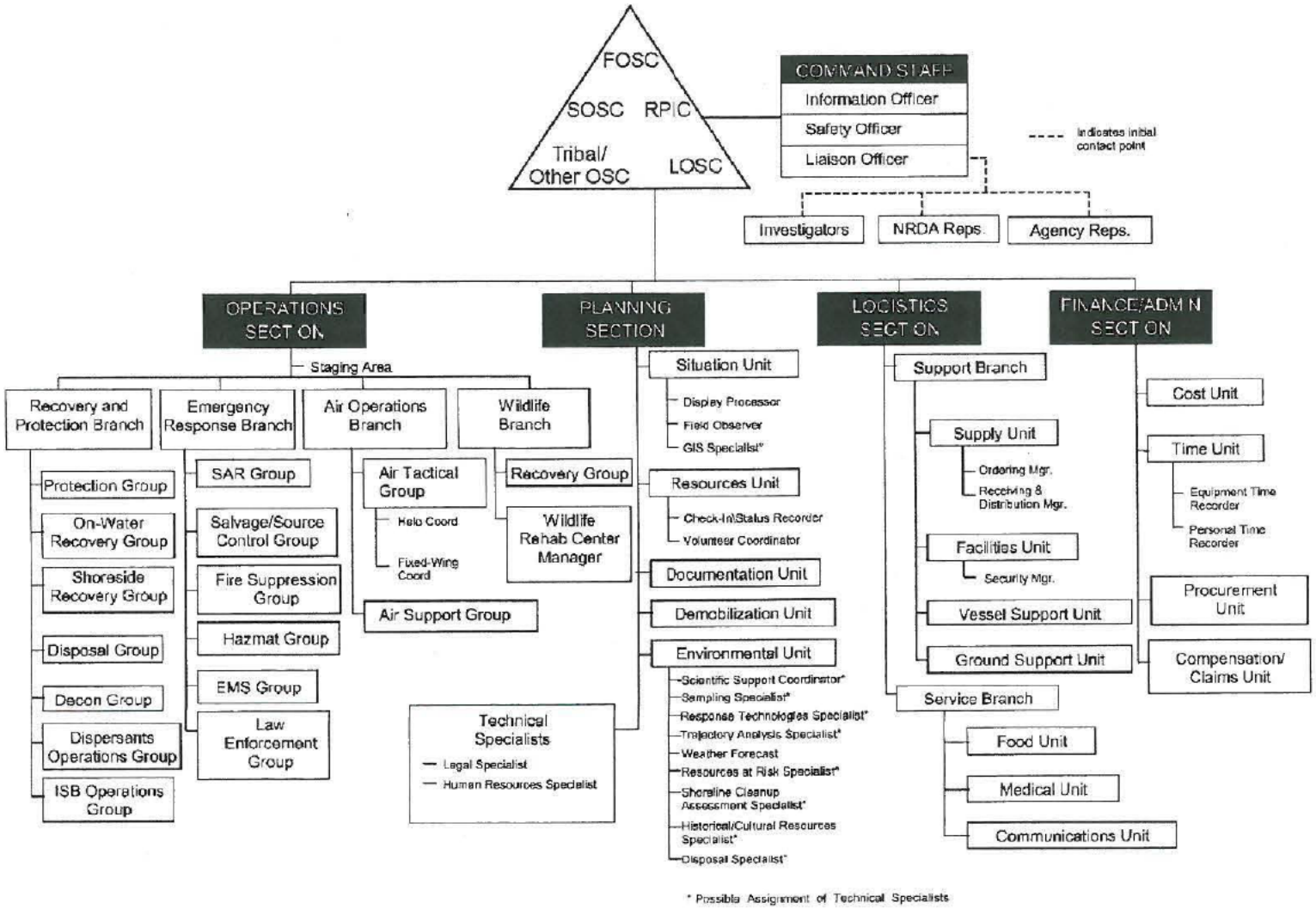
Incident Commander - This response position is filled by the first USOR supervisor to arrive at a spill scene pending the arrival of a FOSC, SOSC, and/or Refinery Incident Commander. Responsibilities include overall management of spill response activities, formulation of policy and objectives, and ordering and releasing spill response resources.

Refinery Incident Commander – This person serves as the responsible party representative to the Unified Command. The first USOR supervisor or manager to arrive on the spill scene will serve as the Refinery IC until that person is replaced by either a higher level manager or one of the "notified" primary supervisors. Generally the Vice-President of Manufacturing, who is the highest ranking primary supervisor, will serve as the Refinery IC. As designated by the Vice-President of Manufacturing, this position may be filled by one of the other USOR primary supervisors. In coordination with the FOSC and SOSC, Refinery IC responsibilities include the following:

1. Overall management and direction of USOR spill response activities,
2. Authorized to access and expend company funding necessary to initiate cleanup and response activities,
3. Assess and implement prompt removal action to contain and remove the substance released,
4. Perform or delegate all actions necessary to ensure all appropriate response personnel and governmental agencies are notified, the extent of the spill is adequately scoped out, and all possible hazards to human health and the environment due to the release are properly assessed,
5. Formulation of policy and objectives,
6. Activating and directing USOR and contracted spill response resources,
7. Serving as a liaison between USOR and the Incident Commander.

Figure 3-2

Unified Command Organization



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Qualified Individual - This is another title for the person who serves as the Refinery Incident Commander. This individual has been given full authority by USOR to (1) activate and engage in contracting with oil spill removal organizations, (2) act as a liaison with the predesignated FOSC and (3) obligate funds required to carry out response activities. The Qualified Individual for USOR, who is the Vice-President of Manufacturing, also serves as the Qualified Individual for McChord Pipeline. The following is a list of duties identified in 40 CFR 112.20(h)(3)(ix) that the QI is responsible to implement:

a) Activate internal alarms and hazard communication systems to notify all facility personnel;
b) Notify all response personnel, as needed;
c) Identify the character, exact source, amount, and extent of the release, as well as other items needed for notification;
d) Notify and provide necessary information to the appropriate Federal, State and local authorities with designated response roles, including the National Response Center, State Emergency Response Commission, and Local Emergency Planning Committee;
e) Assess the interaction of the spilled substance with water and/or other substances stored at the facility and notify response personnel at the scene of that assessment;
f) Assess the possible hazards to human health and the environment due to the release. This assessment must consider both the direct and indirect affects of the release;
g) Assess and implement prompt removal actions to contain and remove the substance released;
h) Coordinate rescue and response actions as previously arranged with all response personnel;
i) Use authority to immediately access company funding to initiate cleanup activities; and
j) Direct cleanup activities until properly relieved of this responsibility.

Alternate Qualified Individual – An Alternate Qualified Individual will be appointed in the event that the Vice-President of Manufacturing is unable to serve as USOR's Qualified Individual. The Alternate Qualified Individual will be appointed as necessary by the USOR Vice-President of Manufacturing from the list of USOR personnel designated as primary supervisors. The Alternate Qualified Individual has been given full authority by USOR to (1) activate and engage in contracting with oil spill removal organizations, (2) act as a liaison with the predesignated FOSC and (3) obligate funds required to carry out response activities.

Safety Officer - The position is generally staffed by a U.S. Oil Safety representative. The Safety Officer is responsible for monitoring and assessing hazardous and unsafe situations and developing measures for assuring personnel safety. The Safety Officer maintains awareness of active an developing situations, ensures the preparation and implementation of the Site Safety Plan, briefs personnel and includes safety messages in each Incident Action Plan. A copy of the Health and Safety Manual is located in Section 9660 of the NWACP.

Public Information Officer - This individual is responsible for developing and releasing information about the incident to the news media, to incident personnel and to other appropriate agencies and organizations, in as timely manner as possible. The Public Information Officer (PIO) position will be filled by a qualified representative of a federal, state, tribal or local agency. If no such agency representative is initially available, qualified, or willing to be the PIO, than a U.S. Oil representative may fill

that role upon concurrence from the Unified Command. Furthermore, a transition to a U.S. Oil designated PIO may occur during the incident with the concurrence of the Unified Command. As necessary, U.S. Oil will designate an Assistant PIO to participated in meetings attended by and briefings made by the PIO.

The PIO and Assistant PIO along with other public affairs representatives will participate in a Joint Information Center (JIC). A JIC involves the co-location of all involved public affairs representatives in conjunction with the Unified Command to better coordinate public information activities. Public information guidance can be found in Chapter 9610 of the NWACP.

Liaison Officer - This individual has the following responsibilities:

- Serve as the initial point of contact for participating federal, state and local agencies with a vested interest in the response.
- Maintain a spill response summary distribution list for public and private entities requesting spill response status reports.
- Received and coordinate all calls from public and private entities offering assistance or requesting information.
- Identify public and private concerns related to the status and effectiveness of the spill response.

The Liaison Officer position will be filled by a qualified representative of a federal, state, tribal or local agency. If no such agency representative is initially available, qualified, or willing to be the Liaison Officer, than a U.S. Oil representative may fill that role upon concurrence from the Unified Command. Furthermore, a transition to a U.S. Oil designated Liaison Officer may occur during the incident with the concurrence of the Unified Command. As necessary, U.S. Oil will designate an Assistant Liaison Officer to participated in meetings attended by and briefings made by the Liaison Officer.

Finance Section Chief - This position, which is filled by a representative from U.S. Oil's Accounting Department, is responsible for all finance functions needed for an incident including documentation of all incident costs and providing guidance to Incident Command on financial issues that may have an impact on incident operations. These responsibilities include the following:

- Future payments.
- Future budgeting.
- Payment of personnel costs.
- Cost Recovery.
- Timely administration of contracts.
- Meet with assisting and cooperating U.S. Oil and agency representatives as required.
- Maintain daily contact with U.S. Oil and agency administrative headquarters on finance matters.
- Ensure that all personnel time records are transmitted to U.S. Oil management as necessary.
- Ensure that all obligation documents initiated at the incident are properly prepared and completed.

As necessary, the Finance Section Chief is supported by the various units identified in Figure 3-2. Additional discussions of the roles and responsibilities of the Finance Section Chief as well as the Finance Section can be found in Chapter 6000 of the NWACP.

Operations Section Chief - This position, which is filled by a U.S. Oil representative, is responsible for the management of all operations directly applicable to the primary mission. The Operations Chief activates and supervises elements in accordance with the Incident Action plan and directs its execution; activates and executes the Site Safety Plan; directs the preparation of unit operational plans, requests or releases resources, makes expedient changes to the Incident Action Plans as necessary, and reports such to the Incident Commander. As necessary, the Operations Section Chief is supported by the various branches and groups identified in Figure 3-2. Additional discussions of the roles and responsibilities of the Operations Section Chief as well as the Operations Section can be found in Chapter 3000 of the NWACP.

Logistics Section Chief - This position, which is filled by a U.S. Oil representative, is responsible for providing facilities, services and material in support of the incident response. The Logistics Section Chief participates in developing and implementing the Incident Action Plan and activates and supervises Branches and Units within the Logistics Section. As necessary, the Logistics Section Chief is supported by the various branches and units identified in Figure 3-2. Additional discussions of the roles and responsibilities of the Logistics Section Chief as well as the Logistics Section can be found in Chapter 5000 of the NWACP.

Planning Section Chief - This position, which is filled by a U.S. Oil representative, is responsible for the collecting, evaluating, disseminating and using information about the development of the incident and status of resources. Information is needed to understand the current situation, predict probable course of incident events and prepare alternative strategies for the incident. As necessary, the Planning Section Chief is supported by the various units identified in Figure 3-2. Additional discussions of the roles and responsibilities of the Planning Section Chief as well as thePlanning Section can be found in Chapter 4000 of the NWACP.

Shoreside Recovery Group Supervisor – This individual reports to the Recovery & Protection Branch Director who in turn reports to the Operations Section Chief. This person is responsible for managing and supervising shoreside cleanup operations in compliance with the Incident Action Plan (IAP). Tasks include implementing recovery strategies as indicated in the IAP, directing, coordinating and assessing the effectiveness of shoreside recovery operations and modifying protective actions as needed.

On-Water Recovery Group Supervisor – This individual reports to the Recovery & Protection Branch Director. This person is responsible for managing and implementing on-water recovery operations in accordance with the IAP, directing, coordinating and assessing the effectiveness of on-water recovery actions and modifying protective actions as needed.

3.2.2 Available USOR Response Personnel

Primary Supervisors - These personnel, which are mainly comprised of USOR manufacturing department heads, have the authority to function as the IC and/or Refinery IC. As necessary, these personnel are qualified to fill/ support the following spill response positions: Public Information Officer, Liaison Officer, Operations Section Chief, Logistics Section Chief, Planning Section Chief and Safety Officer. These individuals, who are capable of performing the role of "Alternate Qualified Individual", have the fiscal authority to expend company funds necessary for spill mitigation. Depending on the nature of the spill, some primary supervisors may have more than one assigned responsibility.

Support Supervisors - These response personnel are mainly comprised of USOR shift supervisors, maintenance supervisors, operations superintendents and engineers. These personnel are qualified to fill positions, as necessary, within the Operations, Planning and Logistics Sections.

Shift Supervisors - This is not a response position, however, refinery operations require the presence of one shift supervisor on site at all times. In the event of an oil spill the shift supervisor is the first person notified and therefore performs the role of Refinery IC until replaced by a Primary Supervisor. When one of the Primary Supervisors arrives on site, the Shift Supervisor will function as a one of the Support Supervisors unless directed otherwise.

Response Technicians – This group is mainly comprised of trained hourly USOR operations and maintenance personnel who would be required to perform various spill response tasks as assigned by their respective supervisors.

Figure 3-3 provides an organization list of one primary and one alternate persone lead each ICS spill management position down to the section chief and command staff level. To ensure adequate spill response coverage, the ICS structure can be expanded, as necessary, to include additional USOR spill response personnel necessary to fill other ICS organizational chart positions. Based on the magnitude of the incident, some of these positions may be filled with federal, state, locate and/or tribal personnel or personnel from MSRC.

In some cases, these positions organizational units to incorporate personnel from USOR and their spill response contractors as well as federal, state, local and tribal governmental agencies. Additional information regarding USOR response personnel is located in the following sections of this manual:

- Job Descriptions - See Sections 3.2.1 and 3.2.2
- Call out lists including phone numbers - See Appendix C
- Personnel Training - See Section 7.1

3.2.3 Personnel Prepositioning

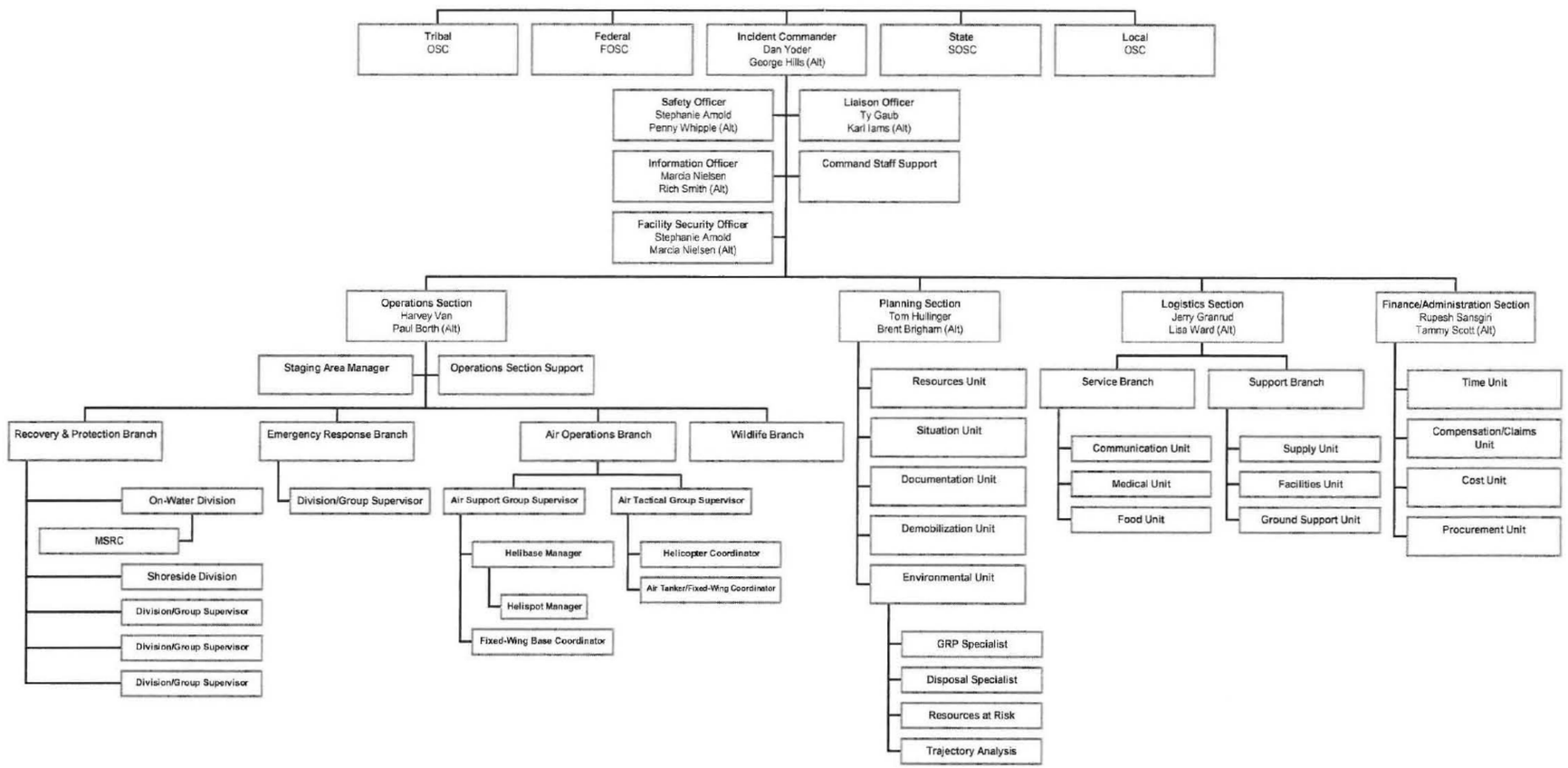
USOR maintains a dock watch at the Marine Terminal dock 24 hours per day, however, there are generally 2 to 4 additional USOR hourly personnel prepositioned at the dock whenever a vessel is being connected to or disconnected from the dock facility. Since the refinery operates 24 hours per day there is always hourly, dispatch, laboratory and shift supervisory personnel on site at all times.

It is important to note that other off-duty personnel can be brought in to provide additional manpower since the majority of USOR spill response personnel live in close proximity to the refinery and the McChord pipeline. Many of the primary response contractor personnel listed in Appendix F also live in close proximity to the refinery and the McChord pipeline. There is a sufficient number of prepositioned USOR personnel to adequately staff and deploy spill response equipment staged at the Marine Terminal Dock area within the first hour after a spill is discovered.

Figure 3-3

U.S. Oil Spill Management Team

General Organization Diagram



3.2.4 Primary Response Contractor Personnel Descriptions

A description of available personnel who would be utilized by each of USOR's primary response contractors is contained within Appendix F. Phone numbers for primary response contractors are located in Appendix C. Contract personnel identified in Appendix F are available to respond to any size of spill including the protection of sensitive environmental areas. The following descriptions are contained in Appendix F:

1. Job description for each type of spill response position needed.
2. Number of personnel available to perform each type of spill response position.
3. Type and frequency of spill response operations and safety training that each individual in a spill response position receives to attain the level of qualification demanded by their job description.

Appendix E contains Letters of Intent from all primary response contractors who have agreed to respond to USOR oil spills in which their cleanup services are required. Appendix C, Section #4 contains call out lists and addresses for each of the primary response contractors.

3.2.5 Volunteer Usage Description

While USOR does not intend to utilize volunteers to assist in spill response cleanup operations, any final decisions to use volunteers will be decided upon by the Unified Command in accordance with the Volunteer Policy outlined in Chapter 4000 of the NWACP.

3.3 Response Equipment

3.3.1 Available Equipment Inventory

A list of available response equipment maintained by our primary response contractors and USOR is contained in Appendices F and G respectively. Equipment listed in these appendices is available to respond to any size of persistent or non-persistent oil spill including the protection of sensitive environmental areas. These appendices summarize the following information for each piece of listed equipment: type, quantity, age, location, maintenance schedule and equipment availability. In addition, the following information is summarized for oil recovery equipment: make/model, nameplate capacity, applicable design limits, maximum amount of oil that can be recovered in a 24 hour period, and amount of oil that can be recovered in a 24 hour period utilizing a 20% efficiency factor. Additional information regarding Marine Spill Response Corporation's (MSRC) response equipment descriptions and capabilities is contained in MSRC's Spill Response Plan as well as MSRC's most current primary response contractor application, which is incorporated into this Facility Oil Spill Response Plan by reference. Further, an inventory of response equipment can also be found at www.wrrl.us. The Western Response Resource List (WRRL) is a database of oil spill response equipment maintained by regional equipment owners.

USOR's Maintenance Department Manager will designate who is responsible for performing maintenance and testing of equipment listed in Appendix G. The response equipment listed in Appendix G will be maintained in accordance with manufacturer recommendations. Maintenance and testing programs associated with the contractor equipment listed in Appendix F will be at the discretion of the respective response contractor. Maintenance records for USOR owned response equipment, including equipment listed in Appendix G, will be managed and tracked using Maximo®, which is an asset management software program. These records will be maintained by the Maintenance Dept. for at least five years.

MSRC maintains and operates oil spill cleanup vessels, equipment, and materials for the purpose of responding to oil spills occurring on public and private properties, beaches, harbors and waters along the coastal portions of the State of Washington and inland waters within Puget Sound. MSRC also has access to dedicated oil spill response equipment through their STARS contractor network. MSRC's STARS (Spill Team Area Responders) represent a nationwide network of contractors with personnel/equipment/vessels appropriate to supporting the spill response mission, however, these resources are "as available", and therefore represent non-dedicated resources.

During 2005 Clean Sound Cooperative and MSRC merged their organizations and assets under the name MSRC. Since its inception, USOR has maintained a membership with Clean Sound Cooperative, which is comprised mainly of local industries involved in oil refining, oil storage and/or oil transportation. This membership includes attendance at planning & strategy meetings, participation in spill exercises and guaranteed access to MSRC's oil spill cleanup equipment.

USOR has established contacts and developed vendor lists to provide emergency services, safety equipment, response equipment and construction materials. These vendors, who provide services and equipment on a routine basis, are able to provide services and equipment in the event of a refinery emergency, fire or oil spill. Appendix C contains a list of vendors who can be contacted in the event of an emergency to provide response services and/or safety equipment.

USOR utilizes a computerized equipment/parts inventory tracking and reordering system for maintaining several thousand items in inventory. This inventory, which includes response equipment/supplies, hand tools, PPE and safety equipment, is located on-site in the Receiving Dept. warehouses. Examples of safety/response resources maintained in inventory include personal protective equipment, spill booms and cleanup materials, construction materials, first aid supplies, decontamination materials and exposure monitoring instruments. This plan does not provide specifics on inventoried items due to the large number of items in inventory. Specifics regarding these items can be obtained through USOR's computerized parts inventory database. Reordering of inventoried items is automatic and is based on minimum and maximum inventories established for each part and piece of equipment.

In addition, USOR maintains a mobile environmental control trailer on-site. The primary purpose of this trailer is to respond to oil spills along the McChord pipeline. This trailer is stocked with containment boom, sorbent materials, safety equipment, personal protection equipment and miscellaneous hand tools and materials. In the event of an oil spill, this trailer can be towed to the spill site using one of USOR's pick-up trucks.

Safety and/or response equipment items that are seldom used are either rented or purchased on an as-needed basis. USOR maintains a large inventory of safety related equipment as well as response, cleanup and construction materials on-hand due to usage requirements necessary to support daily operations.

Table 3-3 identifies the spill response capabilities of the primary response contractors that have been retained by USOR.

3.3.2 Equipment Prepositioning

Equipment prepositioned at USOR's Marine Terminal Dock is listed in Table 3-4. Drawing #AD08049 located in Appendix H shows the location of equipment prepositioned at the Marine Terminal dock area. MSRC maintains spill response equipment located nearby at their Tacoma Base, which is approximately 3 miles from USOR's Marine Terminal dock. A listing of MSRC's spill response equipment can be found in Appendix F as well as at www.wrrl.us. It is important to note that USOR primary response contractors listed in Appendix F have spill response equipment that is prepositioned in close proximity to the refinery. USOR's ability to meet spill response planning standards is demonstrated in Section 6.1.

Along the McChord pipeline, additional sorbents and containment boom are prepositioned in a storage shed which is located on the North side of the road where 80th Street crosses Swan Creek. This shed can also be found midway between the intersections of 80th Street and Waller Road and 80th Street and 24th Avenue. The location of this shed is shown on the McChord Pipeline Co. drawings located in Appendix H whereas the contents of the shed are listed in Appendix G.

USOR owned response equipment listed in Table 3-4 is maintained on-site and is used by USOR to perform approximately 500 product transfers per year at the Marine Terminal Dock. Daily usage of this equipment demonstrates that it is appropriate for all sea state conditions which might be encountered during a response activity in the Blair Waterway.

Table 3-3
Primary Response Contractor Capabilities

Contractor	Capability
Marine Spill Response Corporation.	Primary responder utilized to respond to spills of all crude oils and petroleum products into the water.
Guardian Industrial Services, Inc.	Primary responder utilized to respond to spills of crude oils and petroleum products on land. Other utilization may include providing limited land response to oil spills into the water.
Global Diving & Salvage, Inc.	Secondary responder utilized to respond to spills of crude oils and petroleum products on either land or water.

Table 3-4

Marine Terminal Dock Prepositioned Equipment List

USOR Owned Equipment (located at USOR's Marine Terminal)

- 2700' (minimum) of 16" containment boom
- 2 - 16' Boston Whaler workboats each equipped with one 90 HP outboard motor
- 1 – Easy Load Boat Trailer

USOR also maintains an inventory of sorbents which are stored at the Marine Terminal dock, warehouse #4 located at the refinery, environmental control trailer and McChord pipeline storage shed. The minimum inventory kept on hand is as follows:

- 40 bales of 18" x 18" absorbant pads (100 pads per bale)
- 40 bales of 8" diameter absorbent boom (4 - 10' boom sections per bale)
- 30 bales of absorbant rolls (36" wide x 150' or 38" x 144')

Spill response materials that are stored inside the spill response equipment storage shed located at the Marine Terminal are listed in Appendix G.

3.3.3 Description of Logistical Resources

This section describes resources which will be needed to meet the needs of personnel during a worst-case spill response. Additional logistical resources can be found in MSRC's Spill Response Plan as well as Tacoma, Pierce County and South King County telephone books.

Lodging

Numerous hotels and motels are available in the greater Tacoma area within a few minutes drive from the USOR facility. Many of these businesses also have restaurants and banquet or meeting rooms which could be utilized, if necessary, for large meetings and/or press releases during a response.

Restaurants

There are numerous restaurants in the Tacoma area, including many catering services which are able to arrange meals for large groups at or near the USOR facility, if needed.

Portable Toilets and Potable Water Services

Several companies which provide portable toilet services are located in Tacoma or South Seattle. Bottled drinking water can be delivered to the facility by one of several water companies located in the Tacoma area.

Fire Services

The city of Tacoma has a fully staffed and equipped fire department with 18 stations in the Tacoma city limits. All staff are trained in hazardous materials response.

Medical Resources

Hospitals in Tacoma are equipped to deal with trauma and other emergency cases.

Shoreline Access

Shoreline access is available from the USOR dock and from several nearby boat launch facilities.

1. Point Defiance Boat Ramp	(Point Defiance Park next to the Vashon Ferry Dock, North Tacoma)
2. Tide Flats	(11th Street Bridge, north side of the Puyallup River, Tacoma)
3. Narrows Marina	(6th Avenue, Tacoma)
4. Steilacoom Marina	(Next to Ferry dock at Steilacoom, which is located along the Tacoma Narrows).
5. Redondo Dock and Ramp	(Redondo Beach Drive & Redondo Way, Federal Way)
6. Des Moines Marina	(South 227 & Dock Street, Des Moines)

3.4 Evacuation Plan

3.4.1 Emergency Whistle

The key communicating devices during an emergency are the in-plant two-way radios and the plant whistle which can be heard in most places throughout the plant. The emergency whistle should be used in the event of fire, toxic gas or flammable vapor release which may require a shutdown of motor traffic (source of ignition), and the evacuation of refinery process units or buildings. The plant whistle, which is actuated from the Net 90 control room will utilize the following call system:

1. Emergency:	A single 30 second blast.
2. Return to Work/All Clear:	Three short blasts of 3 second duration, repeated 3 times.

Plant radios, cell phones and word-of-mouth will be used to communicate the nature and location of the emergency.

3.4.2 Assigned Duties

When notified of an emergency, the Operation's Shift Supervisor will initially assume the responsibilities of Refinery Incident Commander, Safety Officer and Operations Section Chief until relieved of these responsibilities. Specific responsibilities include the following:

1. Initiate appropriate notification procedures.
2. Initial appropriate emergency procedures.
3. Direct the response of refinery Emergency Response Technicians.
4. Initiate evacuation and facility shutdown procedures, if appropriate.
5. Coordinate the activities of USOR emergency responders with the following outside response agencies:
   a) Fire Department
   b) Medical Services
   c) Police Department
   d) Utilities
   e) Contractors
6. Coordinate any search or rescue operations with the Tacoma Fire Department.
7. Establish and/or coordinate first aid efforts.
8. Secure help from supervisory personnel for any needed assistance.
9. When appropriate, initiate efforts to account for personnel (employees, contractors and visitors).
10. Keep records of activities during all stages of the incident.

Public Information Officer

When notified of an emergency, the Manager of Administrative Services will assume the responsibility of Public Information Officer. All public information (radio, TV, newsprint) inquiries and contracts will be referred to the Public Information Officer. If this person is not available, then these inquiries will be referred to the Vice-President of Manufacturing.

3.4.3 Evacuation Procedures

This procedure provides general guidelines for evacuations. Additional information regarding evacuations can be found in USOR's Emergency Response Plan as follows:

- Section 18.0 – Evacuation Guidelines
- Section 19.0 – On-Site Evacuation
- Section 20.0 – Off-Site Evacuation
- Section 21.0 – Shelter-In Place
- Section 22.0 – Dock Emergencies

3.4.3.1 Evacuation Guidelines

The Refinery Incident Commander (IC) will initiate evacuation procedures when the nature of the emergency is so grave as to endanger the personnel present. The Refinery IC will need to assess the available information and determine the type and extent of evacuation that is appropriate.

Emergencies may be natural or manmade and may be refinery specific or area-wide. Examples include the following:

- Floods
- Lahars
- Winds
- Earthquakes
- Tornados
- Fires
- Toxic Gas Release (e.g., H_2S, Chlorine)
- Chemical and Oil Spills
- Radiological Incidents
- Explosions
- Civil Disturbances
- Workplace Violence
- Power Outage

The type and the extent of the evacuation will be based on numerous factors. The Incident Commander will make the determination and communicate the extent and scope of the evacuation.

In some cases where the emergency is very serious, total and immediate evacuation is necessary. In other emergencies, a partial evacuation of nonessential employees with a delayed evacuation of others may be necessary for continued plant operation. There are numerous evacuation modes that can be combined or distinct:

- On-Site
- Off-Site
- Partial (geographical)
- Total (refinery-wide)
- Non-Essential Personnel
- All Personnel
- Shelter-In-Place

In addition to the type of the evacuation, the evacuation urgency, and hence the time available to evacuate, will vary depending on the particular emergency. The Incident Commander needs to communicate, in the evacuation directive, if it is to be immediate or if essential procedures are to be completed, prior to evacuation. Essential personnel will be supplied with and should be prepared to don appropriate PPE (i.e., SCBA's) if required to perform essential procedures.

These evacuation procedures are to be used in the absence of other specific directions from the Incident Commander. For the purpose of these guidelines, it is presumed that an incident would be for an extended period of time (i.e. hours not minutes).

The importance of prompt, accurate, and reliable communications during an emergency is critical. A disorganized evacuation can cause confusion and panic, resulting in unnecessary injury and property damage.

The Incident Commander will notify refinery personnel by portable radios, cell phones, or word-of-mouth. Supervisors (U.S. Oil and contractor) are responsible for notifying all of their employees and subcontractors, if applicable. Operators will notify personnel in their respective operating areas to evacuate and provide evacuation instructions.

If it becomes necessary to evacuate the Main Office, Laboratory, or Scalehouse, the Refinery IC will notify the Scalehouse Shipping Coordinator to initiate evacuation. The Scalehouse Shipping Coordinator will notify the Laboratory Supervisor by phone, radio or word-of-mouth to communicate evacuation instructions for the Laboratory. During normal office hours, the Scalehouse Shipping Coordinator will notify the Office Evacuation Coordinator by phone, radio, or word-of-mouth to communicate evacuation instructions for the Office.

The Office Evacuation Coordinator is responsible for coordinating the evacuation of the Main Office and adjoining office buildings to ensure a safe and timely evacuation is completed during normal office hours. The Office Floor Warden will assist the Office Evacuation Coordinator to ensure a safe and orderly evacuation is performed.

Maintenance Supervisors will notify employees and contractor personnel in the Receiving, Maintenance Shop, Fabrication, and Contractor Areas and in the Planning Trailer to evacuate and provide evacuation instructions.

If it becomes appropriate to evacuate adjacent properties, the Incident Commander will recommend evacuation by contacting the Tacoma Fire Department.

Evacuation communications will be maintained by the Scalehouse Dispatcher with the Scalehouse cell phone and plant radio when/if the Scalehouse is evacuated.

In the absence of incident-specific instructions from the Incident Commander during an evacuation, all Operations personnel are considered essential personnel and are expected to:

- Stay at their normal workstations,
- Follow established procedures,
- Perform essential functions, and
- Be prepared to immediately utilize appropriate PPE.

In the absence of other specific directions from the Incident Commander, all other employees, contractors, security guards, and visitors are considered non-essential personnel and must evacuate.

3.4.3.2 On-Site Evacuations

When an on-site evacuation is initiated by the Incident Commander:

- Security should ensure that the employee and contractor drive-through gates are closed. Gates should remain unlocked.
- Scalehouse personnel should ensure that the Scalehouse gates are open to allow emergency vehicle access.
- Scalehouse personnel should shutdown the Light Product Loading Rack and prevent trucks from entering through the Scalehouse gate.

All of the electrically powered gates can be operated manually if there is a loss of power. Instructions for operating the gate manually are located inside the gate operator cover.

During an on-site evacuation, evacuees should proceed to the evacuation assembly location shown in Figure 3-3A. Evacuees should:

- Proceed on foot. Walk, do not run.
- Follow an evacuation route that avoids areas downwind of the emergency scene.
- Follow an evacuation route that minimizes their proximity to the emergency scene.
- Remain at the evacuation assembly location until otherwise directed by the Refinery Incident Commander.

Unless otherwise directed, designated evacuation assembly locations (see attached drawing) are as follows:

For Main Office, Lab and Scalehouse Personnel

- West of the Light Products Loading Rack.
  Note: The alternate assembly site should be used if the emergency involves the B-Area, Light Products Loading Rack or the Butane Bullets.
- Alternate: Contractors Parking Lot (East of Main Gate)

For Operations, Maintenance, Receiving and Construction Personnel

- North of Receiving/Warehouse 4.
- Alternate: Northwest of Tank 80015 (near railroad spur).
  Note: Personnel working in the tankage area should use the alternate assembly site if the emergency involves the process area.

Operations will coordinate the safe shutdown and cleanup of individual work sites on a one-by-one basis prior to the "All Clear" being sounded. When the "All Clear" whistle is sounded, USOR and contract personnel can come in and sign-off open permits and pick up their equipment. To continue work after the "All Clear" whistle is sounded, all permits will require revalidation.

3.4.3.3 Off-Site Evacuations

If a refinery-wide evacuation (to a remote site) is initiated, numerous factors may influence the appropriate location. Potential evacuation sites and routes were evaluated. The Incident Commander will make the determination and communicate the evacuation location and the mode of evacuation. The preliminary Evacuation Sites are listed below and identified in Figure 3-3B. (Note: If an off-site evacuation is initiated during normal work hours, employees and contractors are to report to the evacuation site to be accounted for. Do **not** go home or elsewhere until you are released.)

Evacuation location factors will include:

- Number of personnel, i.e., day shift, night shift, weekends
- Type of hazard
- Source of hazard
- Wind direction and weather conditions
- Evacuation site distance, i.e., walking vs. driving distance
- Expected duration of incident

Vehicular Evacuation

Fabulich Center *(3600 Port of Tacoma Road)*
The Fabulich Center is located across Port of Tacoma Road from Love's Truckstop and is 1.1 miles from the Main Gate, with an approximate drive time of 4 minutes, (normal day-time traffic from the Main Gate). Additional time should be factored in for personnel evacuating from the north or east ends of the refinery and for traffic congestion at the gates and within the Port Area. There were approximately 120 parking spaces available during a mid-day survey of the parking area.

On-Foot Evacuation

Tacoma Fire Training Grounds *(2124 Marshall Ave.)*
The Tacoma Fire Training Grounds are 0.3 miles from the Main Gate, with an approximate walking time of 6 minutes. (brisk walking pace from the Main Gate). Additional time should be factored in for personnel evacuating from the north or east ends of the refinery and for physically-challenged personnel.

If the hazard does not involve a flammable material release, evacuating by carpool is the recommended procedure. If the incident involves a toxic material release, close all vehicle windows and turn off the vehicle's heating and air conditioning. Evacuating on-foot may be appropriate in some circumstances. In this case walk, do not run.

Evacuation will be either through the employee, contractor, or Scalehouse roadway gates on Marshall Avenue. All of the electrically powered gates can be operated manually if there is a loss of power. The Incident Commander will communicate if the specifics of the emergency dictate an alternate evacuation gate.

When an off-site evacuation is initiated by the Incident Commander:

- Security will ensure that the employee and contractor drive-through gates are opened.
- Scalehouse personnel will ensure that the Scalehouse gates are opened.

During normal business hours, the Off-Site Evacuation Security Officer will be responsible for quickly evacuating to the specified off-site evacuation location to direct arriving personnel to an appropriate location. The Off-Site Evacuation Security Officer will have an up-to-date list of employees readily available to facilitate accounting for all non-essential personnel that report to the specified off-site evacuation location. The Off-Site Evacuation Security Officer will be responsible for informing the Refinery Incident Commander of any missing non-essential personnel.

During non-business hours, the Incident Commander will need to designate an Off-Site Evacuation Security Officer.

During any off-site evacuation, the Scalehouse Shipping Coordinator would take the Scalehouse cell phone, (with spare battery and charger) and the Emergency Response 3-Ring Binder and maintain communications from the remote evacuation site.

3.4.3.4 Shelter-In-Place

If the Incident Commander issues a shelter-in-place emergency order, employees and contractors are to take shelter and employ precautions as listed in Section 21.0 of the Emergency Response Plan. All employees (except Operations personnel), contractors, and visitors will be considered non-essential personnel and are to report to and remain in the buildings or areas listed in Section 21.0 of the Emergency Response Plan, unless otherwise directed by the Incident Commander. Visitors (e.g., truck drivers) should be directed to the closest, appropriate building.

All Operations personnel will remain at their normal work areas unless otherwise directed by the Incident Commander.

All shelter-in-place building HVAC systems are to be shut down. All exterior windows and doors are to be closed and secured to the extent possible. Calculations determined that oxygen levels would remain above the WISHA minimum limit of 19.5% in all of the secured Shelter-In-Place Buildings / Areas for at least the two to three hours timeframe recommended by FEMA as a maximum shelter-in-place time limit.

3.4.3.5 Marine Terminal Evacuations

If an emergency (e.g., dock area, area-wide, or evacuation) is declared at the Dock, personnel will be notified by radio, phone, and/or word-of mouth. Specific directions will be issued at that time by the Incident Commander. The Operations Shift Supervisor will account for all personnel (i.e., employees, contractors, visitors) at the Dock, and report the results to the Refinery Incident Commander.

If the Incident Commander initiates an on-site Dock evacuation, evacuees should proceed to the Dock Evacuation Assembly Location. Evacuees should:

- Proceed on foot. Walk, do not run.
- Take their radio with them.
- Follow an evacuation route that avoids areas downwind of the emergency scene.
- Follow an evacuation route that minimizes their proximity to the emergency incident.
- Remain at the Dock Evacuation Assembly Location until otherwise directed by the Refinery Incident Commander.

Unless otherwise directed, the designated evacuation assembly location for personnel at the Dock is adjacent to the Dock Guard Shack and Dock Gate. See Figure 3-3C.

For Dock on-site evacuations, the Incident Commander should ensure tha the Dock Gate is staffed as soon as practical. The Tacoma City Fire Department has a key to open the Dock Gate, but it should be opened prior to their arrival. Prohibit all non-emergency vehicles and personnel from entering the Dock Area and keep the Dock entrance clear. The electrically powered gate can be operated manually if there is a loss of power. Instructions for operating the gate manually are located inside the gate operator cover. The gate should always remain unlocked.

The Incident Commander and Operations personnel will coordinate the safe shutdown and cleanup of individual work sites on a one-by-one basis prior to the "All Clear" being issued. USOR and contract personnel can come in and sign-off open permits and pick up their equipment. To continue work after the "All Clear" is given, all permits will require revalidation.

Figure 3-3A
On-Site Evacuation Assembly Locations

(b) (7)(F)

[redacted]

(b) (7)(F)

[redacted]

(b) (7)(F)

[redacted]

3.5 Emergency Spill Response Actions

3.5.1 Procession of Spill Response Operations

The Spill Response Decision Diagram shown in Figure 3-4 was developed to provide facility personnel (in particular the Incident Commander, Refinery Incident Commander, Management, and Supervisors) with a graphical representation of the primary steps to follow in the event of an oil spill. This decision diagram covers response actions from spill detection through disposal. Detailed disposal options are covered in Chapter 4.

The Checklist of Spill Response Operations provided in Figures 3-5A and 3-5B includes the key steps necessary to clean up a spill at either the USOR or McChord Pipeline Co. facilities. Emergency spill response strategies specific to McChord Pipeline Co. are discussed in Section 3.7. This checklist provides a means for the Refinery IC or other supervisory personnel to verify that all necessary response steps have been or are being taken during a spill cleanup.

3.5.2 Emergency Response-Initial Actions

Spill at dock during transfer operations:

Person detecting the spill will:

1. Stop all cargo transfer.
2. Initiate notification procedure by notifying nearest supervisor or person in charge. (See Figure 3-1 and Appendix C)
3. Locate spill source, secure and contain if possible.
4. Eliminate known sources of ignition where a spark will present a hazard. Ensure personnel safety.
5. Establish a safety zone around the spill area. Assess the spill, including:
   - spill classification
   - safety/health hazards
   - identify oil types
   - estimate spill size and movement
6. Initiate appropriate response actions. These may include:
   - surveillance
   - containment on land
   - sorbent deployment
   - vacuum truck deployment
   - containment on water:
     - ⇒ booming around spilled oil
     - ⇒ booming at 11th St. bridge and/or Lincoln Ave.
     - ⇒ arrange for skimmer or vacuum truck deployment

See Section 3.5.3 for further details on containment and recovery.

NOTE: If a spill of flammable liquid occurs on the waterway, caution will be exercised when booming to prevent potential concentrations of flammable vapors.

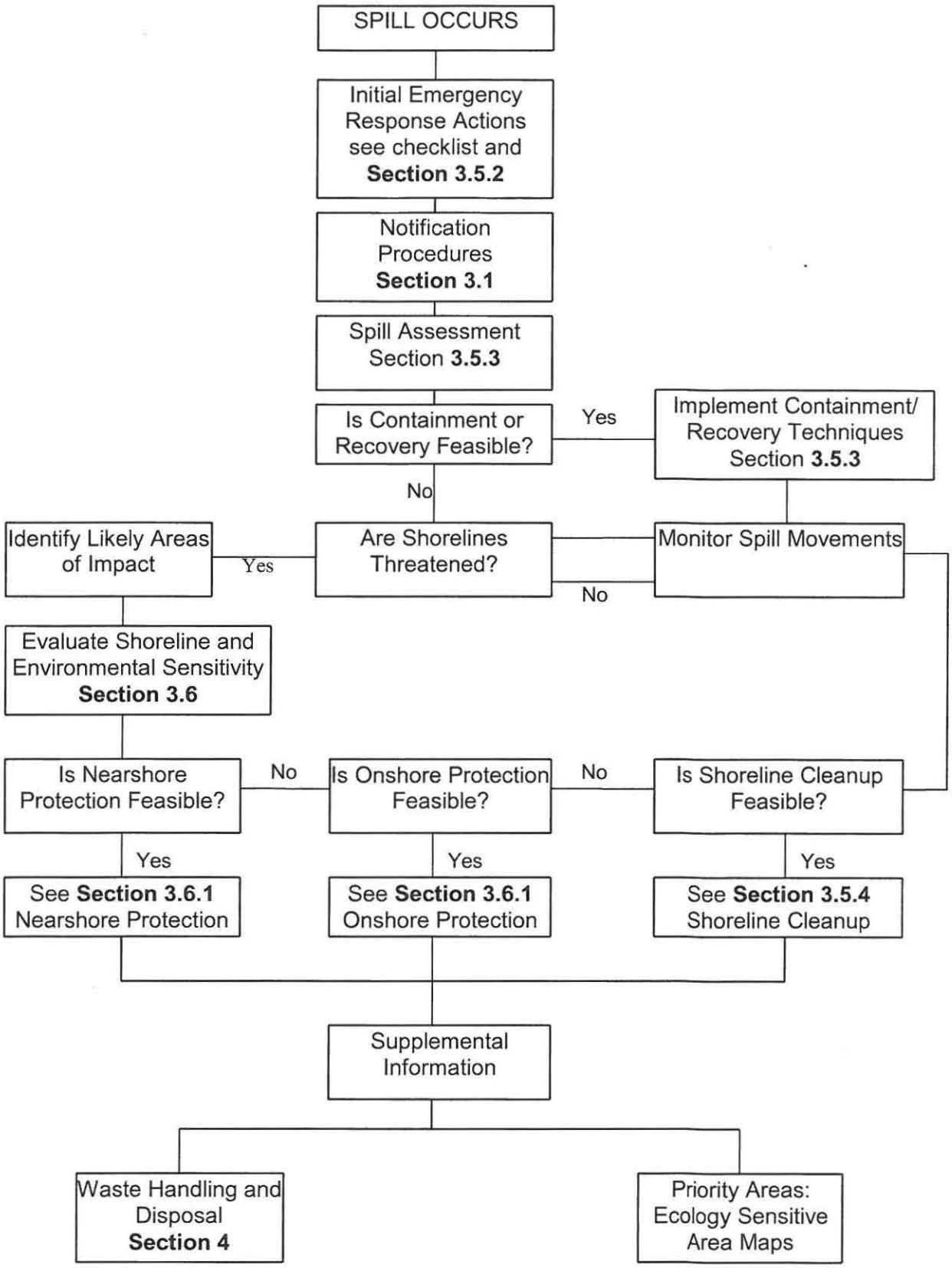


Figure 3-4: Spill Response Decision Diagram

Figure 3-5A

Checklist of Spill Response Operations

Initial Emergency Response Actions

_____ Stop cargo transfer and the product flow, if possible
_____ Shut off all ignition sources
_____ Warn all personnel
_____ Evacuate and secure the area as appropriate
_____ Locate and contain spilled oil if possible
_____ Initiate closure of the Lincoln Ave. Slide Gate if necessary
_____ Notify appropriate agencies, USOR personnel and spill response contractors (See Appendix C)
_____ Establish command and communications structure (See Section 3.5.4)

Assessment (Section 3.5.3)

_____ Size of spill
_____ Type of oil
_____ Equipment needs
_____ Personnel needs
_____ Predict spill movement
_____ Evaluate the potential threat to human health, safety and the environment (Complete the Health & Safety Plan located in Appendix B as necessary)
_____ Evaluate Surface Water and/or Groundwater Impacts (See Figure 3-5B)
_____ Environmental sensitivity of the area (prioritize if more than one - see Appendices I & L)
_____ Identify oiled wildlife (Contact WA Dept. of Wildlife as necessary)
_____ Complete ICS 201 Initial Briefing Form (See Appendix D)

Containment and Protection (Section 3.5.3)

_____ Determine booming strategies
_____ Determine boom needs and availability

Recovery (Section 3.5.3)

_____ Determine skimmer needs and availability
_____ Determine sorbent needs and availability
_____ Beach and shoreline cleanup methods and equipment
_____ Open water cleanup methods and equipment

Disposal (Chapter 4)

_____ Interim storage for recovered oil, oily soil and debris
_____ Permanent disposal options for recovered oil, oily soil and debris
_____ Oily water discharge permit

Figure 3-5B

Surface Water/Groundwater Impact Checklist

Note: Use this checklist to help evaluate potential impacts to sediments, soil, surface water and/or groundwater.

Assessment (Section 3.5.3)

_____ Locate source(s) of contamination
_____ Verify oil type(s)
_____ Evaluate the potential threat to human health, safety and the environment (Complete the Health & Safety Plan located in Appendix B as necessary)
_____ Identify site conditions that could result in ongoing site contamination (e.g. leaking tanks, piping, drums, totes, tank trucks, railcars, construction equipment, motor vehicles, etc.)
_____ Identify underground piping and utilities within the impacted area
_____ Evaluate the size and extent of the contaminated area (soil, sediments, groundwater or surface water)
_____ Identify the soil type and determine if the soil is a continuing source for groundwater contamination
_____ Identify the vertical depth to groundwater and the horizontal distance to nearby wells, surface water, water supply intakes or other off-site receptors
_____ Evaluate the potential for surface water runoff from the site, surface water run on onto the site and the potential for surface water or sediment contamination
_____ Collect site characterization samples as necessary

Response Strategy Evaluation

_____ Develop initial response strategies
_____ Evaluate need to hire a geotechnical consultant
_____ Evaluate long term response strategies including the development of a work plan
_____ Determine appropriate cleanup levels (See WAC 173-340)

Containment & Recovery (Section 3.5.3)

_____ Determine containment needs (e.g. berms, trenches, recovery wells, pumps, absorbants, etc.)
_____ Determine portable pump needs and availability
_____ Determine vacuum truck needs and availability
_____ Determine excavation equipment needs and availability
_____ Determine drill rig equipment needs and availability
_____ Determine support equipment/manpower needs and availability

Disposal (Chapter 4)

_____ Interim storage for recovered oil, oily soil and debris
_____ Permanent disposal options for recovered oil, oily soil and debris
_____ Oily water discharge permit

Spill from refinery or pipeline (on land):

Person who detects any accidental release will:

1. Stop cargo transfers if any are in progress.
2. Initiate notification procedure by notifying nearest supervisor or person in charge. (See Figure 3-1 and Appendix C)
3. Locate spill source and secure if possible.
4. Eliminate known sources of ignition where a spark will present a hazard. Ensure Personnel safety.
5. Establish safety zone around spill area. Assess the spill, including:
   - spill classification
   - safety/health hazards
   - identify oil types
   - estimate spill size and movement
   - identify impacts (if any) to surface waters, groundwater, storm sewers, sanitary sewers etc.
6. Initiate appropriate response actions These may include:
   - surveillance
   - containment on land
     ⇒ dam construction, if possible
     ⇒ sorbent deployment
     ⇒ vacuum truck deployment
   - containment if spill reaches water
     ⇒ booming around spilled oil
     ⇒ booming at 11th St. bridge and/or Lincoln Ave.
     ⇒ arrange for vacuum truck or skimmer
   - deployment
7. Arrange for transfer of oil from the damaged storage unit to available tankage to minimize the amount of oil released.

3.5.3 Spill Containment and Removal Description

Assessment

Upon detection or notification of any oil spill, U. S. Oil will immediately dispatch visual observation personnel to evaluate the incident. Observation will be made using means appropriate to the size and location of the spill. A helicopter will be used, as necessary to observe the spill size, type, speed, and direction of movement. Surveillance methods are discussed later on this section.

The assessment process includes the following steps:

1. Determine spill type and safety hazard to company personnel, contractors and the general public. The safety assessment and air monitoring will be conducted in accordance with the Health & Safety Plan located in Appendix B. Portable air monitoring equipment will be utilized as necessary to monitor

for the following primary hazards; % Lower Explosive Limit (LEL), % oxygen, benzene and hydrogen sulfide (H_2S). Specific monitoring parameters will be established by the incident commander and safety supervisor. This assessment will also be utilized for spills to groundwater.

2. Evaluate the properties of the spilled oil which may influence spill movement, recovery and environmental effects.

3. Estimate spill size and movement. Equipment that can be used during darkness and low visibility conditions to estimate the size and movement of a spill includes the following:

   - Visual observations from shore or from a vessel under safe conditions.
   - Placement of absorbent pads in the water. The white square pads typically provide a good contrast with the surrounding environment. These absorbent pads are located at both the refinery and marine terminal.
   - USOR has four tracking buoys located in a storage shed near dock #2.
   - Trajectory modeling can be used to track the anticipated movement of oil floating on water.
   - Thermal or infrared imagery.

4. Determine level of response required, including equipment and personnel needs.

5. Establish response priorities.

6. Complete ICS 201 Initial Briefing Form

7. Use the checklist in Figure 3-5B to assess potential impacts to sediments, soil, surface water and/or groundwater in order to develop initial response strategies and evaluate long term response strategies.

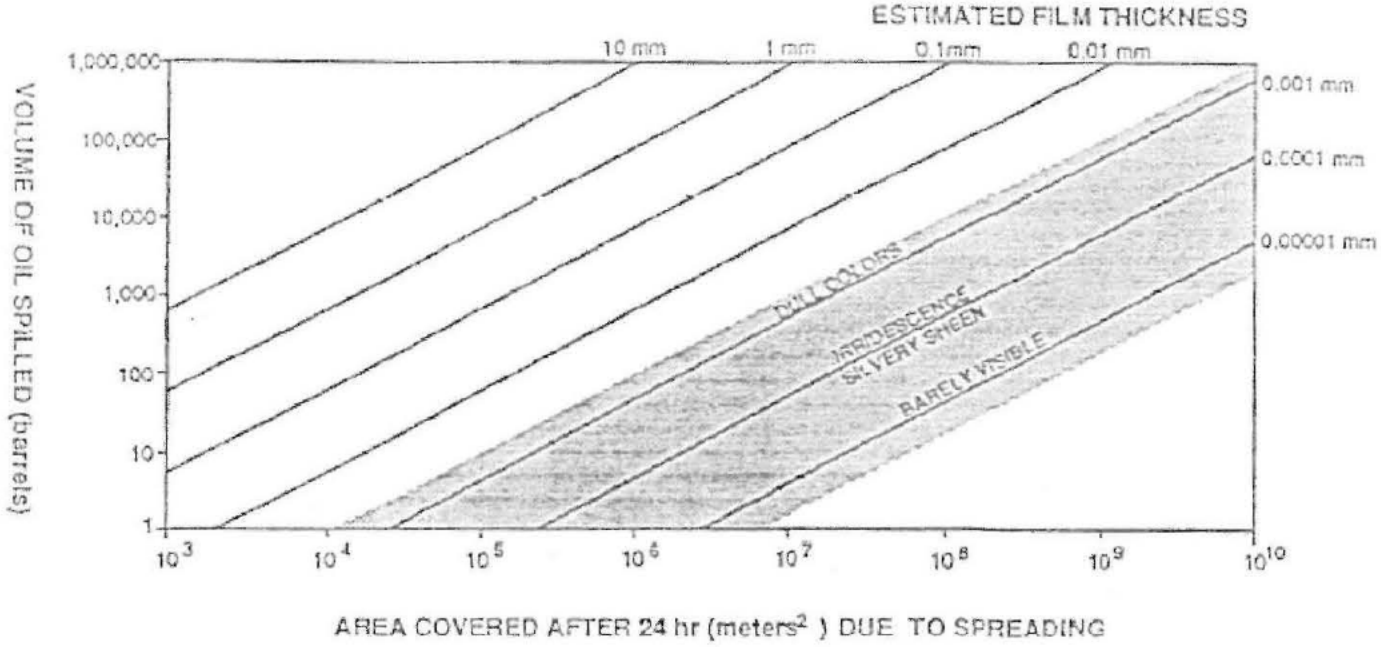
The spill type will be classified, as accurately as possible, using the appropriate oil spill categorization criteria described in Section 5.7 of this document. In general, classification is based entirely on the size of the spill and whether the spill location is inland or coastal. Another critical factor is the composition of the spilled material. An updated report will be provided to Ecology if the initially reported estimated quantity or the area extent of the contamination changes significantly.

Under certain circumstances spilled oil may present a fire hazard. Until otherwise established, all spills should be considered as potential fire hazards. Also, a thorough assessment of the inhalation hazards of the spilled material, skin contact potential and an evaluation of physical hazards will be necessary as the response effort to a spill progresses.

The type of oil spilled will be identified to determine recovery capability, environmental effects and to predict spill movement. At the loading docks, the type of product spilled would be determined using facility or vessel loading reports and/or the Person in Charge of the marine terminal's knowledge of the transfer operation and the cause of the spill. Within the refinery, oil type will be determined based on tankage inventory records and process knowledge of the operators on shift.

Table 3-6

Guide to the Relation Between Appearance, Thickness and Volume of Floating Oil



Shaded area indicates the range for which thickness and area covered can be determined by appearance. Any value below the shaded area would not be visible, and any value above would be a dark brown or black.

A Guide to the Relation Between Appearance, Thickness and Volume of Floating Oil

OIL SLICK TYPE	APPEARANCE	APPROXIMATE THICKNESS	APPROXIMATE VOLUME (m^3/km^2)
Oil Sheen	Silvery	0.0001 mm	0.1
Oil Sheen	Irridescent	0.0003 mm	0.3
Crude and Fuel Oil	Black/dark Brown	0.1 mm	100
Water-in-oil emulsions ("mousse")	Brown/Orange	>1 mm	>1000

The volume of oil spilled during oil transfer operations, storage tank overfills and process unit releases can be estimated using the following equation:

Spill Size = Maximum Pumping Rate x Time from Leak Start to Shutdown

For oil that has already reached the water, a working estimate of the volume of a spill on the water surface can be made by visual assessment of its surface area and thickness. If the slick thickness is unknown, the appearance of the oil on the water can be made using Table 3-6. This estimating technique, however, is limited to slick thicknesses that are less than 0.25 mm.

Slick dimensions can be estimated from the air using navigation electronics; occasionally estimates can be made from the water surface using radar. The following are spill tracking techniques which are available to USOR through Clean Sound.

- *OPTICAL (Reflected visible light)*
- *MILLIMETER WAVE IMAGERS - Radiometer (measures millimeter wave radiation)*

The movement of oil on water depends primarily on local winds and surface currents. **Surface currents will generally dominate spill movement unless winds are very strong.** Currents within the Blair Waterway are tidally driven and are expected to be very slow (<1 knot); thus, if winds are strong, i.e. >35 knots, spill movement may generally follow wind direction. As a rule of thumb, the speed of an oil slick will be approximately 3% of wind speed. Spill movement on land (in the refinery) will be down-gradient. The topography in and around the refinery is flat, therefore, spilled oil is expected to pool in low lying areas of the refinery.

Surveillance Methods

The primary method of surveillance of a spill from the USOR facility would be visual tracking. For a large spill visual tracking is best accomplished from the air. As soon as possible, after notification of a major spill into the waterway, a helicopter would be hired to make an overflight of the waterway to determine the extent of the spill.

If a spill were to escape the Blair Waterway, several systems are available through our membership in MSRC for large scale spill tracking and trajectory modeling. MSRC contracts with a surveillance and information company for large scale tracking purposes. The system uses an airborne millimeter wave imaging radiometer to determine relative thicknesses and location of spills on water. The system works day or night in weather conditions that include fog and clouds. The USCG also has computer-aided spill trajectory modeling capabilities.

For spills to soil and groundwater, surveillance is generally achieved by looking for visible soil stains, visible sheening, free product and the detection of petroleum hydrocarbon odors on the soil surface or below grade. Underground surveillance efforts are typically facilitated by excavating test pits, installing monitoring wells or piezometers

Containment and Removal Methods

Oil spill containment, collection, and recovery activities involve a wide range of hardware systems and techniques. A combination of booms, skimmers and sorbents will most likely be used. In an actual spill, the decisions to use specific containment and recovery techniques will depend on the circumstances, size of the spill, the type of cargo spilled, its location and potential movement, geographic constraints, environmental conditions, and logistics, as well as the availability of equipment and human resources. This section discusses spill response activities which are specific to this facility and available either at the facility or from primary response contractors. The purpose of this section is to discuss the actions and techniques available to limit the spread of a spill and to collect or recover the contained oil.

Spill prevention procedures and devices at the facility are in use at all times. In addition, equipment and methods have been designed by USOR to provide for containment of a spill within a confined area.

If a spill occurs inside the refinery, immediate initial response actions will be taken and emergency shutdown will be implemented as necessary. Immediate steps will also be taken to prevent product from entering Lincoln Avenue ditch or the Blair Waterway. If the spill is relatively small, sorbent material can be used to limit the spread of the oil. Spills which cover a large area or are in danger of flowing into the Lincoln Avenue ditch will be contained and then pumped into available tankage or other appropriate containment. An earthen tertiary containment berm has been constructed along the northern and western edge of the refinery to prevent oil from entering the Lincoln Avenue ditch in the unlikely event secondary containment is breached.

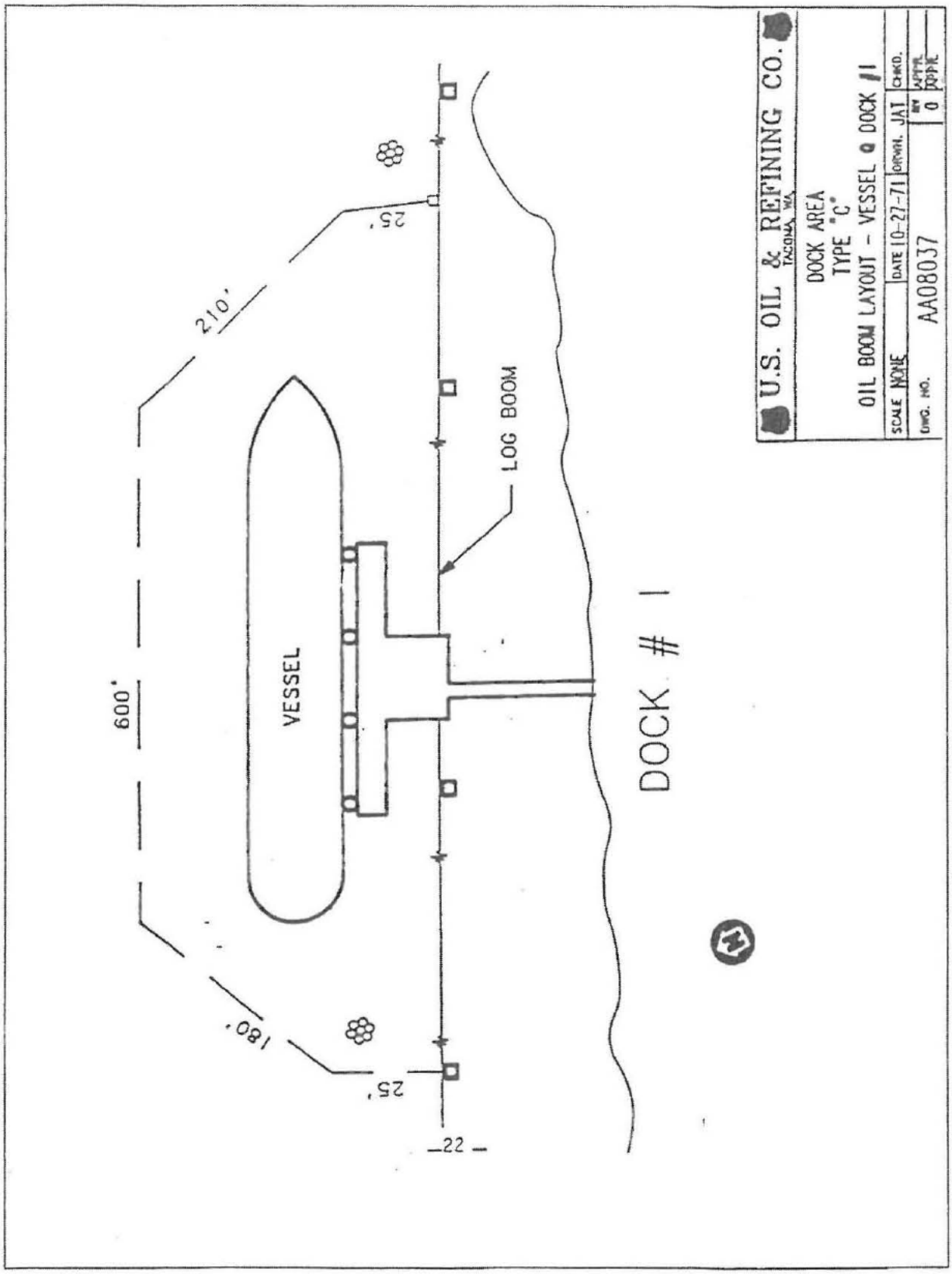
With the exception of single cargoes of gasoline and other highly volatile products, each vessel loading or unloading at the USOR Marine Terminal dock area is encircled with a curtain type containment boom. The typical prebooming configuration, which is shown in Figure 3-6, remains in place during the entire transfer and uncoupling operations. The boom is anchored and kept from contacting the vessel's hull. In addition, a 1400 ft. long boom, made from 50 foot logs fastened together with chains and wrapped in plastic at the joints, has been installed parallel to the shoreline at the facility to help prevent oil from reaching the shore in the event of a spill.

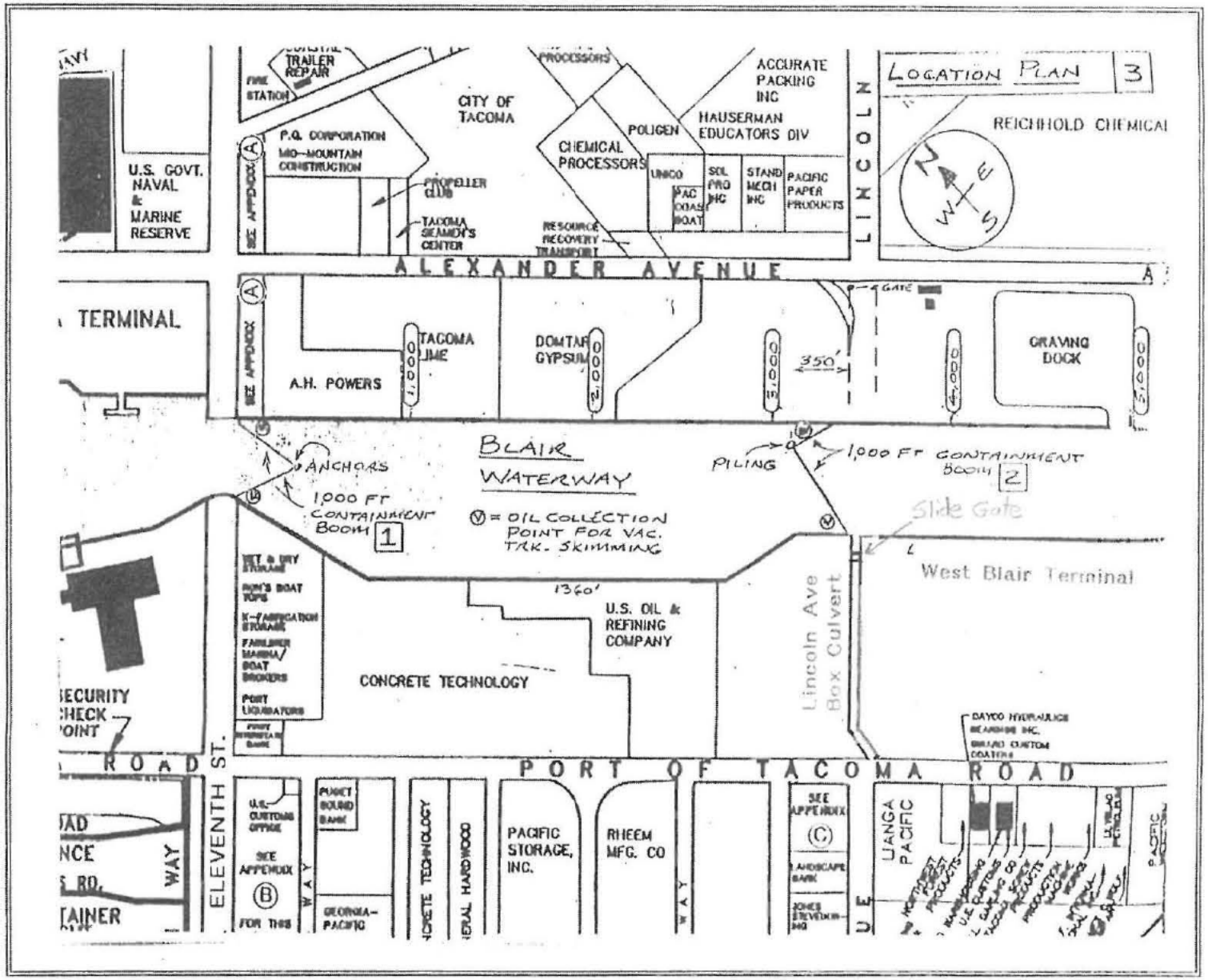
If product enters the water at the dock within the boom containment area, sorbents will be spread along the inside edge of the boom, and be replaced as they become oil soaked. Vacuum trucks aided by MSRC resources, including surface skimmers, will be used to recover heavy oil concentrations within the boom.

If the product should escape immediate containment, additional boom may be deployed. If the size and movement of the spill indicate that oil may enter Commencement Bay, an oil boom will be installed on the southeast side of the former 11th St. Bridge crossing to prevent the oil from leaving Blair Waterway. Containment boom may also be installed upstream of where the Lincoln Avenue ditch discharges into the Blair Waterway to prevent migration into Wapato Creek. Based on anticipated spill trajectories associated with a spill event, exclusion booming will be placed across the entrances to the North and South Blair Mitigation Areas as necessary to further protect these areas. Figures 3-7 through 3-14 show examples of booming and anchoring strategies for Lincoln Avenue ditch, Blair Mitigation Areas and the Blair Waterway. Usage of the these booming and anchoring strategies will

Figure 3-6

Containment of a Spill During Terminal Operations





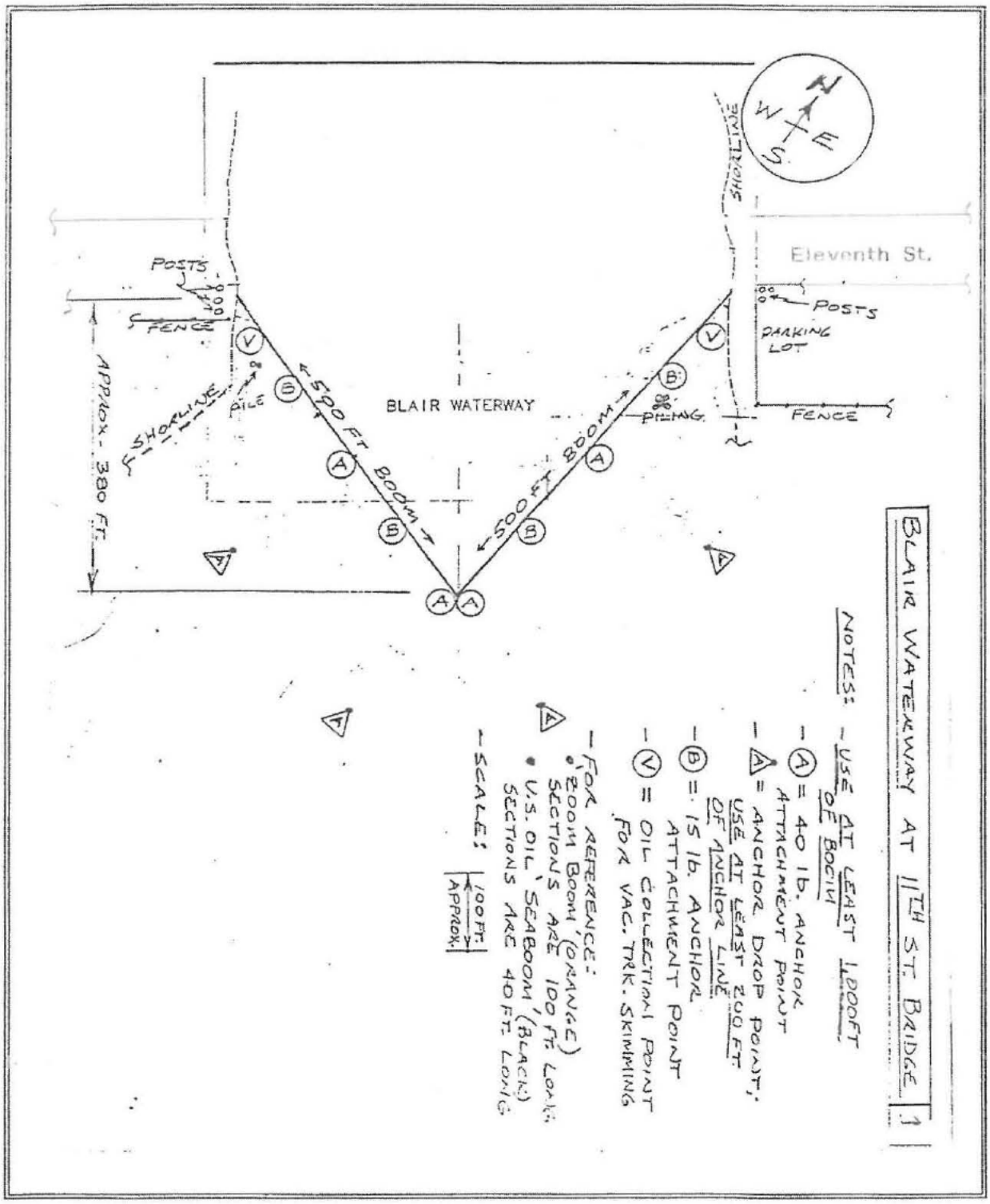
Note: This strategy is also identified as CPS-75 within the Central Puget Sound Geographic Response Plan.

Figure 3-7

Containment Boom Installation For Spill At Dock

Figure 3-8

Containment Boom Configuration And Anchoring Requirements At 11th Street Bridge



Note: This strategy is also identified as CPS-75 within the Central Puget Sound Geographic Response Plan.

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Figure 3-9

Containment Boom Configuration And Anchoring Requirements Northwest Of Lincoln Avenue Ditch Outfall

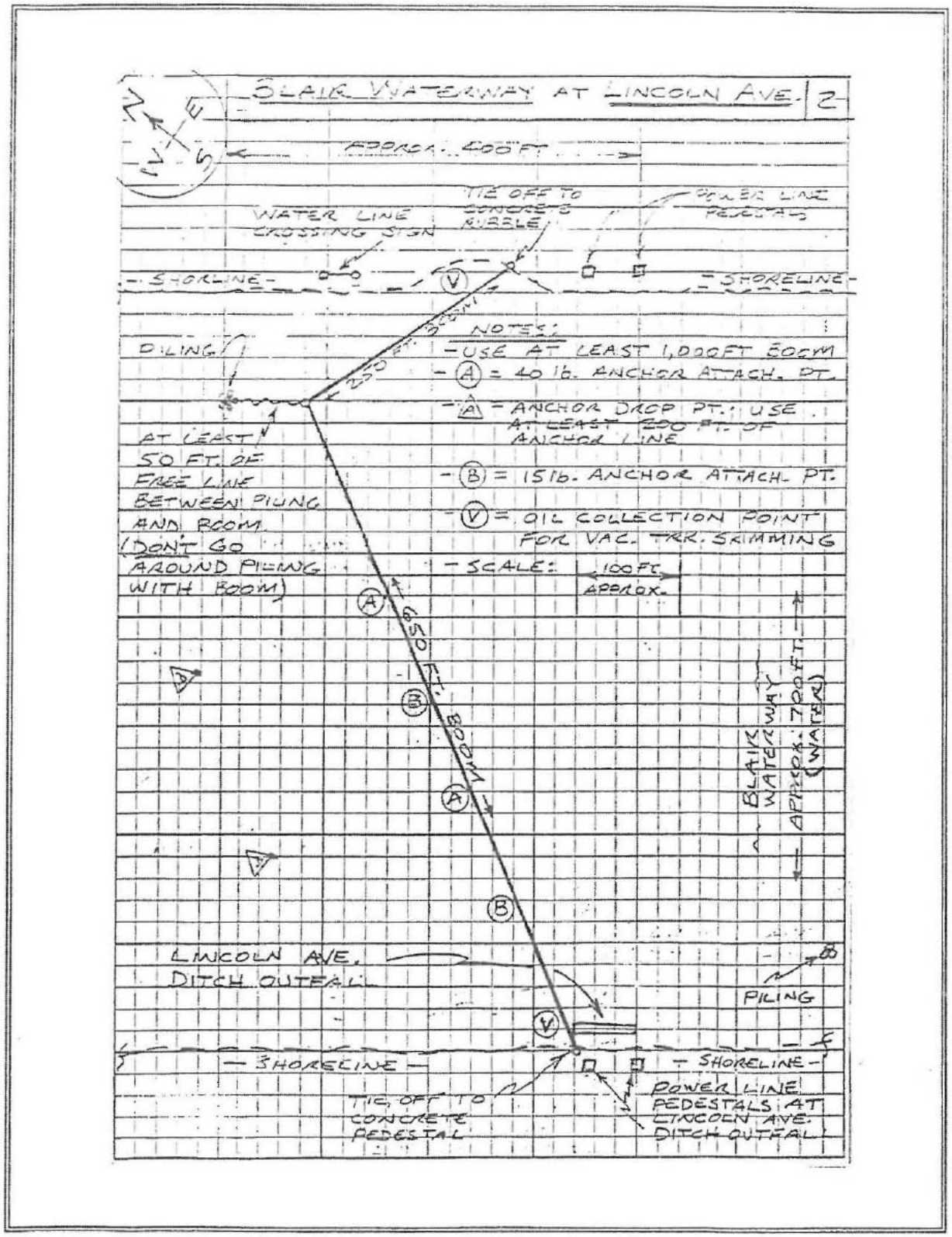
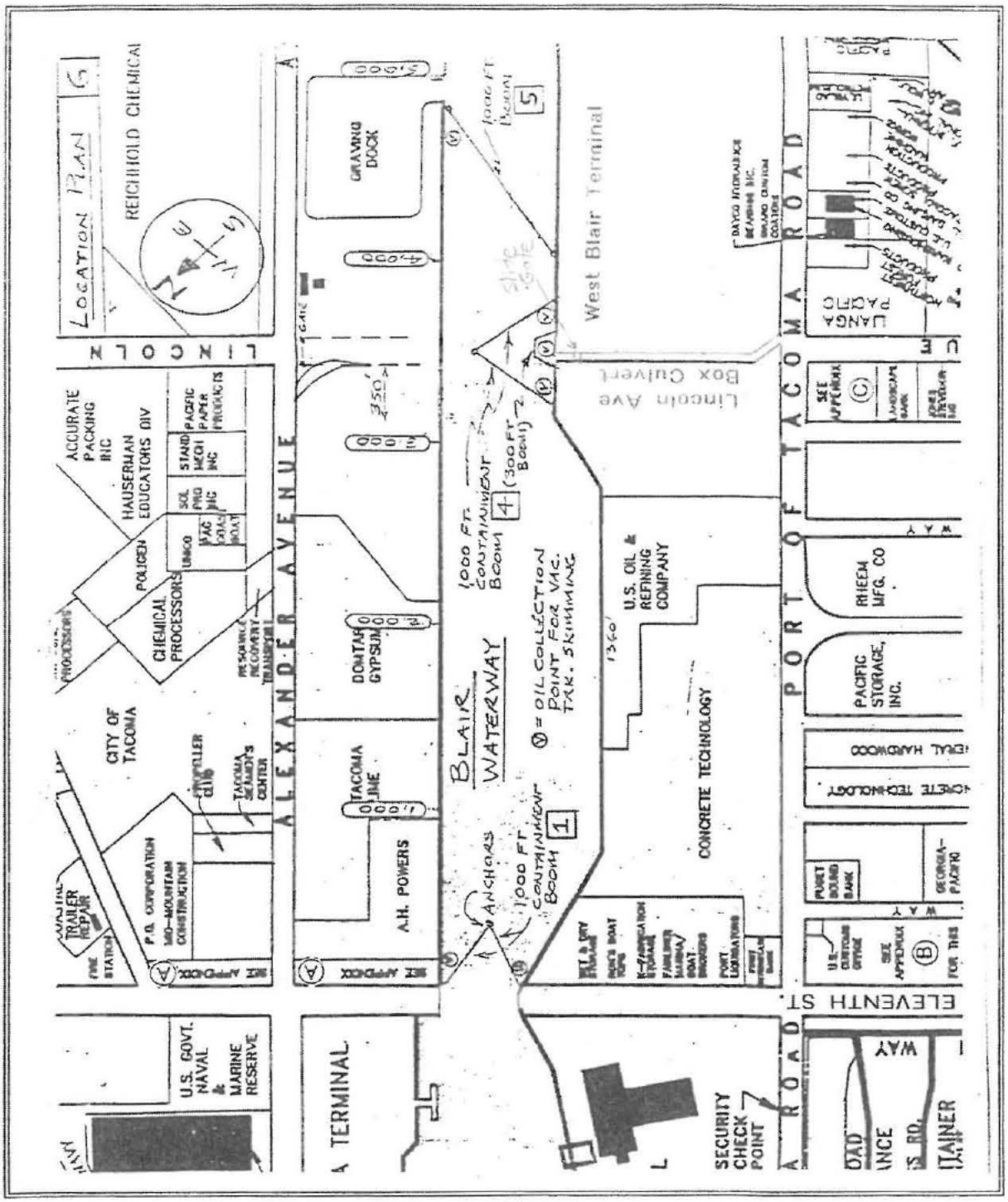


Figure 3-10

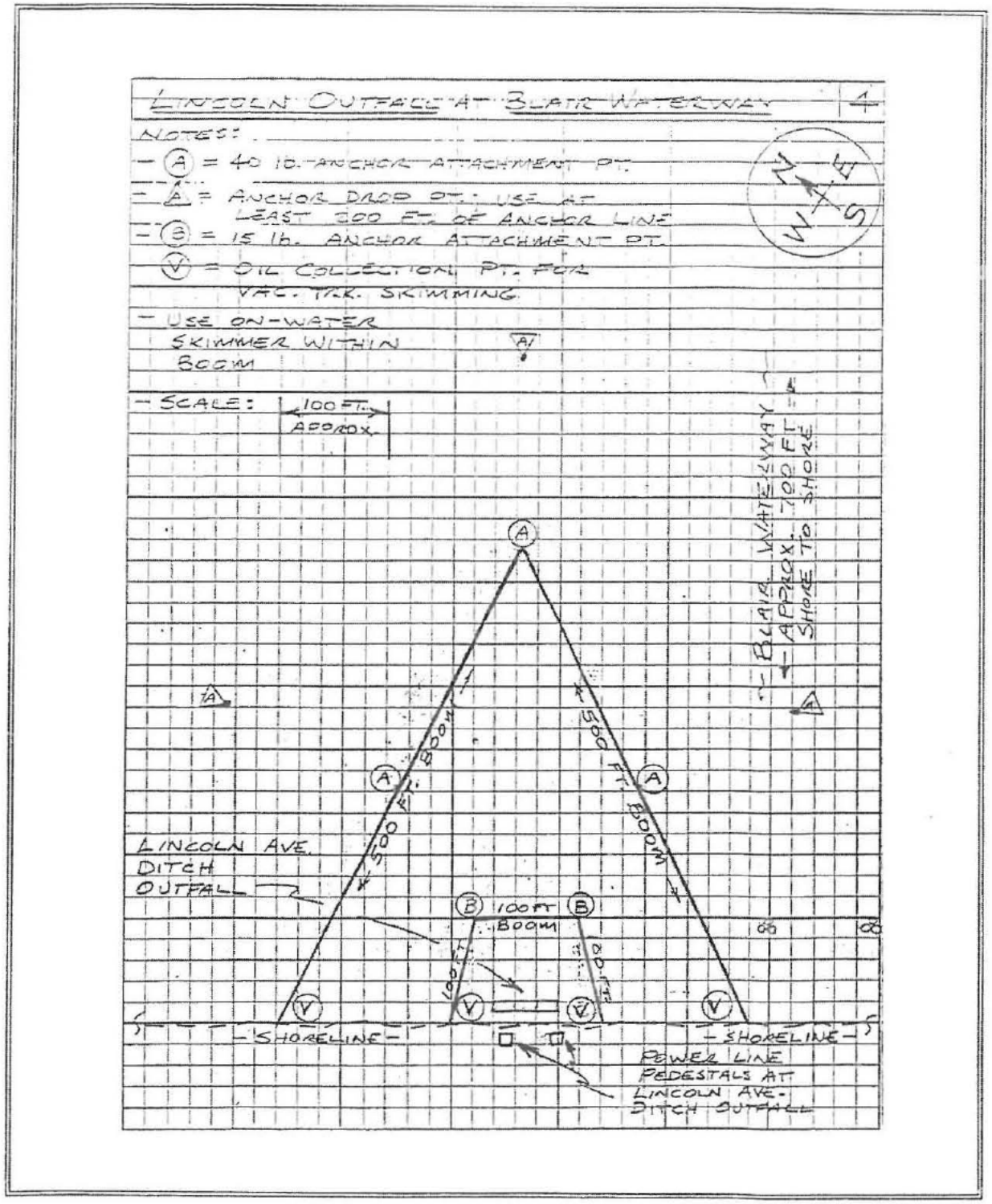
Containment Boom Installation For Spill Into Lincoln Avenue Ditch



Note: The strategies depicted in this figure are also identified as CPS-75, CPS-80, CPS-81 and CPS-82 within the Central Puget Sound Geographic Response Plan.

Figure 3-11

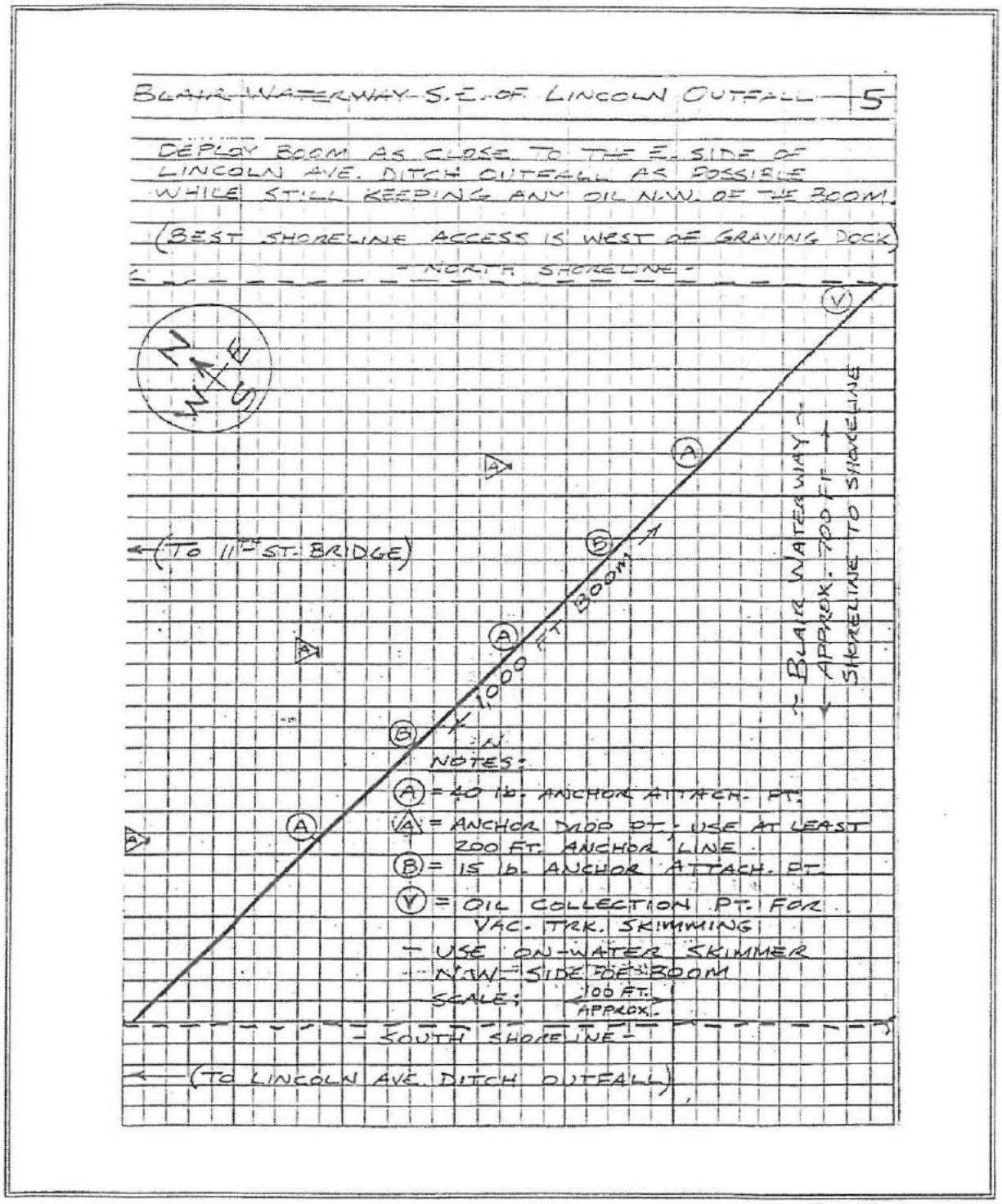
Containment Boom Configuration And Anchoring Requirements At Lincoln Avenue Ditch Outfall



Note: The strategies depicted in this figure are also identified as CPS-80 and CPS-82 within the Central Puget Sound Geographic Response Plan.

Figure 3-12

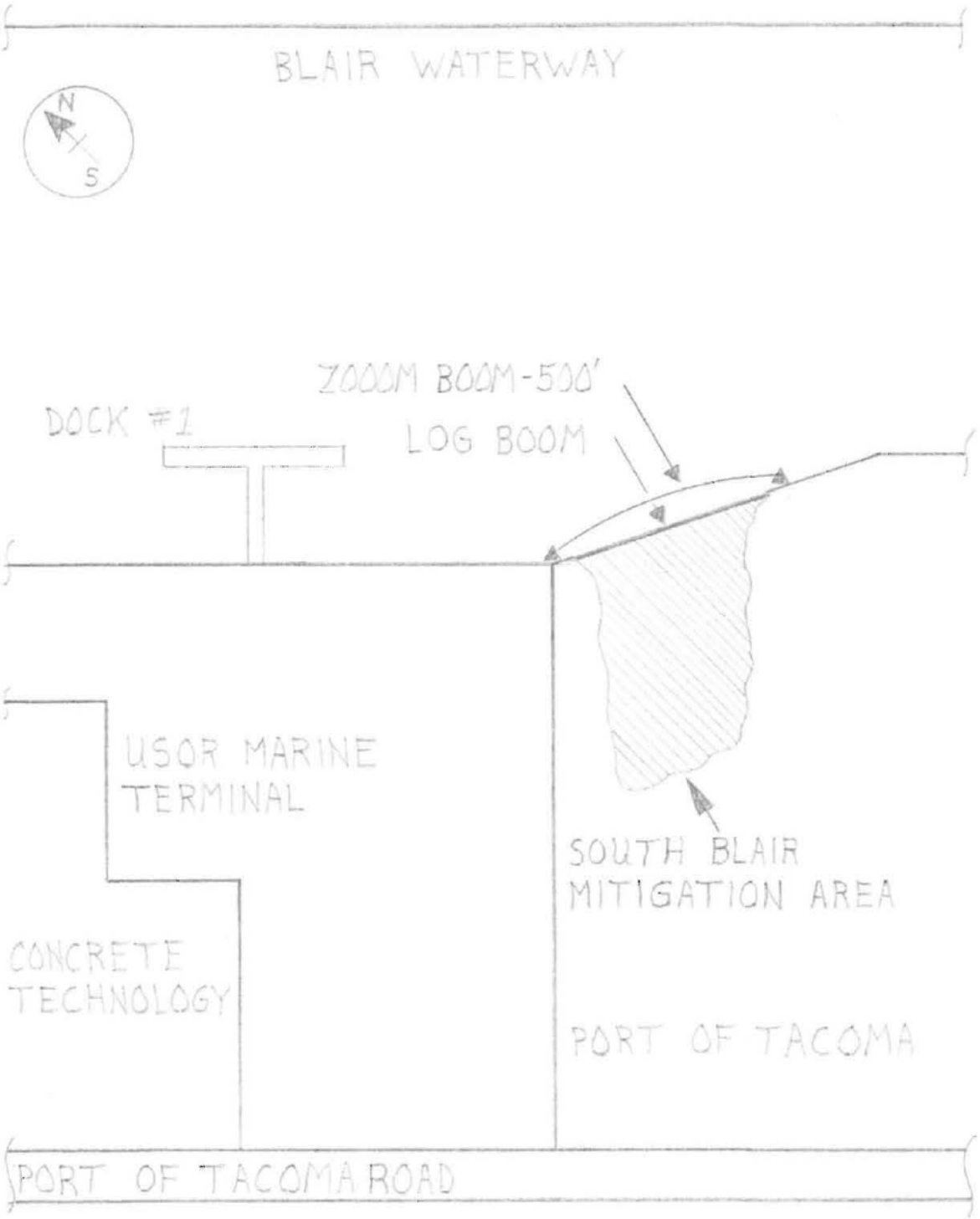
Containment Boom Configuration And Anchoring Requirements Southeast Of Lincoln Avenue Ditch Outfall



Note: This strategy is also identified as CPS-81 within the Central Puget Sound Geographic Response Plan.

Figure 3-13

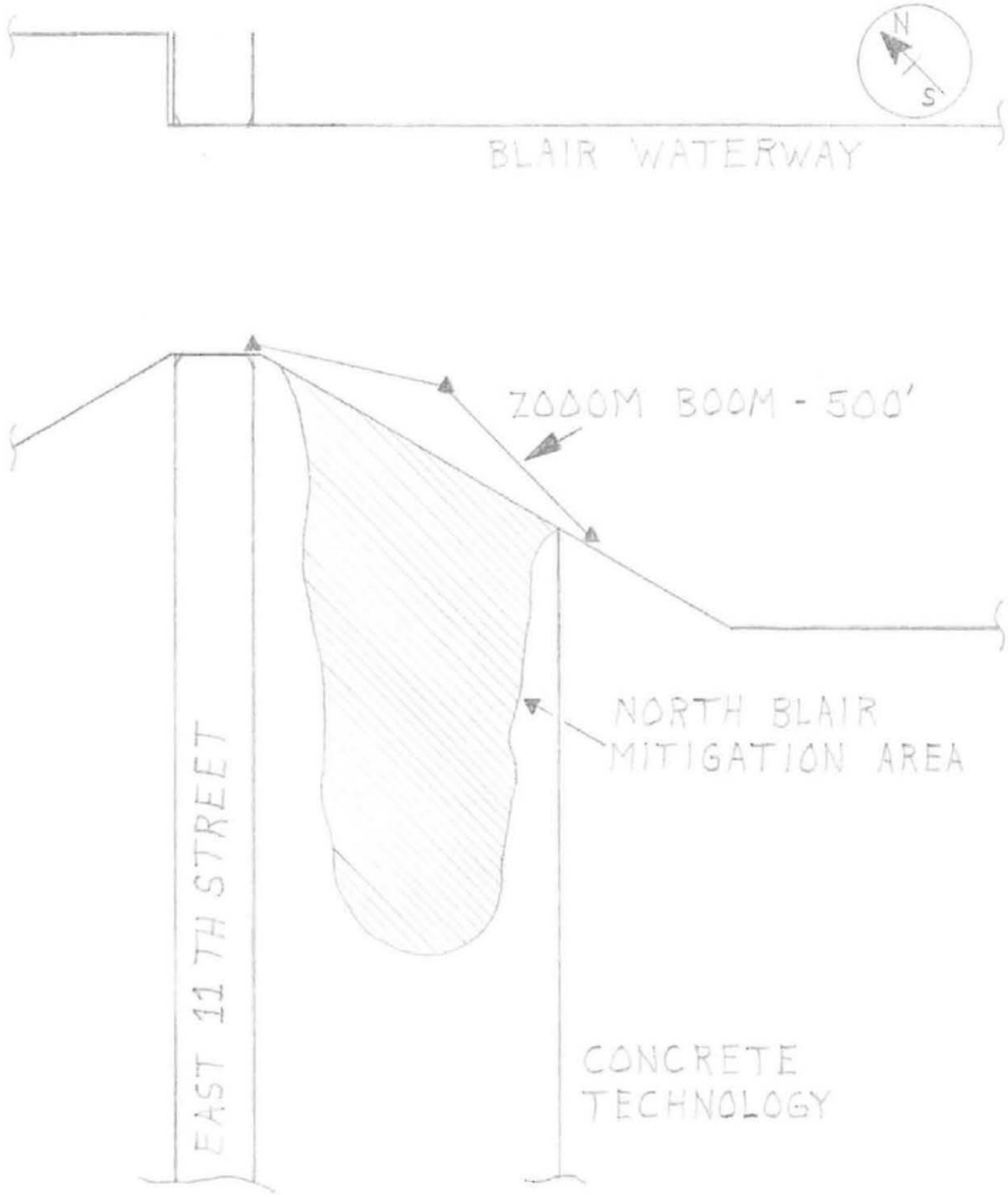
South Blair Mitigation Area Booming Strategy



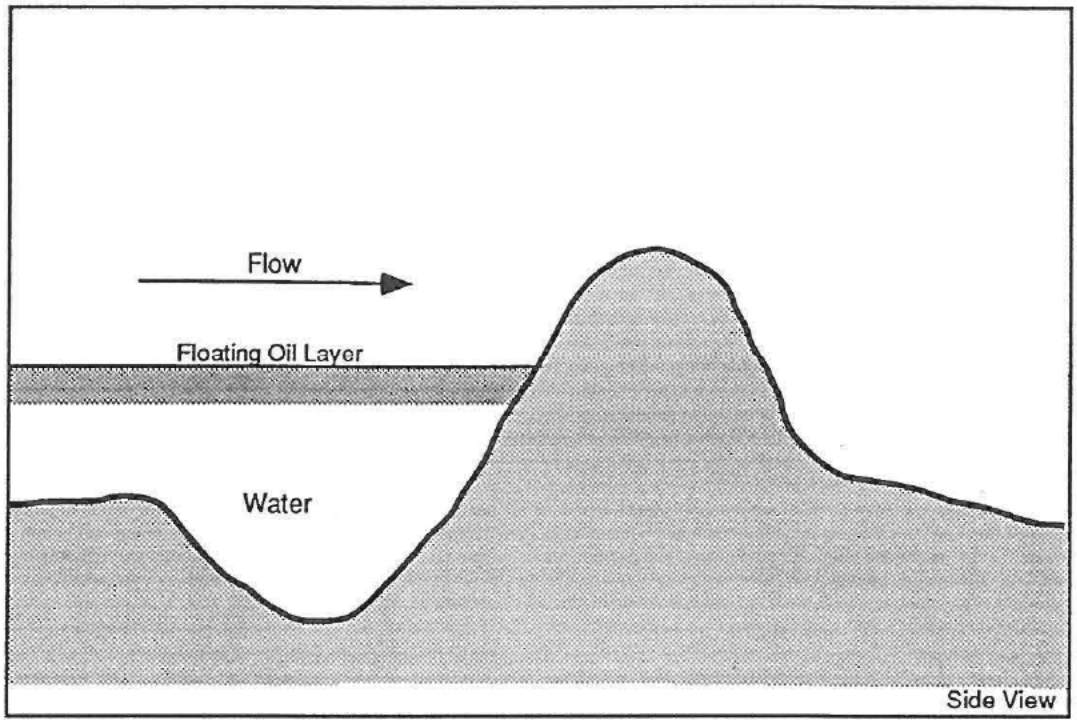
Note: This strategy is also identified as CPS-79 within the Central Puget Sound Geographic Response Plan.

Figure 3-14

North Blair Mitigation Area Booming Strategy

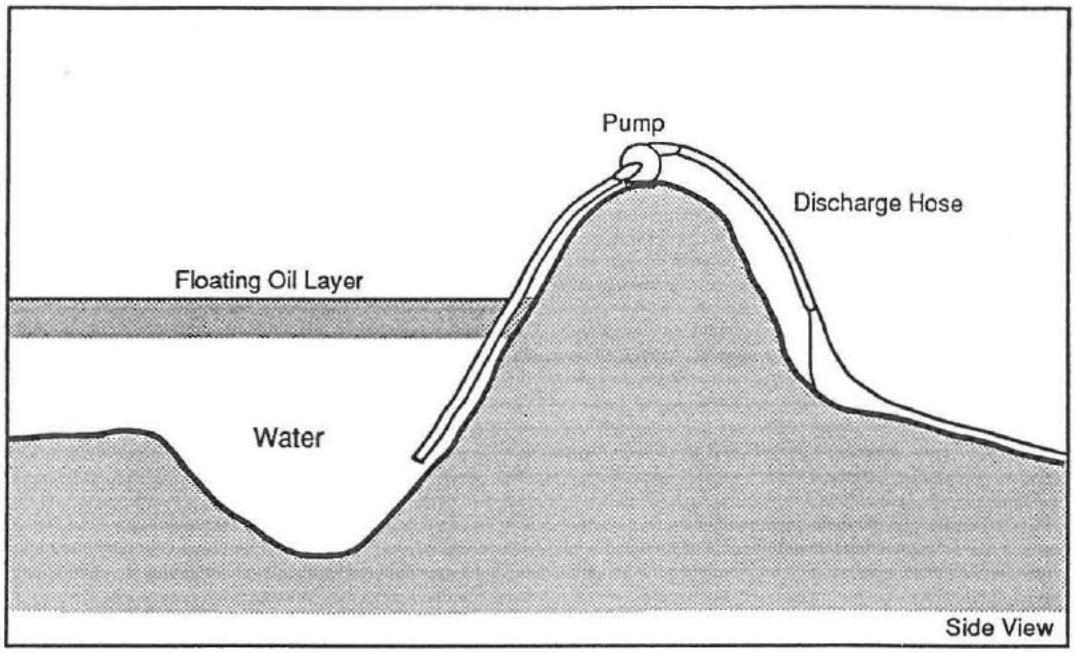


Note: This strategy is also identified as CPS-77 within the Central Puget Sound Geographic Response Plan.

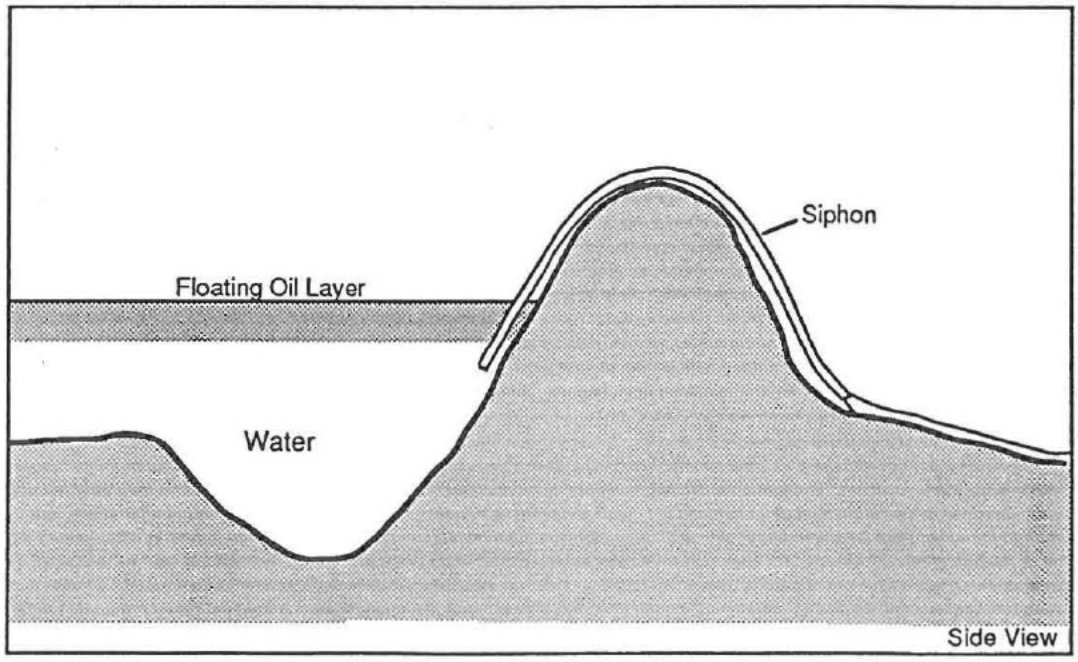


Blocking Dam

FIGURE 3-15 BLOCKING DAM TECHNIQUE



A. Overflow Dam With Pump



B. Overflow Dam With Siphon

FIGURE 3-16 FLOWING WATER DAMS

vary depending on individual spill response circumstances. The Blair Waterway shipping channel was widened at the 11th St. Bridge crossing once removal of this bridge was completed. This widening, however, did not have an appreciable affect on the overall width of the Blair Waterway. Therefore, the amount of containment boom necessary to secure this location remains unchanged.

Sufficient quantities of boom are maintained in MSRC trailers, along with sorbents and recovery equipment, at the USOR dock to accomplish the strategies referenced in the above-mentioned figures. The Central Puget Sound Geographic Plan, which is located in Appendix I, details specific response strategies and resources to protect for spills that enter Commencement Bay and beyond. See MSRC's Spill Response Plan for additional discussion of containment and retrieval actions to take in the event that oil escapes the Blair Waterway and enters Commencement Bay.

If oil from the refinery or pipeline enters the Lincoln Avenue Ditch, initial actions will consist of closing the slide gate located at the end of the Lincoln Ave Ditch box culvert. This slide gate, which is located inside the West Blair Terminal, can be accessed by entering the terminal through the entrance gate. It is important to note that during the later half of 1997 the Lincoln Ave. Ditch was encased in a box culvert which runs from the Port of Tacoma Road to the Blair Waterway. Drawings showing the location of the location and mechanics of the Lincoln Ave Ditch box culvert, slide gate and tideflex check valve are located in Appendix H.

As necessary a blocking dam may also be constructed inside the Lincoln Ave Ditch upstream of the Port of Tacoma Road crossing. The dam location will have high banks on the upstream side with the dam well-keyed into the banks. A dam, such as the one shown in Figure 3-15, will be constructed using on or near-site materials such as earth and/or sandbags. Product may be recovered from behind a blocking dam by pumping, herding, and using vacuum trucks and sorbents. For overflow dam construction, the dam contains the floating product, and water is pumped or siphoned over the top of the dam. An overflow dam should be constructed using the same methods and materials as a blocking dam. Pumps or siphons are used to pass water from below the oil layer over the dam. To be effective, the pumping rate will be maintained greater than the stream flow rate. These techniques have been successfully used at USOR and are depicted in Figure 3-16.

Dams will be continually checked for leakage, integrity, eroded construction materials, and water/product level. Valved pipes, pumps, or a number of siphons may require periodic adjustment to compensate for changes in the stream flow rate.

When as much floating product has been recovered as is practical from behind the dam, remaining sheens will be recovered with sorbents and the dam will be removed.

Recovery Techniques

Once the oil is contained, recovery and disposal must then be accomplished. Based on their mode of operation, recovery devices can be classified as either skimmers or pumps such as vacuum trucks. While pumps are usually used in conjunction with skimmers to transfer oil to storage containers, pumps and hoses may be the sole method of recovery utilized on land, from a ditch, or whenever the spilled oil has been contained to a depth that would allow direct pumping.

A MSRC skimmer, two 30 ft. spill response vessels and a 100 bbl barge are currently stationed at the USOR dock. The skimmer has a derated capacity of 300 gallons per minute. Detailed information on these vessels and on all MSRC equipment is provided in Section 3.3 and Appendix F.

Spills from tank vessels may also involve the use of the ship's pumps to transfer cargo from damaged cargo spaces to slack tanks or other vessels.

For spills that have entered the soil and groundwater, containment and recovery is typically achieved by using berms, trenches or monitoring/recovery wells equipped with pumping systems to remove any free phase hydrocarbons. These pumping systems are sometimes designed to enhance product recovery by creating a localized depression within the water table. As conditions warrant, containment and recovery can also be achieved by excavating any impacted soils. These techniques are readily considered and used within the refinery and marine terminal areas due to the shallow water table and relatively flat groundwater flow gradients. The extent of soil and groundwater cleanup activities are governed by the regulations contained in WAC 173-340, (WA Model Toxics Control Act) and its associated guidance documents.

Cleanup Procedures

Under some circumstances floating oil on the water may escape containment and oil the shoreline. If this occurs some form of shoreline cleanup will be necessary. In general, the objective of the shoreline cleanup is to remove as much oil as possible while causing minimal damage to biotic communities and resources. Cleanup of the affected areas will commence immediately after all emergency control actions have been completed. The cleanup implementation sequence is summarized in Figure 3-16. The main steps in cleanup are:

1. Identify the extent of the problem (usually accomplished by assessment surveys of the shore following oiling),
2. Establish priorities for cleanup, and determine the onshore cleanup options,
3. Plan the cleanup in conjunction with the FOSC or SOSC and adjacent land-owners, and
4. Conduct and monitor the cleanup.

The surface conditions and topography of oiled areas and the manner in which the product has been deposited will dictate the choice of cleanup procedures to be followed. The techniques described in this section are guidelines; actual actions taken and methods used will vary depending on each individual situation.

A range of shoreline types with different sensitivities may be affected by a spill. Priorities must be established to treat those sections for which this requirement is more important or urgent, and to make best use of the available resources. The priority ranking for each shoreline unit or area is dependent on several factors that include:

- degree of sensitivity,
- degree of oil impact, and
- potential for remobilization

In some instances, oil on a segment of shoreline may not directly threaten any sensitive features, but could be a threat to other nearby shorelines if remobilized by tides, winds, waves, or currents. In general, the remobilization potential would be "high" if:

Figure 3-17

Onshore Cleanup Implementation Sequence

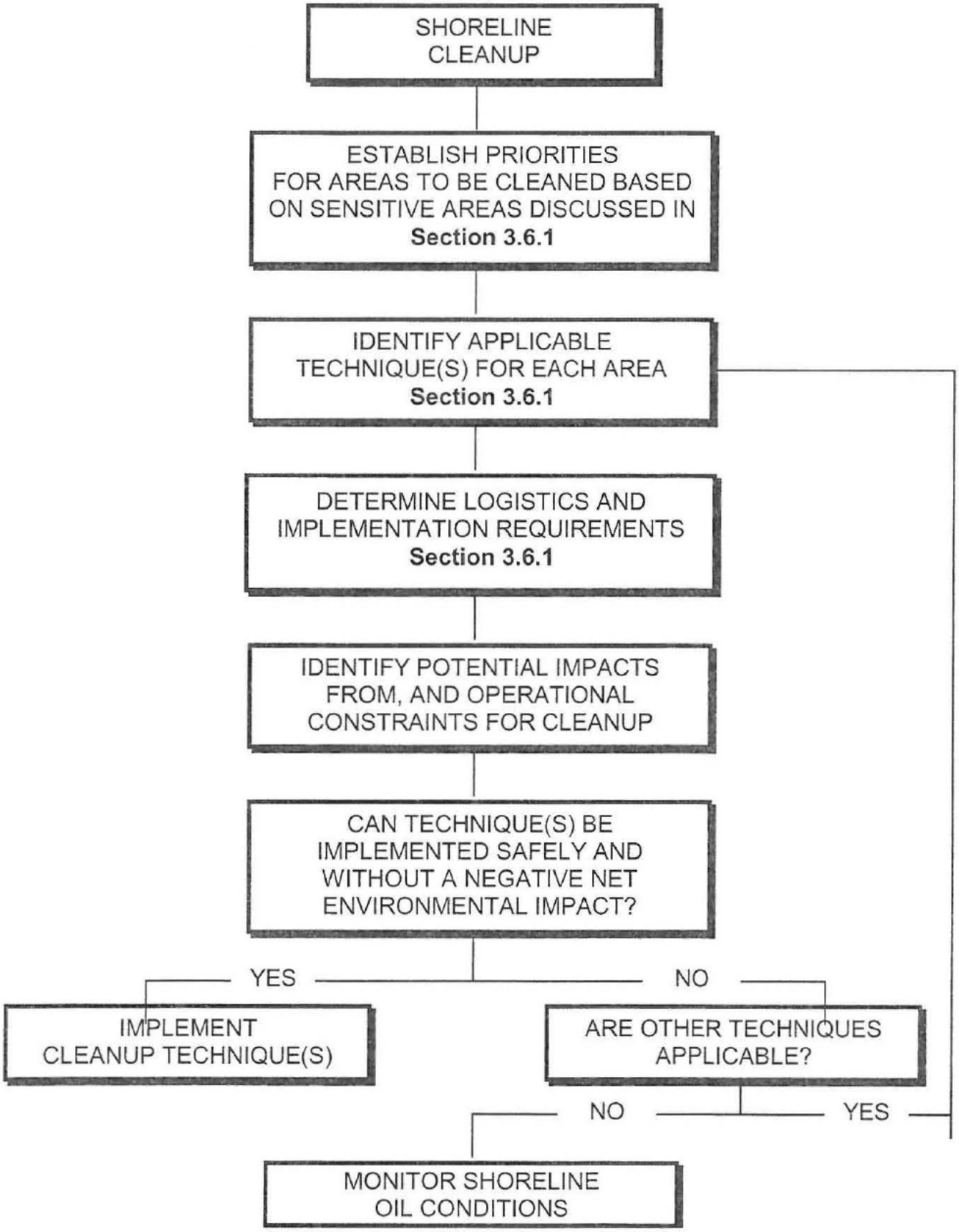


Table 3-7

Summary of Cleanup Techniques

Onshore Cleanup Technique	Primary Use	Technique Description	Potential Environmental Effect
Manual Removal	Used on shorelines with light or sporadic oil conditions or where access is limited.	Oil and oiled sediments or debris are removed by hand using shovels, rakes, trowels, sorbents, putty knives etc.	Foot traffic may crush organisms and some organisms may be removed from the substrate/sediments.
Mechanical Removal	Used on finer sediment beaches to remove heavily oiled surface and near-surface sediments.	Heavy equipment (backhoe, loader, motor grader, elevating scraper, dump truck etc.) is used for excavating and offsite transfer of oiled sediments.	Removes shallow burrowing organisms and reduces beach stability, creating erosion potential.
Vacuum/Skimmers	Used to pick up oil on shorelines where pools have formed in natural or man-made depressions, or from water surfaces in backwater or contained areas.	Vacuum truck or suction pump is positioned near pooled oil and oil is recovered via vacuum hose. Portable skimmers are positioned within containment booms or in areas of oil concentrations to recover the oil.	Vacuuming can remove some organisms. No significant effects from skimmer use.
Vegetation Cutting	Used on heavily vegetated shorelines or marsh/estuarine environments to remove heavily oiled vegetation.	Oiled vegetation is cut by hand, collected and placed into plastic bags or containers for disposal.	Heavy foot traffic can crush organisms and cause root damage in marshes.
Sand Blasting	Used to remove thin residues of weathered oil from man-made structures, rocks or other soiled surfaces.	Sand in a high-velocity air stream is applied to oiled surfaces to remove the oil. The oiled sand is typically recovered manually.	Removes all organisms from surface. Unrecovered oil can be toxic to downslope organisms.
Flushing	Used on medium to coarse sediment beaches to remove mobile oil from interstices and pore spaces.	Ambient or heated seawater is pumped through hoses at low to medium pressure to agitate sediments and flush oil back into water for containment and recovery. Typically used in conjunction with Flooding.	Can remove some organisms from the substrate or cause adverse thermal effects. Potential for impacting previously clean lower intertidal or adjacent areas.
Spot Washing	Used to remove oil coatings from solid surfaces (boulders, rock, man-made structures).	High pressure ambient or heated streams remove oil from substrate or hard surfaces where it is channeled to recovery areas.	Removes most organisms from substrate. Potential for impacting previously clean lower intertidal or adjacent areas.
Sediment Washing	Used on moderate to heavily oiled, medium sediment, sheltered beaches to remove oil without a net sediment loss.	Oiled sediments are excavated and put through a batch or continuous feed washing unit with the cleaned sediments returned to the beach.	Loss of organisms in removed sediments, some loss of finer-grained materials and temporary destabilization of beach.

Table 3-7 (Continued)

Summary of Cleanup Techniques

Onshore Cleanup Technique	Primary Use	Technique Description	Potential Environmental Effect
Steam Cleaning	Used to remove sticky, viscous and weathered oil from boulders, rocks, man-made structures and other solid surfaces.	Steam is applied to oiled surfaces to loosen and remove oil where it is channeled to a recovery area.	Removes some organisms and thermal effects can cause substantial mortality.
Passive Collection	Used to recover small amounts of mobile oil that are continually released from oiled shorelines.	Lengths of snare or sorbent boom are anchored along the shoreline just downslope of the oiled area to collect the oil as it is flushed by tidal and wave action.	No significant effects.
Relocation to Surf Zone	Used on exposed, light to moderately oiled cobble/pebble beaches to enhance natural cleaning processes and prevent potential erosion problems associated with sediment removal.	Heavy equipment is used to transfer oiled sediments from the supra-tidal and top of the upper-intertidal zones to the middle of the upper-intertidal zone.	Potential for remobilizing oil and impacting adjacent areas. Adversely affects organisms inhabiting the relocated sediments and in the relocation area.
Sediment Tilling	Used on low amenity, medium to fine sediment beaches with light to moderate oil conditions to break up surface and/or expose subsurface oil to natural degradation processes.	Tractor fitted with tines or ripper blades is used to till the near surface sediments in the oiled area.	Disturbs shallow burrowing organisms. Can mix oil deeper into sediments.
In situ Bioremediation	Used on light to moderately oiled, medium to coarse sediment shorelines to enhance microbial degradation of the oil.	Liquid or granular fertilizer is applied to oiled area to stimulate growth of naturally occurring oil-metabolizing microbes.	Some fertilizers can be toxic to organisms when first applied. Algae blooms are possible in protected areas.
Log/debris Burning	Used on beaches with significant quantities of heavily oiled logs, driftwood and debris.	Oiled debris is collected and piled in a central location and burned. Ignition devices or fluids and portable fans can be used to facilitate burning.	Temporary degradation in local air quality. Organisms in vicinity of burn pile may suffer adverse thermal effects.
Chemical Treatment	Used on viscous, sticky and weathered oils to reduce adhesion to coarse sediments and aid in removal by flushing.	Chemical "beach cleaning" agents are applied to oiled sediments as a "pre-soak" followed by water flushing. agents may also be mixes in with the flush water.	Some agents can be mildly toxic to biota. Potential for impacting previously clean lower-intertidal and adjacent areas.
Natural Recovery	Used on heavily exposed and/or light to moderately oiled beaches to avoid additional impacts created by cleanup operations.	Allow natural processes to degrade and disperse stranded oil.	Potential toxic and physical effects of remaining oil. Persistent oil can inhibit recolonization.

TABLE 3-8 CLEANUP TECHNIQUE APPLICABILITY - LIGHT OILS

Type A: Light Oils (Low Viscosity)

Key:
● Applicable
○ May Be Applicable
X Usually Not Applicable
— Not Applicable

			BEDROCK		BEACH				INTERTIDAL FLATS					
					Gravel		Mixed		Gravel		Mixed			
		Man-Made Structures	Bedrock Cliffs	Bedrock Ramp/ Platform	Cobble/ Boulder	Pebble/ Cobble	Sand/ Pebble/ Cobble	Sand	Cobble/ Boulder	Pebble/ Cobble	Sand/ Pebble/ Cobble	Sand	Mud	Estuarine Vegetation/ Marsh
REMOVAL	Manual Oil/Sediment Removal	○	X	○	○	○	○	○	○	○	○	○	○	○
	Mechanical Sediment Removal	—	—	—	X	●	●	●	X	●	●	●	○	X
	Vacuum	○	○	●	X	X	○	○	X	X	○	○	○	○
	Vegetation Cutting	X	○	○	○	X	—	—	○	X	—	—	X	●
	Sand Blasting	—	—	—	—	—	—	—	—	—	—	—	—	—
WASHING	Flooding	—	—	X	●	●	●	●	X	X	X	X	X	○
	Flushing	●	●	●	●	●	●	●	●	●	●	●	X	●
	Spot Washing	●	●	●	○	○	X	—	○	○	X	—	—	—
	Sediment Washing	—	—	—	—	○	X	X	—	○	X	X	—	—
	Steam Cleaning	○	○	○	○	X	—	—	○	X	—	—	—	—
IN SITU	Passive Collection	●	●	●	●	●	●	●	●	●	●	●	●	●
	Relocation to Surf Zone	—	—	—	X	●	●	X	—	—	—	—	—	—
	Sediment Tilling	—	—	—	—	●	●	●	—	●	●	●	X	—
	Bioremediation	○	○	○	●	●	●	●	●	●	●	●	●	●
	Log/Debris Burning	●	●	●	●	●	●	●	X	X	X	X	X	●
	Chemical Treatment	○	○	○	X	X	X	X	X	X	X	X	—	—
	Natural Recovery	●	●	●	●	●	●	●	●	●	●	●	●	●

TABLE 3-9 CLEANUP TECHNIQUE APPLICABILITY - MEDIUM VISCOSITY OILS

Type B: Medium Viscosity Crude

Key:
● Applicable
○ May Be Applicable
X Usually Not Applicable
— Not Applicable

			BEDROCK		BEACH				INTERTIDAL FLATS					
					Gravel		Mixed		Gravel		Mixed			
		Man-Made Structures	Bedrock Cliffs	Bedrock Ramp/ Platform	Cobble/ Boulder	Pebble/ Cobble	Sand/ Pebble/ Cobble	Sand	Cobble/ Boulder	Pebble/ Cobble	Sand/ Pebble/ Cobble	Sand	Mud	Estuarine Vegetation/ Marsh
REMOVAL	Manual Oil/Sediment Removal	●	●	●	●	●	●	●	●	●	●	●	○	○
	Mechanical Sediment Removal	—	—	—	○	●	●	●	○	●	●	●	○	—
	Vacuum	○	○	○	X	X	○	○	X	X	○	○	○	○
	Vegetation Cutting	X	○	○	○	X	—	—	○	X	—	—	X	●
	Sand Blasting	X	X	X	X	X	—	—	X	X	—	—	—	—
WASHING	Flooding	—	—	X	●	●	●	●	X	X	X	X	X	●
	Flushing	●	●	●	●	●	●	●	●	●	●	●	X	●
	Spot Washing	●	●	●	○	○	X	—	○	○	X	—	—	—
	Sediment Washing	—	—	—	—	○	○	○	—	○	○	○	—	—
	Steam Cleaning	○	○	○	○	X	—	—	○	X	—	—	—	—
IN SITU	Passive Collection	●	●	●	●	●	●	●	●	●	●	●	●	●
	Relocation to Surf Zone	—	—	—	X	●	●	—	—	—	—	—	—	—
	Sediment Tilling	—	—	—	—	●	●	○	—	●	●	○	X	—
	Bioremediation	○	○	○	●	●	●	●	●	●	●	●	●	●
	Log/Debris Burning	●	●	●	●	●	●	●	X	X	X	X	X	●
	Chemical Treatment	○	○	○	X	X	X	X	X	X	X	X	—	—
	Natural Recovery	●	●	●	●	●	●	●	●	●	●	●	●	●

TABLE 3-10 CLEANUP TECHNIQUE APPLICABILITY - HIGH VISCOSITY OILS

Type C: Weathered and/or Heavy Crude and Fuel Oils (High Viscosity)

Key:
● Applicable
○ May Be Applicable
X Usually Not Applicable
— Not Applicable

			BEDROCK		BEACH				INTERTIDAL FLATS					
					Gravel		Mixed		Gravel		Mixed			
		Man-Made Structures	Bedrock Cliffs	Bedrock Ramp/ Platform	Cobble/ Boulder	Pebble/ Cobble	Sand/ Pebble/ Cobble	Sand	Cobble/ Boulder	Pebble/ Cobble	Sand/ Pebble/ Cobble	Sand	Mud	Estuarine Vegetation/ Marsh
REMOVAL	Manual Oil/Sediment Removal	●	●	●	●	●	●	●	●	●	●	●	○	○
	Mechanical Sediment Removal	—	—	—	○	●	●	●	○	●	●	●	○	—
	Vacuum	○	○	○	X	X	○	○	X	X	○	○	○	○
	Vegetation Cutting	X	X	○	○	X	—	—	○	X	—	—	X	●
	Sand Blasting	○	○	○	X	X	—	—	X	X	—	—	—	—
WASHING	Flooding	—	—	X	○	○	X	X	X	X	X	X	X	X
	Flushing	○	○	○	○	○	X	X	○	○	X	X	X	○
	Spot Washing	●	●	●	●	○	X	—	●	○	X	—	—	—
	Sediment Washing	—	—	—	—	○	○	○	—	○	○	○	—	—
	Steam Cleaning	○	○	○	○	X	—	—	○	X	—	—	—	—
IN SITU	Passive Collection	○	○	○	○	○	○	○	○	○	○	○	○	○
	Relocation to Surf Zone	—	—	—	X	●	●	—	—	—	—	—	—	—
	Sediment Tilling	—	—	—	—	●	●	○	—	●	●	○	—	—
	Bioremediation	○	○	○	○	○	○	○	○	○	○	○	○	○
	Log/Debris Burning	●	●	●	●	●	●	●	X	X	X	X	X	●
	Chemical Treatment	○	○	○	○	○	X	X	○	○	X	X	—	—
	Natural Recovery	●	●	●	●	●	●	●	●	●	●	●	●	●

TABLE 3-11 CLEANUP TECHNIQUE APPLICABILITY - SOLID AND SEMI-SOLID OILS

Type D: Very Weathered Semi-Solid to Solid Oils

Key:
● Applicable
○ May Be Applicable
X Usually Not Applicable
— Not Applicable

			BEDROCK		BEACH				INTERTIDAL FLATS					
					Gravel		Mixed		Gravel		Mixed			
		Man-Made Structures	Bedrock Cliffs	Bedrock Ramp/ Platform	Cobble/ Boulder	Pebble/ Cobble	Sand/ - Pebble/ Cobble	Sand	Cobble/ Boulder	Pebble/ Cobble	Sand/ Pebble/ Cobble	Sand	Mud	Estuarine Vegetation/ Marsh
REMOVAL	Manual Oil/Sediment Removal	●	●	●	●	●	●	●	●	●	●	●	○	○
	Mechanical Sediment Removal	—	—	—	X	●	●	●	X	●	●	●	○	—
	Vacuum	—	—	—	—	—	—	—	—	—	—	—	—	—
	Vegetation Cutting	X	X	○	○	X	—	—	○	X	—	—	X	●
	Sand Blasting	○	○	○	X	X	—	—	X	X	—	—	—	—
WASHING	Flooding	—	—	—	—	—	—	—	—	—	—	—	—	—
	Flushing	X	X	X	—	—	—	—	—	—	—	—	—	—
	Spot Washing	●	●	●	●	○	X	—	●	○	X	—	—	—
	Sediment Washing	—	—	—	—	○	○	○	—	○	○	○	—	—
	Steam Cleaning	○	○	○	○	X	—	—	○	X	—	—	—	—
IN SITU	Passive Collection	—	—	—	—	—	—	—	—	—	—	—	—	—
	Relocation to Surf Zone	—	—	—	—	●	○	—	—	—	—	—	—	—
	Sediment Tilling	—	—	—	—	●	○	○	—	●	○	○	—	—
	Bioremediation	X	X	X	X	X	X	X	X	X	X	X	X	X
	Log/Debris Burning	●	●	●	●	●	●	●	X	X	X	X	X	●
	Chemical Treatment	○	○	○	○	○	X	X	○	○	X	X	—	—
	Natural Recovery	●	●	●	●	●	●	●	●	●	●	●	●	●

- oil is emulsified or non-sticky,
- oil is pooled,
- substrate is fine-grained preventing oil from adhering to solid surfaces,
- higher high-tide water levels are predicted, or
- strong alongshore currents are present.

Onshore cleanup or treatment techniques can be grouped into four categories: leave alone; remove; wash off; and treat in situ. Seventeen onshore cleanup techniques have been identified as being applicable to the Washington coastline. A brief description of the primary uses and potential effects is presented in Table 3-7. The selection of an appropriate treatment technique is dependent on the following factors:

- Substrate type (e.g. man-made, bedrock, or sediment size)
- Slope (if a beach)
- Amount of oil/degree of oil impact
- Type of oil
- Exposure to wave action
- Shoreline sensitivity (ecological, cultural, human use)
- Depth of oil penetration
- Equipment trafficability

Although each cleanup option is identified and described separately in this plan, in practice it is common that several techniques are used in combination. Additional shoreline cleanup assessment and strategy/logistic implementation discussions are addressed in the Northwest Area Contingency Plan, Chapter 9640 titled "Shoreline Countermeasures Assessment Manual" as well as Appendix W of MSRC's PRC application submittal to Ecology.

The relative applicability of the 17 cleanup techniques listed in Table 3-7 can be determined using the matrices in Tables 3-8 through 3-11. Each matrix rates the techniques for use on various substrates and oil types.

In most cases, cleanup reaches a point of diminishing returns where the level of effort and intrusive nature of the cleanup increases exponentially as the amount of oil decreases. The cleanup-related impacts often will surpass those of the oil at some stage of the response operation.

Manual removal of the last bit of retrievable oiled debris is usually required for the final cleanup. Any areas disturbed by the spill or the cleanup operation would be restored. Access roads, ramps, docks, or access paths constructed during cleanup operations will be removed when the cleanup is complete. All damaged or oiled public and private property would be restored to its original or better condition. This includes cleaning roadways. Repair crews of various skills may be needed.

In any case, the shoreline response and cleanup ends when all responsible and involved parties agree that sufficient appropriate treatment and cleanup has been completed.

3.5.4 Spill Response Staging Operations

Central Command Post

The designated Central Command Post for oil spill incidents at USOR is USOR's office building. This location has multiple phone lines, as well as multichannel radio, cellular phone units, and computer facilities in place. All response operations can be handled from this location. This location was successfully used as the Central

Command Post for a spill incident in January 1991 as well as tabletop oil spill drills conducted since June 1999. Adequate meeting/conference rooms and offices are available at USOR to conduct press conferences and public meetings as well as accommodate ICS command and general staff. These facilities are suitable for managing spills ranging in size to worst case. Key meeting/conference rooms and their approximate capacities include the following: Spill Drill Training Trailer (30 people), Planning Trailer (30 people), Operations Office Bldg. (10 people), Main Conference Room (20 people), Training Conference Room (10 people), Executive Conference Room (10 people), Accounting Conference Room (10 people), and Change House Lunch Room (30 people).

In the event that the USOR office buildings cannot be used, a separate location for the Central Command Post may need to be established. The La Quinta in Tacoma has conference room facilities large enough to accommodate an incident command team necessary to respond to a worst case oil spill. For smaller spills, an alternate location would be the MSRC Communications Center, which consists of a 34-foot trailer with power generator, VHF and UHF radios, computer, copier, cellular phone, commercial phone, TV, kitchen, toilet, and shower. This portable trailer is currently stationed in Lynnwood, and thus would have a travel time of approximately 2 1/2 hours to the USOR facility. The trailer would be placed just inside the USOR dock gate near the guard station. One telephone line is available at the site; temporary power and additional telephone lines, as needed, would be hooked up to the trailer; cellular phones would be used until lines are established. Central command post locations for spill events involving McChord Pipeline Co. will be dependent upon spill size and location. If necessary, the central command post would be established along the McChord pipeline. Potential command post staging areas for McChord Pipeline Co. are discussed in Section 3.7.

Personnel safety considerations will be paramount in siting the location of the central command post. As required, this location will be upwind from potential vapor releases and at a distance determined to be safe from the possibility of fire, explosions or any other exposure deemed a threat to personnel safety.

Central Communications Post

The Central Communications Post will be the same as the Central Command Post, i.e. U.S. Oil's office building. Communication functions available at the facility are described in Section 8.1.

Equipment and Personnel Staging Areas

An area is available near the dock to set up a primary equipment and personnel staging area. The location of this area is identified in Figure 3-18. The most likely locations for any spill into the water from the U.S. Oil facilities are at the dock or from the Lincoln Avenue ditch. This staging area would be an ideal location in either case. The primary staging area provides:

- approximately 70,000 square feet of space to set up trailers, equipment, and extra washing facilities, and for vehicle parking;
- equipment access to the Blair Waterway south of the docks (limited to equipment which can be lifted by crane or skiffs, etc. which can be carried by hand);

- communications with the U.S. Oil office building already in place at the dock office via the telephone network described in Section 8.1; and

- proximity to pre-positioned USOR and contractor's response and communications equipment.

If a major part of the cleanup effort is located further up or down the Blair Waterway, a secondary staging area may be beneficial to cleanup operations. A location for the secondary staging area will be chosen based on the following criteria:

- availability of enough open space, either paved or unpaved, to accommodate the necessary equipment and personnel to be staged at the site (including vehicle parking areas);

- ease of access to the site from main roadways such that pieces of large equipment and trailers may be brought to the staging area; and

- available shoreline access, if needed to launch workboats. Boats may be able to be launched from the primary staging area or a commercial boat launch in the vicinity. A list of boat launches in the area is provided in Section 3.3.4.

Procedures for setting up a second staging area will include the following:

- evaluate the needs for the second staging area and determine and prioritize several suitable sites based on the above criteria;

- obtain permission from the land owner for access and use of the site as a spill response staging area; and

- mobilize equipment, including response and communications equipment, decontamination equipment and supplies, and personnel to the second staging area.

3.5.5 Spill Minimization and Damage Control Procedures

Emergency Shutdown Procedures

As soon as a leak or spill is detected, emergency shutdown of transfer operations and/or process operations, as appropriate, will be implemented. This information is detailed in procedures books and operations training manuals, which are accessible and located in appropriate locations throughout the refinery.

Loading/Unloading Procedures

Loading and unloading procedures at the USOR docks are outlined in Section 3.5.3.

Leaks from Tankage - Damage Control

Small breaks or gashes in tanks will be patched or plugged as quickly as possible using various materials depending on the situation. The process of transferring the contents of a damaged tank to an empty or slop tank will also begin immediately. Lowering the liquid level in a damaged tank to a level below the break or gash will minimize the amount of oil spilled and make patching operations easier.

(b) (7)(F)

Large breaks in tank walls are rare but will elicit essentially the same response as small breaks. Tank dikes built to NFPA standards are designed to contain the contents that may escape a leaking tank.

USOR maintains basic construction materials for patching and plugging small breaks in pipelines and storage tanks. Maintenance personnel are familiar with these materials and their uses as well as emergency methods for patching a tank, line or vessel. Plugging and patching materials are maintained at the receiving warehouse.

Pipes and Vessels - Damage Control

Spill minimization procedures followed in the event of a leak due to piping or vessel damage include:

1) depressurize the line(s) involved
2) isolate the damaged line or vessel by closing valves and shutting off pumps
3) drain and capture the liquid remaining in the damaged pipe/vessel

Dock Area - Damage Control

(Same as procedures for pipes and vessels)

3.5.6 Emergency Operations Peripheral to Spills

The following paragraphs discuss emergency procedures peripheral to spill containment and cleanup as well as USOR's role in these emergency procedures prior to the arrival of proper authorities. Phone numbers for all agencies referenced in these paragraphs are listed in Appendix C.

Fire

USOR maintains trained incipient level response team to respond to fires at the refinery and Marine Terminal dock area. These response personnel, which are commanded by the Shift Supervisor and/or Incident Commander, consist of the Refinery Safety Supervisor as well as maintenance and operations personnel including other shift and maintenance supervisors. At the incipient level, USOR's emergency responders are assigned the fire suppression duties which:

- Include offensive and defensive operations, limited to the use of portable fire extinguishers, wheeled fire extinguishers, low-volume handlines, and operation of fixed systems for operations involving incipient fires.
- Include defensive operations from outside the "hot zone" utilizing high-volume handlines and/or portable or mixed master stream devices for operations involving advanced exterior fires. The "hot zone" is the area immediately surrounding the physical location of an emergency that extends far enough from the incident to protect emergency responders positioned outside of the hot zone from being directly exposed to flames, dense smoke, extreme temperatures or other hazardous conditions.
- Do not require the use of SCBA's or thermal protective clothing (bunker gear) and do not require personal evasive actions to avoid products of combustion.

Selected USOR team members, including the Refinery Safety Supervisor, Shift Supervisors, A Operators and B Operators, will be trained and qualified to perform tasks requiring thermal protective equipment, SCBA's and chemical resistant protective clothing. These team members are authorized to accompany Tacoma Fire Dept. personnel into the "hot zone" during a fire situation. Their primary responsibility during a fire is to assist Tacoma Fire Dept. personnel by providing technical expertise and facility knowledge and assisting in isolation and containment of fuel sources. These individuals will also be trained and responsible to respond to uncontrolled releases involving oxygen deficient atmospheres, hydrogen sulfide, sulfur dioxide, nitrogen, caustics, acids and other hazardous materials. As such their response will be limited to the following:

- Activities that can be safely performed with Level B personal protective equipment (SCBA's, flame retardant coveralls, chemical resistant clothing, hard hat, safety glasses, splash goggles, face shield, gloves, chemical boots).
- Basic isolation, containment and confinement activities.

Additional details regarding USOR's emergency response team are located in the Emergency Response Plan.

The services of the Tacoma Fire Dept. will be utilized to respond to fires which require additional expertise, manpower and equipment. The Tacoma Fire Dept. has primary responsibility for the following response services:

- Advanced First Aid (Paramedics/EMTs)
- Advanced Fire Fighting (Structural and Interior)
- Hazardous Material Technicians
- Search and Rescue

USOR is a participating member of a mutual aid agreement with several Western State Petroleum Association (WSPA) member companies. Under this agreement, member companies have agreed to assist other member companies in time of emergency when requested. Participating members of this agreement include the following oil refineries located in Western Washington: BP Cherry Point, Shell, Tesoro, Conoco Phillips and USOR.

Specific procedures for requesting and/or authorizing assistance are identified in the WSPA – Northwest Mutual Aid Group manual. This manual is located in the Safety Manager's Office. This manual also identified possible equipment and material that may be available from each participating company.

3.5.7 Group V Petroleum Oil Spill Response

Group V petroleum oils, which have an API gravity greater than 10, are generally stored and transferred at elevated temperatures since these types of oils are highly viscous and thereby become solid at ambient temperatures. Group V petroleum oils primarily consist of asphalt products that are stored at the refinery where they are loaded onto tanker trucks and railcars. Group V petroleum oils are not typically transferred or stored at the marine terminal. The following are USOR's procedures and strategies for responding to discharges of Group V petroleum oils.

Land Spill

Once a Group V petroleum oil spills onto land it quickly cools thereby causing this oil to become solid. This physical change impedes the oils ability to spread any significant distance from the source of the spill. Techniques used at USOR to prevent the migration of a Group V oil spill include using earth moving equipment to build a dike downgradient from the source of the spill or using any other available materials to block the path of the spill. Earth moving equipment, which is staged on site, is available to respond to this type of oil spill as well as to assist with the cleanup. USOR and contract personnel are also available to assist with any manual labor necessary to facilitate cleanup of spilled material. Recovered materials are either reclaimed on site or transported to an approved off-site landfill facility.

Water Spill

Once a Group V petroleum oil spills into the water it quickly cools thereby causing this oil to become solid. Due to low gravity this material has the potential for sinking or remaining suspended within the water column. The locations of the non-floating Group V oils may be determined through aerial observations, diver intersects, subsurface modeling or side scan sonar surveys. Recovery can be attempted using manual removal by divers, removal by pump and vacuum equipment and/or dredging. Removal methods will be approved by unified command. The primary response contractor (PRC) maintains the resources for locating and recovering oil on the bottom or suspended in the water column. The equipment is capable of being on scene within 12 hours of spill notification. For a detailed list of response equipment and response capabilities refer to Appendix Z of MSRC's PRC application.

For spills into Lincoln Avenue ditch floating oil lumps can be contained by using either containment boom or damming off the end of the ditch at a point downgradient sufficient to contain all of the spilled oil discharge. With the exception of the containment boom, sinking oil lumps would be contained using the same above-mentioned techniques. A vacuum truck would be utilized to remove floating oil lumps while sinking oil lumps would be removed using a backhoe.

For spills into the Blair Waterway floating oil lumps can be contained by placing containment boom around the perimeter of the spill. Containment of oil suspended in the water column may be accomplished under low current conditions using silt curtains or fine-mesh nets coupled with surface boom to contain the floating or refloating fraction of the oil. It may be possible to remove the floating oil lumps using oil recovery vessels, however, due to the physical nature of this material there is the tendency for interference with many types of recovery equipment.

3.5.8 Decanting

This practice is recognized as a necessary option in the Northwest Area Contingency Plan. Decanting of water from recovered oil and the return of excess water into the response area can be vital to the efficient mechanical recovery of spilled oil because it allows maximum use of limited storage capacity, thereby, increasing recovery operations. Decanting is the process of draining off recovered water from portable tanks, internal tanks, collection wells or other storage containers to increase the available storage capacity of recovered oil. When decanting is conducted properly most of the petroleum can be removed from the water. The overriding goal of mechanical recovery is the expeditious recovery of oil from water. In many cases, the

separation of oil and water and discharge of excess water is necessary for skimming operations to be effective in maximizing the amount of oil recovered and in minimizing overall environmental damages. It important to note that discharging decant water into the environment is much less harmful than allowing the oil to remain on the water and be subject to spreading and weathering. Decanting operations must conform to the requirements outlined on the Oil Spill Decanting Authorization Form and must be first authorized by the FOSC and/or the SOSC. A copy of this form is located in Table 3-11A.

TABLE 3-11A

Oil Spill Decanting Authorization Form (See also Northwest Area Contingency Plan Table 7.3.2)
The federal and state OSCs, under authority of RCW 90.56.320(1) and WAC 173-201A-110 (In Washington), or ORS 468B.305 (in Oregon), hereby approve the use of decanting as a means of expediting the recovery of oil during the following spill cleanup operation:
Date(s) Approval Effective:
Name of spill Incident:
Federally Defined Response Area:
Name of Requester:
Location and Description of Proposed Decanting Operation: (continue on reverse, if necessary)
The decanting operation must meet the following conditions: 1. All decanting should be done in a designated "Response Area" within a collection area, vessel collection well, recovery belt, weir area, or directly in front of a recovery system. 2. Vessels employing sweep booms with recovery pumps in the apex of the boom shall decant forward of the recovery pumps. 3. Vessels not equipped with an oil/water separator should allow retention time form oil held in internal or portable tanks before decanting commences. 4. Containment boom must / need not (circle one) be deployed around the collection area to prevent loss of decanted oil or entrainment. 5. Visual monitoring of the decanting shall be maintained at all times so that discharge of oil in the decanted water is detected promptly 6. Decanting in areas where vacuum trucks, portable tanks, or other collection systems are used for shore cleanup will be subject to the same rules as vessels. 7. Additional conditions: (continue on reverse if necessary)
SIGNATURE: Date: Federal OSC
SIGNATURE: Date: State OSC
NOTE: When verbal authorization is given, a copy of this form must be immediately expedited to the requester (must be a person of authority in the cleanup organization) to ensure that the conditions and limitations are clearly understood by all parties.

3.6 Environmental Protection

3.6.1 Environmental Protection Methods

If a spill occurs, it will be necessary to protect the resources and sensitive areas in the vicinity of the facility from the oil. Protection methods will be implemented to prevent oil from contacting a shoreline area, and to limit the impacts. The Central Puget Sound GRP and NWACP Section 9640 titled "Northwest Area Shoreline Countermeasures Manual and Matrices" are incorporated into this section by reference.

Shoreline\Habitat Protection

The purpose of shoreline protection is either to prevent oil from making contact with a shoreline or minimize the effect(s) of oil that contacts a shoreline or sensitive area (onshore protection). This section provides an outline of technique selection and guidelines on the implementation of the various protection options.

Nearshore protection methods appropriate for the USOR facility area include passive techniques, such as exclusion or deflection booming, or active techniques, such as skimming and, to some extent, diversion booming. Onshore protection involves passive techniques such as beach berms, dams, sorbents, or sorbent barriers. Onshore techniques are typically used along a shoreline (such as the Blair Waterway) or across narrow water bodies (such as the Lincoln Ave. ditch). A brief description of each of the techniques and their potential environmental effects is provided in Tables 3-12 and 3-13.

When implementing protection activities, the following factors are considered (Figure 3-19):

- sensitivity analysis and prioritization,
- technique selection,
- logistics analysis, and
- timing with respect to oil movement.

First, it is necessary to analyze and develop decisions regarding the sensitivity of threatened onshore areas. The decision to protect a particular section of shoreline is directly related to:

- the presence of sensitive ecological features;
- the amount of oil and the potential degree of impact;
- the feasibility of effectively implementing a protection technique prior to oil contacting the shoreline; and
- the potential oil residence time.

If more than one section of shoreline or more than one resource feature is threatened by oil, it is necessary to develop priorities. Specific environmental variables, resources and response strategies for this region are addressed in the Central Puget Sound Geographic Plan located in Appendix I as well as elsewhere in this section.

Table 3-12

Shoreline Protection Techniques (Nearshore)

Nearshore Protection Technique	Primary Use	Technique Description	Potential Environmental Effects
Containment Booming	Used in nearshore waters with swells less than 2m to surround and contain portions of an approaching oil slick.	Boom is deployed in a "U" shape in front of the oncoming slick. The ends of the boom are anchored by work boats or drogues. The oil is contained within the "U" and prevented from reaching the shore.	No significant effects.
Exclusion booming	Used across small bays,, harbor entrances, inlets, rivers, or creek mouths where currents are less than 0.5 m/s and breaking waves are less than 50 cm in height.	Boom is deployed across or around sensitive areas and anchored in place. Approaching oil is deflected or contained by boom.	Minor disturbance to substrate at shoreline anchor points.
Deflection Booming	Used to deflect oil away from relatively small sensitive areas where alongshore currents exceed 0.5 m/s, breaking waves are no less than 50 cm, or available boom is insufficient to exclude oil from the area.	Boom is deployed from the shoreline away from the approaching slick and anchored or held in place with a work boat. Oil is deflected away from shoreline.	Minor disturbances to substrate at shoreline anchor points and can cause heavy shoreline contamination at downstream end of boom.
Diversion booming	Used across small bays, harbor entrances, inlets, river or creek mouths where currents exceed 0.5 m/s and breaking waves are less than 50 cm, and on straight coastline areas to protect specific sites where breaking waves are less than 50 cm.	Boom is deployed from the shoreline at an angle towards the approaching slick and anchored or held in place with a work boat. Oil is diverted towards the shoreline for recovery.	Minor disturbance to substrate at shoreline anchor points and can cause heavy shoreline contamination at downstream end of boom
Skimming	Used in nearshore waters with swells less than 2 m to recover all or portions of an approaching oil slick. Can be used independently or in conjunction with containment booming.	Self-propelled skimmers work back and forth along the leading edge of a windrow to recover the oil. Booms may be deployed from the front of a skimmer in a "V" configuration to increase sweep width.	No significant effects.

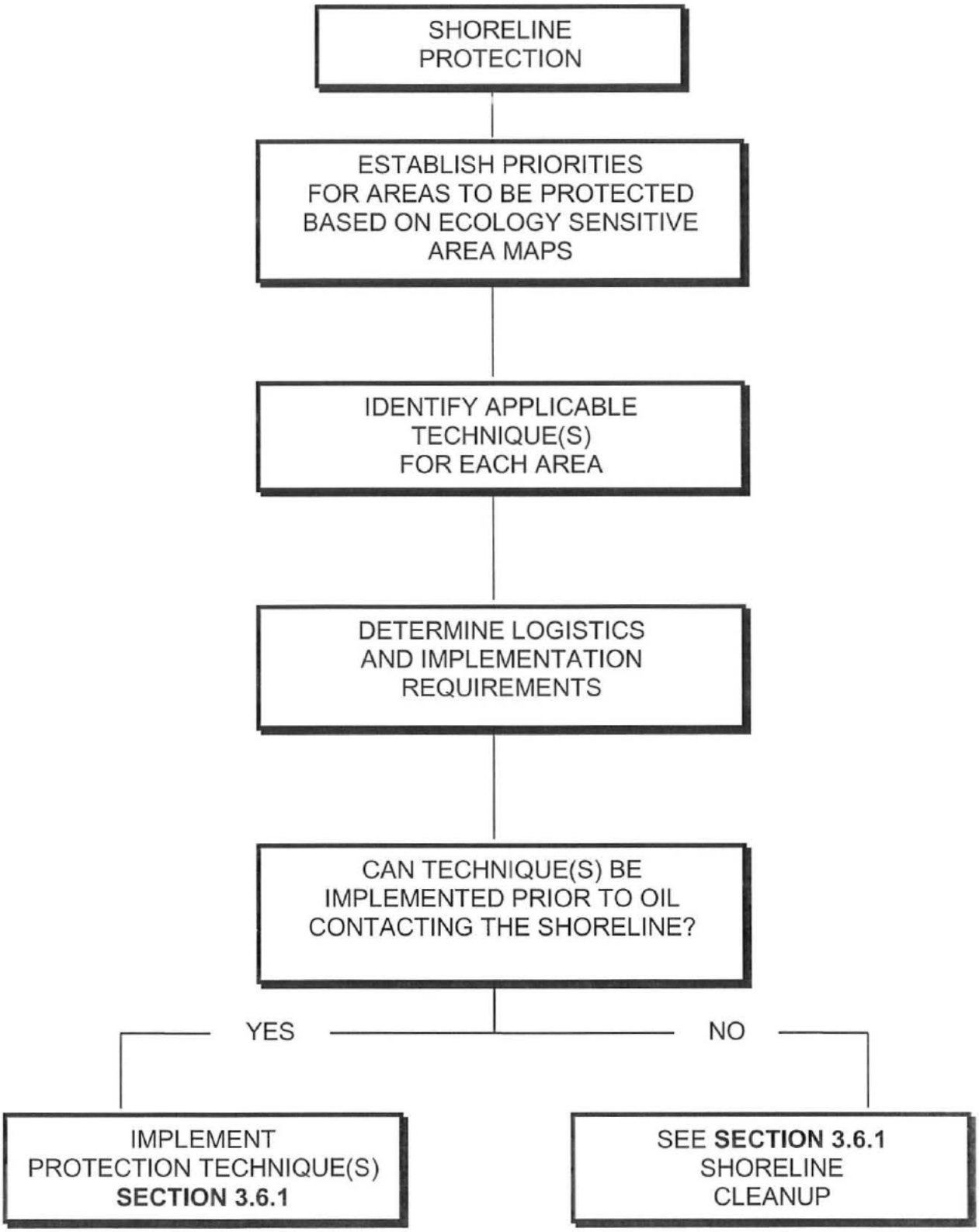
Table 3-13

Shoreline Protection Techniques (Onshore)

Onshore Protection Technique	Primary Use	Technique Description	Potential Environmental Effects
Beach Berms	Used on fine-grained sediment, low energy beaches to prevent or minimize oil from reaching the upper intertidal zone.	A berm is constructed along the top of the mid-intertidal zone from sediments excavated along the downgradient side. The berm should be covered with plastic or geotextile sheeting to minimize wave erosion.	Disturbs upper 50-60 cm of mid-intertidal zone.
Inlet Dams	Used in relatively small tidal inlets, stream channels or other narrow waterways.	A dam is constructed across the channel using local soil or beach sediments to exclude oil from entering channel.	Disturbs channel substrate and adds suspended sediments to water. Can be harmful to landward biota dependent on the periodic tidal flushing.
Culvert Blocking	Used to block tidally influenced culverts to prevent oil from passing through and reaching backwater areas.	Sandbags, wood sheeting, earth or sediments are placed in front of the culvert opening to seal it off and prevent oil or water from entering.	Disturbs channel substrate and can be harmful to landward biota dependent on the periodic tidal flushing.
Sorbent Barriers	Used in relatively small tidal inlets, stream channels or other narrow waterways with low current velocities to exclude and recover oil.	A barrier is constructed by installing two parallel lines of stakes across a channel, fastening wire mesh to the stakes and filling the space between with loose sorbents.	Minor disturbance of inlet or channel substrate.

Figure 3-19

Onshore Protection Implementation Sequence



The presence of sensitive or unique features can be evaluated from existing information sources, however shoreline sensitivity and resource use may change through time, or the presence of sensitive resources, such as birds and animals, may be seasonal. Field checking at the time of the spill is valuable to update information from existing and prior studies.

The likelihood that oil will make contact with a section of shoreline and the amount of oil expected will be estimated using procedures outlined in Section 3.5.3. From this information, an estimate can be made about the potential degree of impact on the shoreline.

The potential oil residence time will be estimated from relating the wave exposure of the shoreline section to the type and volume of oil. A **short oil residence time (days/weeks)** is usually associated with:

- light oils,
- exposed shores (high potential wave energy), and
- oil stranded in the zone of wave action.

A **long residence time (months/years)** is more likely with:

- heavy or weathered oils,
- sheltered locations (low potential wave energy), or
- oil stranded above the normal zone of wave action or in subsurface sediments.

The feasibility and probable effectiveness of a particular nearshore technique must be evaluated at the time of the spill, and is dependent primarily on:

- wave, current, and wind conditions;
- availability of the required equipment, manpower, and logistics; and
- sufficient time to implement the technique prior to shoreline contact.

Although each protection technique option is treated separately in this plan, in practice it is common that several techniques are used in combination.

The nearshore technique selection process involves review of the environmental factors in order to determine which techniques are practical and feasible. A nearshore protection technique decision diagram is shown in Figure 3-20. Considerations for nearshore protection techniques include:

Wave Heights

High waves, greater than 2 meters, preclude the use of most booming and skimming equipment, so that the options are limited to no action. Wave height is not a likely limitation in Blair Waterway, Puyallup River or Commencement Bay.

Surface Currents

Tidal current charts document current speed and direction as weak and variable in Commencement Bay. Net surface water current recorded near the mouth of the Puyallup River is 1.27 m/s (2.5 knots) in a NNE direction. Strong surface currents, greater than 0.5 m/s (1 knot) are not expected in Blair Waterway. However, should oil escape the boom into Commencement Bay, these velocities are theoretically possible (although unlikely) and can cause boom failure or entrainment of oil beneath the boom, depending on the angle or type of boom used.

Other environmental or Physical constraints that might limit operations or equipment use include:

Breaking waves, high winds or obstacles in the water (boulders, rock outcrops, pilings, kelp beds, etc.) could present safety and operational problems. If water depths exceed 20 meters or the bottom is a soft substrate, it may be difficult to deploy anchors to control boom configuration. Limited shoreline access also could prevent the anchoring of booms to a shoreline if required.

Safety is a key consideration throughout the selection process.

Onshore protection options fall into three basic categories: leave alone; collect; exclude. Selection of appropriate onshore protection technique(s) for a specific area depends on the following factors:

- environmental impact of technique,
- beach or shoreline characteristics (slope, inlet width, etc.),
- sediment or substrate type (sand, cobble,bedrock, etc.),
- exposure/wave activity, and
- presence of man-made structures or log piles.

Dams, sorbent barriers or culvert blocking techniques may be applicable for small streams or culverts. These methods have been used successfully to block oil in the Lincoln Avenue ditch from escaping to the Blair Waterway.

Breaking waves, high winds or obstacles on the shoreline (boulders, rock outcrops, etc.) could present safety and operational problems. Limited shoreline access also could prevent the construction of berms using mechanical equipment or the placement of sorbents to catch oil as it comes ashore.

An onshore protection technique decision diagram is given in Figure 3-21.

Unlike nearshore protection, onshore protection techniques generally do not require specialized equipment. Beach berms and dams are usually constructed with standard earth moving equipment such as front-end loaders, motor graders, bulldozers or, in some cases, hand tools.

Rubber-tired equipment will be used where access permits, as it typically creates less of an impact on the beach than tracked equipment. Hand tools and manual labor can be used to construct sorbent barriers and block culverts. Considerations for equipment selection are summarized in Table 3-13.

Various operational factors are evaluated before the initiation of onshore protection measures to assess feasibility and to ensure effective implementation. Factors to evaluate in reviewing the feasibility of an onshore protection operation include:

- safety,
- wave height,
- tide levels/tide times, and
- equipment capabilities.

Figure 3-20

Nearshore Protection Technique Decision Diagram

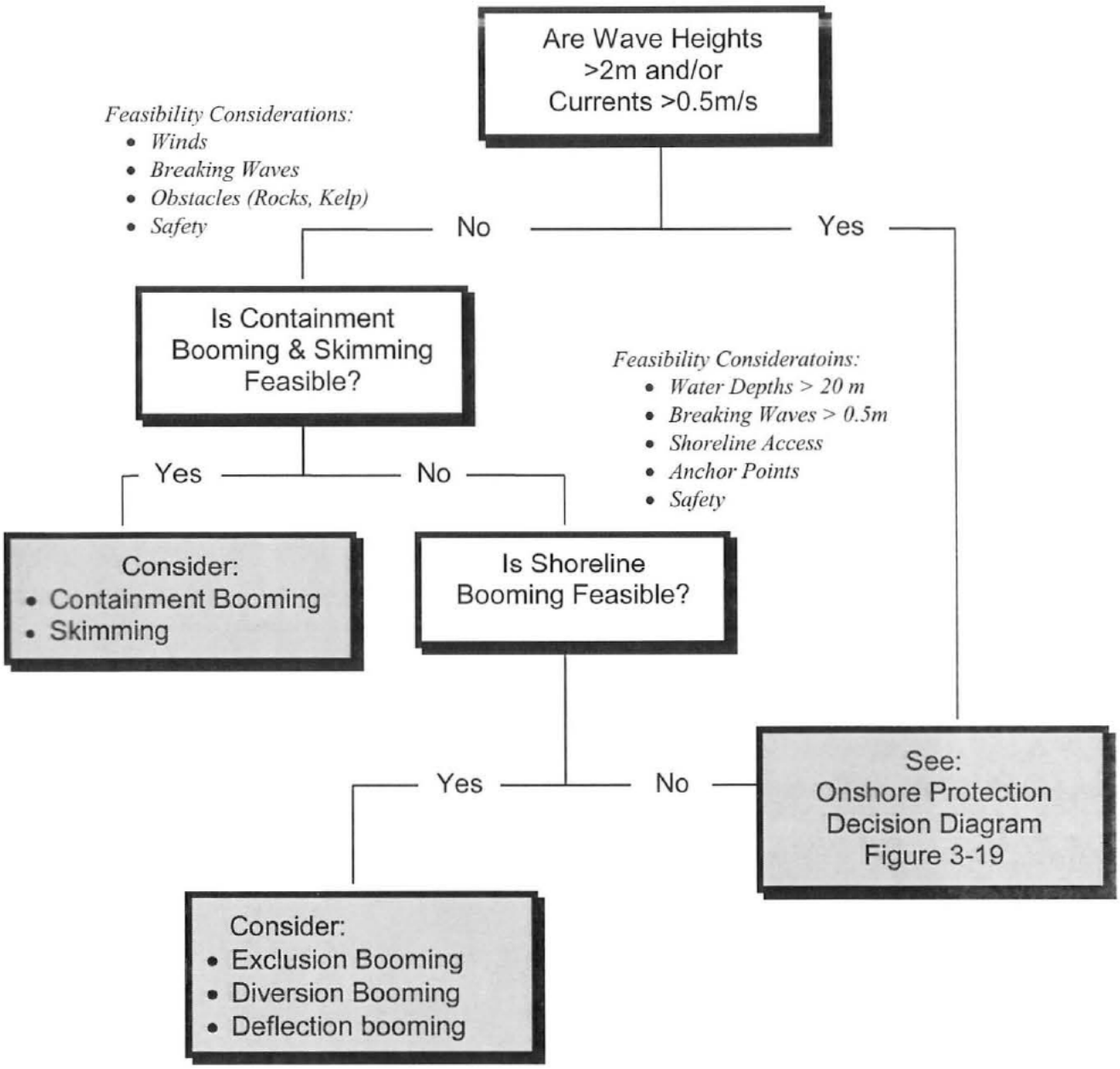
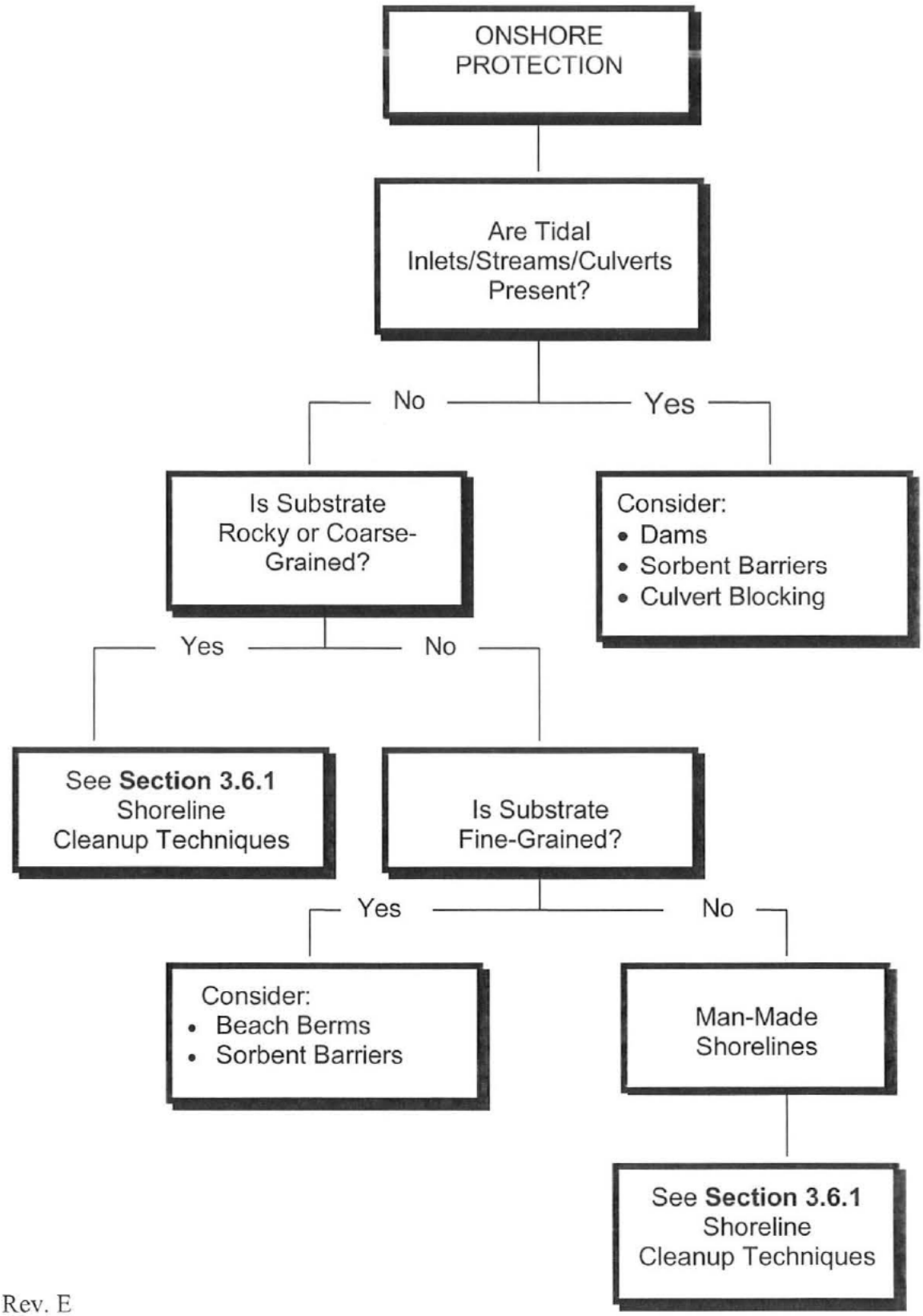


Figure 3-21

Onshore Protection Technique Decision Diagram



Breaker height and high-tide water levels are primary factors in the evaluation of the feasibility of beach berms, dams, or sorbent barriers. Breaking or surging waves can erode or otherwise damage items placed, or berms and dams built on shore. Currents are a factor for sorbent barriers as speeds over 1 knot can damage the barrier or allow oil to pass through it. Shoreline access is an important factor in the implementation of onshore protection, particularly for those techniques that may require the use of heavy equipment (beach berms and dams).

The critical factor for determining feasibility is the relationship between deployment time of the technique(s) and the estimated time of arrival of the oil at the site or area to be protected. Within confined areas, such as Blair Waterway, there may be very little time before oil impact. Therefore, protection strategies for the waterway itself have been pre-determined. If oil escapes Blair Waterway into Commencement Bay, several variables will be evaluated to estimate the total deployment time, including:

- equipment and support material procurement time,
- personnel mobilization time,
- assembly time, and
- deployment time.

Cleanup Operation Impact Reduction

Under some circumstances oil floating on the water may escape containment and oil the shoreline. If this occurs, some form of shoreline cleanup will be necessary. Shoreline cleanup will be implemented carefully and coordinated with the state and/or federal Incident Commander.

Oil that comes in contact with a shoreline has the potential for adversely affecting biological and physical processes. In some cases, however, cleanup activities can result in adverse impacts and, if implemented improperly, can result in greater damage to the shoreline than the oil alone. Potential effects associated with each technique, which will be considered when developing a cleanup plan, are listed in Table 3-14.

A shoreline assessment needs to be completed in order to effectively plan for shoreline cleanup operation. Examples of methods that can be used to assess impacted shorelines include using helicopters to obtain over flight information and using a Spill Cleanup Assessment Team to make field observations. Historical information based on past spills in the area may also be helpful. Based on the area impacted (or potential area be to impacted), the most appropriate cleanup method for the shoreline type and type of oil needs to be selected. Appropriate methods to clean shorelines can be found in the shoreline Countermeasures Assessment Manual (Chapter 9640) of the Northwest Area Contingency Plan. Additional information on shoreline types and sensitivities can be found in Chapter 5 of the Central Puget Sound GRP, which is located in Appendix I.

In general, the objective of a shoreline cleanup program is to remove as much oil as possible while causing minimal extra damage to biotic communities and resources. In a large or worst case spill, where a large amount of oil is expected to continue (and cannot realistically be prevented from) washing onshore, shoreline cleanup may be delayed until all or most of the oil has become stranded, since repeated cleanup efforts may create more harm than the oil itself. However, if the oil is expected to be remobilized back into the water, shoreline cleanup will begin as the oil arrives to minimize the amount which may be refloated by the tides and possibly impact a previously unoiled area.

In most cases, cleanup reaches a point of diminishing returns as the amount of oil decreases. The cleanup-related impacts often will surpass those of the oil at some stage of the response operation. When the cleanup approaches this point, the effects of leaving the remaining oil to degrade naturally will be weighed against the effects of further cleanup efforts.

In order to sustain ongoing shoreline cleanup operations, it is important that an adequate number of trained shoreline cleanup crews can be readily located and transported to the impacted shorelines. As such, USOR will utilize shoreline cleanup personnel and protocols identified within the MSRC (Appendix W) and Global Salvage & Diving Primary Response Contractor application submittals to Ecology to meet this need.

Sensitive Area Protection Priorities

Within the Blair Waterway, the shoreline is primarily man-made and consists of fairly steep, earthen material and some riprap. Industrial facilities line both sides of the shore along most of the waterway. The two areas which are considered "sensitive" for the purpose of spill response planning are each end of the waterway. At its northwest end, the waterway is open to Commencement Bay; at the southeast end, a small creek, Wapato Creek, flows into Blair Waterway. Protection of the mouth of Wapato Creek will be of primary importance, particularly in spring and summer months when the largest concentrations of wildlife are likely to be present.

Studies published in the Puget Sound Environmental Atlas (1987) identify several important resources within Commencement Bay which should be protected from the effects of an oil spill. These resources/areas are shown on Figures 3-22 through 3-27. Additional resources, including specific response strategies to protect them, are outlined in the Central Puget Sound Geographic Response Plan (GRP).

Eelgrass and a small kelp bed occur along the western shoreline of Commencement Bay (more than 3 miles from the mouth of the Blair Waterway). Commercial salmon harvesting takes place throughout the Bay; recreational salmon fishing occurs mainly in the eastern half and along the northwestern shoreline. Commencement Bay generally lacks groundfish resource areas. Most of Commencement Bay is uncertifiable for commercial shellfish harvesting due to the many industrial discharges. In addition, advisories exist against the consumption of crab, bottomfish, and shellfish captured in and near the waterways and along the shoreline from City Waterway to Point Defiance (Puget Sound Environmental Atlas, 1987). In addition to the above-mentioned resources, the Washington State Coastal Sensitive Areas Mapping Project, Tacoma Map, shows five bird colonies in Commencement Bay (Figure 3-28). None of these colonies are located in or near the mouth of the Blair Waterway. Fishing area and shellfish area map (Figure 3-29) provides essentially the same information as the Puget Sound Environmental Atlas.

3.6.2 Oiled Wildlife Care

In the event of a spill, wildlife may come into contact with oil especially on the surface of water or along shorelines. The numbers and types of animals affected will depend on a number of factors, such as size of the spill, weather, wind and currents, habitats affected, and time of year the spill occurs. Birds are the most likely wildlife to be affected during on-water spills, although aquatic or marine mammals may also be affected. Terrestrial mammals are more likely to be secondarily affected when they scavenge other animals that are stressed or have died.

Table 3-14

Cleanup Techniques and Their Potential Environmental Effects

CLEANUP TECHNIQUE	TECHNIQUE USE	POTENTIAL ENVIRONMENTAL EFFECT
Manual Removal	On shorelines with light or sporadic oil conditions or where access is limited.	Foot traffic may crush organisms and some organisms may be removed from the substrate/sediments.
Mechanical Removal	On finer sediment beaches to remove heavily oiled surface and near-surface sediments.	Removes shallow burrowing organisms and reduces beach stability, creating erosion potential.
Vacuum/ Skimmers	To pick up oil on shorelines where pools have formed in depressions, or from water surfaces in contained areas.	Vacuuming can remove some organisms. No significant effects from skimmer use.
Vegetation Cutting	On heavily vegetated shorelines or marsh/estuarine environments to remove heavily oiled vegetation.	Heavy foot traffic can crush organisms and cause root damage in marshes.
Sand Blasting	To remove thin residues of weathered oil from man-made structures, rocks or other solid surfaces.	Removes all organisms from surface. Unrecovered oil can be toxic to downslope organisms.
Flooding	On medium to coarse sediment beaches to remove mobile oil from interstices and pore spaces.	Potential for impact of previously clean lower intertidal or adjacent areas. Unrecovered oil can remain toxic.
Flushing	On medium to coarse sediment beaches to remove mobile oil from interstices and pore spaces.	Can remove some organisms from the substrate or cause adverse thermal effects. Potential for impacting previously clean lower or adjacent areas.
Spot Washing	To remove oil coatings from solid surfaces (boulders, rocks, man-made structures).	Removes most organisms from substrate. Potential for impacting previously clean lower intertidal or adjacent areas.
Sediment Washing	On moderate to heavily oiled, medium sediment, sheltered beaches to remove oil without a net sediment loss.	Loss of organisms in removed sediments, some loss of finer-grained materials and temporary destabilization of beach.
Steam Cleaning	To remove sticky, viscous and weathered oil from boulders, rocks, man-made and other solid surfaces.	Removes some organisms and thermal effects can cause substantial mortality.
Passive Collection	To recover small amounts of mobile oil that are continually released from oiled shorelines.	No significant effects, except possible trampling in muds or marshes.

Table 3-14 (Continued)

Cleanup Techniques and Their Potential Environmental Effects

CLEANUP TECHNIQUE	TECHNIQUE USE	POTENTIAL ENVIRONMENTAL EFFECT
Relocation to Surf Zone	On exposed, light to moderately oiled cobble/pebble beaches to enhance natural cleaning and prevent erosion problems associated with sediment removal.	Potential for remobilizing oil and impacting adjacent areas. Adversely affects organisms inhabiting relocated sediments and in the relocation area.
Sediment Tilling	On medium to fine sediment beaches with light to moderate oiling to break up surface an/or expose subsurface oil.	Disturbs shallow burrowing organisms. Can mix with oil deeper into sediments.
In Situ Bioremediation	On light to moderately oiled, medium to coarse sediment beaches to enhance microbial degradation of oil	Some fertilizers can be toxic to organisms when first applied. Algal blooms are possible in protected areas.
Chemical Treatment	On viscous, sticky and weathered oils to reduce adhesion to coarse sediments and aid in removal by flushing.	Some agents can be mildly toxic to biota. Potential for impacting previously clean lower intertidal and adjacent areas.
Natural Recovery	On heavily exposed and/or light to moderately oiled beaches to avoid additional impacts created by cleanup.	Potential toxic and physical effects of remaining oil. Persistent oil can inhibit recolonization.

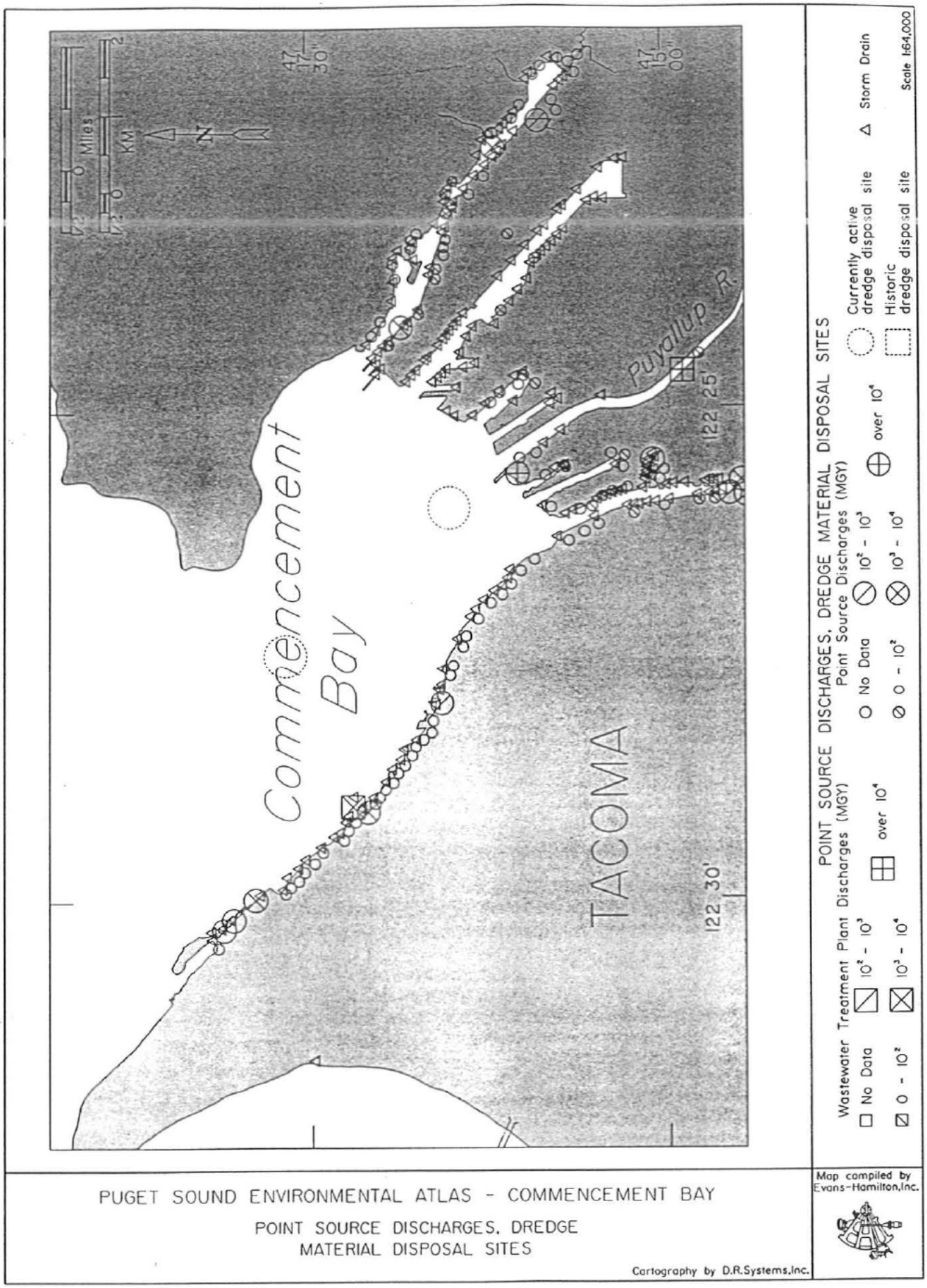


FIGURE 3-22 COMMENCEMENT BAY SENSITIVE AREA MAP

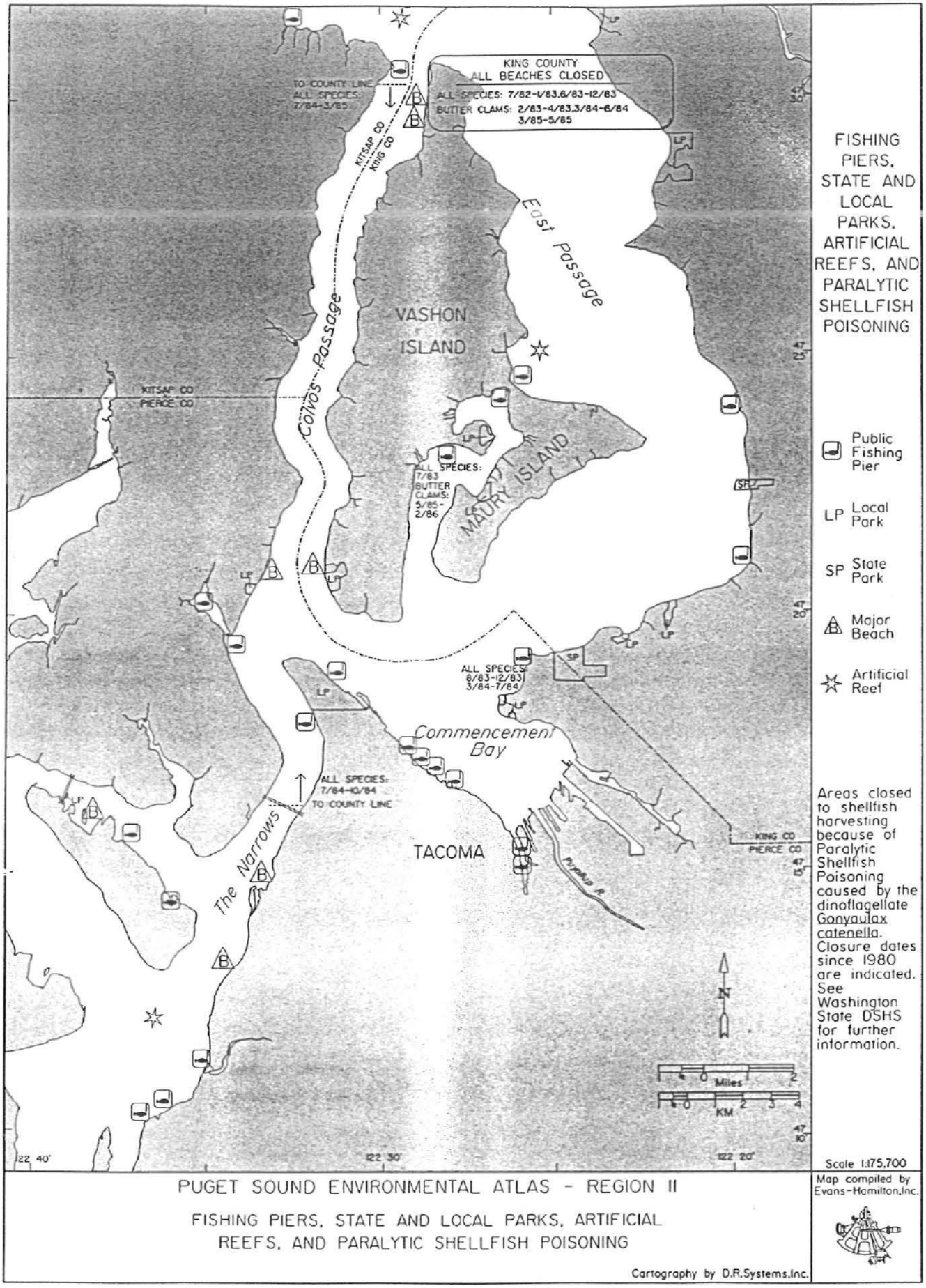


FIGURE 3-23 COMMENCEMENT BAY SENSITIVE AREA MAP

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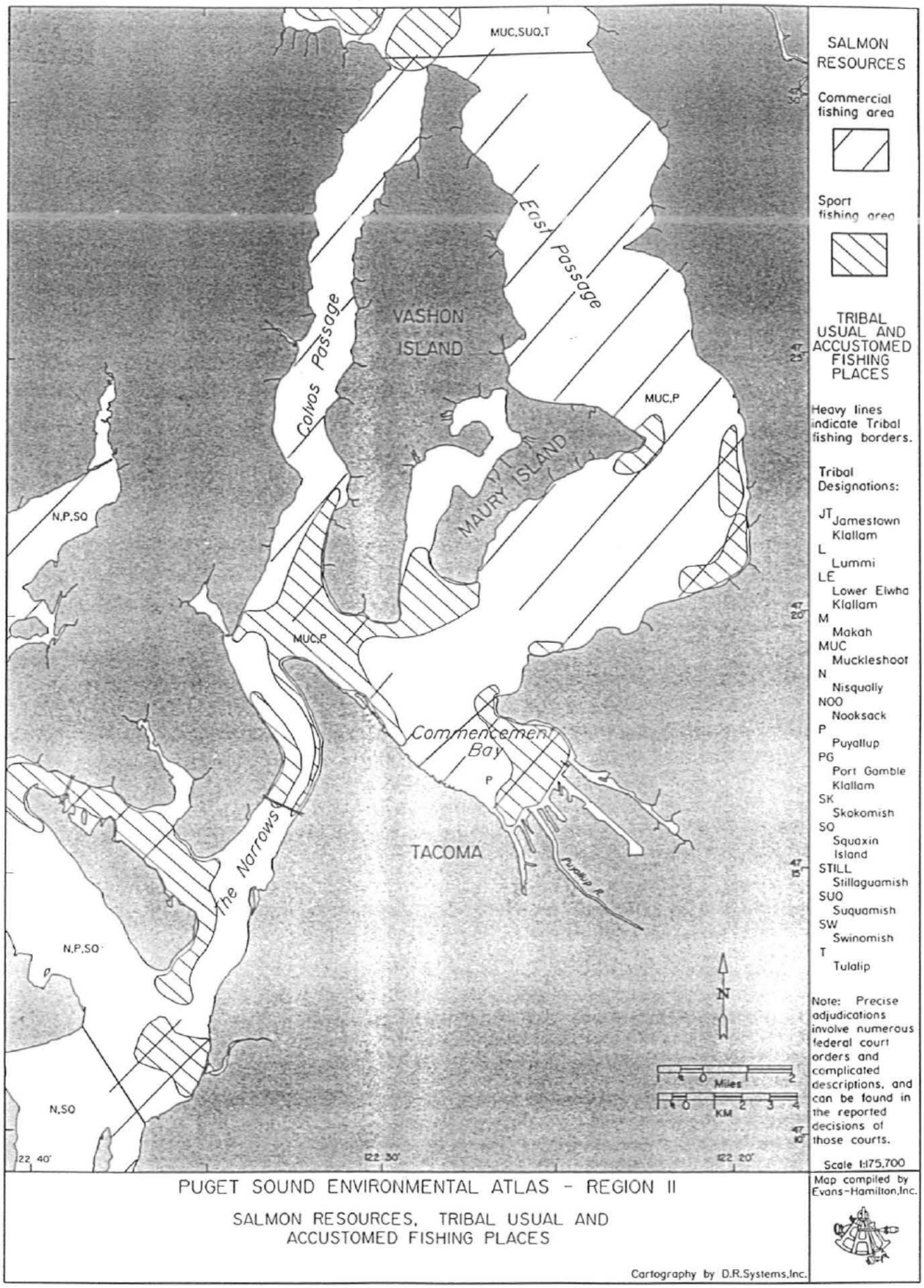

FIGURE 3-24 COMMENCEMENT BAY SENSITIVE AREA MAP

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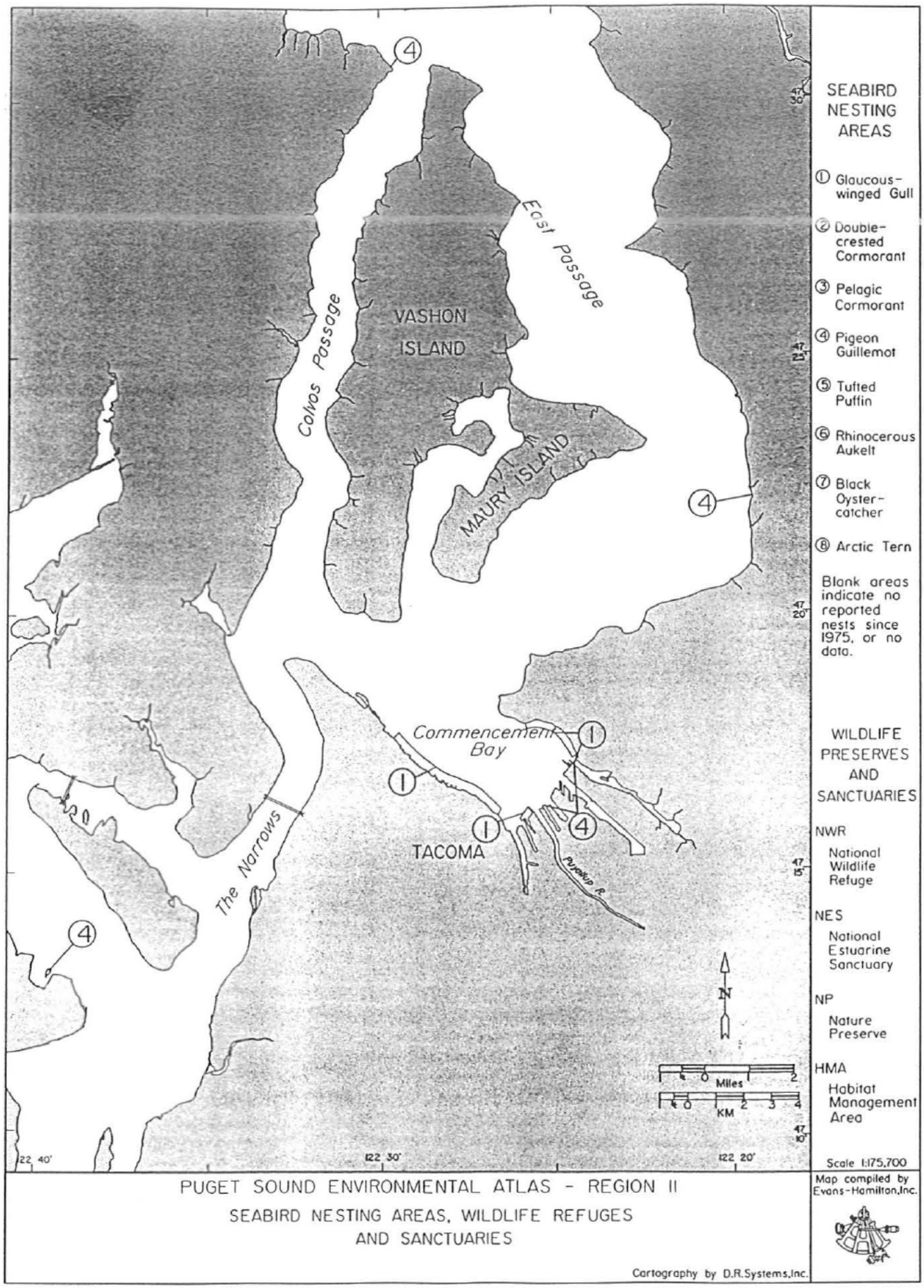

FIGURE 3-25 COMMENCEMENT BAY SENSITIVE AREA MAP

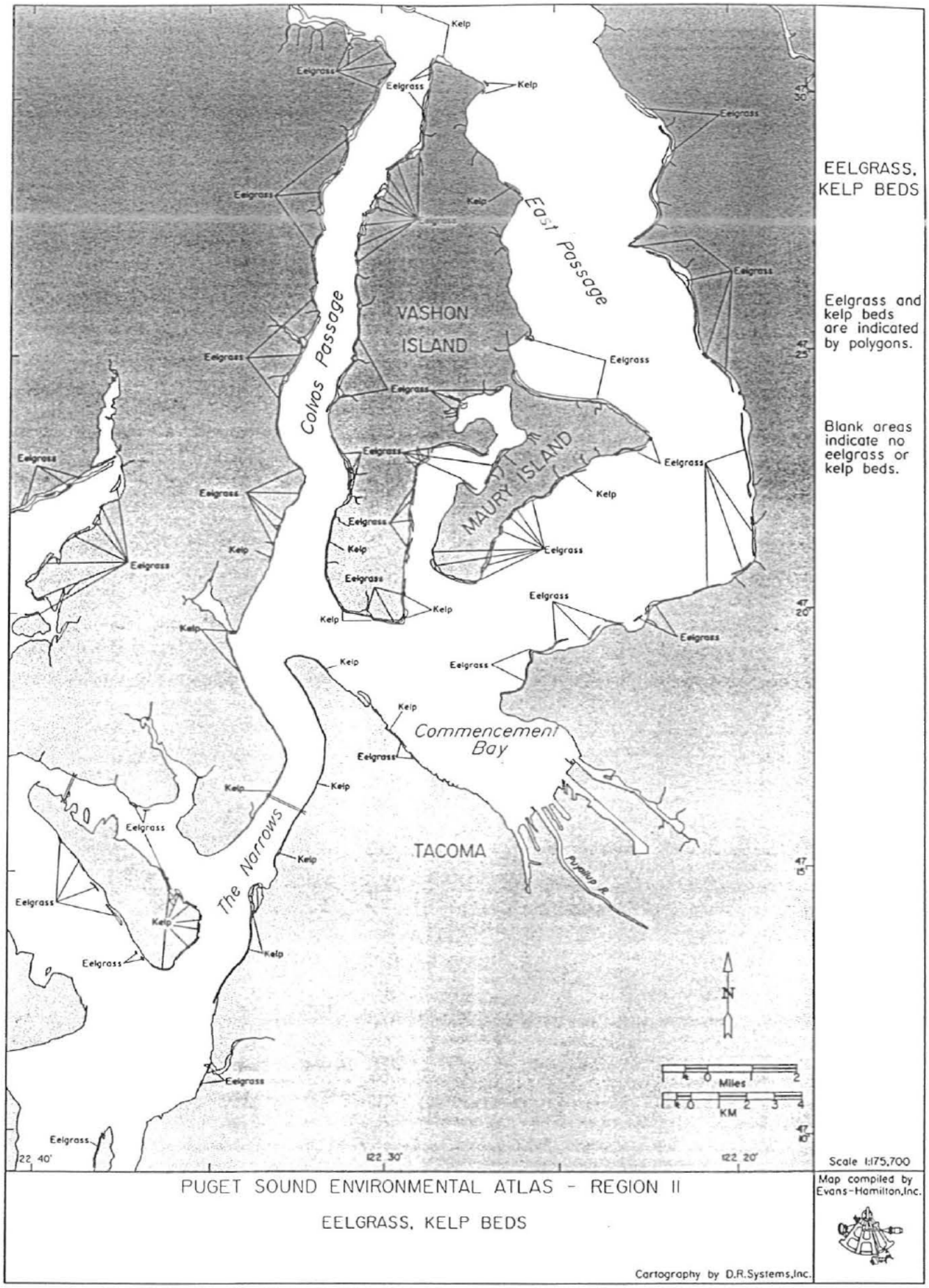

FIGURE 3-26 COMMENCEMENT BAY SENSITIVE AREA MAP

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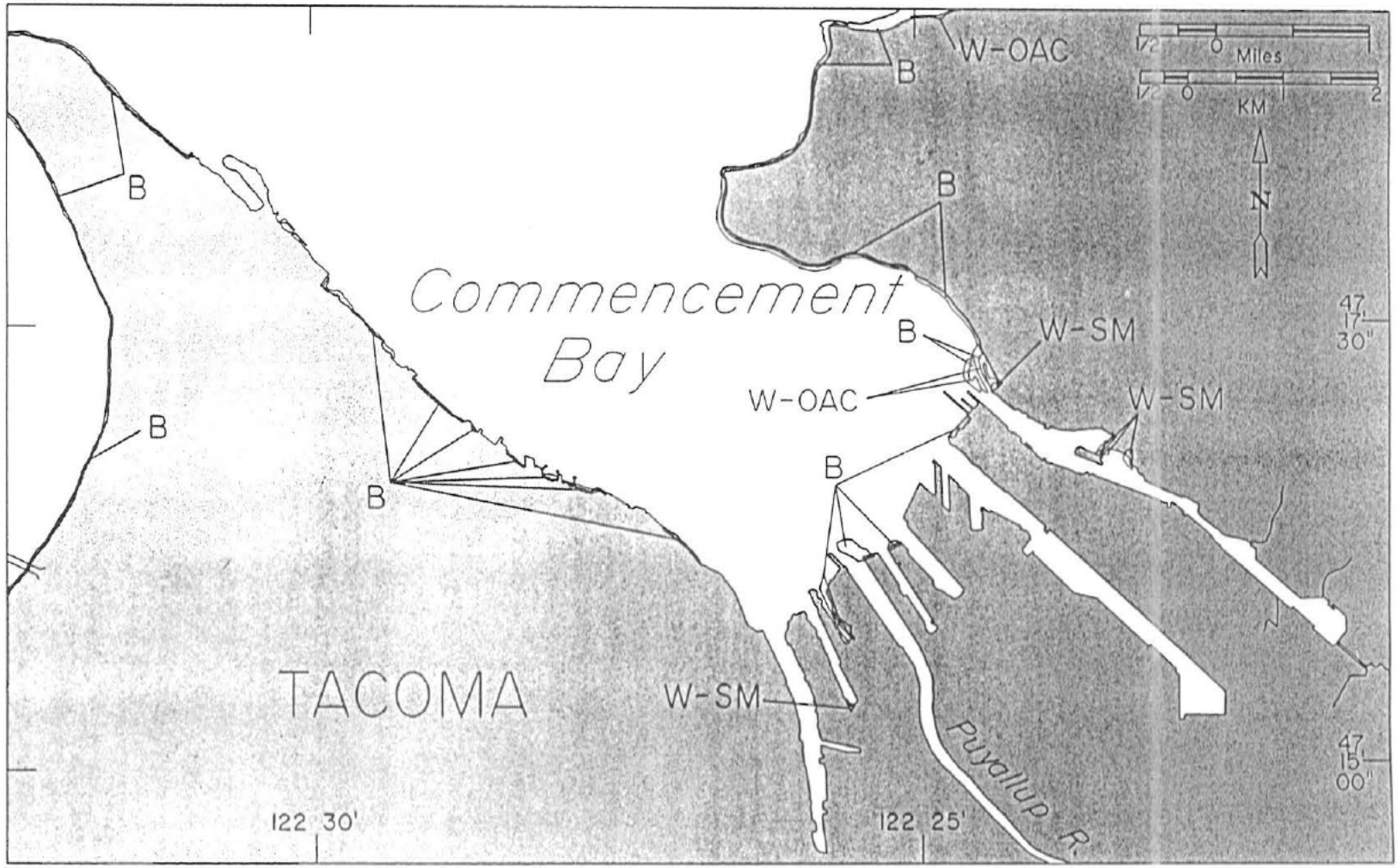


PUGET SOUND ENVIRONMENTAL ATLAS - COMMENCEMENT BAY

WETLANDS, INTERTIDAL SEDIMENT

Cartography by D.R.Systems,Inc.

Map compiled by Evans-Hamilton,Inc.

WETLANDS, INTERTIDAL SEDIMENT

W-BM	Brackish Marsh	W-SM	Salt Marsh	B-MF	Mixed fine material
W-BS	Brackish Swamp	W-SMD	Salt Meadow	B-MM	Mixed medium material
W-IFM	Inland Freshwater Marsh	B	Beach	B-Mud	Silt/clay or mud
W-CFM	Coastal Freshwater Marsh	B-Cob	Cobble	B-R	Rock
W-OAC	Other Algal Community	B-MC	Mixed coarse material	B-S	Sand

Scale 1:64,000

FIGURE 3-27 COMMENCEMENT BAY SENSITIVE AREA MAP

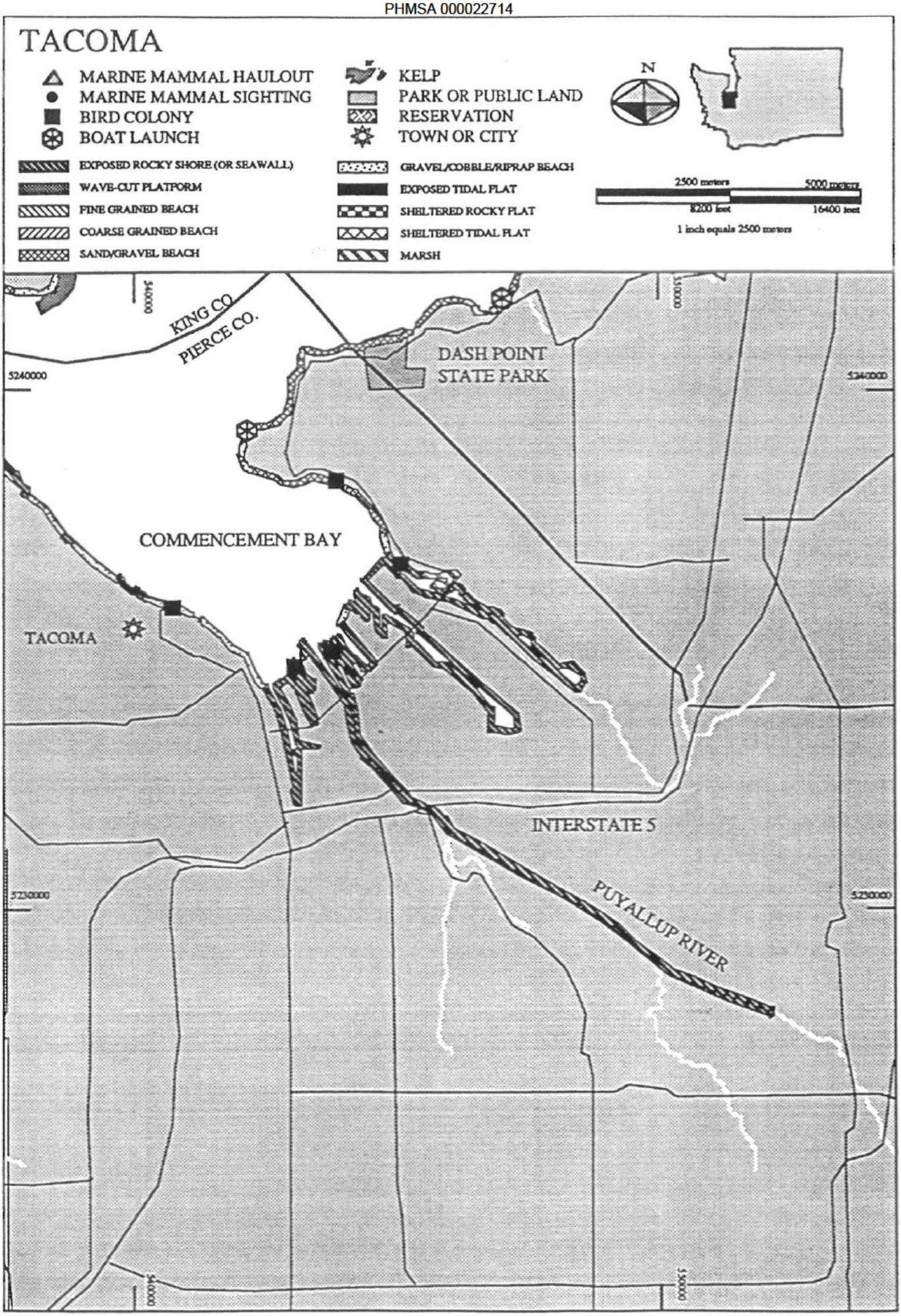


FIGURE 3-28 COASTAL SENSITIVE AREAS - TACOMA MAP

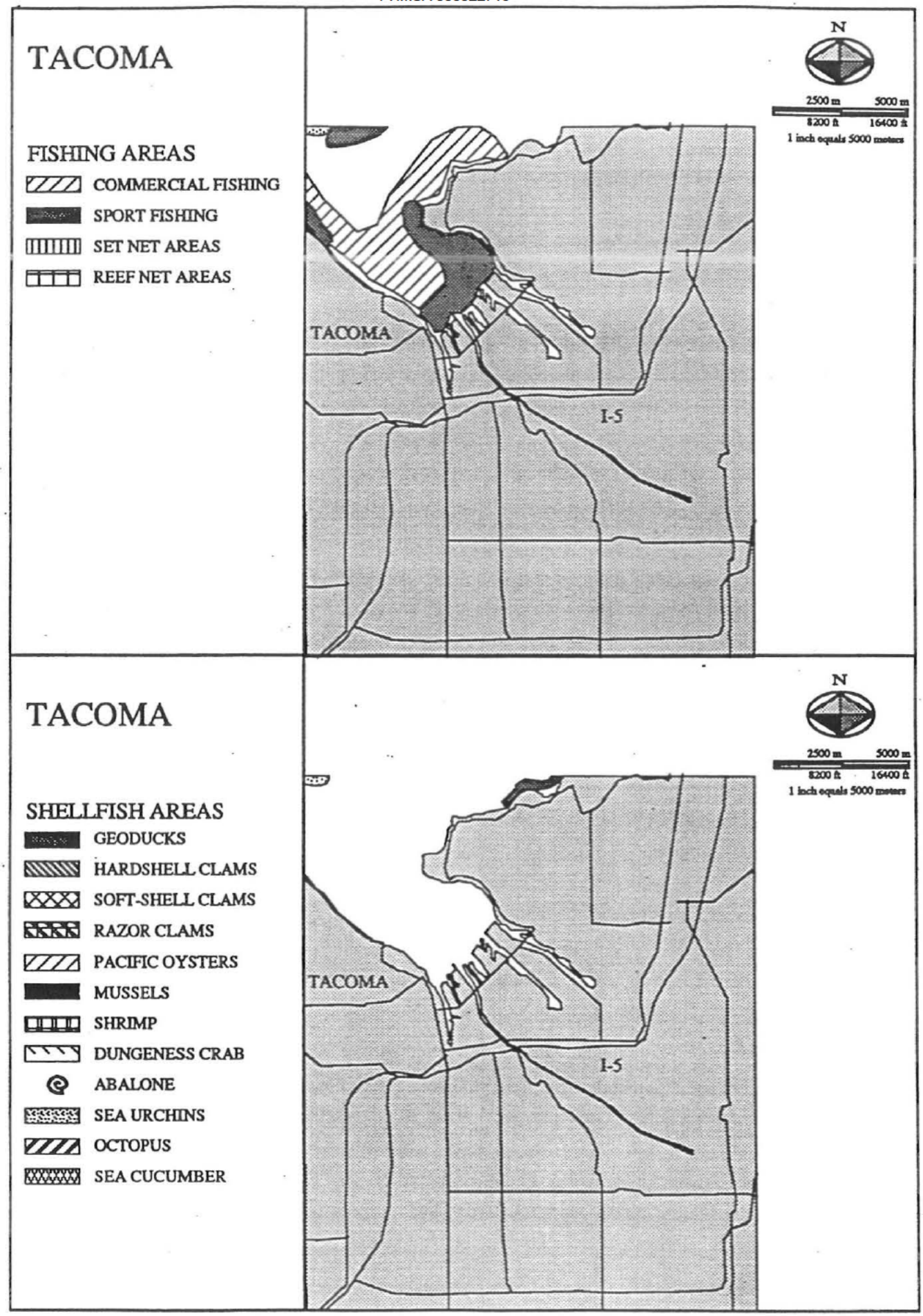


FIGURE 3-29 COASTAL SENSITIVE AREAS - FISHING AND SHELLFISH AREAS

Operations and Wildlife Branch personnel should refer to the Northwest Wildlife Response Plan and Policy, as found in Chapters 3000 and 9000 of the Northwest Area Contingency Plan (NWACP), regarding wildlife response operations, which are incorporated into this plan by reference.

Notifications

Any observations of oiled wildlife made prior to the establishment of an ICS, will be reported to the Washington Emergency Management Division.

Once an ICS has been established, all observations of oiled wildlife must be reported to the Operations Section, Wildlife Branch Director (or their designee) and to the Planning Section, Environmental Unit Leader (or their designee).

In addition, once an ICS has been established the United States Fish and Wildlife Service Response Coordinator in Lacey, Washington will be contacted to initiate the process of obtaining spill-specific authorizations related to oiled wildlife activities (see the Migratory Bird Treaty Act discussion below). The main office phone number and 24-hr pager number for after business hours/weekends is listed in Appendix C, Section C-3, List #3.

Private oiled wildlife care contractors listed in Appendix C, Section C-3, List #3 will be notified as required depending on the number and types of species affected. These contractors have varying abilities to provide service and personnel during response activities.

The following organizations, which are listed in Appendix C, Section C-3, List #3, have mobile wildlife rehabilitation trailers capable of being onsite within 24 hours - as required under WAC 173-182-540 and may be contacted 24/7:

- Clean Rivers Cooperative (Portland, OR)
- MSRC (Everett, WA)
- Washington Department of Fish and Wildlife (Fife, WA)

Permits

All oiled wildlife activities conducted during a spill response will be conducted in compliance with applicable state and federal regulations. The purpose of this section is to identify the state and federal permits required for activities related to the collection and care of affected wildlife.

Migratory Bird Treaty Act (Federal) - Oiled bird activities conducted during a spill response will be conducted in compliance with the Migratory Bird Permit requirement and spill specific authorizations. This act makes it illegal for anyone to take or possess any migratory bird except under the terms of a valid Migratory Bird Permit. As authorized by the Migratory Bird Treaty Act, the U.S. Fish and Wildlife Service issues Migratory Bird Permits to qualified applicants to recovery, temporarily posses, transport and rehabilitate oiled migratory birds. The majority of the oiled wildlife response organizations listed in number 6.10.1 (above) currently possess a valid Migratory Bird Rehabilitation Permit.

A rehabilitator must secure two separate *spill-specific* authorizations (in association with their Migratory Bird Rehabilitation Permit) in order to work with oiled birds during a response. The first authorization permits the rehabilitator (or their designee)

to recover and rehabilitate oiled (live) birds during the specific event. The second authorization permits the rehabilitator (or their designee) to collect and store dead oiled birds. The purpose of this second authorization is to ensure that the dead birds are handled, documented, and stored as "evidence" for later use. Spill-specific authorizations for Western Washington may be requested from the United States Fish and Wildlife Service Response Coordinator in Lacey. The main office phone number and 24-hr pager number for after business hours/weekends is listed in Appendix C, Section C-3, List #3.

Endangered Species Act (Federal) - Oiled animal activities conducted during a spill response will be conducted in compliance with the Endangered Species Act (ESA) requirements. A Migratory Bird Rehabilitation Permit (see above) authorizes the recovery, temporary possession, transport, and rehabilitation of oiled threatened and endangered species of migratory birds with no additional ESA permits required. In the event of an oil spill or hazardous substance release, the ESA must be considered in the development of Federal response activities and actions during an oil spill response (See Section 4314 of the Northwest Area Contingency Plan).

As the spill response occurs, the FOSC must consult with the natural resource trustees as laid out in Section V.B of the *Inter-agency Memorandum of Agreement Regarding Oil Spill Planning and Response Activities Under the Federal Water Pollution Control Act's National Oil and Hazardous Substances Pollution Contingency Plan and the Endangered Species Act (ESA MOA)*. The Environmental Unit will address ESA Section 7 Consultation requirements, as outlined in the ESA MOA.

Marine Mammal Protection Act (Federal) - Oiled marine mammal activities conducted during a spill response will be conducted in compliance with the Marine Mammal Protection Act (MMPA). Under the Marine Mammal Protection Act (MMPA) (16 USC 1361-1407), federal, state and local government officials, or designees of the relevant Secretaries of the Departments of the Interior and Commerce, may take marine mammals during the course of official response duties if such taking is for the protection or welfare of the mammal, the protection of public health and welfare, or the non-lethal removal of nuisance animals (16 USC 1379 Section 109(h)(1)).

Government contractors conducting officially authorized oiled wildlife spill response related activities and acting under the direct supervision of the Wildlife Branch Director are regarded as spill response employees and may take marine mammals *if the Wildlife Branch is activated* and if the Wildlife Branch Director is authorized pursuant to Section 109(h) of the Marine Mammal Protection Act and implementing regulations (USFWS, National Marine Fisheries Service, state wildlife agency, or is designated by the National Oceanic and Atmospheric Administration Regional Administrator under 16 USC 1382 Section 112(c)). "Take" is considered appropriate for the purposes of recovery and transport of marine mammals (live or dead) to a designated location, rehabilitation by an authorized facility, return to the wild, or for the collection of evidence.

If oiled wildlife spill response field personnel are contract employees of a non-government agency and not otherwise authorized pursuant to Section 109(h) or 112(c) of the Marine Mammal Protection Act, authorization to take oiled marine mammals during spill response activities must be obtained directly from the appropriate Federal trustee (USFWS or NOAA National Marine Fisheries Service). Likewise, if the Wildlife Branch is not activated, authorization to take oiled marine mammals must be obtained directly from the appropriate federal trustee (USFWS or NOAA National Marine Fisheries Service) pursuant to 16 USC 1382 Section 112(c).

Washington State Rehabilitation Permit (Washington State) – Oiled animal operations and facilities used during a spill response will be in compliance with Washington State Rehabilitators Permit requirements (WAC 232-12-175). WAC 232-12-175 states that it shall be unlawful for any person to possess wildlife for the purpose of rehabilitation unless they have a valid wildlife rehabilitation permit or they are working under the supervision of a person who has a valid wildlife rehabilitation permit. The permit is valid so long as the information in the permit remains current, the permit holder continues to meet the conditions and requirements of the permit, and provisions of the rule are followed. The majority of the oiled wildlife response organizations mentioned above and listed in Appendix C, Section C-3, List #3 currently posses, or work under, a valid Washington State Rehabilitation Permit.

Wildlife Branch

The Wildlife Branch is contained within the Operations Section of the ICS and its organizational chart may be found within the NWACP.

It is the policy of the Northwest Area Committee (NWAC) that representatives of the U.S. Fish and Wildlife Service (USFWS) will assume the positions of Director and Deputy Director of the Wildlife Branch. Washington Department of Fish and Wildlife representatives will assume these positions if a USFWS representative is not available, or if designated by a USFWS representative. Appointment of other parties, including Responsible Parties representatives, to one or both of these positions may be made by a USFWS representative or their designee at any time during an incident, and for such periods of time as may be deemed appropriate.

Unless otherwise indicated by USFWS, the Wildlife Branch Director position will be delegated to the Washington Department of Fish and Wildlife for spills that occur in Washington State. Delegation of the position may change during a spill of extended duration. The Wildlife Branch Director is responsible for overseeing all activities related to oiled wildlife recovery and rehabilitation during a response.

Currently, private wildlife contractors are typically used to provide the care for affected wildlife. *All* persons who will serve as part of the rehabilitation or field crews, however, must be trained in accordance with the site safety plan established for the incident and should be familiar with generally accepted published guidelines for collecting, cleaning, and rehabilitating oiled birds.

Oiled Wildlife Care Procedures

Federal (USFWS) policy requires that spill responders comply with the care standards outlined in *Best Practices for Migratory Bird Care During Oil Spill Response*, which is incorporated as a requirement of the NWACP. Additional information may be obtained in *Protocols for the Care of Oil-Affected Birds*.

- *Best Practices for Migratory Bird Care During Oil Spill Response*. US Fish and Wildlife Service. 2002
- *Protocols for the Care of Oil-Affected Birds*. Oiled Wildlife Care Network (UC Davis). 2000.

Oiled Wildlife Facilities, Equipment, and Personnel

The NWACP has established four response levels with regards to oiled bird operations: Level 4 (up to 15 animals), Level 3 (up to 100 animals), Level 2 (up to 500 animals), and Level 1 (more than 500 animals).

The equipment and facility infrastructure for oiled wildlife operations will be made available as needed during a spill response as established by Washington Department of Ecology in WAC 173-182-540.

Specific oiled bird rehabilitation facility requirements associated with space, water, and ventilation, have been established by the Washington Department of Fish and Wildlife in WAC 232-12-275. Current planning standards require that the equipment and facility infrastructure for Level 4 and Level 3 responses be capable of being onsite within 24 hours of spill awareness. The space, equipment, and personnel needs identified for these response levels are listed in the table at the end of this section.

Mobile oiled wildlife cleaning facilities necessary to meet WAC 173-182-540 will be provided through our cooperative agreement with MSRC. This capability is also reflected in MSRC's Primary Response Contractor application to Ecology. The personnel requirements listed in Table 3-15 will be met through the use of the oiled wildlife care contractors mentioned above and listed in Appendix C, Section C-3, list #3.

In the event of a spill resulting in impacted wildlife, one or more Mobile Rehabilitation Units (MRUs) (as necessary) will likely be established at U.S. Oil, where there is adequate space to stage the required intake and wash trailers, holding structures, and recovery pools that make up the MRU. Personnel support space will be provided in existing buildings or trailers brought to the site for this purpose. Electrical power will be provided by one or more stand-alone diesel powered generators. Fresh water will be supplied through hoses connected to existing on-site water sources or to a nearby fire hydrant.

Wastewater generated by the cleaning operations will likely contain surfactants and oils and could impact the refinery wastewater treatment plant. Therefore, wastewater will be stored in temporary storage tanks delivered to the site. Based upon the results of sampling and analysis, the wastewater will be processed in the refinery wastewater treatment plant or transported to an off-site disposal facility. This determination will be made by the Disposal Group Supervisor and approved by the Washington Department of Ecology.

3.6.3 Environmental Variables

Physical Geographic Features

The USOR facility is located in the Tacoma Tideflats Industrial Development District on the Blair Waterway. The refinery and Marine Terminal dock, like much of the Tacoma tide flats, was brought to the present grade using hydraulically placed dredge material. This substrate material consists predominately of fine to medium sand and clayey silt to silty clay. The general topography of the USOR facility is level with an elevation approximately 11 feet above mean sea level. All surface areas at the refinery and Marine Terminal dock area are within the Blair Waterway drainage area. The properties surrounding the facility drain to the Lincoln Avenue ditch. All storm water from the USOR facility is collected and treated on the facility before discharging. USOR facility plot plans denoting site topography, stormwater and other drainage systems, mooring areas, pipelines, tankage, and other oil processing, storage, and transfer areas are located in Appendix H.

Table 3-15
NWACP Level 3 & 4 Bird Care Requirements

Infrastructure/Personnel	15 Birds (NWACP Level 4)	100 Birds (NWACP Level 3)
Ventilated and heated interior space (total sqft)	800	2400
Interior personnel support space (total sqft) [1]	400	2500
Exterior space for pools (total sqft)[2]	300	1800
Search and collection space (total sqft)	280	280
Number of pens (combined pre-wash and drying, 4'x8'each)	5	10
Number of wash/rinse stations	1	2
Number of 12' diameter pools	1	6
Maximum daily volume of conditioned fresh water (wash stations) required (gallons)[3]	900	6,000
Maximum daily volume of unconditioned fresh water (pools) required (gallons) [4]	14,450	86,700
Number of management level personnel	4[5]	9[6]

[1] This space is required for administrative activities, volunteer/workforce support and coordination, and laundry services associated with a response but is not required to be on the same site as the rehabilitation facility.

[2] This space required for the pools and their associated surrounding workspace (at least 4').

[3] Conditioned water refers to water that has been adjusted to a hardness of 2-3 grains (if needed) and is maintained at a temperature of 104°F - 106°F, with a pressure 40-60 p.s.i., and a flow rate of 4 gallons/minute.

[4] Each pool is required to have an exchange rate of 4.25x per day to eliminate oil and waste products. The volumes of water listed assume that no filtration and recirculation systems will be used. It is anticipated that required water volumes could be decreased substantially (>90%) if appropriate filtration, oil-separation, and recirculation systems were utilized. [5] One each, Wildlife Branch Director, Wildlife Veterinarian, Bird Recovery and Transportation Unit leader, Rehabilitation Unit leader. Additional Management Functions to be performed by these staff: Deputy Wildlife Branch Director, Bird Recovery and Rehabilitation Group Supervisor, Wildlife Reconnaissance Group Supervisor, Hazing Unit leader, and Volunteer Unit leader.

[6] One each, Wildlife Branch Director, Deputy Wildlife Branch Director, Wildlife Veterinarian, Bird Recovery and Rehabilitation Group Supervisor, Wildlife Reconnaissance Group Supervisor, Volunteer Unit leader, Hazing Unit leader, Bird Recovery and Transportation Unit Leader, and Bird Rehabilitation Unit leader.

The Blair Waterway is one of eight waterways constructed during the past few decades to provide port access to numerous industries in the tideflats area. The Blair Waterway is approximately 2 1/2 miles in length; the USOR docks are located approximately half way down the length of the waterway, 1 1/4 miles from Commencement Bay. The waterway is about 40 feet deep at its deepest points. The waterway is 1000 feet wide at the USOR docks and narrows at the former Eleventh Street bridge crossing.

Natural Resources

Natural resources in the Commencement Bay area include:

- Salmon - including commercial and recreational harvests
- Eel grass and kelp - small area along the western shoreline
- Bird Colonies

No listed endangered or threatened species in southern Commencement Bay are indicated in resources available at the time of writing this plan.

Public Resources

The following public resources, which are identified in Figure 3-30 are located in the Commencement Bay area:

- Point Defiance Municipal Park - west shoreline
- Browns Point Lighthouse Municipal Park - east shoreline

No drinking water supplies are drawn from Commencement Bay or any shallow aquifers in the area.

The nearest marina is the Narrows Marina located at 6th Ave., Tacoma.

Seasonal Hydrographic and Climatic Conditions

Weather conditions vary seasonally in western Washington. The winter months (December through February) are characterized by a fairly consistent low pressure system that hovers off the eastern end of the Aleutian Island chain and is responsible for most of the winter storms encountered in Puget Sound. Winds in southern Puget Sound are generally from the south in the winter.

During the spring months (March through May) a fairly permanent high pressure system located off the southern California coast migrates northward. Weather fronts become weaker and only occasionally reach the coast of western Washington.

The summer months (June through August) are characterized by a generally well-developed high pressure system. Gale force storms are very rare during these months. Winds in southern Puget Sound are usually from the north.

The high pressure system weakens during the autumn months (September through November) and retreats southward. If the high pressure system persists, an "Indian summer" is common, resulting in clear, warm weather. However, by late October low pressure systems become dominant once again and the rains return.

Hydrographic and climatic data conditions, which are recorded in Commencement Bay, are used in this plan since these conditions are assumed to be similar to those in the Blair Waterway.

Wind direction in the Commencement Bay area is generally from the Northeast during October through May and Southwest during June through September. Wind speed varies according to seasonal weather patterns (see Table 3-16).

Visibility depends greatly upon the season; radiation fog is most common between December and February.

Approximate day lengths at Commencement Bay are included in Table 3-17.

Tidal current charts document current speed and direction as weak and variable in Commencement Bay. Net surface water current recorded near the mouth of the Puyallup River is 1.27 m/s (2.5 knots) in a NNE direction. Current speeds within the Blair Waterway are not expected to exceed 0.5 m/s (1 knot).

Tidal fluctuation ranges from a mean high water of 11.8 ft (Mean Sea Level 6.8 ft) to a mean lower low water of 0.0 ft. The maximum high and low tides are approximately 12.3 and -2.4 ft, respectively.

Table 3-16

Wind Velocity - Commencement Bay, Tacoma

		Velocity (knots)
Winter		
	Ave.	6.4 - 8.6
	Max.	48
Spring		
	Ave.	6.2 - 8.3
	Max.	40
Summer		
	Ave.	5.4 - 7.2
	Max.	28
Autumn		
	Ave.	5.3 - 7.6
	Max.	57

Table 3-17

Day Length - Commencement Bay, Tacoma

Month	Day Length (hours)
January	8:33
February	9:36
March	11:08
April	12:54
May	14:30
June	15:42
July	15:51
August	14:53
September	13:18
October	11:37
November	9:57
December	8:44

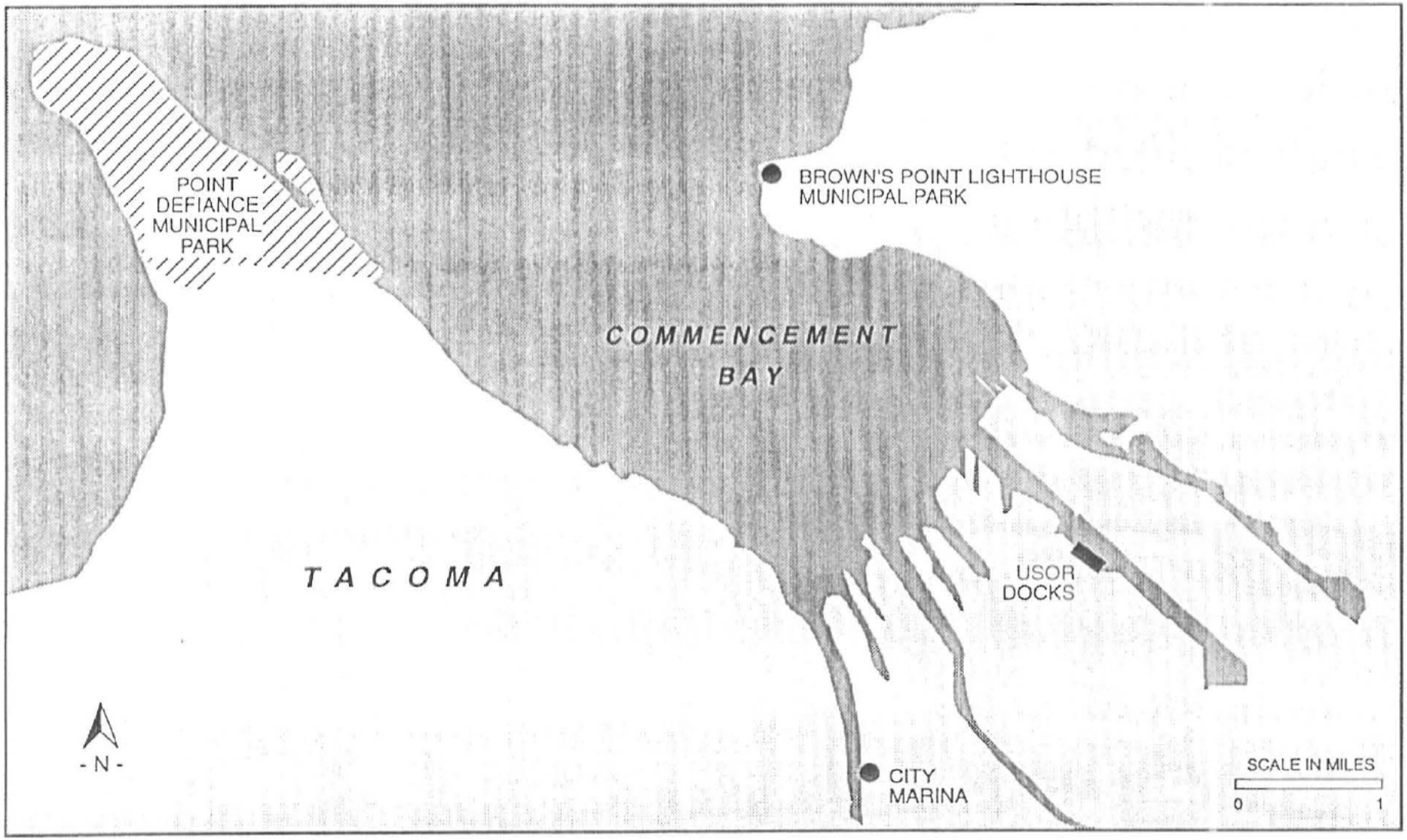


FIGURE 3–30 COMMENCEMENT BAY PUBLIC RESOURCES

3.7 RESPONSE ACTIONS SPECIFIC TO THE MCCHORD PIPELINE

The purpose of this section is to identify overall emergency response initial actions as well as discuss response strategies at the following locations along the pipeline: Puyallup River, Clear Creek, Swan Creek at North end of Swan Creek County Park, Swan Creek at intersection with Tacoma Pipeline Road, Swan Creek at intersection with 80th Street East, Clover Creek at intersection with 47th Ave. SW and Clover Creek at intersection with Pacific Highway.

3.7.1 EMERGENCY RESPONSE INITIAL ACTIONS

For product releases from the McChord Pipeline Co., the following initial actions will be implemented:

1. Stop all cargo transfer.
2. Initiate notification of USOR spill response team. (See Appendix C)
3. Alert emergency response contractors to stand by.
4. Locate spill source; close, lock-out and tag the block valves to isolate the release site; turn off rectifier.
5. Upon determination of the release site:
   - To ensure personnel safety, eliminate known sources of ignition where a spark could be present and establish a safety zone around the spill area..
   - Dispatch emergency response contractors and arrange for mobilization of environmental control trailer.
   - Assess the spill, including: spill classification, safety/health hazards, oil type, estimate spill size and movement, weather conditions.
   - Set up command post and identify spill response staging area.
   - Implement site Health & Safety Plan
6. Initiate appropriate response actions. These may include:
   - Surveillance
   - Containment on land
   - Sorbent deployment
   - Vacuum truck deployment
   - Containment on water using any combination of booming and oil recovery such as skimmers and vacuum trucks
7. As necessary, consult section 3.5 of this document for additional long term spill response strategies.

3.7.2 VULNERABILITY ANALYSIS

The purpose of the vulnerability analysis is to address the potential effects to human health, property or the environment resulting from the worst case release of JP-8 jet fuel which is considered a non-persistent oil. The planning distance for non-persistent oils discharged into tidal waters is 5 miles downstream from the McChord Pipeline Co. Puyallup River crossing. The waters from Commencement Bay including all waterways to Brown's Point would be tidally influenced by a worst case release:

Vulnerable areas located within a 5 mile radius downstream of the McChord Pipeline Co. Puyallup River crossing include the following:

- Point source water discharges located in Figure 3-22.
- See Section 3.7.2 for areas of concern along the Puyallup River.
- Businesses and residences are located along the shoreline perimeter of Commencement Bay.
- Fish, wildlife, wetland, flora and fauna sensitive areas are identified in Figures 3-24 through 3-29 as well as the geographic response plans located in Appendix I.
- Recreational areas including beaches, marinas and parks are identified in Figures 3-23, 3-24, 3-28, 3-29 and 3-31 as well as geographic response plans located in Appendix I.
- Major transportation routes include the following:
  - ⇒ Commencement Bay is used extensively for ship traffic entering the Port of Tacoma as well as other numerous maritime related industries located along the waterways that feed into Commencement Bay.
  - ⇒ Roads crossing the Puyallup River include 11th Street, Lincoln Ave, Pacific Highway and I-5.
  - ⇒ Railroads crossing the Puyallup River include Burlington Northern Railroad and the Union Pacific Railroad.

Additional vulnerable areas are located proximal to the McChord pipeline between the USOR and McChord A.F.B. These area are identified in the USGS maps located in Appendix H:

- Utility Crossings - A detailed listing of utility crossings proximal to the McChord Pipeline are noted in Field Investigation Reports maintained by USOR's Engineering Design Department.
- Numerous private residences, businesses, shopping centers, churches and schools
- Blair Waterway
- Puyallup River
- Commencement Bay
- Cog-le-hi-te wetland area
- Clear Creek, Swan Creek, Clover Creek
- Swan Creek Park
- Steilacoom Lake

The following environmental information regarding Clear Creek, Swan Creek and Clover Creek was extracted from the 1975 Washington Department of Fish and Wildlife publication titled "A Catalog of Washington Streams and Salmon Utilization, Volume 1, Puget Sound".

Clear Creek

Clear Creek, which enters the Puyallup River, is approximately 4 miles long. The greatest environmental risk along the pipeline is where it crosses Clear Creek. Clear Creek supports resident native fish species as well as a spawning population of coho salmon. Clear Creek is located such that it serves as part of the critical juvenile acclimation zone. This creek also provides a fair habitat for the spawning and rearing of coho salmon. Factors limiting salmon production in this area have been largely attributed to residential developments, agricultural spraying and chanellizing projects associated with flood control and storm drainage problems in general. Maintaining fish production potential in this creek includes preserving and improving stream bank cover and restricting dredging operations in the lower Puyallup River, however, the problem of water quality continues to be a limiting factor of significance.

This stream is characterized by low flows in the summer and periods of seasonal flooding during periods of high precipitation throughout the winter months.

Adult coho salmon begin entering the Puyallup River in late July and continue will into December. Spawning commences about mid-October and continues in some areas until mid-January. Following emergence from the gravel, the juvenile coho characteristically remain in the system more than a year, migrating to sea early in their second year of fresh-water life. The bulk of this migration occurs between early March and early August. This timing pattern is generally believed to be the same in adjacent drainage areas such as Clean Creek.

Swan Creek

Swan Creek, which is a tributary of Clear Creek, also contains a run of coho salmon in the lower reaches of the available habitat. The pipeline crossing of this creek is considered a lower risk from a fish standpoint since it crosses Swan Creek several miles upstream of the point limiting coho salmon migration. See also the discussion for Clear Creek.

Clover Creek

Clover Creek originates from springs and groundwater drainage approximately 6 miles east of Spanaway in suburban residential area. Its North fork heads 3 miles east of Brookdale and Parkland and flows approximately 13 miles northwesterly through McChord A.F.B. and the heavy residential and business districts of Lakewood into Lake Steilacoom. Spanaway Creek, a tributary of Clover Creek, is formed by springs and marshes that drain through Spanaway Lake and converges with Clover Creek at McChord A.F.B. Tule Lake also drains into Spanaway Creek. Natural springs, lakes, ponds and marsh areas all provide seepage, either directly or indirectly, to Clover Creek to sustain summer flows. This stream is also characterized by periods of high flows and possible seasonal flooding during periods of high precipitation throughout the winter months. Clover creek remains near its natural state except where it enter McChord A.F.B. Here it has been placed in straight sections of formal channel for several miles. It is also contained within a concrete underground culvert below the runways at McChord A.F.B. and under the I-5 freeway. Land use within the watershed remains largely residential. Clover Creek contains resident native fish species, however, no salmon utilize this drainage upstream of this lake since a formal dam controls the flow at the outlet of Lake Steilacoom thereby creating a block to fish passage.

Chambers Creek is approximately 4 miles long and is characterized by widths up to 25 feet and varies in depth from 6 inches to 2 feet. It contains excellent gravel and good pool-riffle ratios with a moderate gradient. Deciduous trees and growth overhang the banks and provide excellent shade and cover except in the upper section where residences abut the stream. Chambers Creek, which flows out of Steilacoom lake and into Chambers Bay, does contain four species of salmon including chinook, coho, chum and sockeye.

Factors limiting fish production along Clover Creek include little or no flow in the upper sections of this creek going dry summer months, higher water temperatures associated with low summer flows, the urbanization of rural areas which increases siltation and destabilizes stream bed flows, and affects on water quality attributed to drainage from storm systems and septic systems.

The reproductive phase is by far the most sensitive stage in the life cycle of any fish species. In the early stages of development any exposure to toxins can potentially alter the development of an embryo. All three of these creeks have juvenile fish species present year around in various life history stages. JP - 8 exposure is acutely toxic to all aquatic organisms as well as birds and mammals that may be exposed during a spill event.

Wellhead Protection Areas

The McChord Pipeline travels through an area designated as a sole source aquifer. According to the Tacoma-Pierce County Health Department, the McChord Pipeline lies within wellhead protection areas that consist of the following water districts:

- Lakewood Water District
- Parkland Light and Water
- City of Tacoma Water Division
- SE Tacoma Mutual Water

These wellhead protection areas, which partially overlap with each other, as well as the Pierce County Aquifer Recharge Area are depicted in Appendix H. Ecology as well as the Tacoma-Pierce County Health Department maintain records on private well owners throughout Pierce County, however, these records are not maintained in a database such that private well owners along the pipeline can be easily identified and contacted. In the event of an emergency, USOR will initiate notifications relative to wellhead protection areas and private well owners by contacting both the Pierce County Department of Emergency Management and the Fire Department. As necessary, USOR will contact the affected wellhead protection area(s) separately using the phone numbers listed in Appendix C, Section C-5, List #5. The Tacoma-Pierce County Health Department continues to assist water system purveyors in the development of their Wellhead Protection Programs and to provide the framework for local implementation of these programs. USOR's Oil Spill Response Plan will be updated to include pertinent wellhead protection information as it becomes available in the future.

3.7.3 MCCHORD PIPELINE GEOGRAPHIC RESPONSE PLAN

With assistance from Ecology, the first GRP was developed for McChord Pipeline during August 1997 and incorporated into Section 3.7 of the Facility Oil Spill Response Plan. During December 1999, Ecology enhanced the GRP for McChord Pipeline and reorganized this information into their standard GRP format. Ecology's December 1999 McChord Pipeline GRP supercedes that which was developed in August 1997. Therefore, the finalized McChord Pipeline GRP has been incorporated into Appendix L of this document and the original GRP located in Section 3.7 has been removed.

The following paragraphs discuss USOR's ability to meet the benchmark requirements for oil transmission pipelines. Table 3-18 provides the containment boom requirements necessary to protect each of the sensitive areas/pipeline waterway crossings along the McChord Pipeline. It is important to re-iterate that the overall length of McChord Pipeline is 14.25 miles. From USOR's refinery, all points along this pipeline are accessible within one hour of being notified that a spill event has occurred.

Table 3-18

McChord Pipeline Sensitive Area GRP Boom Requirements

GRP Number	Location	Feet of Boom Required
S-2	Cog-le-hi-te wetland	200'
S-3A	Clear Creek upstream of River Road crossing	50'
S-3B	Clear Creek upstream of River Road crossing	25'
S-3C	Clear Creek upstream of River Road crossing	50'
S-4	Swan Creek holding pond	100'
S-6	Storm retention pond North of Waller Road & Pioneer Way intersection	25'
S-6A	Storm retention pond on 40th St. East	25'
S-12	Erdahl ditch	500'
S-5	Swan Creek downstream of 80th St. East crossing	25'
S-5A	Roosevelt Ditch North of 72nd St. East crossing	25'
S-5B	Roosevelt Ditch North of 80th St. East crossing	25'
S-5C	Swan Creek at Tacoma Waterline crossing	25'
S-5D	Storm retention pond at 5805 Waller Road, headwaters of Squally Creek	25'
S-9	Parkland Ditch at "A" St. South	15'
S-10A	Parkland Ditch at 11th Ave. Ct. South	3 sections @ 25' each
S-7	Mouth of Clover Creek at Lake Steilacoom	200'
S-7A	South of Interlaaken Drive bridge across Lake Steilacoom	1500'
S-7B	Passage at Lake Steilacoom Point to mouth of Chambers Creek	500'
S-8	Clover Creek upstream of the Pacific Hwy crossing	100'

Containment Boom Planning Standards

USOR maintains 250' of containment boom in a mobile environmental trailer staged at warehouse #4 and 100' of containment boom pre-staged in a storage shed located where Swan Creek flows under 80 St. East. This containment boom is available to respond to all GRP's located in Table 3-17. Appendix G contains a listing of additional response equipment stored in both the environmental trailer and the storage shed. The exact location of the storage shed is also noted on the McChord Pipeline maps contained in Appendix H.

Additional containment boom listed in Table 6-6 is also available to protect sensitive areas/pipeline waterway crossings along McChord Pipeline. Containment boom necessary to respond to GRP's S-2 and S-12 would likely come from the MSRC vessels moored at USOR's Marine Terminal whereas additional containment boom necessary to respond to GRP's S-7, S-7A, S-7B and S-8 would likely come from one of the MSRC vans staged at USOR's Marine Terminal.

Containment boom deployment at various locations may require the use of a trailered workboat. MSRC maintains a trailered workboat at USOR's Marine Terminal. The Snipe, which is located at USOR's Marine Terminal, can be readily loaded onto a trailer and utilized to deploy containment boom.

Oil Recovery Planning Standards

(b) (7)(F)

[redacted]

The following skimmers are able to respond within 6 hours to a release involving a response on Lake Steilacoom.

- Perigrine - This is a MARCO lifting belt skimmer located on a trailer in Everett and owned by MSRC. This skimmer has a derated capacity of 3,588 barrels per day and a storage capacity of 28 barrels.
- Merlin - This is a MARCO lifting belt skimmer located on a trailer in Everett and owned by MSRC. This skimmer has a derated capacity of 3,588 barrels per day and a storage capacity of 28 barrels.

The following vacuum trucks would be given initial consideration for responding to a release along the McChord Pipeline.

- Guardian Industrial – This company has 3 – 70 bbl vacuum trucks which are capable of being on-site within one hour of being notified that there has been an oil release.
- Non-Dedicated vacuum trucks can also be provided by Cowlitz Clean Sweep, who is one of MSRC's STARS contractors.

Interim Storage Planning Standards

The planning standard compliance demonstrations contained in Table 6-8 are also applicable for meeting the interim storage benchmarks for transmission pipelines. The interim storage identified in this table would also be able to keep up with the pace of oil recovery. Additional interim storage that is also available includes the above-mentioned vacuum trucks for Guardian Industrial and Cowlitz Clean Sweep.

Clear Creek Flood Gate

The flood gate located at the mouth of Clear Creek is owned by the Port of Tacoma and operated/maintained by WA Dept. of Transportation. This flood gate is electrically operated with generator backup and can be opened/closed manually. When closed, the gate not only prevents water from flowing from Clear Creek into the Puyallup River but also prevents water from backflowing into the nearby Clear Creek flood zone. The flood gate can also be adjusted to allow Clear Creek to underflow into the Puyallup River while trapping floating oil on the upstream side of the flood gate.

The Clear Creek flood zone, which is owned by the Port of Tacoma, is located on the South side of River Road and the West side of Clear Creek. The land located on the East side of Clear Creek, which is not part of the flood zone, is owned by the Puyallup Indian Tribe.

4.0 WASTE DISPOSAL PLAN

4.1 Waste Disposal Introduction

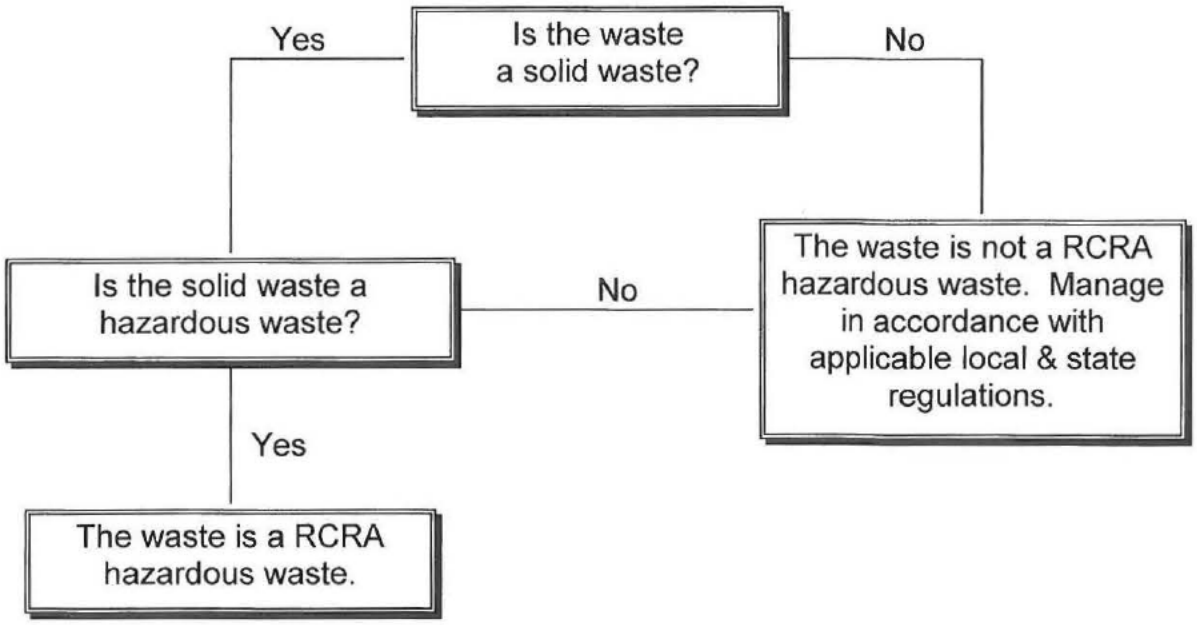
It is USOR's policy to manage the cleanup of an oil spill waste in accordance with all applicable federal, state and local regulations. At a minimum, these actions will be conducted using waste management, disposal and tracking policies/procedures outlined in the National Oil and Hazardous Substances Pollution Contingency Plan, Northwest Area Contingency Plan, Statewide Master Oil and Hazardous Substance Spill Contingency Plan, WAC 173-303, WAC 173-304, and USOR's NPDES waste discharge permit (#WA 000178-3). Whenever possible, USOR will first attempt to recycle and reuse recovered oil and oiled debris thus reducing the amount of oily debris requiring incineration or disposal. This chapter discusses the collection, storage, characterization, and disposal techniques that will be considered for each type of oily wastes. NWACP Section 9620 titled "Washington State Disposal Guidance" is incorporated into this chapter by reference.

4.2 Waste Identification

To ensure that oily waste is managed properly, actions will be taken to properly designate the waste in accordance with applicable hazardous waste regulations. The simplified flow diagram in Figure 4-1 depicts the basic decision process that must be followed to determine the requirements necessary to manage each oily waste. This decision making process involves using generator knowledge, analytical testing or both. Where analytical tests are required, the sampling and testing will be conducted in accordance with WAC 173-303-110. Waste that meets hazardous waste criteria will be managed in accordance with applicable hazardous waste regulations.

Figure 4-1

Oily Waste Identification Process



For purposes of this chapter, oily waste includes recovered oil/water mixture, absorbent pads/booms, protective clothing/gear, oily soil/logs/vegetation, oil contaminated equipment, and decontamination solutions. There is also the potential for the collection of oiled animal carcasses during a cleanup action. However, per the Northwest Area Contingency Plan, the collection and management of these carcasses is the responsibility of the Washington Department of Wildlife in conjunction with the U.S. Fish and Wildlife Service.

4.3 Interim Storage For Waste Materials

NWACP Section 9620 , Subsection III titled "Interim Storage, Segregation and Tracking" is incorporated into this section by reference. The information contained in this section, which supplements that which is contained in the above-referenced NWACP section, discusses interim storage requirements for each of the identified waste materials that are likely to be generated during an oil spill response/cleanup. Interim storage sites will be set up in a manner that will prevent leakage and subsequent contact/absorption of oil by the soil.

Recovered Oil/Water Mixture

This consists of hydrocarbon/water mixtures collected from the ground or water after a spill. Typically, oil will be collected using vacuum trucks, pumps, slurps or skimmers. From these sources, the recovered oil/water mixture will be continuously transferred to available portable or stationary interim storage identified in Table 6-3 using applicable manifesting, labeling and placarding. Since the interim storage consists of closed structures, there are minimal emissions of volatiles into the air. Also, there is no additional site approval requirements for either the portable or stationary interim storage structures. USOR maintains an adequate daily interim storage capacity which is equivalent to twice the effective daily recovery rate required at the scene of the spill. Interim storage capacity required to meet Ecology's benchmark requirements is identified in Tables 6-5 and 6-8. In addition, USOR also has an average of 400,000 bbl of crude oil tankage which can be utilized as interim storage for recovered oil/water. Crude oil tankage capacities are identified in Table 5-5. (b) (7)(F) [redacted] as identified in Section 2.2.

Recovered oil/water will be transferred to USOR's refinery for processing since this is considered a raw material feedstock. This material will be transported to recovered oil tankage at the refinery using tank trucks, the refinery-to-dock pipeline or a combination of both. Recovered oil tankage is located in secondary containment structures consisting of earthen berms. As stated in Section 2.2, USOR's refinery has the capability to process up to 39,000 barrels per day of crude oil/recovered oil. This production capacity directly increases the amount of interim storage capacity that can be made available on a daily basis. Site security measures for the refinery and dock are discussed in Chapter 11.

As discussed in the Northwest Area Contingency Plan, Decanting will be considered on a case by case basis. See Section 3.5.10 for a discussion of decanting operations and Table 3-11A for a copy of the Oil Spill Decanting Authorization Form.

Absorbent Pads/Booms

This waste consists primarily of oil soaked absorbent pads/booms. These materials will be collected at the point of generation and placed in lined storage barrels, plastic bags, or a combination of both. Absorbent pads/boom collected in plastic bags, if generated in large volumes, will be placed into 25-30 yard roll-off dumpsters supplied by the local Pierce County municipal waste hauler or other approved waste hauler.

These dumpsters are equipped with screened covers. Barrels will be used to package smaller volumes of this waste material. Drummed material will be transferred to the refinery and stored in the hazardous waste storage area, which consists of a bermed concrete pad that drains to the refinery wastewater treatment system. Prior to content disposal, roll-off dumpsters will be transported and staged at the refinery in an area that drains to the refinery wastewater treatment system. Manifesting, labeling and placarding will be used as necessary during the transport of this material from the spill site to the refinery.

Emissions of volatiles into the air will be minimized since the absorbent pads will be placed into closed drums or sealed plastic bags. Due to the portable nature of these interim storage modes, there is no additional site approval requirements for the staging of this material prior to disposal. Site security measures for the refinery and dock are discussed in Chapter 11.

Protective Clothing/Gear

This waste consists of protective clothing and gear that is no longer useable due to oily contamination. This material will be collected at the point of generation and placed into lined storage barrels, plastic bags, or a combination of both. Protective clothing and gear collected in plastic bags, if generated in large volumes, will be placed into 25-30 yard roll-off dumpsters. These dumpsters are equipped with screened covers. Otherwise, barrels will be used to package smaller volumes of this waste material. Drummed material will be transferred to the refinery and stored in the hazardous waste storage area, which consists of a bermed concrete pad that drains to the refinery wastewater treatment system. Prior to content disposal, roll-off dumpsters will be transported and staged at the refinery in an available area that drains to the refinery wastewater treatment system. Manifesting, labeling and placarding will be used as necessary during the transport of this material from the spill site to the refinery.

Emissions of volatiles into the air will be minimized since the oily protective clothing/gear will be placed into closed drums or sealed plastic bags. Due to the portable nature of these interim storage modes, there is no additional site approval requirements for the staging of this material prior to disposal. Site security measures for the refinery and dock are discussed in Chapter 11.

Oily Soil/Logs/Vegetation

This waste consists of soil, logs, and other vegetation that has become oiled as a result of an oil spill. As spill circumstances dictate, this material will be excavated, segregated, loaded into trucks and transported to the refinery containment cell located in Figure 4-2. Otherwise, this oiled material will be transported directly from the spill site to the selected disposal facility. Manifesting, labeling and placarding will be used as necessary during the transport of this material from the spill site to the refinery. This containment cell, which was constructed in 1991 and has a storage capacity of 3000 cubic yards, has a paved floor and berming around the perimeter covered with a rubberized barrier. Also, the paved floor is sloped such that any generated liquids/stormwater flow to a low point that drains to the refinery wastewater treatment system. As necessary, oily soil/logs/vegetation will be covered with plastic tarps to minimize the emission of volatiles into the air.

Site security for the refinery and dock, which includes the containment cell, are discussed in Chapter 11.

Oil Contaminated Equipment

This waste stream consists of disposable equipment such as drums, hand tools, ancillary pumping equipment, etc, contaminated with oil. This equipment will be stored, decontaminated and reused at the spill site to the maximum extent practicable. Disposable equipment that is no longer useable will be decontaminated to the extent practicable, collected at the point of generation and placed into appropriate containers. Drums will generally suffice to contain this material. Drummed material will be transferred to the refinery and stored in the hazardous waste storage area, which consists of a bermed concrete pad that drains to the refinery wastewater treatment system.

Emissions of volatiles into the air will be minimized since the oiled disposable equipment will be placed into closed drums or other appropriate closed containers. Due to the portable nature of these interim storage modes, there is no additional site approval requirements of the staging of this material prior to disposal. Site security measures for the refinery and dock are discussed in Chapter 11.

Decontamination Solutions

This waste stream consists of petroleum and or soap solutions that are used to decontaminate both disposable and non-disposable equipment. These solutions will be reused at the spill site to the maximum extent practicable. Decontamination solutions that are no longer useable will be transferred into drums or vacuum trucks and transported to the refinery in accordance with applicable manifesting, labeling and placarding requirements. Since this material consists of an oil/water mixture, it will be transferred into recovered oil tankage for processing. Since the interim storage consists of closed structures, there are minimal volatile emissions into the air. Also, there is no additional site approval requirements for the interim storage structures. Recovered oil tankage is located in secondary containment structures consisting of earthen berms. Site security measures for the refinery and dock are discussed in Chapter 11.

4.4 Permanent Disposal of Waste Materials

NWACP Section 9620 , Subsection IV titled "Waste Disposition and Final Disposal" is incorporated into this section by reference. The information contained in this section, which supplements that which is contained in the above-referenced NWACP section, discusses permanent disposal methods for each of the identified waste materials that are likely to be generated during an oil spill response/cleanup. Permanent disposal methods will be in accordance with all applicable federal, state and local regulations. Contact information for the waste disposal locations mentioned in this section can be found in Section C-6, List #6 located in Appendix C.

Recovered Oil/Water Mixture

Recovered oil will be de-watered and processed by the refinery, which has a 39,000 bbl/day crude oil charge rate. Water that is removed from the recovered oil will be sent to the refinery's wastewater treatment system. Per NPDES permit #WA 000178-3, treated effluent from the wastewater treatment system will be discharged into Lincoln Ave. Ditch. Flow rates through the wastewater treatment system typically range from 0.200 to 0.500 MGD since USOR also treats the storm water that is collected at the refinery. During abnormal storm events during 1996, 1997, 2005 and 2006, USOR's wastewater treatment system has successfully been able to treat flow rates up to 1.0 MGD for prolonged periods of time.

Absorbent Pads/Booms

Waste profiles have been established for the disposal of non-hazardous oily absorbent pads/booms in the Wasco County Landfill in Oregon and the Clean Harbors Grassy Mountain Landfill in Utah. Prior to disposal, however, the oily absorbent pads/booms will be analyzed as necessary to ensure that this material meets profile criteria and does not otherwise designate as a characteristic hazardous waste. Oily absorbent pad/booms that designate as a hazardous waste will need to be profiled and transported to a TSD facility permitted to handle this material.

Transportation will be provided by a company licensed to haul this material. All applicable manifesting, labeling and placarding requirements will be followed during transportation.

Protective Clothing/Gear

Prior to disposal, this material will be evaluated to ensure that it does not designate as a characteristic hazardous waste. Non-hazardous oily protective clothing/gear will be disposed of at either the Pierce County landfill, the Wasco County Landfill or the Grassy Mountain Landfill. The Tacoma-Pierce County Health Department will be contacted prior to disposal at the Pierce County landfill. Oily protective clothing/gear that designates as a hazardous waste will need to be profiled and transported to a TSD facility permitted to handle this material.

Transportation will be provided by a company licensed to haul this material. All applicable manifesting, labeling and placarding requirements will be followed during transportation.

Oily Soil/Logs/Vegetation

Oily soil will be sampled and analyzed as necessary to ensure that this material meets profile criteria and does not otherwise designate as a characteristic hazardous waste. If contaminated soils designate as a hazardous waste, then they will be profiled, transported and disposed of at a TSD facility permitted to handle this material in a manner consistent with available treatment technologies. On a case by case basis, non-hazardous oily soil will be disposed using one of the following options:

Waste profile can readily be established for the disposal of oily soil/debris at Chemical Waste Management's landfill facility in Arlington, OR.

Waste profile has been established for the disposal of oily soil/debris at Waste Management's Columbia Ridge landfill facility in Arlington, OR.

Waste profile has been established with Waste Management's Columbia Ridge landfill facility in Arlington, OR for the disposal of soil/debris contaminated with asphalt.

Waste Disposal Authorization Permits must be obtained from the Tacoma-Pierce County Health Department prior to the disposal of these waste materials in the Pierce County Landfill.

Other technologies that will be utilized on a case by case basis for the disposal of oily soil, logs and vegetation include the following:

- Bioremediation of oily soil at USOR's containment cell and/or at the spill site. The Pierce County Health Department will be contacted prior to selecting this as a disposal option.

- Using logs/vegetation as a fuel source at one of the hog fuel boilers located in the Puget Sound Region.

Criteria that will be considered when selecting a disposal option include the following:

- Regulatory requirements/limits
- Technical limitations
- Risk
- Economics
- Disposal facility permitting limitations
- Profile limitations

Transportation, which will be provided by a company licensed to haul this material, will be provided using roll off bins or dump trucks. All applicable manifesting, labeling and placarding requirements will be followed during transportation.

Oil Contaminated Equipment

Prior to disposal, this material will be evaluated to ensure that it does not designate as a characteristic hazardous waste. Non-hazardous oily disposable equipment will be disposed of at a local Pierce County landfill with the permission of the Tacoma-Pierce County Health Department. Oily disposable equipment that designates as a hazardous waste will need to be profiled and transported to a TSD facility permitted to handle this material.

Transportation will be provided by a company licensed to haul this material. All applicable manifesting, labeling and placarding requirements will be followed during transportation.

Decontamination Solutions

Recovered decontamination solutions will be de-watered and processed by the refinery, which has a 39,000 bbl/day crude oil charge rate. Water that is removed from the decontamination solutions will be sent to the refinery's wastewater treatment system. Per NPDES permit #WA 000178-3, treated effluent from the wastewater treatment system will be discharged to Outfall 001. Flow rates through the wastewater treatment system typically range from 0.200 to 0.500 MGD since USOR also treats the storm water that is collected at the refinery.

(b) (7)(F)

5.0 HAZARD EVALUATION

5.1 Oil Volume Planning

USOR stores and transports oils that range in API gravity from approximately 5 to 70. The following list identifies the basic types of oils capable of being spilled at USOR:

1. Crude Oils
2. Gasolines
3. Jet Fuels
4. Diesel Fuels
5. Marine Fuel Oils
6. Gas Oils (Intermediates)
7. Asphalt Cements
8. Asphalt Emulsions
9. Medium Curing Asphalts

McChord Pipeline Co. transports JP-8 jet fuel from USOR's refinery to Joint Base Lewis-McChord via a 14.25 mile pipeline. The API gravity for this material is approximately 41.5.

Physical properties associated with the above-mentioned list of materials are identified in Material Safety Data Sheets located in Appendix M. The amounts of oil stored at our facility can be obtained by referring to Tables 5-3 through 5-5. Oil properties can be obtained from the summary provided in Table 5-5A.

Table 5-1 summarizes the volumes of various oil types that are involved in each refinery, dock or McChord Pipeline Co. transfer while Table 5-2 contains data summarizing the annual flow of crude oil and various refined petroleum products across the marine terminal dock. The annual volume of JP-8 jet fuel through the McChord Pipeline is estimated to be 930,000 bbl.

Table 5-1

Oil Transfer Volume Summary

Transfer Location	Oil Type	Transport Vehicle	Volume Avg or Range (bbls)
Refinery	Gasoline	Tank Truck	119 Avg
Refinery	Diesel	Tank Truck	119 Avg
Refinery	Jet Fuel	Tank Truck	119 Avg
Refinery	Asphalts	Tank Truck	119 Avg
Dock	Gasoline	Barge	10K - 60K
Dock	Lt Industrial Distillate	Barge/Tug	30K Avg
Dock	Fuel Oils	Barge	10K Avg
Dock	Heavy Cycle Oils	Barge	25K Avg
Dock	RVGO	Barge	75K Avg
Dock	Crude Oils	Barge/Tanker	250K – 500K
McChord Pipeline Co.	Jet Fuel	Pipeline	5K - 10K per transfer

Table 5-2

Annual Flows Across the Marine Terminal Dock

Oil Type	Annual Volume (bbls.)
Crude Oil	14,000,000
Gasoline	200,000
Jet Fuel	200,000
Diesel Fuel	225,000
Fuel Oil	2,500,000
Raw Vacuum Gas Oil	3,300,000

5.2 Tank/Content Identification

USOR does not operate surface impoundments that collect or store oil, therefore this section will focus on the hazard identification of aboveground and underground tanks. Tank/content identification for aboveground storage tanks is located in Tables 5-4 and 5-5 while below ground tank/content identification is located in Table 5-3. Secondary containment volumes for aboveground tankage included in Tables 5-4 and 5-5 is located in Appendix H, Drawing #AE-SITE05.

Table 5-3

Below Ground Tank Inventory

WDOE Tank Number	Product Name	Capacity (bbls.)	Capacity (Gal)	Tank Type	Year Built
		(b) (7)(F) [redacted]			
061	Premium Unleaded			Steel	Unknown
108	Diesel Fuel			Steel	Unknown
737	Regular Unleaded Gasoline			Steel	Unknown

Table 5-4

Aboveground Tank Inventory Part 1

Tank No.	Max Gauge	Max Barrels	Barrels Foot	Barrels Inch
300002	44-9	(b) (7)(F) [redacted]	6168	514
300001	44-9		6168	514
80022	44-9		2010	168
80021	44-9		2010	168
80020	44-9		2010	168
80019	39-0		2006	167
80018	34-9		2006	167
80017	36-3		2005	167
80016	39-0		2016	168
80015	34-6		2014	168
80014	34-6		2016	168
80013	34-10		2014	168
80012	34-0		2014	178
80011	34-0		2014	168
80010	37-11		2014	168
80009	38-0		2014	168
80008	35-0		2014	168
80007	35-7		2015	168
80006	36-0		2015	168
80005	35-7		2016	168
80004	36-0		2015	168
80003	35-3		2014	168
80002	36-0		2014	168
80001	35-6		2015	168
55001	37-3		1397	116
45001	38-6		1133	94

Table 5-4

Aboveground Tank Inventory Part 1 (continued)

Tank No.	Max Gauge	Max Barrels (b) (7)(F)	Barrels Foot	Barrels Inch
35002	38-3	[redacted]	895	75
30006	44-0	[redacted]	626	52.2
30005	44-0	[redacted]	626	52.2
30004	38-0	[redacted]	746	62
30003	38-6	[redacted]	752	63
30002	40-6	[redacted]	711	59
30001	38-0	[redacted]	727	60
28001	38-0	[redacted]	686	57
24001	32-0	[redacted]	712	59
20002	48-0	[redacted]	504	42
20001	31-0	[redacted]	631	53
15002	36-6	[redacted]	379	31
15001	36-6	[redacted]	379	31
14002	42-6	[redacted]	321.8	26.8
14001	42-6	[redacted]	321.8	26.8
13001	35-2	[redacted]	322	27
10010	34-3	[redacted]	295	24.6
10008	36-0	[redacted]	284	23.7
10006	32-0	[redacted]	290	24
10004	32-0	[redacted]	290	24
10003	31-7	[redacted]	290	24
10002	41-6	[redacted]	224	18.7
10001	26-6	[redacted]	338	28
8503	26-0	[redacted]	199	17
8502	26-6	[redacted]	283	23
8501	26-6	[redacted]	283	23

Table 5-4

Aboveground Tank Inventory Part 1 (continued)

Tank No.	Max Gauge	Max Barrels	Barrels Foot	Barrels Inch
7501	27-6	(b) (7)(F) [redacted]	203	17
6002	23-6	[redacted]	224	18
6001	23-6	[redacted]	225	18
5003	24-9	[redacted]	187	15.6
5002	24-6	[redacted]	172	14
5001	24-6	[redacted]	171	14
4002	21-10	[redacted]	133.3	11.1
4001	22-6	[redacted]	133.3	11.1
3003	30-0	[redacted]	95	8
3002	33-4	[redacted]	84.7	7
3001	33-0	[redacted]	84.7	7
2701	19-8	[redacted]	125.7	10.48
2004	25-0	[redacted]	75	6.25
2003	22-0	[redacted]	83.3	6.94
2002	22-0	[redacted]	83.3	6.94
2001	22-0	[redacted]	83.3	6.94
1807	33-6	[redacted]	50.5	4.2
1806	33-6	[redacted]	50.5	4.2
1805	34-0	[redacted]	50.8	4.2
1804	33-6	[redacted]	50.5	4.2
1801	33-6	[redacted]	50.5	4.2
1701	25-0	[redacted]	67.69	5.64
1602	31-0	[redacted]	51.8	4.3
1601	22-0	[redacted]	50.5	4.2
1502	29-0	[redacted]	50	4

Table 5-4

Aboveground Tank Inventory Part 1 (Continued)

Tank No.	Max Gauge	Max Barrels	Barrels Foot	Barrels Inch
1501	29-0	(b) (7)(F) [redacted]	50	4
1210	23-0	[redacted]	50.5	4.3
1209	22-0	[redacted]	50.5	4.2
1208	22-0	[redacted]	50.5	4.2
901	15-0	[redacted]	50	4.16
760	31-0	[redacted]	22	1.83
759	28-0	[redacted]	22	1.83
758 *	31-0	[redacted]	22	1.83
757	31-0	[redacted]	22	1.83
756	31-0	[redacted]	22	1.83
753 *	23-0	[redacted]	31.5	2.6
752 *	23-0	[redacted]	31.5	2.6
751	23-0	[redacted]	31.5	2.6
505	26-5	[redacted]	16.2	1.35
504	26-5	[redacted]	16.21	1.35
503	26-5	[redacted]	16.21	1.35
502	26-5	[redacted]	16.21	1.35
501	26-5	[redacted]	16.21	1.35
472	13-6	[redacted]	31.3	2.61
471	13-6	[redacted]	32.0	2.67
245	18-0	[redacted]	12.63	1.05
242	12-6 (90%)	[redacted]	15	1.25
241	12-6 (90%)	[redacted]	15	1.25
240	14-0	[redacted]	15	1.25
208	16-0	[redacted]	12.5	1.04

Table 5-4

Aboveground Tank Inventory Part 1 (Continued)

Tank No.	Max Gauge	Max Barrels	Barrels Foot	Barrels Inch
207	16-0	(b) (7)(F) [redacted]	12.5	1.04
206	16-0	[redacted]	13.33	1.11
205 *	14-0	[redacted]	15	1.25
202	16-0	[redacted]	12.6	1.05
142	4-0	[redacted]	0.65	0.05
141	4-0	[redacted]	0.65	0.05
130	6-0	[redacted]	19.25	1.6
121	7-11	[redacted]	Varies from 9 gal/inch to 68 gal/inch.	
116	9-5	[redacted]	6.8	0.57
102	8-0	[redacted]	10	0.83
101	13-0	[redacted]	7.73	0.64
52	7-0	[redacted]	6.4	0.5
32	6-3	[redacted]	Varies from 7 gal/inch to 43 gal/inch.	
31	5-4	[redacted]	Varies from 7 gal/inch to 40 gal/inch.	
		[redacted]		
V-63	80%	[redacted]	22 bbls/%	N/A
V-64	80%	[redacted]	22 bbls/%	N/A
		[redacted]		
		[redacted]		
		[redacted]		
		[redacted]		
		[redacted]		
		[redacted]		

* Denotes tanks that are out of service.

Table 5-5

Aboveground Tank Inventory Part 2

Tank Number	Product Name	Max Capacity (bbls.)	Avg. Volume (bbls.)	Tank Type	Year Built
		(b) (7)(F) [redacted]			
300002	Crude Oil			Floater	2008
300001	Crude Oil			Floater	2007
80022	Crude Oil			Floater	2008
80021	Crude Oil			Floater	2008
80020	Crude Oil			Floater	2008
80019	Raw Vacuum Gas Oil			Fixed Roof	1980
80018	Crude Oil			Floater	1980
80017	Jet Fuel			Floater	1980
80016	PG Asphalt			Fixed Roof	1980
80015	Crude Oil			Floater	1966
80014	Crude Oil			Floater	1966
80013	Crude Oil			Floater	1966
80012	Crude Oil			Floater	1966
80011	Crude Oil			Floater	1964
80010	Mixed Cutterstock			Fixed Roof	1964
80009	Raw Vacuum Gas Oil			Fixed Roof	1963
80008	Orbal Feed Wastewater			Floater	1959
80007	Unfinished Gasoline			Floater	1957
80006	Unfinished Gasoline			Floater	1957
80005	Unfinished Gasoline			Floater	1957
80004	Crude Oil			Floater	1956
80003	Crude Oil			Floater	1956
80002	Fuel Oil			Floater	1956
80001	Fuel Oil			Floater	1956
55001	Rundown Diesel			Fixed Roof	1959
45001	Finished Diesel			Fixed Roof	2002
35002	Fuel Oil			Fixed Roof	1945
30006	Unfinished Gasoline			Floater	1966
30005	Finished Diesel			Internal Floating Roof	1966
30004	Mixed Cutter			Fixed Roof	1984
30003	Jet Fuel			Fixed Roof	1963
30002	Jet Fuel			Fixed Roof	1946
30001	SP-18 Asphalt			Fixed Roof	1949
28001	Finished Diesel			Fixed Roof	1959

Table 5-5

Aboveground Tank Inventory Part 2

Tank Number	Product Name	Max Capacity (bbls.)	Avg. Volume (bbls.)	Tank Type	Year Built
		(b) (7)(F)	[redacted]		
24001	PG Asphalt	[redacted]	[redacted]	Fixed Roof	1957
20002	Low Reformate Blend Stock	[redacted]	[redacted]	Fixed Roof	2007
20001	PG Asphalt	[redacted]	[redacted]	Fixed Roof	1959
15002	Light Raw Naphtha	[redacted]	[redacted]	Floater	1989
15001	Heavy Raw Naphtha	[redacted]	[redacted]	Floater	1989
14002	Heavy Raw Naphtha	[redacted]	[redacted]	Floater	1966
14001	Light Raw Naphtha	[redacted]	[redacted]	Floater	1966
13001	High Reformate Blendstock	[redacted]	[redacted]	Floater	1947
10010	Ethanol	[redacted]	[redacted]	Internal Floating Roof	2008
10008	Regular Unleaded Gasoline	[redacted]	[redacted]	Fixed Roof	2003
10006	Unfinished Gasoline	[redacted]	[redacted]	Fixed Roof	1991
10004	Unfinished Gasoline	[redacted]	[redacted]	Fixed Roof	1991
10003	Unfinished Gasoline	[redacted]	[redacted]	Fixed Roof	1991
10002	Regular Unleaded Gasoline	[redacted]	[redacted]	Fixed Roof	2006
10001	Premium Unleaded Gasoline	[redacted]	[redacted]	Fixed Roof	1957
8503	Marine Diesel	[redacted]	[redacted]	Floater	1947
8502	Jet Fuel	[redacted]	[redacted]	Fixed Roof	1957
8501	Jet Fuel	[redacted]	[redacted]	Fixed Roof	1957
7501	Isomerate Blendstock	[redacted]	[redacted]	Fixed Roof	1957
6002	Flux Oil	[redacted]	[redacted]	Fixed Roof	1988
6001	Flux Oil	[redacted]	[redacted]	Fixed Roof	1988
5003	Ethanol	[redacted]	[redacted]	Internal Floating Roof	2008
5002	PG Asphalt	[redacted]	[redacted]	Fixed Roof	1950
5001	SP-18 Asphalt	[redacted]	[redacted]	Fixed Roof	1957
4002	Mixed Cutterstock	[redacted]	[redacted]	Fixed Roof	1957
4001	Fuel Oil	[redacted]	[redacted]	Fixed Roof	1957
3003	CRS-2P Asphalt Emulsion	[redacted]	[redacted]	Fixed Roof	1982
3002	PG Asphalt	[redacted]	[redacted]	Fixed Roof	1957
3001	PG Asphalt	[redacted]	[redacted]	Fixed Roof	1957
2701	PG Asphalt	[redacted]	[redacted]	Fixed Roof	1964

Table 5-5

Aboveground Tank Inventory Part 2

Tank Number	Product Name	Max Capacity (bbls.)	Avg. Volume (bbls.)	Tank Type	Year Built
		(b) (7)(F)	[redacted]		
2004	Recovered Oil	[redacted]	[redacted]	Internal Floating Roof	2002
2003	CSS-1 Asphalt Emulsion	[redacted]	[redacted]	Fixed Roof	1998
2002	Recovered Oil	[redacted]	[redacted]	Fixed Roof	1990
2001	Recovered Oil	[redacted]	[redacted]	Fixed Roof	1990
1807	Recovered Oil	[redacted]	[redacted]	Fixed Roof	2004
1806	Recovered Oil	[redacted]	[redacted]	Fixed Roof	2001
1805	Pretreat Naphtha	[redacted]	[redacted]	Fixed Roof	2004
1804	Isom Feed	[redacted]	[redacted]	Fixed Roof	1957
1801	Rundown Jet Fuel	[redacted]	[redacted]	Fixed Roof	2006
1701	CSS-1H Asphalt Emulsion	[redacted]	[redacted]	Fixed Roof	1977
1602	MC Cutter Stock	[redacted]	[redacted]	Fixed Roof	1957
1601	MC Asphalt	[redacted]	[redacted]	Fixed Roof	1957
1502	CRS-2P Asphalt Emulsion	[redacted]	[redacted]	Fixed Roof	1979
1501	CRS-2 Asphalt Emulsion	[redacted]	[redacted]	Fixed Roof	1977
1210	MC Asphalt	[redacted]	[redacted]	Fixed Roof	1961
1209	PG Asphalt	[redacted]	[redacted]	Fixed Roof	1957
1208	PG Asphalt	[redacted]	[redacted]	Fixed Roof	1957
901	Recovered Oil	[redacted]	[redacted]	Fixed Roof	1995
760	CSS-1H Asphalt Emulsion	[redacted]	[redacted]	Cone Roof	1972
759	Spent Caustic	[redacted]	[redacted]	Fixed Roof	1972
758	(Tank not in Service)	[redacted]	[redacted]	Fixed Roof	1972
757	Spent Caustic	[redacted]	[redacted]	Fixed Roof	1972
756	CSS-1H Asphalt Emulsion	[redacted]	[redacted]	Fixed Roof	1972
753	(Tank not in Service)	[redacted]	[redacted]	Fixed Roof	1972
752	(Tank not in Service)	[redacted]	[redacted]	Fixed Roof	1972
751	Antistrip	[redacted]	[redacted]	Fixed Roof	1972
505	Emulsifier	[redacted]	[redacted]	Fixed Roof	1977
504	CSS-1 Asphalt Emulsion	[redacted]	[redacted]	Fixed Roof	1977
503	Emulsion Soap	[redacted]	[redacted]	Fixed Roof	1977
502	CSS-1 Asphalt Emulsion	[redacted]	[redacted]	Fixed Roof	1982
501	Emulsion Soap	[redacted]	[redacted]	Fixed Roof	1982
472	Recovered Oil	[redacted]	[redacted]	Fixed Roof	2002
471	Recovered Oil	[redacted]	[redacted]	Fixed Roof	2002

Table 5-5

Aboveground Tank Inventory Part 2

Tank Number	Product Name	Max Capacity (bbls.)	Avg. Volume (bbls.)	Tank Type	Year Built
		(b) (7)(F) [redacted]			
245	Recovered Oil			Fixed Roof	1983
242	Boiler Fuel Oil			Fixed Roof	1957
241	Boiler Fuel Oil			Fixed Roof	1957
240	Recovered Oil			Fixed Roof	1985
208	Ethyl Hi Tec 3023			Cone Roof	1996
207	Jet Fuel Anti-Icing Additive			Cone Roof	1995
206	Jet Fuel Anti-Icing Additive			Fixed Roof	1990
205	(Tank Not in Service)			Fixed Roof	1984
202	Emulsion Soap			Fixed Roof	1977
142	Unicor J Additive			Fixed Roof	*
141	Stadis 450 Additive			Fixed Roof	*
130	Hot Oil			Fixed Roof	1988
121	Gasoline Additive			Horizontal	*
116	Emulsifier			Fixed Roof	2004
102	HCl			Fixed Roof	2002
101	E-11 Soap			Fixed Roof	1977
52	Red Dye			Fixed Roof	1987
32	Diesel Additive			Horizontal	1996
31	Diesel Additive			Horizontal	*
V-63	Butane			Pressure Vessel	1977
V-64	Butane			Pressure Vessel	1977

* The exact year of manufacture is unkown.

Table 5-5A

Summary of Oil Properties

Product	Density (lb/gal) @ 60°F	Specific Gravity @ 60°F	API Gravity	Group #	Sulfur Content (sweet <0.5% sulfur)
Crude Oils – Sweet	6.790	0.816	42.0	2	Sweet
Crude Oils - Sour	7.627	0.916	23.0	3	Sour
Recovered Oil	7.206	0.865	32.0	3	Sweet
Isomerate	5.545	0.666	80.9	1	Sweet
Reformate	6.618	0.795	46.5	1	Sweet
Gasoline	6.050	0.727	63.2	1	Sweet
Ethanol (denatured)	6.58	0.791	47.5	1	Sweet
Pretreat Naphtha	6.158	0.740	59.8	1	Sweet
Light Raw Naphtha	5.676	0.682	76.0	1	Sweet
Heavy Raw Naphtha	6.273	0.754	56.3	1	Sweet
Ultra Low Sulfur Diesel	7.085	0.851	34.8	1	Sweet
Rundown Diesel	7.141	0.858	33.5	1	Sweet
Jet Fuel	6.682	0.803	44.8	1	Sweet
Marine Gas Oil	7.141	0.858	33.5	1	Sweet
Raw Vacuum Gas Oil	7.696	0.924	21.6	3	Sour
Cutterstock	7.830	0.940	19.0	3	Sour
Fuel Oil Basestock	8.287	0.995	10.7	4	Sour
Hot Oil	7.184	0.863	32.5	3	Sweet
Asphalt Cements	8.509	1.022	7.0	5	Sour
Asphalt Emulsions	8.448	1.014	8.0	5	Sour
Specialty Asphalts	8.212	0.986	12.0	4	Sour
Antistrip	8.000	0.96	15.8	4	Sweet
Red Dye	7.578	0.91	24.0	3	Sweet
Asphalt Emulsifier	8.697	1.11	4.0	5	Sweet
Generic Gasoline Additive	7.563	0.908	24.3	3	Sweet
Shell Additive	7.651	0.919	22.5	3	Sweet
FSII Anti-Icing – Jet Additive	8.503	1.020	7.1	5	Sweet
Unicor J – Jet Additive	7.661	0.92	22.3	3	Sweet
Statis 450 – Jet Additive	6.736	0.809	43.4	1	Sweet
Diesel Cold Flow Improver	7.6	0.913	23.5	3	Sweet

5.3 Vessel Oil Transfer Planning

The following description identifies the number of vessels that USOR can transfer oil to or from simultaneously.

Transfer location: USOR Marine Terminal Dock area.

Vessel Numbers: One vessel at dock #1 and one vessel at dock #2.

Vessel Sizes and Types: See Table 5-6.

Table 5-6
Vessel Sizes and Types

Dock Number	Vessel Type	Capacity Bbls. (maximum)	Length Feet (maximum)
1	Tug	160	165
1	Barge	75,000	300
1	Tanker	500,000	894
2	Tug	160	165
2	Barge	75,000	300

5.4 Pipeline Oil Transfer Planning

Table 5-7 identifies the capacities of USOR's 4 oil transfer pipelines that extend from the refinery to the marine terminal dock as well as the McChord pipeline that extends from the refinery to Joint Base Lewis-McChord. Fuel types carried in each pipeline are discussed in Section 2.2.

Table 5-7
Pipeline Oil Transfer Capacities

Pipeline Identification	Maximum Capacity (Bbls/hour)
8" Gasoline Line	2,800
8" Diesel Line	2,800
10" Jet Fuel Line	3,500
24" Pipeline Unload Rate	36,000
24" Pipeline Loading Rate	10,000
6" McChord Pipeline	670

5.5 Vulnerability Analysis

The purpose of the vulnerability analysis is to address the potential effects to human health, property or the environment resulting from the worst case release of a persistent or non-persistent oil into Blair Waterway at or near USOR's Marine Terminal. In accordance with 40 CFR Part 112 Appendix C, Attachment C-III, Section 4.0 the planning distance for the tidally influenced Blair Waterway is as follows:

1. Persistent oils - 15 miles from USOR's Marine Terminal. This includes the following tidally influenced waters:
   - Commencement Bay including all waterways
   - The Narrows South to approximately Titlow Beach
   - East Passage North to approximately Des Moines
   - Colvos Passage North to approximately Ollalla
   - Dalco Passage
   - Quartermaster Harbor
   - Gig Harbor
2. Non-persistent oils - 5 miles from USOR's Marine Terminal. This includes the following tidally influenced waters:
   - Commencement Bay including all waterways
   - East Passage North to approximately Dash Point
   - Dalco Passage Northwest to approximately Ruston
   - Commencement Bay to approximately Neill Point on the Southeast tip of Vashon Island

Vulnerable areas located within 15 miles of USOR's Marine Terminal are as follows:

1. Point source water discharges are located in Figure 3-22
2. No schools or medical facilities are identified as being located on the shoreline within 15 miles of USOR's Marine Terminal.
3. Numerous residences are located along the shoreline within 15 miles of USOR's Marine Terminal.
4. Businesses located along the shoreline within 15 miles of USOR's Marine Terminal are primarily concentrated in the following areas:
   - City of Gig Harbor
   - City of Des Moines
   - Redondo Beach
   - Southern shoreline of Commencement Bay from Ruston to Downtown Tacoma
   - Businesses are also scattered along the waterways that feed into Commencement Bay.
5. Fish and wildlife and wetland sensitive areas are identified in Figures 3-24 through 3-29 as well as the geographic response plans located in Appendix I.
6. Streams and harbors are identified in the geographic response plans located in Appendix I.
7. Flora and fauna sensitive areas are identified in Figures 3-24 through 3-29 as well as the geographic response plans located in Appendix I.

(b) (7)(F)

[redacted]

9. Recreational areas including beaches, marinas and parks are identified in Figures 3-23, 3-24, 3-28, 3-29 and 3-31 as well as geographic response plans located in Appendix I.
10. Major transportation routes include the following:
    - The East Passage and Commencement Bay serve as transportation routes for ship traffic destined for the Port of Tacoma whereas East Passage, Dalco Passage and The Narrows serve as transportation routes for ship traffic destined for the Port of Olympia.
    - The Tacoma Narrows bridge which is suspended high above the The Narrows waterway serves to connect Gig Harbor and the Kitsap Peninsula to Tacoma and interstate I-5.
11. Located on the opposite side of the Blair Waterway SE of USOR's Marine Terminal is a riverboat casino which is owned and operated by the Puyallup Indian Tribe. Even though this business is privately owned, it has the capability to accomodate a large number of people and is open for business 7 days per week.

Vulnerability analysis of the worst case release of a non-persistant oil from the McChord Pipeline into the Puyallup River is discussed in Section 3.7.2 of this document.

5.6 Spill Risk Analysis – U.S. Oil & Refining Co.

As required by WAC 173-180 Part F, USOR retained the Anvil Corporation to conduct a risk analysis of the refinery. Specifically, the evaluation focused on the marine terminal dock, transfer pipelines, tankage areas and loading racks. These areas were evaluated using the following parameters: materials of construction, inspection and maintenance of equipment/hardware, operating parameters and controls, leak detection systems and containment. To further determine risk potential, human error and natural hazard considerations were also factored into the evaluation of each area. A copy of the Risk Anaysis Report is contained in USOR's Facility Oil Spill Prevention Control & Countermeasures Plan.

In summary this risk analysis did not identify any areas of high or unacceptable levels of risk. This analysis did, however, identify two pieces of equipment exhibiting a higher level of risk which translates to an increased probability of an oil spill occurring at least once during the life cycle of the piece of equipment. Both pieces of equipment are identified as follows:

1. Tk #701 was a riveted tank located within secondary containment at the marine terminal. At the time that the risk analysis was performed, there was no pedigre recorded for this tank nor was there a formal API 653 program in place for conducting thorough tank inspections. **During 1995 USOR dismantled this tank and replaced it with a** (b) (7)(F) [redacted] **1) for receipt of recovered oil generated at the marine terminal.**

2. Dock #2 sump pump, which is controlled manually at a local start/stop switch, is mounted under dock #2 and over the water. At the time that the risk analysis was performed, this pump did not have any secondary containment nor any inspection records. **During 1994 USOR enlarged the dock #2 secondary containment system and mounted the sump pump within the secondary containment system. High level alarms were also added to both the dock #1 and dock #2 sumps.**

5.7 Spill Risk Analysis – McChord Pipeline Co.

During 1993 Buckeye Pipeline Co. retained Woodward-Clyde Consultants to perform a Hazards and Operability (HAZOP) study on the pipeline that is now owned by McChord Pipeline Co. HAZOP is a risk analysis method whose main objective is to identify potential hazards of a system. This assessment did not identify any significant and/or catastrophic operational scenarios that could impact the safety or the environment. The HAZOP identified one recommendation relative to pipeline operations. This recommendation is as follows:

1. In case of any significant seismic activity during operation, the system should and will be immediately shut down and appropriate emergency procedures initiated if necessary. In case of such activity under static condition, inspection of the system for significant damage and/or release should and will be performed followed by appropriate emergency response and repair if needed prior to subsequent operation.

A copy of this HAZOP is contained in the Facility Oil Spill Prevention Control & Countermeasures Plan for USOR and McChord Pipeline Co.

During 1999 WUTC created a draft copy of a risk evaluation for the McChord Pipeline. With input from Ecology and WUTC, this original draft was updated during July 2000 and is detailed in the following paragraphs.

McChord Pipeline Spill Risk Assessment

Product:

JP-8 Jet Fuel
Density: 0.775 – 0.840 (@15E C, Kg/L)
Gravity (API): 37.0 – 51.0
Flash Point: 38 EC (100EF)

Pipeline Specifications:

14.25 miles of 6 inch nominal (6 5/8 inch O.D.) grade B steel pipe
Wall thickness: 0.188 inch to 0.432 inch
Constructed: 1966
Normal transfer rate is 650 barrels per hour at 450 psig.

Operation:

Pipeline is dedicated to the transport of a single product. Shipments are made 2-3 times per week for 8-10 hours each. Product shipping temperature is 60-80°F. The system is monitored from a continuously attended control room.

(b) (7)(F) [redacted]

Response Time:

Pump shutoff response time is <5 minutes. Response time to close pipeline valves at either end is < 5 minutes. Response personnel can close the intermediate valves within 30 minutes of notification.

Leak volume basis:

Worst case leak volumes would occur during transfer operations. However, transfers only occur about 15% of the time.
The other 85% of the time the pipeline is static and leak volume would be less for two reasons. 1) No product would be added to the system during this period. 2) No air could enter the pipeline above the leak point to allow rapid product loss. Leak volumes under these conditions are very difficult to estimate. For the purposes of this review, assume the volume would be limited to the section volume.

(b) (7)(F) [redacted]

Risk Evaluation:

Section 1

At mile posi(b) (7)(F) [redacted] *ed which should limit the total release of product from this section to approximately ®*(b) (7)(F) [redacted] *drain back from the section up gradient. This calculation assumes that it will take approximately 5 minutes for leak detection/evaluation and to shut in the system. This section is in close proximity to the main office and control center thus the response time should be the prompt. However, it is adjacent to major waterways and has the greatest potential to release product into the waterways in and around Commencement Bay.*

Section 2

With an estimation of 5 minutes for leak detection/evaluation and response time and 30 minutes for intermediate valve closure, there is a potential for a discharge of approximately (b) (7)(F) [redacted] *into Clear Creek, Swan Creek, the Puyallup River, and Commencement Bay.* (b) (7)(F) [redacted] *Depending upon the point of rupture, this elevational head may promote the volumetric flow and velocity of product from a pipeline rupture and consequently, allow more product to be released into the environment rather than contained within the pipeline. However the total leak volume depends upon the elevation of the failure point, e.g., a break near the highest system elevation would result in a very small leak volume. (For a single break, a vacuum would result "uphill" from the break and significantly slow the leak rate. A 6" steel pipe can withstand full vacuum conditions without damage.*

Section 3

With an estimation of 5 minutes for leak detection/evaluation and response time and 30 minutes for intermediate valve closure, there is a potential for a discharge of approximately (b) (7)(F) [redacted] *) into the environment in and around the pipeline corridor. The elevational difference is about 60 feet through this section (*(b) (7)(F) [redacted] *), and will promote the drainage of product due to a pipeline rupture. (See comment above). However, the initial area of impact and extent of damage from the pipeline rupture will result from the pump rate of 650 barrels per hour at a pump pressure of 450 psig. A discharge in this section will adversely impact the environment but it has a greater potential to impact human populations due to the proximity of residential development adjacent to the pipeline corridor.*

Section 4

With an estimation of 5 minutes for leak detection evaluation and response time and 30 minutes for intermediate valve closure, there is a potential for a discharge of approximately (b) (7)(F) [redacted] *into the environment in and around the pipeline corridor. Initially, the primary driving force for a discharge will be the pump rate and pump pressure with the elevational difference of approximately 80 feet (360 feet at mile post 10.095 and 280 feet at the McChord A.F.B terminal) promoting the drainage of product due to a pipeline rupture. A discharge in this section could have a substantial impact upon the human population in addition to the waterways and drainage that feed Clover Creek and Lake Steilacoom.*

Worst Case Potential:

Section 1 and Section 2 have a high potential to discharge large volumes of product into sensitive waterways that are important for fisheries and ultimately drain into Commencement Bay. With respect to the proximity of each of these sections to the dispatch center/office, there is a greater potential for leak detection, countermeasures (e.g., valve closure), and spill response in a more timely manner, which could minimize the volume discharged and consequential impact upon the environment and associated aquatic populations.

The worst case potential would be in the area of Section 3 or Section 4 (or a combination of the two). Section 3 and Section 4 are more remote from the main office and control center which may increase the time required to locate the rupture and isolate the damaged pipeline section. These sections have more residential development in close proximity to the pipeline corridor and greater potential to impact the human potentials adjacent to the pipeline.

In addition, any discharge from the pipeline in these areas would impact the environment and associated wildlife, be it terrestrial or aquatic. A discharge of jet fuel in this area has greater potential to impact the ground water and drinking water aquifers.

Jet fuel that has been discharged into the air and vaporized has a greater chance to contact an ignition source and combust in a more developed, residential area as opposed to a rural area. However, the degree of risk for JP8 product is significantly less than that for more volatile petroleum products. The flash point of JP8 is greater than 100°F. The product must both be >100°F and contact a combustion source.

5.8 Spill History

USOR has exprienced spills in the past at the Marine Terminal dock as well as refinery loading rack and tankage areas. Table 5-8 contains a brief description of USOR's spill history dating back to 1982.

The following is a brief description of USOR's crude oil spill that occurred on January 6, 1991:

Quantity: 14,270 Bbls

Type of oil: Alaskan North Slope crude oil

Geographic location: Underground pipeline located near Lincoln Avenue and Port of Tacoma Road in Tacoma, Washington

Analysis of cause:

On January 6, 1991, 14,270 barrels of crude oil spilled from a ruptured 16" buried pipeline and collected in a field located near Lincoln Avenue on Port of Tacoma Road in Tacoma, Washington. Oil subsequently flowed into storm sewer drains which drain into the Lincoln Avenue ditch leading to the Blair Waterway. Due to quick response by USOR employees the oil was prevented from entering Blair Waterway via the tide gate when an earthen dam was erected next to the gate. Containment

Table 5-8

USOR Spill History

Date	Spill	Pollutant	Remarks
5/13/82	20 gal - Blair Waterway	Bunker Oil	Bleeder valve on 8" cargo line slightly open.
1/3/83	50 gal - Blair Waterway	Crude Oil	Inoperative motor at dock sump (contained).
11/1/83	5 gal - Blair Waterway	Cutter Stock	Loading arm failure on vessel (contained).
1/24/84	3500 gal - Lincoln Ave Ditch	Oil	Record rainfall caused overflow of back pond into Lincoln Ave Ditch and Blair Waterway. Constructed concrete pond to eliminate problem.
5/15/84	2 gal	Jet Fuel	Gasket leak at blind on Jetline (contained).
9/10/84	4 gal - Blair Waterway	Marine Diesel Oil	Sump overflowed while draining water during line pressure test (contained).
6/29/86	50 gal - Blair Waterway	Bunker Oil	Spring supporting transfer hose caught under sample valve and upward pull tore off valve (contained).
12/19/86	100 gal - Blair Waterway	Marine Diesel Oil	Check valve failure at dock 1 (contained).
12/24/86	200 gal - Blair Waterway	Marine Diesel Oil	Bleeder valve on return line to dock sump vibrated open (contained).
2/24/87	175 gal - Blair Waterway	JP-5	Gasket failed (contained).
4/24/87	5-10 gal - Blair Waterway	Marine Diesel Oil	Gasket failure on 3" line (contained). Pressure relief valve added to line.
1/25/88	5 gal - Blair Waterway	Marine Diesel Oil	Contract maintenance crew overflowed dock sump while draining lines for maintenance (contained).
9/25/89	5 gal - Blair Waterway	Crude Oil	Bleeder valve opened during line connect (contained).

Table 5-8

USOR Spill History (continued)

Date	Spill	Pollutant	Remarks
2/22/90	25-50 gal - Blair Waterway	Fuel Oil	Barge disconnect - barge shift sump overflow (contained).
1/6/91	14,470 bbls.	Crude Oil	See description located elsewhere in Section 5.7.
12/4/91	120 bbls. on ground	Emulsified Asphalt	Contained to area immediately around Tk 759.
10/18/93	6,300 bbls. into Tk 80003 secondary containment	ANS Crude Oil	Failure of camlock connector on tank waterdraw (contained).
5/4/94	30 bbls. from 10" Jet line 100 bbls. from 16" crude oil pipeline	Jet Fuel Cutterstock	Both pipelines overpressured and ruptured from the solar load during maintenance upgrade of pressure relief valve system. Rupture occurred at dock; however, no product entered Blair Waterway.
1/6/96	25 gal - Blair Waterway	ANS Crude Oil	Mis-communication between the vessel and dock-watch during stripping operations resulted in an overflow of the dock #1 containment sump into the Blair Waterway.
9/25/96	385 gal	Gasoline	Gasoline leak from underground pipeline between the gasoline blend area and the light products loading rack.
8/1/97	<1 gal	Fuel Oil	Gasket failed. Most of the product was contained, however, a small amount sprayed onto the dock resulting in some drippage into the Blair Waterway.
3/16/98	1,795 bbl	Marine Diesel Oil	Operator failed to close a valve thereby resulting in the overflow of Tk #8503 shortly after initiating the transfer of a fuel oil blend.
4/16/98	100 bbl	LVGO	Transfer hose ruptured shortly after the transfer of LVGO from a portable tank to Tk #80002 was initiated. The purpose of the portable tank was to support the Tk #80001 turnaround project.

Table 5-8

USOR Spill History (continued)

Date	Spill	Pollutant	Remarks
3/3/2000	<5 gal – Blair Waterway @ Dock #1	Cutterstock	An improperly installed gasket resulted in this release, which occurred during the start of transfer when product sprayed out from the bolted flange that connects the transfer hose to the dock manifold.
3/6/2000	Underground at Roadway NW of API	Black Diesel	Free product was observed on both sides of the roadway NW of the API separator. Numerous subsurface investigations to determine the source of the black oil did not identify the source of the product. Perforated piping has been installed underground to recover this product and to verify that we do not have an ongoing leak source.
5/12/2000	PRV release from C-17 tower	Petroleum Distillate	During startup of the Light Crude Unit, the atmospheric distillation column (C-17) over-pressured thereby venting vapors containing entrained petroleum distillate to the atmosphere. The wind carried some of this distillate mist across the refinery property boundary to the Northwest and deposited it on several of the neighboring businesses.
11/5/2002	47 gallons onto concrete pad at light products loading rack	Gasoline	Tanker truck overflowed while loading gasoline at the light products loading rack resulting in the truck driver becoming covered with gasoline. This incident occurred when the driver incorrectly entered the volume of product being loaded coupled with the scully failing to operate as the truck reached capacity. All spillage was contained and cleaned up.
4/6/2003	100 gallons of crude oil leaked from the bottom of Tk #80003	ANS Crude Oil	The pumper gauger noticed crude oil pooling near the bottom angle of Tk #80003 upon completion of filling this tank with ANS crude oil from a crude oil tanker. The contents of this tank were immediately pumped to other available crude oil tankage followed by taking this tank out of service for cleaning and repairs. The leakage was contained and cleaned up.

Table 5-8

USOR Spill History (continued)

Date	Spill	Pollutant	Remarks
10/20/2003	Approximately 3000 gallons of untreated stormwater were released from the storm pond	Untreated Storm Water	During 10/20/2003, the Puget Sound Region received record rainfall. Even though U.S. Oil's wastewater treatment system was operating at maximum rates during this storm event, the storm pond was not able to contain/process the large volume of stormwater being pumped into this pond. This resulted in the release of approximately 3000 gallons of untreated stormwater from the storm pond overflow pipe onto the ground around the secondary wastewater treatment area during a period of 2½ hours.
8/31/2004	Appoximately 334 bbls of jet fuel leaked into the ground from a buried section on the 3" jet fuel run down line.	Jet Fuel	On 8/31/2004 contract maintenance personnel commenced hand digging in an area near the Southwest corner of SRU1 in response to a stained soil area that was observed by U.S. Oil personnel. Further excavation activities traced the source of this leak to a small hole in an underground 3" jet fuel run down line. In response, U.S. Oil commenced product recovery operations, which resulted in the recovery of approximately 334 bbls of jet fuel through September 26, 2005. Remediation efforts were completed during the week of September 26, 2005 to remove jet fuel contaminated solids to the maximum extent practicable throughout the impacted area without undermining adjacent roadways, structure and utilities.
4/7/2005	322 bbls of jet fuel	Jet Fuel	At approximately 8:20 am on 4/7/2005, a supervisor for one of USOR's maintenance contractors discovered a large amount of jet fuel within the secondary containment berm surrounding jet fuel storage Tks #30002 and 30003. Upon discovery, the Maintenance Contractor Supervisor noticed that jet fuel was flowing out of an open ¾" bleeder valve located on a jet fuel run down line. The open valve was immediately closed. The spillage was completely contained and cleaned up.

Table 5-8

USOR Spill History (continued)

Date	Spill	Pollutant	Remarks
8/10/2005	Approximately 156 bbls of crude oil leaked from 16" refinery-to-dock crude oil line.	Crude Oil	On 8/10/2005, U.S. Oil was notified of a large black stain on the ground surface within the fenced refinery-to-dock pipeline easement. Investigation activities identified that the source of this leak was crude oil that had leaked from a small crack in a girth weld on an underground section of the 16" crude oil line that had migrated to the ground surface. Upon discovery, repairs to the 16" crude oil line were immediately initiated and completed on 8/14/2005. The duration of this leak appeared to be limited to the crude oil delivery that was taking place at the time the leak was discovered. The size of the impacted area was mostly within the pipeline easement with a small amount extending onto neighboring properties. Approximately 120 bbls of free product were recovered from the impacted area. Remediation efforts were completed on September 2, 2005 to remove crude oil contaminated solids to the maximum extent practicable within the impacted area without undermining the five pipelines located within the easement. An estimated 36 bbls of crude oil was contained in the removed soils.
11/6/2006	Untreated stormwater was released from both the storm pond and crude oil storage improvement project construction site	Untreated Storm Water	As a result of record rainfall in the Puget Sound Region on 11/6/2006, the storm water retention pond experienced an overflow event that lasted for approximately 3 hours. Even though U.S. Oil's wastewater treatment system was operating at maximum rates during this storm event, the storm pond was not able to contain/process the large volume of stormwater being pumped into this pond. This event resulted in the discharge of stormwater to the adjacent area around the secondary wastewater treatment plant. The intensity of this storm also resulted in highly turbid stormwater bypassing the containment area that was constructed to help management stormwater from the crude oil storage improvement project construction site.

Table 5-8

USOR Spill History (continued)

Date	Spill	Pollutant	Remarks
1/7/2007	Approximately 650 gallons of untreated stormwater were released from the storm pond	Untreated Storm Water	As the result of yet another severe winter storm moving through the Puget Sound Region on 1/7/2007, the stormwater retention pond experienced an overflow event that lasted for approximately 2 hours. Even though U.S. Oil's wastewater treatment system was operating at maximum rates during this storm event, the storm pond was not able to contain/process the large volume of stormwater being pumped into this pond. This event resulted in the discharge of stormwater to the adjacent area around the secondary wastewater treatment plant. There was no oil sheen present in the stormwater being discharged from the stormwater pond.
11/28/2007	< 5 gallons of cutterstock leaked into the ground from a buried section on a 4" cutterstock pipeline	Cutterstock	On November 28, 2007, refinery personnel found a puddle of water with oil on it. This puddle was located on the side of a road across from the diesel cargo pumps. The source of this oil was from a small hole that was found on a 4" buried pipeline running through this area that is used to move cutterstock from the process units to tankage. The cutterstock was leaking from this hole and seeping upward to the ground surface. Upon discovery, a vacuum truck was used to cleanup the area around this leak and a temporary clamp was installed on the 4" pipeline at the location of the leak. The buried portion of this pipeline was replaced on August 6, 2008
7/7/2008	Approximately 8 bbls of crude oil released from pressure relief valve on the C1 crude oil fractionation tower	Crude Oil	On July 7, 2008 a straddle carrier operating at the Pierce County Terminal located within the Port of Tacoma struck a power line inside the terminal causing power outages through the tideflats area. This incident also resulted in the loss of power to USOR, which quickly resulted in upset conditions within USOR's process units. As such the pressure relief valve on the C1 tower opened and released atomized crude oil into the atmosphere. While most of the released oil was deposited within the process units, the light breeze also carried some of the small oil droplets in a southeasterly direction towards an adjacent new vehicle storage yard. Corrective actions included cleaning up the oil that deposited on the ground and equipment within the process units as well as working with the operators of the adjacent vehicle storage yard to remove any oil droplets impacting their facility and vehicle inventory.

Table 5-8

USOR Spill History (continued)

Date	Spill	Pollutant	Remarks
12/15/2008	Approximately 5 bbls of RVGO leaked onto the ground from the high point vent on the 24" pipeline expansion loop	RVGO	On December 15, 2008 RVGO was found to be slowly spraying from a high point valve located on the 24" crude oil pipeline onto the ground around the base of the expansion loop support structure that is located within the refinery-to-dock pipeline easement. Some of the RVGO also drifted in a southwesterly direction towards the neighboring bark pile. The source of this leak was from the bonnet gasket on the high point valve that had been distorted for awhile. The freezing weather over several days prior to the start of this leak was believed to have caused this leak. Vacuum trucks and backhoes were brought on-site to cleanup the spillage along the easement and expansion loop structure/piping as well as to remove any overspray that reached the adjacent beauty bark pile. In addition, this valve was also replaced.
1/19/2009	Approximately 1/3 cup of jet fuel dripped from a 3" recovered oil line at Dock #1	Jet Fuel	On January 19, 2009 oil was found to be slowly dripping into the Blair Waterway from the 3" insulated recovered oil line that is used to transfer recovered oil from the Dock #1 mechanical loading arm containment sump to Tk #901. Further investigation identified the source of this leak to be from an area of localized corrosion on the top side of this 3" pipeline. Immediate corrective actions included using absorbant materials to clean up the sheening on the water as well as replacing this 3" line.
6/12/2009	Approximately 1 tablespoon of mineral oil sprayed into the water from one of the Dock #1 hydraulic loading arms	Mineral Oil	On June, 12, 2009 a hydraulic coupling on one of the Dock #1 hydraulic loading arms separated thereby resulting in the release of mineral oil onto the dock #1 spill pan and concrete structure. Due to the pressure in the hydraulic system, a very small quantity of this mineral oil (hydraulic fluid) also sprayed into the Blair Waterway thereby resulted in some sheening, which dissipated quickly before any cleanup activities could commence. Repairs were made to the hydraulic coupling prior to returning this loading arm back to service.

Table 5-8

USOR Spill History (continued)

Date	Spill	Pollutant	Remarks
11/30/2010	Approximately 320 gallons of diesel was spilled onto the ground at dock #2 from a partially open bleeder.	Diesel	On November 30, 2010 a new 8" pipe that runs from Dock #1 to Dock #2 was being charged with diesel for the first time. Approximately 320 gallons of diesel spilled onto the ground near Dock #2 from a low point bleeder valve that had been left partially open. Approximately 25 gallons of the diesel ran into the Blair Waterway. Booms were immediately deployed to contain the diesel and absorbent pads and sweeps were used to clean up the spill. Contaminated soil was removed from the spill site.
3/6/2012	A crude oil leak from the mixer on Tk #80021 onto the ground was initially discovered.valve.	Cold Lake Crude Oil	A small volume of Cold Lake Crude Oil was found on top of the ground within the containment berm near the mixer on Tk #80021. The mixer was subsequently taken out of service and any visible evidence of oil cleaned up. On March 9, 2012 while removing additional stained soils near the tank mixer, crude oil was found floating on top of the shallow groundwater next to the tank foundation. Efforts were immediately initiated to remove the floating crude oil. Recovery and tabulation efforts are ongoing but are approaching the point of diminishing returns. Initial investigations show that the source of the crude oil next to the tank foundation appears to be due to a portion of the tank mixer leakage flowing un-noticed back towards the tank foundation through a nearby pipe extension on a tank leak detection pipe sleeve. As of June 5, 2012, approximately 349 gallons of crude oil have been recovered from the groundwater.
3/14/2012	Approximately 1477 gallons of crude oil leaked from a small hole on an inactive pipe onto the ground near Tk #80010.	Alaskan North Slope Crude Oil	Crude oil was discovered floating on stormwater contained within the containment berm around Tk #80010. Efforts were immediately taken to plug the source of the leak and initiate cleanup actions. Approximately 1477 gallons of crude oil were recovered. The source of the release was a small hole on an inactive pipe in crude oil service and located adjacent to Tk #80010. Further testing concluded that the through-wall pit was the result of microbiological influenced corrosion (MIC).

Table 5-8

USOR Spill History (continued)

Date	Spill	Pollutant	Remarks
7/9/2012	350 gallons of naphtha overflowed onto the ground from the Tk #14002 waterdraw system.	Naphtha	U.S. Oil personnel discovered that naphtha had overflowed onto the ground from the Tk #14002 waterdraw system. This release was contained within the secondary containment berm, which surrounds the gasoline blend area tankage including Tk #14002. More specifically, the extent of this release was generally limited to a shallow depression that runs along an adjacent pipeway located within this tank farm. All of the naphtha was recovered using vacuum trucks. The waterdraw hub serving Tk #14002 was also vacuumed out to ensure that this hub continued to flow freely. No specific blockage problems were identified.

booms were deployed in the Blair Waterway at the mouth of the Lincoln Avenue ditch to contain oil seepage through the tide gate should any occur during the spill cleanup. The spill was cleaned from the ditch and affected city of Tacoma storm drain systems by using vacuum truck equipment, skimming equipment, and sorbents. Recovery of the spilled oil was greater than 95%, and the ditch was returned to normal use on January 14, 1991. Further remediation of the area affected by the oil spill is underway.

Outside consultants determined that the pipeline rupture occurred as a result of an external force acting upon a defective weld. The weld, however, was deemed to be of sufficient quality to have permitted indefinite safe operation had these external forces not been applied.

Corrective measures taken to prevent reoccurrence:

As a result of this release 41 dock transfer line spill prevention items were identified by USOR and agreed to by Ecology in order to prevent reoccurrence. These items had completion dates scheduled from February 1991 through fourth quarter 1995.

The McChord Pipeline Co., which was previously owned by the Buckeye Pipeline Co., has never experienced a reportable oil spill since the pipeline has been in existence.

5.9 Oil Spill Categorizations

5.9.1 WDOE Criteria

The following criteria will be used by USOR in determining the size of WDOE's worst case oil spill as defined in WAC 173-182-030:

- U.S. Oil & Refining Co. (Onshore Storage Facility): The entire volume of the largest above ground storage tank on the facility site complicated by adverse weather conditions, unless Ecology determines that a larger or smaller volume is more appropriate given a particular facility's site characteristics and storage, production, and transfer capacity.
- McChord Pipeline Co. (Pipeline): The pipeline's maximum time to detect the release, plus the maximum shutdown response time multiplied by the maximum flow rate per hour, plus the largest line drainage volume after shutdown. Worst case discharge criteria based on the maximum historic discharge from the pipeline is not applicable since there has never been a release from this pipeline. Worst case discharge criteria based on the use of breakout tanks is not applicable since this pipeline does not contain or utilize any breakout tanks.

5.9.2 USCG Criteria

The following criteria will be utilized by USOR in determining the size of an oil spill according to 33 CFR Part 154:

- Average most probable discharge: 50 bbl
- Maximum most probable discharge: 1,200 bbl
- Worst case discharge: (1) The loss of the entire capacity of all in-line and breakout storage tank(s) needed for the continuous operation of the refinery-to-dock pipeline used to transport oil to or from a vessel, plus (2) the discharge from all piping carrying oil between the marine transfer manifold and the refinery. See Section 6.2 for discussions regarding USCG worst case spill scenarios.

5.9.3 EPA Criteria

The following criteria will be utilized by USOR in determining the size of an oil spill according to 40 CFR Part 112 (proposed rule):

- Small case discharge: 2,100 gallons (50 bbl) or less.
- Medium case discharge: Greater than 2,100 gallons (50 bbl) and less than or equal to 50,400 gallons (1200 bbl) since USOR is regulated by both EPA and USCG and thereby is considered a complex facility.
- Worst case discharge: (1) largest single aboveground oil storage tank within an adequate secondary containment area, plus (2) the total aboveground oil storage capacity of tanks without adequate secondary containment. See Section 6.3 for discussions regarding EPA worst case spill scenarios.

5.9.4 DOT Criteria

The only oil spill categorization that is discussed in 49 CFR Part 194 is for a worst case discharge. Per DOT the applicable worst case discharge for the McChord Pipeline Co. pipeline is defined as follows:

> The worst case discharge is the largest volume, in barrels, of the pipeline's maximum release time in hours, plus the maximum shutdown response time in hours (based on historic discharge data or in the absence of such historic data, the operator's best estimate), multiplied by the maximum flow rate expressed in barrels per hour (based on the maximum daily capacity of the pipeline), plus the largest line drainage volume after shutdown of the line section in response zone expressed in barrels.

See Section 6.4 for additional discussions regarding DOT's worst case discharge scenario as it applies to the McChord Pipeline Co. (b) (7)(F) [redacted]

6.0 SPILL SCENARIOS

6.1 Ecology Planning Standards

Ecology will apply planning standards when determining the ability of plan holders to meet WAC 173-182, Sections C and D. During actual spill events, the initial deployment of response resources will be guided by safety considerations. According to WAC 173-182-310, it's important to note that the planning standards discussed in this section do not constitute cleanup standards that must be met by the holder of a contingency plan. The following paragraphs contained in this section discuss how USOR and McChord Pipeline Co. will meet Ecology's planning standards discussed in WAC 173-182.

6.1.1 Planning Standards for Non-Dedicated Work Boats and Operators

This standard requires that the plan holder obtain non-dedicated work boats and operators that will be available to deploy GRPs, enhance skimming, and assist with skimming systems, logistical support or other uses during a spill. At a minimum, this plan will describe a plan that will support a worst case spill response with work boats and operators that could have arrived on scene beginning at 48 hours. U.S. Oil plans to meet this requirement through our contract with MSRC. As such, the plan for meeting this requirement is addressed in Appendix D of MSRC's primary response contractor application submittal to Ecology.

6.1.2 Planning Standards for Aerial Surveillance

This standard requires that the plan holder provide for aerial oil tracking resources capable of being on-scene with six hours of a spill notification and that these resources be capable of supporting oil spill removal operations for three, ten-hour operational shifts during the initial seventy-two hours after a spill. USOR has established a blanket purchase order with both Northwest Helicopters and Worldwind Helicopters, Inc. to provide the services necessary to meet this planning standard. Their contact information is listed in Table 3-1 and Appendices C and D.

6.1.3 Planning Standards for Dispersants

This standard applies to vessels carrying group II or III persistent oil as a primary cargo that transit in any area where pre-approval or case-by-case use of dispersants is allowed per the NWACP. USOR and McChord Pipeline Co. do not intend to utilize chemical dispersants as a means of removing or controlling oil spills as both of these facilities are located in an area considered by Chapter 4000 of the NWACP to be a "No Dispersant Use Zone. The use of chemical dispersants is generally not conducive within the highly populated Seattle-Tacoma metropolitan area including the numerous sensitive habitats located throughout the waters of the Puget Sound area. The use of dispersants may be used only if, in the judgement of the FOSC, they are required to prevent or substantially reduce a hazard to human life.

6.1.4 Planning Standards for In-Situ Burning

This standard applies to plan holders operating in areas where in-situ burnng has an expedited approval process. It is the policy of the Northwest Area Committee to use, and in certain cases, encourage in-situ burning, provided that requirements specified in the NWACP are met. A primary consideration in the decision to burn is the protection and safety of human life. The authority to approve a burn rests with the Unified Command, who must determine that an application to burn conforms to these guidelines.

USOR and McChord Pipeline Co. are located in an area that will be considered on a case-by-case basis according criteria outlined in Chapter 4000 of the NWACP. While no geographic areas have been excluded from the consideration to use in-site burning, it is very unlikely that it would be approved in a heavily populated area such as inner Puget Sound because of the increased potential for exposing people to high levels of particulates. As such, USOR relies on the in-situ equipment resources identified in MSRC's Primary Response Contractor application in order to meet this standard.

6.1.5 Planning Standards for Storage

This standard requires plan holders to identify both on-water devices and shoreside interim storage locations. For marine waters, shoreside storage can be identified to meet 50% of storage requirements listed in the tables contained in WAC 173-182, Section C provided that plan holders can demonstrate that recovered oil can be transported to the shoreside storage.

It's important to note that USOR has approximately 1,376,000 bbls of crude oil storage capacity, which can be utilized if necessary to contain recovered oil. As a practical matter, the actual availability of recovered oil storage capacity using crude oil tankage increases at a rate that is generally equivalent to the rate at which crude oil is being refined in the process units. Recovered oil can be transferred from a barge/vessel located at the marine terminal to USOR's crude oil tankage via the refinery-to-dock pipelines that are used to convey crude oil and various products between the refinery and the marine terminal. Recovered oil can also be transported into the refinery via vacuum trucks and offloaded into refinery crude oil tankage at designated off load stations. Recovered oil can be transported into the refinery using railcars and then offloaded using vacuum trucks.

From crude oil tankage, any free phase water is drained to the refinery wastewater treatment system and the oil is charged to the refinery process units for processing. USOR's ability to meet the minimum storage requirements using this planning standard is further depicted in the following paragraphs.

6.1.6 Determining Effectiveness of Recovery Systems

The purpose of this requirement is to determine the effectiveness of recovery systems necessary to meet the planning standards contained in WAC 173-182, Section C. As such the response equipment and recovery system included in the primary response contractor applications for MSRC, Guardian Industrial and Global Salvage and Diving are being incorporated by reference.

Effective daily recovery capacity will be calculated using the following formula:

R = T x 24 hours x E

R = Effective daily recovery capacity
T = Throughput rate in barrels per hour (nameplate capacity)
E = 20% (efficiency factor)

The primary response contractor can request an alternative EDRC from Ecology. If approved, then the following formula will be used to calculate the effective daily recovery capacity:

$R = D \times U$

R = Effective daily recovery capacity
D = Average oil recovery throughput rate in barrels per hour
U = 10 hours of operation

6.1.7 Documenting Compliance with the Planning Standards

The following paragraphs contain spreadsheets showing the resources intended to meet the planning standards described in WAC 173-182, Chapter C. Specifically, these spreadsheets account for the provider as well as quantities/types/home base of containment boom, recovery systems and on-water storage necessary to meet individual planning standards. The personnel necessary to operate this equipment is identified in the spreadsheets contained in this section as well as Appendix F.

Unless an alternate performance standard is demonstrated to Ecology's satisfaction, the following factors will used to determine the adequacy of meeting these planning standards:

- The time needed for a resource to move to the spill site is the sum of the notification, mobilization and travel times.
- For dedicated resources owned by the plan holder, PRC and Ecology is thirty minutes.
- For all other dedicated response equipment, the mobilization planning factor is one hour.
- Non-dedicated resources have a mobilization factor of three hours.
- Equipment travel speeds are computed using a speed of 35 miles per hours for land and five knots for water using standard nautical charts and street maps and on-line mapping programs.

6.1.8 Planning Standard for Facilities with a Vessel Terminal

Table 6-1 shows how USOR meets the planning standards identified in WAC 173-182-355 for containment boom, oil recovery and on-water storage.

6.1.9 Planning Standard for Transmission Pipelines

Tables 6-2 and 6-3 show how USOR meets the planning standards identified in WAC 173-182-365 for containment boom, oil recovery and storage along the McChord Pipeline. This pipeline crosses Water Resource Inventory Area (WRIA) #10, which empties into the Puyallup River and Clover Creek, which empties into Lake Steilacoom and is located in WRIA #12. The selection of response resources available for WRIA #12 is based on those resources that can be trailered for deployment at the Clover Creek crossing. The amount of containment boom necessary to meet the two-hour planning standard for these water body crossings uses the WAC 173-182-365 (2) default value of 2000 feet.

6.1.10 Planning Standards for Ground Water

Oil releases to groundwater are very complex issues that vary significantly with each situation. Spills to the ground and groundwater will be investigated and cleaned up in accordance with the Model Toxics Control Act cleanup standards outlined in WAC 173-340. USOR will immediately commence a response/investigation effort upon becoming aware of a spill to groundwater. Methods that will likely be used to assess a ground water spill to help determine the origin/extent of the release include the following:

- Reviewing refinery process and/or oil movement information.
- Collecting samples for analysis.
- Digging test pits.
- Installing monitoring and/or observation wells.
- Looking for the presence of discoloration, odors, sheening, distressed vegetation, etc. in areas adjacent to and/or downgradient of a suspected release location.

Contact information for consultants as well as remediation contractors that are typically used by USOR are located in Appendix C. Additional information regarding the assessment, containment and removal of spills to groundwater is contained in Section 3.5.3.

Table 6-1

Washington State Department of Ecology
Planning Standards

WAC 173-182-355 Transfer sites for covered vessels at locations where transfer occur, and for facilities with a vessel terminal

NOTE: Planning standard calculations shown indicate resources listed on the WRRL and information provided through the Primary Response Contractor applications as of plan approval (conditional) date. This information is subject to change as equipment is acquired and relocated.

NOTE: This equipment does not necessarily represent the equipment that would be deployed in the event of a spill. This is not a response standard, this is only a representation of equipment that would be available based on the guidelines set forth in WAC 173-182 for planning standards, determining effectiveness of recovery systems, documenting compliance with planning standards, and plan evaluation criteria. Actual times and performance will depend on traffic, weather, safety considerations, and operator discretion.

NOTE: WAC 173-182-335 Planning standards for storage: For marine environments, shoreside storage can be identified to meet fifty percent of the storage requirements in the planning standards if the plan holder can demonstrate that recovered oil can be transported to the shoreside storage. Access to fixed temporary storage is verified through plan review, letters of intent between companies, and primary response contractor applications.

NOTE: Distances in this spreadsheet were calculated using multiple web-based mapping tools. Ecology will allow +/- 5 miles/nautical miles for planning standard distance calculations.

Plan Holder: **U.S. Oil**
PRC: **MSRC**
(b) (7)(F) [redacted]
Mutual Aid: **WSPA (BP Cherry Point Refinery, ConocoPhillips - Ferndale Refinery, Shell Puget Sound Refinery, Tesoro - Anacortes Refinery)**
Shoreside storage available: **Shoreside storage as available through U.S. Oil and PRC**

Category Definitions

Mobilization Times	Boom Type
Dedicated, plan holder owned = 30 mins	B1: boom > 42"
Dedicated, PRC owned = 1 hour	B2: boom between 18" and 42"
Non-Dedicated = 3 hour	B3: boom < 18"

Planning Transit Distance = [(hour benchmark - mobilization time) x transit speed]
Distance to Planning Standard = miles/nautical miles from staging area to the applicable planning standard.
Distance to Planning Standard <1m: The equipment is staged within the planning standard area.
Product: oil group(s) in which skimmers can be effective. Definition - 33CFR155.1020
Assets in italics are available for a response however no transportation or support platform is associated to be counted toward the planning standards.

Benchmark Calculations

6 HR	**Boom:** Additional 10,000 feet of boom available for containment, recovery or protection could have arrived.	10,000' boom
	Recovery: Capacity to recover the lesser of 10% of worst case spill volume or 12,000 barrels within 24-hr period could have arrived.	12,500 bbls recovery
	Storage: 2 times the EDRC (50% on water)	12,500 bbls on water storage

Organization	Asset	Home Base	Mobilization Time (hr)	Planning transit distance	Distance to Planning Standard	Boom Type B1 (feet)	Boom Type B2 (feet)	Boom Type B3 (feet)	EDRC (BPD) shallow / calm capable	EDRC (BPD) open water capable	Product (Group II, III, IV, V)	On Water Storage (BBLS)	People
USOil	Boom (16")	U.S.Oil	0.5	n/a	< 1 m	-	-	2,700	-	-	-	-	-
USOil	Workboat	U.S.Oil	0.5	n/a	< 1 nm	-	-	-	-	-	-	-	2
MSRC	RV BRANT (12"x18")	Tacoma, WA	1	70 nm	< 1 nm	-	200	-	4,896			8	2
MSRC	WB COOT (8"x12")	Tacoma, WA	1	125 nm	< 1 nm	-	1,500	-	-	-	-	-	2
MSRC	WB SCOOTER (8"x12")	Tacoma, WA	1	125 nm	< 1 nm	-	1,000	-	-	-	-	-	2
MSRC	OSRB IBIS (12"x18")	Tacoma, WA	3	24 nm	3 nm	-	1,400	-	-	-	-	21,410	2
MSRC	Trailer 60 (18")	Tacoma, WA	3	125 m	3 m	-	-	4,000	-	-	-	-	-
MSRC	Trailer 70 (12"x18")	Tacoma, WA	3	125 m	3 m	-	4,000	-	-	-	-	-	-
MSRC	RV WIDGEON (8"x12")	Shilshole Marina	1	125 nm	26 nm	-	600	-	3,588	-		30	2
MSRC	WB AVOCET (8"x12")	Shilshole Marina	1	125 nm	26 nm	-	1,500	-	-	-	-	-	2
MSRC	RV CORMORANT	Shilshole Marina	1	35 nm	26 nm	-	-	-	-	21,450		90	2
					6 Hour Totals:	0	10,200	6,700	8,484	21,450	0	21,538	16

Based on location of contracted assets, mobilization time, transit distance and distance to planning standard, plan holder is able to meet the 6 hour planning standard.

12 HR	**Boom:** Additional 20,000 feet of boom available for containment, recovery or protection could have arrived.	20,000' of boom
	Recovery: Capacity to recover the lesser of 15% of worst case spill volume or 36,000 barrels within 24-hr period could have arrived.	23,500 bbls additional recovery
	Storage: 2 times the EDRC (50% on water)	23,500 bbls additional on water storage

Organization	Asset	Home Base	Mobilization Time (hr)	Planning transit distance	Distance to Planning Standard	Boom Type B1 (feet)	Boom Type B2 (feet)	Boom Type B3 (feet)	EDRC (BPD) shallow / calm capable	EDRC (BPD) open water capable	Product (Group II, III, IV, V)	On Water Storage (BBLS)	People
		Available equipment remaining from 6 hour requirements:				-	6,900	-	-	17,434	-	9,038	-
MSRC	Trailers(3) SWRB 123 (18"x20") & WB-1	Tacoma, WA	3	115 m	< 1 nm	-	60	-	905	-	-	400	2
MSRC	WB MALLARD (8"x12")	Port Angeles	1	506 nm	93 nm	-	1,500	-	-	-	-	-	2
MSRC	RV PINTAIL (8"x12")	Port Angeles	1	308 nm	93 nm	-	200	-	2,592	-		8	2
MSRC	RV SHEARWATER (12"x16")	Port Angeles	1	229 nm	93 nm	-	600	-	12,000	-	-	1,362	4
MSRC	RIB	o/b SHEARWATER	-	-	-	-	-	-	-	-	-	-	2
MSRC	John Boat	o/b SHEARWATER	-	-	-	-	-	-	-	-	-	-	2
MSRC	OSRB 380	Port Angeles	3	168 nm	93 nm	1,320	-	-	-	-	-	38,000	-
MSRC	WB EAGLE (8"x12")	Bellingham, WA	1	209 nm	100 nm	-	3,000	-	-	-	-	-	2
MSRC	Trailer 45 (12"x18")	Seattle, WA	3	315 m	35 m	-	5,200	-	-	-	-	-	-
MSRC	Trailer 62 (15"x27")	Richmond Beach	3	315 m	47 m	-	2,000	-	-	-	-	-	-
MSRC	Trailer 63 (15"x27")	Richmond Beach	3	315 m	47 m	-	2,000	-	-	-	-	-	-
MSRC	Trailer 68 (12"x18")	Richmond Beach	3	315 m	47 m	-	2,000	-	-	-	-	-	-
MSRC	Trailer 17 (12"x18")	CP Ferndale	3	315 m	131 m	-	4,000	-	-	-	-	-	-
MSRC	Trailer 61 (12"x18")	CP Ferndale	3	315 m	131 m	-	2,000	-	-	-	-	-	-
					12 Hour Totals:	1,320	29,660	0	15,497	17,434	0	48,808	16

Based on location of contracted assets, mobilization time, transit distance and distance to planning standard, plan holder is able to meet the 12 hour planning standard.

WAC 173-182-355 Transfer Site: **U.S. Oil**

Table 6-1 (Continued)

Washington State Department of Ecology
Planning Standards

24 HR	**Boom:** Additional 20,000 feet of boom available for containment, recovery or protection could have arrived.					**20,000' of boom**							
	Recovery: Capacity to recover the lesser of 20% of worst case spill volume or 48,000 barrels within 24-hr period could have arrived.					**12,000 bbls additional recovery**							
	Storage: 3 times the EDRC (50% on water)					**36,000 bbls additional on water storage**							
Organization	**Asset**	**Home Base**	**Mobilization Time (hr)**	**Planning transit distance**	**Distance to Planning Standard**	**Boom Type B1 (feet)**	**Boom Type B2 (feet)**	**Boom Type B3 (feet)**	**EDRC (BPD) shallow / calm capable**	**EDRC (BPD) open water capable**	**Product (Group II, III, IV, V)**	**On Water Storage (BBLS)**	**People**
					Available equipment remaining from 12 hour requirements:		10,980	-	3,747	5,684	-	25,308	-
MSRC	OSRB KITTIWAKE	Port Angeles	3	168 nm	93 nm	-	2,700	-	-	2,914	-	23,414	2
MSRC	RV PERIGRINE	Everett	3	735 m	61 m	-	-	-	3,588	-		28	2
MSRC	WB OSPREY (8"x12")	Anacortes, WA	1	437 nm	94 nm	-	3,000	-	-	-	-	-	2
MSRC	RV MERLIN	Everett	3	735 m	61 m	-	-	-	3,588	-		28	2
MSRC	WB TEAL (8"x12")	Anacortes, WA	1	437 m	94 nm	-	1,500	-	-	-	-	-	2
MSRC	Trailer 66 (12"x18")	March Pt, Anacortes	3	735 m	113 m	-	2,900	-	-	-	-	-	-
MSRC	Trailer 75 (8"x12")	March Pt, Anacortes	3	735 m	113 m	-	4,500	-	-	-	-	-	-
MSRC	Trailer 76 (12"x18")	Tesoro, Anacortes	3	735 m	110 m	-	4,000	-	-	-	-	-	-
MSRC	Trailer 63 (12"x18")	Tesoro, Anacortes	3	735 m	110 m	-	4,160	-	-	-	-	-	-
MSRC	Trailer 41 (8"x12")	Tesoro, Anacortes	3	735 m	110 m	-	1,000	-	-	-	-	-	-
					24 Hour Totals:	0	34,740	0	10,923	8,599	0	48,778	10
Based on location of contracted assets, mobilization time, transit distance and distance to planning standard, plan holder is able to meet the 24 hour planning standard.													
48 HR	**Boom:** More boom as necessary for containment, recovery or protection.					**as needed**							
	Recovery: Capacity to recover the lesser of 25% of worst case spill volume or 60,000 barrels within 24-hr period could have arrived.					**12,000 bbls additional recovery required**							
	Storage: More storage as necessary to not slow the response.					**as needed**							
Organization	**Asset**	**Home Base**	**Mobilization Time (hr)**	**Planning transit distance**	**Distance to Planning Standard**	**Boom Type B1 (feet)**	**Boom Type B2 (feet)**	**Boom Type B3 (feet)**	**EDRC (BPD) shallow / calm capable**	**EDRC (BPD) open water capable**	**Product (Group II, III, IV, V)**	**On Water Storage (BBLS)**	**People**
					Available equipment remaining from 24 hour requirements:	-	4,740	-	4,923	2,599	-	12,778	-
MSRC	Trailer 42 (8"x12")	Port Angeles	3	1,575 m	107 m	-	1,000	-	-	-	-	-	-
MSRC	Trailer 69 (12"x18")	Port Angeles	3	1,575 m	107 m	-	3,200	-	-	-	-	-	-
MSRC	Trailer 74 (12"x30")	Port Angeles	3	1,575 m	107 m	-	2,000	-	-	-	-	-	-
MSRC	Trailer 27 (12"x18")	Blaine	3	1,575 m	142 m	-	2,000	-	-	-	-	-	-
MSRC	Trailer 77 (12"x18")	Blaine	3	1,575 m	142 m	-	3,200	-	-	-	-	-	-
					48 Hour Totals:	0	16,140	0	4,923	2,599	0	12,778	0
Based on location of contracted assets, mobilization time, transit distance and distance to planning standard, plan holder is able to meet the 48 hour planning standard.													

WAC 173-182-355 Transfer Site: **U.S. Oil**

Table 6-2

Washington State Department of Ecology
Planning Standards

WAC 173-182-365 Transmission pipelines and pipeline tank farms.

NOTE: Planning standard calculations shown indicate resources listed on the WRRL and information provided through the Primary Response Contractor applications as of plan approval (conditional) date. This information is subject to change as equipment is acquired and relocated.

NOTE: This equipment does not necessarily represent the equipment that would be deployed in the event of a spill. This is not a response standard, this is only a representation of equipment that would be available based on the guidelines set forth in WAC 173-182 for planning standards, determining effectiveness of recovery systems, documenting compliance with planning standards, and plan evaluation criteria. Actual times and performance will depend on traffic, weather, safety considerations, and operator discretion.

NOTE: For freshwater environments, shoreside storage can be identified to meet sixty-five percent of the storage requirements outlined in the planning standards if the plan holder can demonstrate that recovered oil can be transported to the shoreside storage. For marine environments, shoreside storage can be identified to meet fifty percent of the storage requirements in the planning standards if the plan holder can demonstrate that recovered oil can be transported to the shoreside storage. Access to fixed temporary storage is verified through plan review, letters of intent between companies, and primary response contractor applications.

NOTE: Distances in this spreadsheet were calculated using multiple web-based mapping tools. Ecology will allow +/- 5 miles/nautical miles for planning standard distance calculations.

NOTE: The 2 hour benchmark requirements are based on information on submitted by the plan holder and calculated as outlined in WAC 173-182-365. To determine the boom necessary for the two hour standards the plan holder must identify by WRIA, surface waters of the state with the potential to be impacted by a spill from the pipeline. **The U.S. Oil / McChord Pipeline could impact water bodies within WRIA #10 and WRIA #12. Information regarding the widest river in the WRIA, average speed of that river, and its widest point were not included in the U.S. Oil / McChord contingency plan. A default of 2,000' of boom will be applied for the two hour planning standard.**

Plan Holder: **U.S. Oil and McChord Pipeline, WRIA 10**

PRC: **MSRC**

(b) (7)(F) [redacted]

Mutual Aid: **WSPA (BP Cherry Point Refinery, ConocoPhillips - Ferndale Refinery, Shell Puget Sound Refinery, Tesoro - Anacortes Refinery)**

Shoreside storage available: **Shoreside storage as available**

Category Definitions

Mobilization Times	Boom Type
Dedicated, plan holder owned = 30 mins	B1: boom ≥ 42"
Dedicated, PRC owned = 1 hour	B2: boom between 18" and 42"
Non-Dedicated = 3 hour	B3: boom < 18"

Planning Transit Distance = [(hour benchmark - mobilization time) x transit speed]

Distance to Planning Standard = miles/nautical miles from staging area to the applicable planning standard.

Distance to Planning Standard <1m: The equipment is staged within the planning standard area.

Product: oil group(s) in which skimmers can be effective. Definition - 33CFR155.1020

Assets in italics are available for a response however no transportation or support platform is associated to be counted toward the planning standards.

Benchmark Calculations

Hr 2 — **Puyallup River Crossing: 2000' boom**

Boom available at the spill source or downstream of the source could have arrived

Organization	Asset	Home Base	Mobilization Time (hr)	Planning transit distance	Distance to Planning Standard	Boom Type B1 (feet)	Boom Type B2 (feet)	Boom Type B3 (feet)	EDRC (BPD) shallow / calm capable	EDRC (BPD) open water capable	Product (Group II, III, IV, V)	On Water Storage (BBLS)	People
US Oil / MP	Trailer (LP 5422-SU) Boom (6"x6")	U.S. Oil, Tacoma	0.5	52.5 m	3 m	-	-	100	-	-	-	-	-
US Oil / MP	Trailer (LP 5422-SU) Boom (6"x6")	U.S. Oil, Tacoma	0.5	52.5 m	3 m	-	-	50	-	-	-	-	-
US Oil / MP	Trailer (LP 5422-SU) Boom (2"x4")	U.S. Oil, Tacoma	0.5	52.5 m	3 m	-	-	100	-	-	-	-	-
US Oil / MP	Swan Creek Shed, Boom (6"x6")	Tacoma, (28th & 80th)	0.5	52.5 m	6 m	-	-	50	-	-	-	-	-
US Oil / MP	Swan Creek Shed, Boom (6"x6")	Tacoma, (28th & 80th)	0.5	52.5 m	6 m	-	-	50	-	-	-	-	-
US Oil / MP	Swan Creek Shed, Boom (2"x4")	Tacoma, (28th & 80th)	0.5	52.5 m	6 m	-	-	50	-	-	-	-	-
MSRC	Small Boom Trailer (12")	Tacoma, WA	1	35 m	3 m	-	-	4,000	-	-	-	-	2
CHES (str)	Spill Trailer w/skiff, boom (18")	SeaTac, WA	1	35 m	20 m	-	-	2,500	-	-	-	-	-
					Puyallup River Crossing 2 hour totals	-	0	6,900	0	0	0	0	2

Based on location of contracted assets, mobilization time, transit distance, and distance to planning standard, **U.S. Oil/McChord Pipeline can meet the two hour planning standard**

Hr 6 — **Puyallup River Crossing**

Boom: Additional 5,000 feet of boom available for containment, recovery or protection could have arrived.	**5,000' additional boom required**
Recovery: Capacity to recovery the lesser of 10% of worse case spill volume or 12,500 barrels within 24-hour period could have arrived.	**130 bbls recovery required**
Storage: 1 times the EDRC (Marine Environment)	**65 bbls on water storage required**

Organization	Asset	Home Base	Mobilization Time (hr)	Planning transit distance	Distance to Planning Standard	Boom Type B1 (feet)	Boom Type B2 (feet)	Boom Type B3 (feet)	EDRC (BPD) shallow / calm capable	EDRC (BPD) open water capable	Product (Group II, III, IV, V)	On Water Storage (BBLS)	People
					Remaining Equipment from 2 hr benchmarks:	-		4,900	-	-	-	-	-
GDS	Skiff w/8hp OB	Seattle, WA	1	175 m	38 m	-	-	-	-	-	-	-	2
GDS	Skiff w/OB	Seattle, WA	1	175 m	38 m	-	-	-	-	-	-	-	2
GDS	Skiff w/OB	Seattle, WA	1	175 m	38 m	-	-	-	-	-	-	-	2
MSRC	Morris MI-30 w/ tank (2 liquitotes)	Everett, WA	1	175 m	61 m	-	-	-	967	-	-	28	1
MSRC	Aquaguard #1 w/ tank	Everett, WA	1	175 m	61 m	-	-	-	360	-	-	24	1
MSRC	Aquaguard #2 w/ tank	Everett, WA	1	175 m	61 m	-	-	-	360	-	-	24	1
MSRC	Minibarge	Tacoma, WA	3	115 m	61 m	-	60	-	905	-	-	100	2
GDS	Response Trailer, Boom (4"x4")	Seattle, WA	1	175 m	38 m	-	-	200	-	-	-	-	-
GDS	Skimmer Trailer, Boom (4"x6")	Seattle, WA	1	175 m	38 m	-	-	200	-	-	-	-	-
GDS	Yard 2 Trailer, Boom (8"x12")	Seattle, WA	1	175 m	38 m	-	2,000	-	-	-	-	-	-
GDS	Yard 2 Trailer, Boom (8"x12")	Seattle, WA	1	175 m	38 m	-	1,000	-	-	-	-	-	-
GDS	Yard 2 Enclosed Trailer (8"x12")	Seattle, WA	1	175 m	38 m	-	500	-	-	-	-	-	-
					6 hour totals	0	3,560	5,300	2,612	0	0	176	11

Based on location of contracted assets, mobilization time, transit distance, and distance to planning standard, **U.S. Oil / McChord Pipeline can meet the six hour planning standard.**

Table 6-2 (Continued)

Washington State Department of Ecology
Planning Standards

Hr 2 — **Swan Creek Crossing: 2000' boom**
Boom available at the spill source or downstream of the source could have arrived

Organization	Asset	Home Base	Mobilization Time (hr)	Planning transit distance	Distance to Planning Standard	Boom Type B1 (feet)	Boom Type B2 (feet)	Boom Type B3 (feet)	EDRC (BPD) shallow / calm capable	EDRC (BPD) open water capable	Product (Group II, III, IV, V)	On Water Storage (BBLS)	People
US Oil / MP	Trailer (LP 5422-SU) Boom (6"x6")	U.S. Oil, Tacoma	0.5	52.5 m	10 m	-	-	100	-	-	-	-	-
US Oil / MP	Trailer (LP 5422-SU) Boom (6"x6")	U.S. Oil, Tacoma	0.5	52.5 m	10 m	-	-	50	-	-	-	-	-
US Oil / MP	Trailer (LP 5422-SU) Boom (2"x4")	U.S. Oil, Tacoma	0.5	52.5 m	10 m	-	-	100	-	-	-	-	-
US Oil / MP	Swan Creek Shed, Boom (6"x6")	Tacoma, (28th & 80th)	0.5	52.5 m	< 1 m	-	-	50	-	-	-	-	-
US Oil / MP	Swan Creek Shed, Boom (6"x6")	Tacoma, (28th & 80th)	0.5	52.5 m	< 1 m	-	-	50	-	-	-	-	-
US Oil / MP	Swan Creek Shed, Boom (2"x4")	Tacoma, (28th & 80th)	0.5	52.5 m	< 1 m	-	-	50	-	-	-	-	-
CHES (str)	Spill Trailer w/skiff, boom (18")	SeaTac, WA	1	35 m	20 m	-	-	2,500	-	-	-	-	-
MSRC	Small Boom Trailer (12")	Tacoma, WA	1	35 m	10 m	-	-	4,000	-	-	-	-	2
					Swan Creek Crossing 2 hour totals	-	0	6,900	0	0	0	0	2

Based on location of contracted assets, mobilization time, transit distance, and distance to planning standard, **U.S. Oil / McChord Pipeline can meet the two hour planning standards for the Swan Creek Crossing.**

Hr 6 — **Swan Creek Crossing**

Boom: Additional 5,000 feet of boom available for containment, recovery or protection could have arrived.	**5,000' additional boom required**
Recovery: Capacity to recovery the lesser of 10% of worse case spill volume or 12,500 barrels within 24-hour period could have arrived.	**130 bbls recovery required**
Storage: 1 times the EDRC (Fresh Water Environment)	**65 bbls on water storage required**

Organization	Asset	Home Base	Mobilization Time (hr)	Planning transit distance	Distance to Planning Standard	Boom Type B1 (feet)	Boom Type B2 (feet)	Boom Type B3 (feet)	EDRC (BPD) shallow / calm capable	EDRC (BPD) open water capable	Product (Group II, III, IV, V)	On Water Storage (BBLS)	People
					Remaining Equipment from 2 hr benchmarks:	-	-	2,400	-	-	-	-	-
GDS	Skiff w/8hp OB	Seattle, WA	1	175 m	38 m	-	-	-	-	-	-	-	2
GDS	Skiff w/OB	Seattle, WA	1	175 m	38 m	-	-	-	-	-	-	-	2
GDS	Skiff w/OB	Seattle, WA	1	175 m	38 m	-	-	-	-	-	-	-	2
MSRC	Morris MI-30 w/ tank (2 liquitotes)	Everett, WA	1	175 m	66 m	-	-	-	987	-	-	28	1
MSRC	Aquaguard #1 w/ tank	Everett, WA	1	175 m	66 m	-	-	-	360	-	-	24	1
MSRC	Aquaguard #2 w/ tank	Everett, WA	1	175 m	66 m	-	-	-	360	-	-	24	1
MSRC	Trailers(3) SWRB 123 (18"x20") & WB-1	Tacoma, WA	3	115 m	10 m	-	60	-	905	-	-	400	2
GDS	Response Trailer, Boom (4"x4")	Seattle, WA	1	175 m	38 m	-	-	200	-	-	-	-	-
GDS	Skimmer Trailer, Boom (4"x6")	Seattle, WA	1	175 m	38 m	-	-	200	-	-	-	-	-
GDS	Yard 2 Trailer, Boom (8"x12")	Seattle, WA	1	175 m	38 m	-	2,000	-	-	-	-	-	-
GDS	Yard 2 Trailer, Boom (8"x12")	Seattle, WA	1	175 m	38 m	-	1,000	-	-	-	-	-	-
GDS	Yard 2 Enclosed Trailer (8"x12")	Seattle, WA	1	175 m	38 m	-	500	-	-	-	-	-	-
					6 hour totals	0	3,560	2,800	2,612	0	0	476	11

Based on location of contracted assets, mobilization time, transit distance, and distance to planning standard, **U.S. Oil / McChord Pipeline can meet the six hour planning standards for the Swan Creek Crossing.**

Hr 12 — **Puyallup River Crossing**
Swan Creek Crossing

Boom: Additional 20,000 feet of boom to be used for containment, protection or recovery could have arrived	**20,000' additional boom required**
Recovery: Capacity to recover the lesser of 15% of worst case spill volume or 36,000 barrels within 24-hr period could have arrived.	**94 bbls additional recovery required**
Storage: 2 times the EDRC	**166 bbls additional on water storage required**

Organization	Asset	Home Base	Mobilization Time (hr)	Planning transit distance	Distance to Planning Standard	Boom Type B1 (feet)	Boom Type B2 (feet)	Boom Type B3 (feet)	EDRC (BPD) shallow / calm capable	EDRC (BPD) open water capable	Product (Group II, III, IV, V)	On Water Storage (BBLS)	People
					Available equipment remaining from 6 hour requirements:	-	1,900	-	3,401	-	-	65	-
MSRC	Trailer 70 (12"x18")	Tacoma, WA	3	315 m	3 m	-	4,000	-	-	-	-	-	-
MSRC	WB AVOCET (8"x12")	Shilshole Marina	1	125 nm	26 nm	-	1,500	-	-	-	-	-	2
MSRC	RV CORMORANT	Shilshole Marina	1	35 nm	26 nm	-	-	-	-	21,450		-	2
MSRC	Jon Boat	o/b CORMORANT	-	-	-	-	-	-	-	-	-	-	2
MSRC	Trailers(3) SWRB 123 (18"x20") & WB-1	Tacoma, WA	3	115 m	3 m	-	60	-	905	-	-	400	2
MSRC	WB MALLARD (8"x12")	Port Angeles	1	506 nm	93 nm	-	1,500	-	-	-	-	-	2
MSRC	Trailer 60, Boom (18")	Tacoma, WA	3	315 m	3 m	-	-	4,000					
MSRC	Trailer 42, Boom (8"x12")	Port Angeles, WA	3	315 m	111 m	-	1,000	-	-	-	-	-	-
MSRC	Trailer 66, Boom (18")	Anacortes, WA	3	315 m		-	-	2,900	-	-	-	-	-
MSRC	Trailer 77, Boom (18")	Bellingham	3	315 m		-	-	3,200	-	-	-	-	-
MSRC	Trailer 45, Boom (12"x18")	Seattle, WA	3	315 m	35 m	-	5,200	-	-	-	-	-	-
MSRC	Trailer 68, Boom (12"x18")	Richmond Beach	3	315 m	47 m	-	2,000	-	-	-	-	-	-
MSRC	Trailer 17, Boom (12"x18")	CP Ferndale	3	315 m	131 m	-	4,000	-	-	-	-	-	-
MSRC	Trailer 81, Boom (12"x18")	CP Ferndale	3	315 m	131 m	-	2,000	-	-	-	-	-	-
					12 hour totals	0	23,160	10,100	4,306	21,450	0	465	10

Based on location of contracted assets, mobilization time, transit distance, and distance to planning standard, **U.S. Oil / McChord Pipeline can meet the twelve hour planning standards.**

WAC 173-192-365 Transmission pipelines and pipeline tanks farms: **U.S. Oil and McChord Pipeline**

Table 6-2 (Continued)

Washington State Department of Ecology
Planning Standards

24 HR	**Puyallup River Crossing** **Swan Creek Crossing**												
	Boom: More boom as necessary for containment, recovery or protection					**as needed**							
	Recovery: Capacity to recover the lesser of 20% of worst case spill volume or 48,000 barrels within 24-hr period could have arrived.					**94 bbls additional recovery required**							
	Storage: 3 times the EDRC (Marine Environment)					**281 bbls additional on water storage required**							
Organization	Asset	Home Base	Mobilization Time (hr)	Planning transit distance	Distance to Planning Standard	Boom Type B1 (feet)	Boom Type B2 (feet)	Boom Type B3 (feet)	EDRC (BPD) shallow / calm capable	EDRC (BPD) open water capable	Product (Group II, III, IV, V)	On Water Storage (BBLS)	People
		Available equipment remaining from 12 hour requirements:				-	7,260	-	4,212	21,356	-	279	-
MSRC	WB EAGLE (8"x12")	Bellingham, WA	1	437 m	100 nm	-	3,000	-	-	-	-	-	2
MSRC	WB OSPREY (8"x12")	Anacortes, WA	1	437 m	94 nm	-	3,000	-	-	-	-	-	2
MSRC	RV PEREGRINE	Everett, WA	1	735 m	61 m	-	-	-	3,588	-	-	28	-
MSRC	RV MERLIN	Everett, WA	1	735 m	61 m	-	-	-	3,588	-	-	28	-
					24 Hour Totals:	**0**	**13,260**	**0**	**11,388**	**21,356**	**0**	**335**	**4**
Based on location of contracted assets, mobilization time, transit distance, and distance to planning standard, **U.S. Oil / McChord Pipeline can meet the twenty-four hour planning standard.**													
48 HR	**Puyallup River Crossing** **Swan Creek Crossing**												
	Boom: More boom as necessary for containment, recovery or protection.					**as needed**							
	Recovery: Capacity to recover the lesser of 25% of worst case spill volume or 60,000 barrels within 24-hr period could have arrived.					**97 bbls additional recovery required**							
	Storage: More storage as necessary to not slow the response.					**as needed**							
Organization	Asset	Home Base	Mobilization Time (hr)	Planning transit distance	Distance to Planning Standard	Boom Type B1 (feet)	Boom Type B2 (feet)	Boom Type B3 (feet)	EDRC (BPD) shallow / calm capable	EDRC (BPD) open water capable	Product (Group II, III, IV, V)	On Water Storage (BBLS)	People
		Available equipment remaining from 24 hour requirements:				-	-	-	11,294	21,262	-	54	-
MSRC	Trailer 42, Boom (8"x12")	Port Angeles, WA	3	1575 m	109 m	-	1,000	-	-	-	-	-	-
MSRC	Trailer 41, Boom (8"x12")	Port Angeles, WA	3	1575 m	109 m	-	1,000	-	-	-	-	-	-
MSRC	Trailer 75, Boom (8"x12")	Anacortes, WA	3	1575 m	109 m	-	4,500	-	-	-	-	-	-
MSRC	WB TEAL (8"x12")	Anacortes, WA	1		94 nm	-	1,500	-	-	-	-	-	2
					48 Hour Totals:	**0**	**8,000**	**0**	**11,294**	**21,262**	**0**	**54**	**2**
Based on location of contracted assets, mobilization time, transit distance, and distance to planning standard, **U.S. Oil / McChord Pipeline can meet the forty-eight hour planning standard.**													

WAC 173-192-365 Transmission pipelines and pipeline tanks farms: **U.S. Oil and McChord Pipeline**

Table 6-3

Washington State Department of Ecology
Planning Standards

WAC 173-182-365 Transmission pipelines and pipeline tank farms.

NOTE: Planning standard calculations shown indicate resources listed on the WRRL and information provided through the Primary Response Contractor applications as of plan approval (conditional) date. This information is subject to change as equipment is acquired and relocated.

NOTE: This equipment does not necessarily represent the equipment that would be deployed in the event of a spill. This is not a response standard, this is only a representation of equipment that would be available based on the guidelines set forth in WAC 173-182 for planning standards, determining effectiveness of recovery systems, documenting compliance with planning standards, and plan evaluation criteria. Actual times and performance will depend on traffic, weather, safety considerations, and operator discretion.

NOTE: For freshwater environments, shoreside storage can be identified to meet sixty-five percent of the storage requirements outlined in the planning standards if the plan holder can demonstrate that recovered oil can be transported to the shoreside storage. Access to fixed temporary storage is verified through plan review, letters of intent between companies, and primary response contractor applications.

NOTE: Distances in this spreadsheet were calculated using multiple web-based mapping tools. Ecology will allow +/- 5 miles/nautical miles for planning standard distance calculations.

NOTE: The 2 hour benchmark requirements are based on information submitted by the plan holder and calculated as outlined in WAC 173-182-365. To determine the boom necessary for the two hour standards the plan holder must identify by WRIA, surface waters of the state with the potential to be impacted by a spill from the pipeline. **The U.S. Oil / McChord Pipeline could impact water bodies within WRIA #10 and WRIA #12. Information regarding the widest river in the WRIA, average speed of that river, and its widest point were not included in the U.S. Oil / McChord contingency plan. A default of 2000' of boom will be applied for the two hour planning standard.**

Plan Holder: **U.S. Oil and McChord Pipeline, WRIA 12**
PRC: **MSRC**
(b) (7)(F) [redacted]
Mutual Aid: **WSPA (BP Cherry Point Refinery, ConocoPhillips - Ferndale Refinery, Shell Puget Sound Refinery, Tesoro - Anacortes Refinery)**
Shoreside storage available: **Shoreside storage as available**

Category Definitions

Mobilization Times	Boom Type
Dedicated, plan holder owned = 30 mins	B1: boom > 42"
Dedicated, PRC owned = 1 hour	B2: boom between 18" and 42"
Non-Dedicated = 3 hour	B3: boom < 18"

Planning Transit Distance = [(hour benchmark - mobilization time) x transit speed]
Distance to Planning Standard = miles/nautical miles from staging area to the applicable planning standard.
Distance to Planning Standard <1m: The equipment is staged within the planning standard area.
Product: oil group(s) in which skimmers can be effective. Definition - 33CFR155.1020
Assets in italics are available for a response however no transportation or support platform is associated to be counted toward the planning standards.

Benchmark Calculations

Hr 2 — **Clover Creek Crossing: 2000' boom**
Boom available at the spill source or downstream of the source could have arrived

Organization	Asset	Home Base	Mobilization Time (hr)	Planning transit distance	Distance to Planning Standard	Boom Type B1 (feet)	Boom Type B2 (feet)	Boom Type B3 (feet)	EDRC (BPD) shallow / calm capable	EDRC (BPD) open water capable	Product (Group II, III, IV, V)	On Water Storage (BBLS)	People
US Oil / MR	Trailer (LP 5422-SU) Boom (6"x6")	U.S. Oil, Tacoma	0.5	52.5 m	12.5 m	-	-	100	-	-	-	-	-
US Oil / MR	Trailer (LP 5422-SU) Boom (6"x6")	U.S. Oil, Tacoma	0.5	52.5 m	12.5 m	-	-	50	-	-	-	-	-
US Oil / MR	Trailer (LP 5422-SU) Boom (2"x4")	U.S. Oil, Tacoma	0.5	52.5 m	12.5 m	-	-	100	-	-	-	-	-
US Oil / MR	Swan Creek Shed, Boom (6"x6")	Tacoma, (28th & 80th)	0.5	52.5 m	9 m	-	-	50	-	-	-	-	-
US Oil / MR	Swan Creek Shed, Boom (6"x6")	Tacoma, (28th & 80th)	0.5	52.5 m	9 m	-	-	50	-	-	-	-	-
US Oil / MR	Swan Creek Shed, Boom (2"x4")	Tacoma, (28th & 80th)	0.5	52.5 m	9 m	-	-	50	-	-	-	-	-
MSRC	Small Boom Trailer (12")	Tacoma, WA	1	35 m	10 m	-	-	4,000	-	-	-	-	2
CHES (str)	Spill Trailer w/skiff, boom (18")	SeaTac, WA	1	35 m	29 m	-	-	2,500	-	-	-	-	-
					2 hour totals	-	0	6,900	0	0	0	0	2

Based on location of contracted assets, mobilization time, transit distance, and distance to planning standard, **U.S. Oil / McChord Pipeline can meet the two hour planning standard**

Hr 6 — **Clover Creek Crossing**

Boom: Additional 5,000 feet of boom available for containment, recovery or protection could have arrived.	**5,000' boom required**
Recovery: Capacity to recover the lesser of 10% of worse case spill volume or 12,500 barrels within 24-hour period could have arrived.	**187 bbls recovery required**
Storage: 1 times the EDRC	**187 bbls on water storage required**

Organization	Asset	Home Base	Mobilization Time (hr)	Planning transit distance	Distance to Planning Standard	Boom Type B1 (feet)	Boom Type B2 (feet)	Boom Type B3 (feet)	EDRC (BPD) shallow / calm capable	EDRC (BPD) open water capable	Product (Group II, III, IV, V)	On Water Storage (BBLS)	People
					Remaining Equipment from 2 hr benchmarks:	-	-	4,800	-	-	-	-	-
GDS	Skiff w/8hp OB	Seattle, WA	1	175 m	38 m	-	-	-	-	-	-	-	2
GDS	Skiff w/OB	Seattle, WA	1	175 m	38 m	-	-	-	-	-	-	-	2
GDS	Skiff w/OB	Seattle, WA	1	175 m	38 m	-	-	-	-	-	-	-	2
MSRC	Morris MI-30 w/ tank (2 liquitotes)	Everett, WA	1	175 m	71 m	-	-	-	987	-	-	28	1
MSRC	Aquaguard #1 w/ tank	Everett, WA	1	175 m	71 m	-	-	-	360	-	-	24	1
MSRC	Aquaguard #2 w/ tank	Everett, WA	1	175 m	71 m	-	-	-	360	-	-	24	1
MSRC	Trailers(3) SWRB 123 (16"x20") & WB-1	Tacoma, WA	3	115 m	13 m	-	60	-	905	-	-	400	2
GDS	Response Trailer, Boom (4"x4")	Seattle, WA	1	175 m	38 m	-	-	200	-	-	-	-	-
GDS	Skimmer Trailer, Boom (4"x6")	Seattle, WA	1	175 m	38 m	-	-	200	-	-	-	-	-
GDS	Yard 2 Trailer, Boom (8"x12")	Seattle, WA	1	175 m	38 m	-	2,000	-	-	-	-	-	-
GDS	Yard 2 Trailer, Boom (8"x12")	Seattle, WA	1	175 m	38 m	-	1,000	-	-	-	-	-	-
GDS	Yard 2 Enclosed Trailer (8"x12")	Seattle, WA	1	175 m	38 m	-	500	-	-	-	-	-	-
					6 hour totals	0	3,560	5,300	2,612	0	0	476	11

Based on location of contracted assets, mobilization time, transit distance, and distance to planning standard, **U.S. Oil / McChord Pipeline can meet the six hour planning standard.**

Table 6-3 (Continued)

Washington State Department of Ecology
Planning Standards

Hr 12	**Clover Creek Crossing**												
	Boom: Additional 20,000 feet of boom to be used for containment, protection or recovery could have arrived					**20,000' boom required**							
	Recovery: Capacity to recover the lesser of 15% of worst case spill volume or 36,000 barrels within 24-hr period could have arrived.					**94 bbls additional recovery required**							
	Storage: 2 times the EDRC					**186 bbls additional on water storage required**							
Organization	Asset	Home Base	Mobilization Time (hr)	Planning transit distance	Distance to Planning Standard	Boom Type B1 (feet)	Boom Type B2 (feet)	Boom Type B3 (feet)	EDRC (BPD) shallow / calm capable	EDRC (BPD) open water capable	Product (Group II, III, IV, V)	On Water Storage (BBLS)	People
		Available equipment remaining from 6 hour requirements:				-	3,560	300	2,425	-	-	289	-
MSRC	RV PEREGRINE	Everett, WA	1	385 m	71 m	-	-	-	3,588	-	-	28	2
MSRC	RV MERLIN	Everett, WA	1	385 m	71 m	-	-	-	3,588	-	-	28	2
MSRC	Trailer 15, Jon Boat	Tacoma, WA	3	315 m	13 m	-	-	-	-	-	-	-	2
MSRC	Jon Boat #1	Everett, WA	3	385 m	71 m	-	-	-	-	-	-	-	2
MSRC	Jon Boat #2	Everett, WA	3	385 m	71 m	-	-	-	-	-	-	-	2
MSRC	Trailer 45, Boom (18")	Seattle, WA	3	385 m	40 m	-	-	3,200	-	-	-	-	-
MSRC	Trailer 42, Boom (8"x12")	Port Angeles, WA	3	385 m	111 m	-	1,000	-	-	-	-	-	-
MSRC	Trailer 66, Boom (18")	Anacortes, WA	3	385 m	119 m	-	-	2,900	-	-	-	-	-
MSRC	Trailer 77, Boom (18")	Bellingham, WA	3	385 m	142 m	-	-	3,200	-	-	-	-	-
MSRC	Trailer 60, Boom (18")	Tacoma, WA	3	385 m	13 m	-	-	4,000	-	-	-	-	-
MSRC	Trailer 43, Minibarge	Anacortes, WA	3	385 m	113 m	-	-	-	-	-	-	110	1
MSRC	Trailer 75, Boom (8"x12")	Anacortes, WA	3	385 m	113 m	-	4,500	-	-	-	-	-	-
					12 hour totals	0	9,060	13,600	9,601	0	0	455	11
Based on location of contracted assets, mobilization time, transit distance, and distance to planning standard, U.S. Oil / McChord Pipeline can meet the twelve hour planning standards.													
Hr 24	**Clover Creek Crossing**												
	Boom: More boom as necessary for containment, recovery or protection					**as needed**							
	Recovery: Capacity to recover the lesser of 20% of worst case spill volume or 48,000 barrels within 24-hr period could have arrived.					**94 bbls additional recovery required**							
	Storage: 3 times the EDRC					**281 bbls additional on water storage required**							
Organization	Asset	Home Base	Mobilization Time (hr)	Planning transit distance	Distance to Planning Standard	Boom Type B1 (feet)	Boom Type B2 (feet)	Boom Type B3 (feet)	EDRC (BPD) shallow / calm capable	EDRC (BPD) open water capable	Product (Group II, III, IV, V)	On Water Storage (BBLS)	People
		Available equipment remaining from 12 hour requirements:					2,660	-	9,507			269	
MSRC	Trailer 57, Boom (8"x12")	Astoria, OR	3	735 m	139 m	-	-	1,600	-	-	-	-	-
MSRC	Trailer 02, Boom (8"x12")	Astoria, OR	3	735 m	139 m	-	-	1,000	-	-	-	-	-
MSRC	MiniBarge	Tacoma, WA	3	735 m	13 m	-	-	-	-	-	-	100	
					24 Hour Totals:	0	2,660	2,600	9,507	0	0	369	0
Based on location of contracted assets, mobilization time, transit distance, and distance to planning standard, U.S. Oil / McChord Pipeline can meet the twenty-four hour planning standard.													
Hr 48	**Clover Creek Crossing**												
	Boom: More boom as necessary for containment, recovery or protection.					**as needed**							
	Recovery: Capacity to recover the lesser of 25% of worst case spill volume or 60,000 barrels within 24-hr period could have arrived.					**97 bbls additional recovery required**							
	Storage: More storage as necessary to not slow the response.					**as needed**							
Organization	Asset	Home Base	Mobilization Time (hr)	Planning transit distance	Distance to Planning Standard	Boom Type B1 (feet)	Boom Type B2 (feet)	Boom Type B3 (feet)	EDRC (BPD) shallow / calm capable	EDRC (BPD) open water capable	Product (Group II, III, IV, V)	On Water Storage (BBLS)	People
		Available equipment remaining from 24 hour requirements:				-	-	-	9,413	-	-	88	-
MSRC	Trailer 41, Boom (8"x12")	Port Angeles, WA	3	1575 m	111 m	-	1,000	-	-	-	-	-	-
					48 Hour Totals:	0	1,000	0	9,413	0	0	88	0
Based on location of contracted assets, mobilization time, transit distance, and distance to planning standard, U.S. Oil / McChord Pipeline can meet the forty-eight hour planning standard.													

6.2 USCG Spill Response Scenarios

6.2.1 Average Most Probable Discharge

The information contained in this section identifies response resources that are available to respond to an average most probable discharge as required by 33 CFR Part 154.

Basis: 50 Barrels of any one of the Group I through IV Petroleum Oils

Containment Boom: USOR maintains 2700' of containment boom. This boom is kept in the water and is used to boom each vessel loading or unloading at USOR's dock. This boom is deployed and anchored using USOR's 16' Boston Whaler workboat and would be readily available if an incident were to occur.

Within the Tacoma area MSRC maintains the following inventory of containment boom which can be deployed and anchored by using MSRC's spill response vessels. The response equipment inventories discussed in this section are summarized in Table 6-1and Appendix F of this document and are also accessible on the Western Response Resource List at www.wrrl.us.

1. 1500' of boom on one spill response vessel and 1400' of boom on a barge located in the Tacoma area.
2. 200' of boom on one spill response vessel and 1000' of boom on a second spill response vessel located in the Tacoma area.
3. 8,000'of boom on two equipment trailers located in the Tacoma area.

Oil Recovery Vessels: Within the Tacoma area MSRC maintains one oil recovery vessel with a derated EDRC of 4,896 bbls/day and an on-board storage capacity of 8 barrels.

This oil recovery vessel can be off-loaded onto a 100 bbl MSRC mini-barge, a 21,410 bbl MSRC barge or onto 70 barrel vacuum trucks provided by Guardian Industrial. All of these storage assets are located in the Tacoma area. The 100 bbl MSRC mini barge can be off-loaded into vacuum trucks. These vacuum trucks are then emptied into available recovered oil tankage at the refinery. The 21,410 bbl MSRC barge can be off-loaded at USOR's marine terminal where the contents are transferred to recovered oil tankage located in the refinery via one of the refinery-to-dock pipelines.

Response Time: The estimated response time to notify MSRC and commence mobilization/deployment of their response equipment is one hour.

Oil Storage Capacity: USOR's 2,000 bbl recovered oil tank as well as any one of the refinery crude oil tanks listed in Table 5-5, have adequate storage capacity to receive petroleum oils that would be recovered from an average most probable discharge. Additional interim storage, which would be available within 6 hours after an average most probable discharge, is identified in Table 6-1 and Section F-1 of Appendix F.

6.2.2 Maximum Most Probable Discharge

The information contained in this section identifies response resources that are available to respond to a maximum most probable discharge as required by 33 CFR Part 154.

Basis: 1,200 Barrels of any one of the Group I through IV Petroleum Oils. This value represents the lesser of 1,200 barrels or 10% of the volume of a worst case discharge.

Tacoma Area Containment Boom: USOR maintains 2700' of containment boom. This boom is kept in the water and is used to boom each vessel loading or unloading at USOR's dock. This boom is deployed and anchored using USOR's 16' Boston Whaler workboat and would be readily available if an incident were to occur.

Within the Tacoma area MSRC maintains the following inventory of containment boom which can be deployed and anchored using MSRC's spill response vessels. The response equipment inventories discussed in this section are summarized in Table 6-1and Appendix F of this document and are also accessible on the Western Response Resource List at www.wrrl.us.

1. 1500' of boom on one spill response vessel and 1400' of boom on a barge located in the Tacoma area.
2. 200' of boom on one spill response vessel and 1000' of boom on a second spill response vessel located in the Tacoma area.
3. 8,000'of boom on two equipment trailers located in the Tacoma area.

There is an adequate amount of containment boom within the Tacoma area to execute the booming configurations shown in Figures 3-6 through 3-12 of this plan. The sensitive area protection strategies represented by these figures are also identified in the GRPs for the Blair Waterway (#CPS-S), which are located in Appendix I.

Seattle Containment Boom: Should additional containment boom be required to protect other Commencement Bay GRPs, MSRC maintains the following inventory of containment boom in Seattle.

1. 2100' of boom on 2 spill response vessels. Using the on-water travel speed listed in MSRC's primary response contractor application and taking into consideration mobilization and notification times, these vessels would arrive within 2 hours at USOR's dock.

2. 3500' of boom on a single equipment van trailer. Using the land travel speed of 35 miles per hour, it would take approximately 2 hours (including mobilization time) to travel from Seattle to USOR's dock.

This additional containment boom from Seattle can be deployed and anchored using MSRC's spill response vessels. The MSRC equipment located at Seattle would be operated and mobilized by MSRC personnel. The estimated response time to mobilize MSRC response equipment is one hour.

Tacoma/Seattle Area Oil Recovery Vessels: Within the Tacoma/Seattle area, MSRC maintains 3 oil recovery vessels with a combined derated effective daily recovery capacity (EDRC) of 29,934 bbls/day. This inventory is also summarized in Table 6-1 and Section F-1 of Appendix F. The EDRC for each of these vessels is calculated as follows:

R = T x 24 hours x E

R - Effective daily recovery rate
T - Throughput rate in barrels per hour (nameplate capacity).
E - Efficiency factor (depending on the efficiency of the specific oil recovery vessel)

MSRC Vessel	Location	EDRC (barrels per day)
Plover	Tacoma	4,896
Widgeon	Seattle	3,588
Cormorant	Seattle	21,450
Total		29,934

Therefore, these vessels are capable of recovering a volume of oil within a 24 hour period which is greater than the planning volume of a 1200 bbl petroleum oil discharge.

These oil recovery vessels can be off-loaded onto a 100 bbl MSRC mini-barge, a 21,410 bbl MSRC barge or onto 70 barrel vacuum trucks provided by Guardian Industrial. All of these storage assets are located in the Tacoma area. The 100 bbl MSRC mini barge can be off-loaded into vacuum trucks. These vacuum trucks are then emptied into available recovered oil tankage at the refinery. The 21,410 bbl MSRC barge can be off-loaded at USOR's marine terminal where the contents are transferred to recovered oil tankage located in the refinery via one of the refinery-to-dock pipelines.

Guardian Industrial can readily mobilize and deploy their vacuum trucks since they are located at USOR's refinery.

Oil Storage Capacity: USOR's 2,000 bbl recovered oil tank as well as any one of the refinery crude oil tanks listed in Table 5-5, have adequate storage capacity to receive petroleum oils that would be recovered from a maximum most probable discharge. Additional interim storage, which would be available within 6 hours after a maximum most probable oil discharge, is identified in Table 6-1 and Appendix F.

6.2.3 Worst Case Discharge

The worst case discharge quantity was determined by applying the definition found in 33 CFR Part 154.1029 to each of the Group I through IV oil types. The corresponding worst case planning volume for each oil group was then determined by applying the guidelines contained in Appendix C of 33 CFR Part 154. (b) (7)(F) [redacted]. Information contained in the following paragraphs identify response resources required by 33 CFR Part 154 that are available to respond to a worst case discharge.

Group I Worst Case Scenario:

Worst Case Discharge Calculation:

1. The largest line used to transfer a Group I oil includes the 8" gasoline pipeline since it can be utilized during a Group I transfer. None of the other pipelines are utilized to transport Group I oils. For purposes of this exercise, the other remaining pipelines will not be given any further consideration since they would not be in Group I oil service.

(b) (7)(F) [redacted]

Worst Case Planning Volume Calculation:

Emulsification Factor = 1.0

Area Impacted = Blair Waterway - A manmade waterway artificially created for navigation. For planning purposes, this area is considered a "nearshore/inland" environment.

Planned Natural Dissipation % = 80
Planned Recovered Floating Oil % = 20
Planned Oil On-Shore % = 10
Planning Volumes For On-Water Recovery = (b) (7)(F) [redacted]
Planning Volumes For On-Shore Recovery = [redacted]

Response capability = (on-water planning volume) x (response tier mobilization factor for a "nearshore/inland" environment)

Tier 1 = 144 x 0.15 = 22 bbl/day
Tier 2 = 144 x 0.25 = 36 bbl/day
Tier 3 = 144 x 0.40 = 58 bbl/day

The Tier 1, 2 and 3 oil removal planning volumes are within the response capability caps of 12,500, 25,000 and 50,000 bbls/day respectively for nearshore/inland environments.

Group II Worst Case Scenario:

Worst Case Discharge Calculation:

1. The 10" jet fuel pipeline is the largest pipeline utilized to transfer a Group II oil. For purposes of this exercise, the other remaining pipelines will not be given any further consideration since they would not be used to transfer jet fuel.

(b) (7)(F) [redacted]

Worst Case Planning Volume Calculation:

Emulsification Factor = 1.8

Area Impacted = Blair Waterway - A manmade waterway artificially created for navigation. For planning purposes, this area is considered a "nearshore/inland" environment.

Planned Natural Dissipation % = 50
Planned Recovered Floating Oil % = 50
Planned Oil On-Shore % = 30

(b) (7)(F) [redacted]

Planning Volumes For On-Water Recovery =
bbl
Planning Volumes For On-Shore Recovery =

Response capability = (on-water planning volume) x (response tier mobilization factor for a "nearshore/inland" environment)

(b) (7)(F) [redacted]

Tier 1
Tier 2
Tier 3

The Tier 1, 2 and 3 oil removal planning volumes are within the response capability caps of 12,500, 25,000 and 50,000 bbls/day respectively for nearshore/inland environments.

Group III Worst Case Scenario

Worst Case Discharge Calculation:

1. The 24" pipeline is the largest pipeline utilized to transfer a Group III oil. None of the other pipelines are utilized to transport Group III oils. For purposes of this exercise, none of the other refinery-to-dock pipelines will not be given any further consideration since they would not be in Group III oil service.

(b) (7)(F) [redacted]

Worst Case Planning Volume Calculation:

Emulsification Factor = 2.0

Area Impacted = Blair Waterway - A manmade waterway artificially created for navigation. For planning purposes, this area is considered a "nearshore/inland" environment.

Planned Natural Dissipation % = 30
Planned Recovered Floating Oil % = 50
Planned Oil On-Shore % = 50

Planning Volumes For On-Water Recovery = (b) (7)(F) [redacted] bbl
Planning Volumes For On-Shore Recovery = [redacted] bbl

Response capability = (on-water planning volume) x (response tier mobilization factor for a "nearshore/inland" environment)

(b) (7)(F) [redacted]

Tier 1 =
Tier 2 =
Tier 3 =

The Tier 1, 2 and 3 oil removal planning volumes are within the response capability caps of 12,500, 25,000 and 50,000 bbls/day respectively for nearshore/inland environments.

Group IV Worst Case Volume Determination

Worst Case Discharge Calculation:

1. The 24" pipeline is the largest pipeline utilized to transfer a Group IV oil. None of the other pipelines are utilized to transport Group IV oils. For purposes of this exercise, none of the other refinery-to-dock pipelines will not be given any further consideration since they would not be in Group IV oil service.

(b) (7)(F) [redacted]

Worst Case Planning Volume Calculation:

Emulsification Factor = 1.4

Area Impacted = Blair Waterway - A manmade waterway artificially created for navigation. For planning purposes, this area is considered a "nearshore/inland" environment.

Planned Natural Dissipation % = 10
Planned Recovered Floating Oil % = 50
Planned Oil On-Shore % = 70

Planning Volumes For On-Water Recovery (b) (7)(F) [redacted]
bbl
Planning Volumes For On-Shore Recovery: [redacted]

Response capability = on-water planning volume x response tier mobilization factor for a "nearshore/inland" environment.

Tier 1 = (b) (7)(F) [redacted]
Tier 2 = [redacted]
Tier 3 = [redacted]

The Tier 1, 2 and 3 oil removal planning volumes are within the response capability caps of 12,500, 25,000 and 50,000 bbls/day respectively for nearshore/inland environments.

Oil Recovery Planning Resources:

USOR has contracts in place with the oil spill response contractors identified in Appendices E & F of this document to ensure support necessary to sustain on-water oil recovery operations for a minimum of 4 days as specified in Appendix C to 33 CFR Part 154. Response equipment type and storage locations are identified in Appendix F as well as Table 6-1 of this document. Since USOR is located in a higher volume port area, the contracted resources will need to arrive on scene within the following time frames after the discovery of an oil release:

Tier 1 = 12,500 bbls/day within 6 hours
Tier 2 = 25,000 bbls/day within 30 hours
Tier 3 = 50,000 bbls/day within 54 hours

Oil Recovery Vessel Capacity

MSRC can be notified and mobilize/deploy their oil spill response vessels within an estimated time of one hour after an oil spill is detected. Table 6-1 identifies oil spill response vessels that USOR has identified to fulfill the requirements for each tier. The following formula was used to calculate the effective daily recovery rate for each response vessel:

R = T x 24 hours x E

R - Effective daily recovery rate (i.e. derated equipment capacity)
T - Throughput rate in barrels per hour (i.e. nameplate capacity).
E - Efficiency factor

In accordance with WAC 173-182-350, travel times for oil recovery equipment to be mobilized and arrive at USOR were calculated using a default on-water speed of 5 knots. However, on-water travel speeds greater than 5 knots are used for selected response equipment as allowed by Ecology and noted in MSRC's primary response contractor application. The following formula was used to calculate equipment travel times:

T = M + (D / S)

T - Travel time (hours)
M - Time necessary to complete notification/mobilization of oil spill response equipment. This value is estimated at one hour.
D - Travel distance (nautical miles) between response vessel storage location and USOR. Trailered equipment is noted in statute miles.
S - Response vessel default travel speed (5 knots = 5 nautical miles per hour) unless otherwise noted in MSRC's primary response contractor application. The speed for vacuum trucks and trailered vessels is 35 miles per hour.

Table 6-1 as supported by the MSRC Equipment Cascade Matrix located in Section F-1 of Appendix F, identifies oil spill recovery vessels necessary to meet Tier 1, 2 and 3 response capabilities.

Interim Oil Storage Capacity

USOR maintains adequate daily storage capacity equivalent to twice the effective daily recovery rate required at the scene of the spill. The interim storage discussed in this section is in the form of holding tanks on oil spill recovery vessels, stationary tankage at USOR's refinery, tank trucks, cargo tanks and barges. MSRC can be notified and mobilize/deploy their oil spill response vessels located at USOR's dock within an estimated time of one hour after an oil spill is detected. The response time for Guardian Industrial is estimated to be 3 hours since their vacuum trucks are considered to be non-dedicated response resources. It is important to note, however, that Guardian Industrial stages their vacuum trucks at USOR's refinery.

In accordance with WAC 173-182-350, travel times for equipment to be mobilized and arrive at USOR were calculated using a default on-water speed of 5 knots and a land speed of 35 miles per hour. However, on-water travel speeds greater than 5 knots are used for selected response equipment as allowed by Ecology and noted in MSRC's primary response contractor application. The formula of $T = M + (D / S)$, which is previously discussed in this section, was used to calculate equipment travel times.

The oil spill response vessels and barges shown in Table 6-1 have been identified to meet Tier 1, 2 and 3 interim storage requirements. The interim storage capacities contained in Table 6-1 are supported by the MSRC Equipment Cascade Matrix located in Section F-1 of Appendix F.

Containment Boom Capabilities

USOR maintains sufficient quantities of containment boom that can arrive on-scene within the required response times to support oil containment and collection efforts and protect shoreline areas. This boom consists of both USOR working containment boom and MSRC containment boom, which is available on their oil spill response vessels, vans, trailers, or warehouses. The estimated response time to notify and commence mobilization/deployment of MSRC's containment boom identified in Table 6-1 is one hour.

In accordance with WAC 173-182-350, travel times for equipment to be mobilized and arrive at USOR were calculated using a default on-water speed of 5 knots and a land speed of 35 miles per hour. However, on-water travel speeds greater than 5 knots are used for selected response equipment as allowed by Ecology and noted in MSRC's primary response contractor application. Once again, the formula of $T = M + (D / S)$, which is previously discussed in this section, was used to calculate equipment travel times.

The containment boom shown in Table 6-1, has been identified to support Tier 1, 2 and 3 oil recovery operations. The containment boom quantities listed in Table 6-1 are supported by the MSRC Equipment Cascade Matrix located in Section F-1 of Appendix F.

Near Shore Response Capabilities

Within the Puget Sound Region, MSRC currently has a derated recovery capability of approximately 144,000 bbls/day, of which 43% is capable of operating in waters of 6' or less depth. This exceeds the required 20% required by 33 CFR Part 154. These capabilities are further depicted in the MSRC Equipment Cascade Matrix located in Section F-1 of Appendix F.

Shoreline Cleanup Capabilities

USOR has entered into agreements with Global Diving and Salvage to perform shoreline cleanup operations. USOR also has access to shoreline cleanup capabilities through MSRC, which has agreements with several independent contractors capable of providing this type of service.

6.3 EPA Spill Response Scenarios

6.3.1 Small Case Discharge

The information contained in this section identifies response resources that are available to respond to a small discharge as required by 40 CFR Part 112.

Basis: 50 Barrels of any one of the Group I through IV Petroleum Oils

Containment Boom: USOR maintains 2700' of containment boom. This boom is kept in the water and is used to boom each vessel loading or unloading at USOR's dock. This boom is deployed and anchored using USOR's 16' Boston Whaler workboat and would be readily available if an incident were to occur.

Within the Tacoma area MSRC maintains the following inventory of containment boom which can be deployed and anchored by using MSRC's spill response vessels. The response equipment inventories discussed in this section are summarized in Table 6-1 and Appendix F of this document and are also accessible on the Western Response Resource List at www.wrrl.us.

1. 1500' of boom on one spill response vessel and 1400' of boom on a barge located in the Tacoma area.
2. 200' of boom on one spill response vessel and 1000' of boom on a second spill response vessel located in the Tacoma area.
3. 8000'of boom on two equipment trailers located in the Tacoma area.

Oil Recovery Vessels: Within the Tacoma area MSRC maintains one oil recovery vessel with a derated EDRC of 4,896 bbls/day and an on-board storage capacity of 8 barrels.

This oil recovery vessel can be off-loaded onto a 100 bbl mini-barge, a 21,410 bbl MSRC barge or 70 barrel vacuum trucks provided by Guardian Industrial. These storage assets are located in the Tacoma area. The 100 bbl MSRC mini barge can be off-loaded into vacuum trucks. These vacuum trucks are then emptied into available recovered oil tankage at the refinery. The 21,410 bbl MSRC barge can be off-loaded at USOR's marine terminal where the contents are transferred to recovered oil tankage located in the refinery via one of the refinery-to-dock pipelines.

Response Time: The estimated response time to notify MSRC and commence mobilization/deployment of their response equipment is one hour.

Oil Storage Capacity: USOR's 2,000 bbl recovered oil tank as well as any one of the refinery crude oil tanks listed in Table 5-5, have adequate storage capacity to receive petroleum oils that would be recovered from a small case discharge. Additional interim storage, which would be available within 6 hours after a small case discharge, is identified in Table 6-1 and Section F-1 of Appendix F.

6.3.2 Medium Case Discharge

The information contained in this section identifies response resources that are available to respond to a medium discharge as required by 40 CFR Part 112.

Basis: 1,200 Barrels of any one of the Group I through IV Petroleum Oils. Since USOR is considered a complex facility (i.e. regulated by both EPA and USCG), this value represents the greater amount when comparing the medium planning quantity for the transportation-related to that of the non-transportation related component of the refinery.

Tacoma Area Containment Boom: USOR maintains 2700' (minimum) of containment boom. This boom is kept in the water and is used to boom each vessel loading or unloading at USOR's dock. This boom is deployed and anchored using USOR's 16' Boston Whaler workboat and would be readily available if an incident were to occur.

Within the Tacoma area MSRC maintains the following inventory of containment boom which can be deployed and anchored using MSRC's spill response vessels. The response equipment inventories discussed in this section are summarized in Table 6-1 and Appendix F of this document and are also accessible on the Western Response Resource List at www.wrrl.us.

1. 1500' of boom on one spill response vessel and 1400' of boom on a barge located in the Tacoma area.
2. 200' of boom on one spill response vessel and 1000' of boom on a second spill response vessel located in the Tacoma area.
3. 8000'of boom on two equipment trailers located in the Tacoma area.

There is an adequate amount of containment boom within the Tacoma area to execute the booming configurations shown in Figures 3-6 through 3-12 of this plan. The sensitive area protection strategies represented by these figures are also identified in the GRPs for the Blair Waterway (#CPS-S), which are located in Appendix I.

Seattle Containment Boom: Should additional containment boom be required to protect other Commencement Bay GRPs, MSRC maintains the following inventory of containment boom in Seattle.

1. 2100' of boom on 2 spill response vessels. Using the on-water travel speed listed in MSRC's primary response contractor application and taking into consideration mobilization and notification times, these vessels would arrive within 2 hours at USOR's dock.

2. 3500' of boom on a single equipment van trailer. Using the land travel speed of 35 miles per hour, it would take approximately 2 hours (including mobilization time) to travel from Seattle to USOR's dock.

This additional containment boom from Seattle can be deployed and anchored using MSRC's spill response vessels. The MSRC equipment located at Seattle would be operated and mobilized by MSRC personnel. The estimated response time to mobilize MSRC response equipment is one hour.

Tacoma/Seattle Area Oil Recovery Vessels: Within the Tacoma area MSRC maintains 3 oil recovery vessels with a combined derated effective daily recovery

capacity (EDRC) of 29,934 bbls/day. This inventory is also summarized in Table 6-1 and Section F-1 of Appendix F. The EDRC for each of these vessels is calculated as follows:

R = T x 24 hours x E

R - Effective daily recovery rate
T - Throughput rate in barrels per hour (nameplate capacity).
E - Efficiency factor (depending on the efficiency of the specific oil recovery vessel)

MSRC Vessel	Location	EDRC (barrels per day)
Plover	Tacoma	4,896
Widgeon	Seattle	3,588
Cormorant	Seattle	21,450
Total		29,934

Therefore, these vessels are capable of recovering a volume of oil within a 24 hour period, which is greater than the planning volume of a 1200 bbl petroleum oil discharge.

These oil recovery vessels can be off-loaded onto a 100 bbl mini-barge, a 21,410 bbl MSRC barge or 70 barrel vacuum trucks provided by Guardian Industrial. These storage assets are located in the Tacoma area. The 100 bbl MSRC mini barge can be off-loaded into vacuum trucks. These vacuum trucks are then emptied into available recovered oil tankage at the refinery. The 21,410 bbl MSRC barge can be off-loaded at USOR's marine terminal where the contents are transferred to recovered oil tankage located in the refinery via one of the refinery-to-dock pipelines.

Guardian Industrial can readily mobilize and deploy their vacuum trucks since they are located at USOR's refinery.

Oil Storage Capacity: USOR's 2,000 bbl recovered oil tank as well as any one of the refinery crude oil tanks listed in Table 5-5, have adequate storage capacity to receive petroleum oils that would be recovered from a medium case discharge. Additional interim storage, which would be available within 6 hours after a medium case discharge, is identified in Table 6-1 and Section F-1 of Appendix F.

6.3.3 Worst Case Discharge

The information contained in this section calculates a worst case discharge volume using the methodology outlined in 40 CFR Part 112, Appendix D, Part A titled "Worst Case Discharge Planning Volume Calculation for Onshore Storage Facilities". Using Attachment E-1 to 40 CFR Part 112, Appendix E, this section also calculates the planning volumes associated with a worst case discharge necessary to identify response resources. The group of tanks that were considered for this worst case discharge evaluation are identified in Section 5.2 of this document. It is important to note that while petroleum oils can be transferred between various tanks that none of these tanks are manifolded together and operated in such a way that they function as a single storage unit. The following paragraphs provide a worst case discharge volume calculation per 40 CFR Part 112, Appendix D, Part A.

40 CFR PART 112, APPENDIX D, PART A – WORST CASE DISCHARGE

A.1 Single Tank Facilities

This is not applicable to USOR since the covered refinery is a multi-tank facility.

A.2 Secondary Containment-Multiple-Tank Facilities

Are all aboveground oil storage tanks or groups of aboveground oil storage tanks at the facility without adequate secondary containment? Secondary containment is described in 40 CFR Part 112, Subparts A through C. Acceptable methods and structures for containment are also give in 40 CFR 112.7(c)(1).

No

A.2.1 *If the answer is yes, the final worst case discharge planning volume equals the total aboveground oil storage capacity at the facility.*

Final Worst Case Volume:____GAL

Not applicable since the answer to the previous question was no. All aboveground oil storage tanks have adequate secondary containment.

A.2.2 *If the answer is no, calculate the total aboveground oil storage capacity of tanks without adequate secondary containment. If all aboveground oil storage tanks or groups of aboveground oil storage tanks at the facility have adequate secondary containment, ENTER "0" (zero).*

__0__ *GAL*

All aboveground oil storage tanks have adequate secondary containment.

A.2.3 *Calculate the capacity of the largest single aboveground oil storage tank within an adequate secondary containment area or the combined capacity of a group of aboveground oil storage tanks permanently manifolded together, whichever is greater, PLUS THE VOLUME FROM QUESTION A.2.2. All complexes that are jointly regulated by EPA and the Coast Guard must also calculate the worst case discharge planning volume for the transportation-related portions of the facility and plan for whichever volume is greater.*

(b) (7)(F) [redacted]

This volume is based on the release of a Group III petroleum oil. U.S. Oil's facility is jointly regulated by both EPA and the Coast Guard. In order to conduct a comparative worst case planning volume analysis between EPA and Coast Guard, the following paragraphs calculate the worst case discharge for Group 1 through V petroleum oils along with the worst case planning volume for Group 1 through IV petroleum oils. The Coast Guard worst case discharge analysis is located in Section 6.2.3. The comparative analysis is located in Table 6-4

Group I Oil (Non-Persistent)

Worst Case Volume Determination

Worst Case Discharge = (Maximum Storage Tank Volume) + Capacity of Group I Storage Tanks Without Adequate Secondary Containment. This discharge quantity was determined by using the information contained in Appendix D to 40 CFR Part 112.

(b) (7)(F)

[redacted]

Planning Volume for Response Resources

Attachment E-1, which is located in Appendix E to 40 CFR Part 112 was used to calculate the planning volumes associated with a worst case discharge necessary to identify response resources.

Part 1: Background Information

Emulsification Factor = 1.0

Area Impacted = Blair Waterway - A manmade waterway artificially created for navigation. For planning purposes, this area is considered a "nearshore/inland" environment.

Planned Natural Dissipation % = 80
Planned Recovered Floating Oil % = 20
Planned Oil On-Shore % = 10

(b) (7)(F)

[redacted]

On-Water Oil Recovery Mobilization Factor

Tier 1 = 0.15
Tier 2 = 0.25
Tier 3 = 0.40

Part 2: On-Water Oil Recovery Capacity

Response capability = (on-water oil recovery) x (emulsification factor) x (response tier mobilization factor for a "nearshore/inland" environment).

(b) (7)(F)

[redacted]

Part 3: Shoreline Cleanup Volume

(b) (7)(F) [redacted]

Part 4: On-Water Response Capacity by Operating Area

Operating Area = All operations occur within a single category titled "All except Rivers & Canals, Great lakes".

Tier 1 = 12,500 bbls/day as of February 18, 1998.
Tier 2 = 25,000 bbls/day as of February 18, 1998
Tier 3 = 50,000 bbls/day as of February 18, 1998

Part 5: On-Water Amount Needed to be Identified but not contracted for in Advance

Volume = (On-Water Recovery Capacity) - (On-Water Response Capacity by Operating Area.

(b) (7)(F) [redacted]

Group II Oil (Persistent)

Worst Case Discharge Volume

Worst Case Discharge = (Maximum Storage Tank Volume) + Capacity of Group I Storage Tanks Without Adequate Secondary Containment. This discharge quantity was determined by using the information contained in Appendix D to 40 CFR Part 112.

Calculation Basis:

(b) (7)(F) [redacted]

Planning Volume for Response Resources

Attachment E-1, which is located in Appendix E to 40 CFR Part 112 was used to calculate the planning volumes associated with a worst case discharge necessary to identify response resources.

Part 1: Background Information

Emulsification Factor = 1.8

Area Impacted = Blair Waterway - A manmade waterway artificially created for navigation. For planning purposes, this area is considered a "nearshore/inland" environment.

Planned Natural Dissipation % = 50
Planned Recovered Floating Oil % = 50
Planned Oil On-Shore % = 30

(b) (7)(F) [redacted]

On-Water Oil Recovery Mobilization Factor

Tier 1 = 0.15
Tier 2 = 0.25
Tier 3 = 0.40

Part 2: On-Water Oil Recovery Capacity

Response capability = (on-water oil recovery) x (emulsification factor) x (response tier mobilization factor for a "nearshore/inland" environment).

(b) (7)(F) [redacted]

Part 3: Shoreline Cleanup Volume

(b) (7)(F) [redacted]

Part 4: On-Water Response Capacity by Operating Area

Operating Area = All operations occur within a single category titled "All except Rivers & Canals, Great Lakes".

Tier 1 = 12,500 bbls/day as of February 18, 1998.
Tier 2 = 25,000 bbls/day as of February 18, 1998
Tier 3 = 50,000 bbls/day as of February 18, 1998

Part 5: On-Water Amount Needed to be Identified but not contracted for in Advance

Volume = (On-Water Recovery Capacity) - (On-Water Response Capacity by Operating Area.

(b) (7)(F) [redacted]

Group III Oil (Persistent)

Worst Case Discharge Volume

Worst Case Discharge = (Maximum Storage Tank Volume) + Capacity of Group I Storage Tanks Without Adequate Secondary Containment. This discharge quantity was determined by using the information contained in Appendix D to 40 CFR Part 112.

Calculation Basis:

(b) (7)(F) [redacted]

Attachment E-1, which is located in Appendix E to 40 CFR Part 112 was used to calculate the planning volumes associated with a worst case discharge necessary to identify response resources.

Part 1: Background Information

Oil Recovery Calculations:

Emulsification Factor = 2.0

Area Impacted = Blair Waterway - A manmade waterway artificially created for navigation. For planning purposes, this area is considered a "nearshore/inland" environment.

Planned Natural Dissipation % = 30
Planned Recovered Floating Oil % = 50
Planned Oil On-Shore % = 50

(b) (7)(F) [redacted]

On-Water Oil Recovery Mobilization Factor

Tier 1 = 0.15
Tier 2 = 0.25
Tier 3 = 0.40

Part 2: On-Water Oil Recovery Capacity

Response capability = (on-water oil recovery) x (emulsification factor) x (b) (7)(F) [redacted] environment).

Part 3: Shoreline Cleanup Volume

(b) (7)(F) [redacted]

Part 4: On-Water Response Capacity by Operating Area

Operating Area = All operations occur within a single category titled "All except Rivers & Canals, Great Lakes".

Tier 1 = 12,500 bbls/day as of February 18, 1998.
Tier 2 = 25,000 bbls/day as of February 18, 1998
Tier 3 = 50,000 bbls/day as of February 18, 1998

Part 5: On-Water Amount Needed to be Identified but not contracted for in Advance

Volume = (On-Water Recovery Capacity) - (On-Water Response Capacity by Operating Area.

(b) (7)(F) [redacted]

Group IV Oil (Persistent)

Worst Case Volume Determination

Worst Case Discharge = (Maximum Storage Tank Volume) + Capacity of Group I Storage Tanks Without Adequate Secondary Containment. This discharge quantity was determined by using the information contained in Appendix D to 40 CFR Part 112.

Calculation Basis:

(b) (7)(F) [redacted]

Planning Volume for Response Resources

Attachment E-1, which is located in Appendix E to 40 CFR Part 112 was used to calculate the planning volumes associated with a worst case discharge necessary to identify response resources.

Part 1: Background Information

Oil Recovery Calculations:

Emulsification Factor = 1.4

Area Impacted = Blair Waterway - A manmade waterway artificially created for navigation. For planning purposes, this area is considered a "nearshore/inland" environment.

Planned Natural Dissipation % = 10
Planned Recovered Floating Oil % = 50
Planned Oil On-Shore % = 70

(b) (7)(F)

[redacted]

On-Water Oil Recovery Mobilization Factor

Tier 1 = 0.15
Tier 2 = 0.25
Tier 3 = 0.40

Part 2: On-Water Oil Recovery Capacity

Response capability = (on-water oil recovery) x (emulsification factor) x (response tier mobilization factor for a "nearshore/inland" environment).

(b) (7)(F)

[redacted]

Part 3: Shoreline Cleanup Volume

(b) (7)(F)

[redacted]

Part 4: On-Water Response Capacity by Operating Area

Operating Area = All operations occur within a single category titled "All except Rivers & Canals, Great Lakes".

Tier 1 = 12,500 bbls/day as of February 18, 1998.
Tier 2 = 25,000 bbls/day as of February 18, 1998
Tier 3 = 50,000 bbls/day as of February 18, 1998

Part 5: On-Water Amount Needed to be Identified but not contracted for in Advance

Volume = (On-Water Recovery Capacity) - (On-Water Response Capacity by Operating Area.

(b) (7)(F)

[redacted]

Worst Case Discharge Planning Volume Comparison

Table 6-4		
Coast Guard/EPA Worst Case Discharge Planning Volume Comparison		
Oil Type	Coast Guard Volume (bbls)	EPA Volume (bbls)
Group 1 Oil		
Worst Case Discharge Amount	(b) (7)(F) [redacted]	
On-Water Recovery Planning Volume		
Tier 1		
Tier 2		
Tier 3		
Shoreline Recovery Planning Volume		
Group 2 Oil		
Worst Case Discharge Amount		
On-Water Recovery Planning Volume		
Tier 1		
Tier 2		
Tier 3		
Shoreline Recovery Planning Volume		
Group 3 Oil		
Worst Case Discharge Amount		
On-Water Recovery Planning Volume		
Tier 1		
Tier 2		
Tier 3		
Shoreline Recovery Planning Volume		
Group 4 Oil		
Worst Case Discharge Amount		
On-Water Recovery Planning Volume		
Tier 1		
Tier 2		
Tier 3		
Shoreline Recovery Planning Volume		

Group V Oil (Persistent)

Worst Case Volume Determination

Worst Case Discharge = (Maximum Storage Tank Volume) + Capacity of Group I Storage Tanks Without Adequate Secondary Containment. This discharge quantity was determined by using the information contained in Appendix D to 40 CFR Part 112.

Calculation Basis:

(b) (7)(F) [redacted]

It is important to note that Group V petroleum oils are only transferred to tanker trucks and railcars within the refinery and therefore are not transferred onto vessels or barges at the marine terminal. Response resource considerations for a Group V petroleum oil spill response are discussed in Section 3.5.7 of this document.

Oil Recovery Planning Resources

As stated earlier, the Tier 1, 2, and 3 oil removal volumes for Group III oils as well as the Tier 1 and 2 oil removal volumes for Group II oils exceed the response capability caps of 12,500, 25,000, and 50,000 bbls/day respectively for nearshore/inland environments. USOR has contracts in place with the oil spill response contractors identified in Appendices E & F of this document to ensure additional resources and support necessary to sustain on-water oil recovery operations for a minimum of 4 days as specified in 40 CFR 112 Appendix E. Response equipment type and storage locations are identified in Appendix F as well as Table 6-1 of this document.

Since USOR is located in a higher volume port area, contracted resources will need to arrive on scene within the following time frames after the discovery of an oil discharge:

Tier 1 = 12,500 bbls/day within 6 hours
Tier 2 = 25,000 bbls/day within 30 hours
Tier 3 = 50,000 bbls/day within 54 hours

Oil Recovery Vessel Capacity

MSRC can be notified and mobilize/deploy their oil spill response vessels within an estimated time of one hour after an oil spill is detected. Table 6-1 identified oil spill response vessels that USOR has identified to fulfill the requirements for each tier. The following formula was used to calculate the effective daily recovery rate for each response vessel:

$$R = T \times 24 \text{ hours} \times E$$

R - Effective daily recovery rate (i.e. derated equipment capacity)
T - Throughput rate in barrels per hour (i.e. nameplate capacity).
E - Efficiency factor

In accordance with WAC 173-182-350, travel times for oil recovery equipment to be mobilized and arrive at USOR were calculated using a default on-water speed of 5 knots. However, on-water travel speeds greater than 5 knots are used for selected response equipment as allowed by Ecology and noted in MSRC's primary response contractor application. The following formula was used to calculate equipment travel times:

$$T = M + (D / S)$$

T - Travel time (hours)
M - Time necessary to complete notification/mobilization of oil spill response equipment. This value is estimated to be one hour.
D - Travel distance (nautical miles) between response vessel storage location and USOR. Trailered equipment is noted in statute miles.

S - Response vessel default travel speed (5 knots = 5 nautical miles per hour) unless otherwise noted in MSRC's primary response contractor application. The speed for vacuum trucks and trailered vessels is 35 miles per hour.

Table 6-1 as supported by the MSRC Equipment Cascade Matrix located in Section F-1 of Appendix F, identifies oil spill recovery vessels necessary to meet Tier 1, 2 and 3 response capabilities.

Interim Oil Storage Capacity

USOR maintains adequate daily storage capacity equivalent to twice the effective daily recovery rate required at the scene of the spill. The interim storage discussed in this section is in the form of holding tanks on oil spill recovery vessels, stationary tankage at USOR's refinery, tank trucks, cargo tanks and barges. MSRC can be notified and mobilize/deploy their oil spill response vessels located at USOR's dock within an estimated time of one hour after an oil spill is detected. The response time for Guardian Industrial is estimated to be 3 hours since their vacuum trucks are considered to be non-dedicated response resources. It is important to note, however, that Guardian Industrial stages their vacuum trucks at USOR's refinery.

In accordance with WAC 173-182-350, travel times for equipment to be mobilized and arrive at USOR were calculated using a default on-water speed of 5 knots and a land speed of 35 miles per hour. However, on-water travel speeds greater than 5 knots are used for selected response equipment as allowed by Ecology and noted in MSRC's primary response contractor application. The formula of $T = M + (D / S)$, which is previously discussed in this section, was used to calculate equipment travel times.

The oil spill response vessels and barges shown in Table 6-1 have been identified to meet Tier 1, 2 and 3 interim storage requirements. The interim storage capacities contained in Table 6-1 are supported by the MSRC Equipment Cascade Matrix located in Section F-1 of Appendix F.

Containment Boom Capabilities

USOR maintains sufficient quantities of containment boom that can arrive on-scene within the required response times for oil containment and collection and protection of shoreline areas. This boom consists of both USOR working containment boom and MSRC containment boom, which is available on their oil spill response vessels, vans, trailers, or warehouses. The estimated response time to notify and commence mobilization/deployment of MSRC's containment boom identified in Table 6-1 is one hour.

In accordance with WAC 173-182-350, travel times for equipment to be mobilized and arrive at USOR were calculated using a default on-water speed of 5 knots and a land speed of 35 miles per hour. However, on-water travel speeds greater than 5 knots are used for selected response equipment as allowed by Ecology and noted in MSRC's primary response contractor application. Once again, the formula of $T = M + (D / S)$, which is previously discussed in this section, was used to calculate equipment travel times.

The containment boom shown in Table 6-1, has been identified to support Tier 1, 2 and 3 oil recovery operations. The containment boom quantities listed in Table 6-1 are supported by the MSRC Equipment Cascade Matrix located in Section F-1 of Appendix F.

Near Shore Response Capabilities

Within the Puget Sound Region, MSRC currently has a derated recovery capability of approximately 144,000 bbls/day, of which 43% is capable of operating in waters of 6' or less depth. This exceeds the required 20% required by 40 CFR Part 112. These capabilities are further depicted in the MSRC Equipment Cascade Matrix located in Section F-1 of Appendix F.

Shoreline Cleanup Capabilities

USOR has entered into agreements with Global Diving and Salvage to perform shoreline cleanup operations. USOR also has access to shoreline cleanup capabilities through MSRC, which has agreements with several independent contractors capable of providing this type of service.

6.4 McChord Pipeline Co. Worst Case Discharge

The worst case discharge quantity was determined by applying the definition found in 49 CFR Part 194.105 to JP-8 jet fuel, which is considered a Group I Petroleum Oil. Only one discharge scenario is discussed in this section since JP-8 is the only product slated for shipment through this pipeline.

As discussed in Appendix K, the 14.25 mile pipeline owned by McChord Pipeline Co. consists of a single continuous line which extends from milepost 0.0, which is located at the McChord Pipeline Co. pump station, to mile post 14.5, which is located at Joint Base Lewis-McChord. For purposes of determining the worst case discharge volume, this line was split into two sections with the division point being the high point along the pipeline which is located at milepost 5.871. The worst case spill volume for both sections was calculated as follows:

Section 1 – Milepost 0.0 to Milepost 5.871

Location:

WRIA #10 – Puyallup-White River Watershed (See Figure 2-1)

Actual Pipeline Section Length:

5.734 miles

(b) (7)(F)

[redacted]

Section 2 – Milepost 5.871 to Milepost 14.5

Location:

WRIA #12 – Chambers-Clover Creek Watershed (See Figure 2-2)

Actual Pipeline Section Length:

8.629 miles

(b) (7)(F)

[redacted]

The maximum release time plus the maximum shutdown response time used in each of the above calculations is a combined value based on a worst case detection and shutdown time during adverse weather conditions. The difference between the worst case discharge volumes noted above is attributed to the fact that the length of pipeline contained in Section 2 is several miles longer than Section 1. The configuration of the McChord Pipeline is further depicted in the topographic maps located in Appendices H and L.

Both Sections 1 and 2 were determined to reside within a single response zone. The size of this zone was determined after considering available capabilities, resources and the geographic characteristics associated with both pipeline sections. This response zone is referred to as the Pierce County response zone. Based on the calculations shown above, the worst case discharge amount for the Pierce County response zone was (b) (7)(F) [redacted].

Response Resources:

On behalf of McChord Pipeline Co., USOR has contracts in place with the oil spill response contractors identified in Appendices E and F of this document to respond to the discovery of a worst case discharge or to mitigate the substantial threat of such a discharge within the time frames specified in 49 CFR Part 194.115. Response equipment type and storage locations are identified in Appendices F and G as well as Tables 6-2 and 6-3 of this document. Since McChord Pipeline Co. is located in a high volume port area, the contracted resources will need to arrive on scene within the following time frames after the discovery of an oil release:

Tier 1 = 12,500 bbls/day within 6 hours
Tier 2 = 25,000 bbls/day within 30 hours
Tier 3 = 50,000 bbls/day within 54 hours

7.0 TRAINING AND EXERCISES

7.1 Training

7.1.1 USOR Spill Response Training Program

Training requirements for USOR and its contractors follow those mandated by the Washington Department of Labor & Industries and OSHA 29 CFR 1910.120. All primary response contractors are required to have 40 hours of Hazardous Waste Operations Training. Refinery employees involved in spill response operations have received 24 hours of hazardous waste training. Additional workers required to meet cleanup needs will receive 8 hours of training as stipulated in WISHA Regional Directive 91-1. These workers will not be allowed to assist in spill cleanup until a thorough site assessment has been completed. While USOR does not intend to utilize volunteers to assist in spill response cleanup operations, any final decisions to use volunteers will be decided upon by the Unified Command in accordance with the Volunteer Policy outlined in Chapter 4000 of the NWACP.

Employees that are new to USOR's spill response organization will completed initial training prior to being assigned job responsibilities which require participation in emergency response activities. All other USOR personnel depicted in Figure 3-3 and Appendix C will receive training applicable to their positions including ICS, NWACP policies, use and location of GRPs, contents of the Facility Oil Spill Response Plan and worker health and safety. This training, which approximates the actual roles and responsibilities of the participants specified in this document, is accomplished by participating in periodic announced and unannounced exercises, responding to actual emergencies and additional classroom training as necessary.

7.1.2 USOR Training & Certification Program

In 1991 the Washington legislature passed the Oil Spill Prevention & Response Act. This comprehensive regulation mandated that facilities handling petroleum products establish training and certification programs to ensure that employees and contractors receive training to reduce the possibility of oil spills caused by human error factors. USOR has established a training and certification program to comply with WAC 173-180 Part E requirements.

The Oil Spill Prevention Training & Certification regulations identify four categories of personnel that require training and/or certification. Categories include: certification of operations & supervisory personnel and training for management, maintenance and indirect operations personnel. Specific training guidelines have been established for each employee category and personnel are identified by position title to ensure training is completed. Specific outlines of training plan content, evaluation procedures, competencies, recertification procedures and documentation of training are maintained by USOR's Environmental Department. An outline of USOR's Training & Certification Program is located in Appendix N.

Relative to training requirements outlined in 49 CFR Part 194, USOR's Training & Certification Program addresses the following:

1. All personnel know their responsibilities under this plan.
2. All personnel know the name, address, and procedures for contacting the operator on a 24 hour basis.
3. All personnel know the name of and procedures for contacting the Qualified Individual on a 24 hour basis.
4. All reporting personnel know the content of the Core Plan Information Summary.

5. All reporting personnel know the telephone number of the National Response Center.
6. All reporting personnel know the notification process.
7. All response personnel know the characteristics and hazards of the oil discharged.
8. All response personnel know the conditions that are likely to worsen emergencies, including the consequences of facility malfunctions, and the appropriate corrective actions.
9. All response personnel know the steps necessary to control any accidental discharge of oil and to minimize the potential of fire, explosion, toxicity, or environmental damage.
10. All response personnel know the proper firefighting procedures and the use of equipment, firesuits, and breathing apparatus.

7.1.3 Emergency Response Plan Training

USOR response personnel also receive annual training on components of the refinery Emergency Response Plan. This document is available electronically on USOR's computer system. Topics covered in this plan include the following:

Emergency Response Plan Text

1. Introduction
2. Organization
3. Responsibilities
4. Communication
5. Emergency Procedure – Emergency Reporting
6. Emergency Procedure – Response Activation
7. Emergency Procedure – Refinery Wide Emergencies
8. Emergency Procedure - Injuries
9. Emergency Procedure – Spills
10. Emergency Procedure – Radio Active Material
11. Emergency Procedure – Evacuation
12. Emergency Procedure – Accounting for Personnel
13. Emergency Procedure - Bomb Threats
14. Emergency Procedure – Earthquakes
15. Emergency Procedure – Decontamination/Waste Disposal
16. Emergency Procedure – Site Security
17. Emergency Procedure – Safe Distances
18. Emergency Procedure – Port Security Incident
19. Emergency Procedure – Evacuation Guidelines
20. Emergency Procedure – On-Site Evacuation
21. Emergency Procedure – Off-Site Evacuation
22. Emergency Procedure – Shelter in Place
23. Emergency Procedure – Dock Emergencies

Emergency Response Plan Appendices

A. Emergency Guidelines for Refinery Fires
B. Emergency Response Health & Safety Plan
C. Call Out Lists
D. Spill Response Field Document
E. Tank Farm Pre-Fire Plan
F. WSPA Mutual Aid Agreement
G. Refinery Plot Plan – Street Identification
H. Fire Equipment

I. Fire Protection Systems
J. Building Layouts
K. Process Area Pre-Fire Plan
L. Fire Equipment- Hook Up Schematics
M. Personal Protective Equipment
N. First Aid/CPR Trained Staff & Location of First Aid Kits and AEDS
O. Minor Injury and Emergency Transportation
P. Decontamination
Q. Light Products Loading Rack – Pre Fire Plan
R. Butane Storage Area – Pre Fire Plan
S. Neighboring Properties
T. McChord Pipeline – Directions to Isolation Valves & Spill Shed
U. USOR Refinery Trucks – Towing Capabilities

7.1.4 Safety Meetings/Training

Individual department safety meetings are held on a monthly basis by the various departments within USOR's Manufacturing Division. Department safety meetings are used to implement and coordinate the safety process within each department/workgroup, plan and review prevention activities and to effectively respond to employee safety concerns. The monthly safety meetings are also used as a forum to discuss recent incidents (safety, environmental, security, property, etc.) as well as an opportunity to review emergency response and preparedness procedures, drills or activities that impact their area of responsibility, respond to suggestion or questions raised by department personnel.

7.1.5 Training Recordkeeping Program

Records sufficient to document training of all facility oil spill response personnel including instructors will be maintained for 3 years and will be made available to regulatory agency personnel upon request. USOR training records are maintained, as appropriate, in either a computerized database or in file cabinets dedicated to storing training records and will be maintained for USOR personnel as long as they are assigned oil spill responsibilities. Included in these files are copies of applicable training course outlines. All USOR oil spill response personnel training records will be maintained and located at USOR's Tacoma refinery, whereas, USOR requires all of their oil spill response contractors to maintain their own training records.

The forms shown in Table 7-1 and Table 7-2 are used to document training received by USOR personnel including the completion of oil spill prevention and response training programs. The form included in Table 7-2 can also be used to document discharge prevention meetings, which can be held separately or in conjunction with individual monthly manufacturing department safety meetings. Training records are maintained by USOR's Training Coordinator.

7.2 Exercises

The National Preparedness for Response Exercise Program (PREP) was developed to establish a workable exercise program which meets the intent of the Oil Pollution Act of 1990. As such, the PREP represents a unified effort that satisfies mandated oil pollution response exercise requirements for federal and state agencies signatory to the Northwest Area Contingency Plan. USOR has elected to conduct oil pollution response exercises in accordance with PREP guidelines and Ecology drill requirements in order to meet these mandated requirements for both USOR and McChord Pipeline Co. facilities. It is important to note that the designated spill emergency response team members are the same for USOR and McChord Pipeline Co.

PREP guidelines stipulate that once every three years, all components of the entire response plan must be exercised. This is accomplished by conducting the following exercises during the course of a triennial cycle:

- 12 qualified individual notification exercises *(conducted on a quarterly basis)*
- 3 spill management team tabletop exercises *(one in each year of the drill cycle and one of these exercises must involve a worst case discharge scenario)*
- 3 unannounced exercises *(Excluding qualified individual notification exercises, any of the exercises contained in this list in which the spill scenario is unannounced will satisfy this requirement. These unannounced exercises may be initiated by Ecology.)*
- Equipment deployment exercises consisting of the following:
  - ⇒ 6 facility owned and operated equipment deployment exercises at a frequency of 2 drills per year.
  - ⇒ 3 oil spill response organization equipment deployment exercises
  - ⇒ 3 pipeline equipment deployment exercises using either oil spill response organization and/or USOR owned equipment.
  - ⇒ One wildlife deployment drill per triennial cycle.

The PREP guidance document lists fifteen core components that will be demonstrated during the triennial cycle. The components, which have also been adopted by Ecology, are as follows:

1. Notifications: Test the notification procedures identified in the Facility Oil Spill Response Plan.
2. Staff Mobilization: Demonstrate the ability to assemble the spill response organization identified in the Facility Oil Spill Response Plan.
3. Ability to operate within the response management system described in the plan. This includes demonstration of the ICS staffing and process identified in the plan.
4. Source control: Demonstrate the ability of the spill response organization to control and stop the discharge at the source.
5. Assessment: Demonstrate the ability of the spill response organization to provide an initial assessment of the discharge and provide continuing assessments of the effectiveness of the tactical operations.
6. Containment: Demonstrate the ability of the spill response organization to contain the discharge at the source or in various locations for recovery operations.
7. Recovery: Demonstrate the ability of the spill response organization to recover, mitigate, and remove the discharged product. Includes mitigation and removal activities (e.g. dispersant use, in-situ burning and bioremediation use).
8. Protection: Demonstrate the ability of the spill response organization to protect the environmentally and economically sensitive areas identified in the NWACP and the Facility Oil Spill Response Plan.
9. Disposal: Demonstrate the ability of the spill response organization to dispose of the recovered material and contaminated debris in compliance with guidance found in the NWACP.
10. Communications: Demonstrate the ability to establish an effective communications system throughout the scope of the Facility Oil Spill Response Plan for the spill response organization.
11. Transportation: Demonstrate the ability to provide effective multimode transportation both for execution of the discharge and support functions.
12. Personnel Support: Demonstrate the ability to provide the necessary logistical support of all personnel associated with the response.
13. Equipment maintenance and support: Demonstrate the ability to maintain and support all equipment associates with the response.

14. Procurement: Demonstrate the ability to establish an effective procurement system.
15. Documentation: Demonstrate the ability of the plan holder's spill management organization to document all operational and support aspects of the response and provide detailed records of decisions and actions taken.

Ecology will be provided an opportunity to help design and evaluate all tabletop and deployment drills. As such, all drills will be scheduled on the NWACP area exercise calendar. Upon completion of the drill, Ecology will mail a written drill evaluation report to the plan holder. Credit will be granted for drill objectives that are successfully met. Objectives that are not successfully met will be tested again and will be successfully demonstrated within the triennial cycle, except that significant failure will be retested within thirty days. Plan deficiencies identified in the written evaluation may require plan holders to make specific amendments to the plan. A plan holder may request an informal review of Ecology's evaluation within thirty days of receipt of the report.

In accordance with WAC 173-182, Part III, a modified triennial cycle for drills, as found in the PREP is relied on in Washington to test each component of the plan. The type and frequency of drills is as follows:

- 3 tabletop drills per triennial cycle with one drill in each year of the cycle. One of the three drills will involve a worst case discharge scenario. Tabletop drill will need to be scheduled 60 days in advance, except the worst case discharge drill, which needs to be scheduled 90 days in advance.
- 6 equipment deployment drills per triennial cycle with two of these drills being performed per year of the cycle. These drills will include GRP deployments and testing of each type of equipment to demonstrate compliance with the planning standards. Deployment drills will need to be scheduled 30 days in advance.
- Ecology initialed unannounced drills will be conducted as necessary. These drills may involve testing any component of the Facility Oil Spill Response Plan, including notification procedures, deployment of personnel, boom, recovery and storage equipment. USOR may request to be temporarily excused from an unannounced drill if conducting the drill poses an unreasonable safety or environmental risk or significant hardship.

As applicable, USOR may request drill credit for a response to an actual spill provided that Ecology has an opportunity to participate and evaluate the spill response. This credit will be obtained by submitting a written request to Ecology within sixty days of completion of the cleanup operations and will include documentation supporting the components of WAC 173-182-720. Further, USOR will have up to ninety days to submit a lessons learned summary supporting the request for drill credit.

WAC 173-182-740 allows USOR to request a waiver for a deployment of tabletop drill under the following conditions:

- The request is in writing and describes why a waiver should be considered and how the plan holder is meeting the purpose and intent of the drill program with the waiver.
- This drill waiver request is made available for public review for a period of thirty days.
- Ecology will evaluate the request and respond in writing within sixty calendar days of receipt of the written request.

7.2.1 Notification Exercises

Once each quarter, USOR will conduct a test of the internal call out list to verify that it is accurate as well as functional. This test will involve contacting both USOR spill management personnel (including both the Qualified Individual and Alternate Qualified Individuals) and primary response contractors listed in Appendix C to ensure that their phone numbers are current. Table 7-3 shows the format that will be utilized to document each call out test.

7.2.2 Equipment Deployment Exercises

This section discusses various spill drills that will be utilized to familiarize spill response personnel in both tactical spill response procedures as well as the use of spill response equipment.

MSRC Exercises

On a yearly basis MSRC generally conducts at least one spill response drill within Puget Sound waters which is available to cooperative members. These drills, which can be announced or unannounced, require full or limited deployment of MSRC equipment as well as MSRC and cooperative membership spill response personnel. USOR actively participates in these drills by sending spill response personnel and/or USOR staged MSRC equipment operated by spill response personnel. Drills are designed to demonstrate the ability to meet Ecology's planning standards, including recovery systems and system compatibility in operating environments that could be impacted from spills as well as the deployment of GRPs. Depending on the nature of the drill MSRC also invites regulatory agencies and other interested parties to observe and/or participate.

USOR Equipment Exercises

On a yearly basis, Ecology is invited to observe the deployment of USOR owned containment boom. This is typically accomplished as part of pre-booming a barge/vessel prior to initiating an oil transfer at the marine terminal.

USOR Training Exercises

USOR spill response equipment operators annually participate in a training exercise at the USOR Marine Terminal to maintain their proficiency with response equipment. Typically, these training exercises involve Clean Sound personnel as trainers and provide hands-on instruction regarding the operational aspects of spill response equipment staged at the Marine Terminal dock. USOR spill response personnel also maintain a continual working knowledge of USOR owned spill response equipment since this equipment is used to support the loading and unloading of vessels at the dock. The Preventative Maintenance Work Order Form contained in Table 7-3 is used to document this type of exercise.

In addition USOR maintenance personnel use the USOR owned work boat and working boom prestaged at the Marine Terminal on a daily basis to preboom all ships and barges prior to conducting any transfer operations. As such, this provides USOR maintenance personnel with the opportunity to maintain their proficiency in boom deployment operations since this boom is deployed during a variety of weather and tidal conditions.

Table 7-1

Training Completion Form

The following employee has completed the listed training course:

TRIM COURSE CODE:	
Training Title/Description:	
Name: **(Please Print - Last, First, Middle Initial)**	
Company: ☐ U.S. Oil ☐ Other:_____	Date:
Trainer(s) Name(s):	

I have received the above listed training and understand the materials presented.

Signature:_____

Note: Completed document to be submitted to Erin House for input to training database. Incomplete documents will be returned to Department Manager.

Table 7-2

Group Training Attendance Sheet

Training Attendance Sheet

Department(s):	Date:
Meeting Leader:	Trainer(s):

TRIM Course Code(s)	*Topic(s)*

Name (*Print Please*)	Signature

Note: Forms without TRIM information will be returned to Dept. Manager.
Routing: Safety ➡ File

Table 7-3

Call Out List Documentation

Person(s) Performing Call Out: _____

Date(s) That Call Out Was Performed: _____

Instructions: Contact all USOR spill management personnel and primary spill response contractors listed in Appendix C, Lists #1 & #3 respectively, to verify that their listed phone numbers are correct. If the phone numbers are correct check the column marked **Yes**. For those phone numbers that are not correct, check the column marked **No** and write in the correct phone number. Please return the completed form to the Environmental, Health & Safety Department.

	YES	NO	NEW PHONE #
Primary Supervisors			
Support Supervisors			
Logistics Support			
Safety Support			
Environmental Support			
Public Relations			

Table 7-3 (Continued)

	YES	NO	NEW PHONE #
Shift Supervisors			
Spill Response Contractors			
Marine Spill Response Corporation			
Guardian Industrial Services			
Global Diving & Salvage Co.			

7.2.3 Tabletop Exercises

Tabletop drills are intended to demonstrate USOR's capability to manage a spill using the ICS. Based on our size and configuration, USOR does not have a regional/nation "away" team as key members are located in the Seattle-Tacoma area. USOR's spill response team is discussed and identified in Section 3.2 and Chapter C of this document. On an annual basis USOR's spill management team will conduct or take part in one tabletop spill response drill. An example tabletop spill response exercise log is contained in Table 7-4.

7.2.4 Exercise Recordkeeping Program

Records sufficient to document participation in oil spill response exercises will be maintained for 5 years and will be made available to regulatory agency personnel upon request. The forms contained in Tables 7-1 through 7-5 will be used to document the participation in oil spill response exercises.

7.2.5 Drill Program Coordination

Overall responsibility for coordination, management, implementation and tracking of USOR's drill program is assigned to USOR's Environmental Department. The exceptions to this generalization are listed as follows, however, oversight is still provided by USOR's Environmental Department:

Quarterly Notification Exercises - This exercise is conducted by USOR's Dispatch Office.

Equipment Deployment Exercises - These exercises are conducted by USOR's Maintenance Department personnel with assistance provided by MSRC personnel as warranted.

7.3 Post Spill Review

After completion of an oil spill response/cleanup operation, a post-spill review meeting will be held to critique the progression of the spill response as well as the effectiveness of the Facility Oil Spill Response Plan. This critique will involve all relevant participants including USOR spill response personnel and supervisors, primary response contractors/cooperatives, and other pertinent personnel involved in the spill response. As appropriate, Ecology as well as the applicable USCG, EPA and other participating agencies and organizations will also be invited to participate in this debriefing process. The scope any post spill review will also take into consideration whether a unified command was established and whether the incident identified significant plan updates and/or significant lessons learned.

The post spill review meeting will be scheduled at a reasonable time after investigation into the cause(s) and events surrounding the incident are complete. Written reports documenting the incident will be prepared as part of the investigation.

During the spill critique process, the effectiveness of the Facility Oil Spill Response Plan will be reviewed and plan improvement will be made as necessary. Those sections where insufficiencies are noted (if any) will be amended and submitted to Ecology, USCG, EPA and/or DOT in accordance with the procedures outlined in Section 2.3 of this plan. Also, action items will be assigned as required to address any insufficiencies and to prevent incident recurrence.

Table 7-4

Annual MSRC/USOR Maintenance Exercise

JOB PLAN LIST REPORT

Job Plan Number: J108
Description: Annual Maintenance Exercise with MSRC

Date: _____ Routing: 1) GAH 2) TJG 3) KBI File

U.S. Oil Personnel		Non-U.S. Oil Personnel

Climatic Conditions: Tide Data: _____

Temperature: _____

Wind: _____

(Ref: PM546) Supervisor Signature: _____

Trim Course Code: RPM546HO

Table 7-4 (Continued)

Annual MSRC/USOR Maintenance Exercise

JOB PLAN LIST REPORT

Job Plan Number: J109
Description: Annual Maintenance Exercise Description

Routing: 1) HEH 2) TJG 3) KBI File

1) Instruct personnel on the operation of the belt skimmer and SRV at dock side. Include radar system and communication equipment.

2) Take both vessels out and go over containment boom tie-offs on both sides of waterway at the Blair bridge and Lincoln Ave. ditch. Familiarize personnel with location plan drawings.

3) At either end of the Blair bridge or Lincoln Ave. ditch (depending on water way traffic) tie-off and deploy 1000' of zooom boom. Set-up the belt skimmer and instruct personnel on the use of the oil recovery belt and spray boom.

4) Return to dock, repack the zooom boom and secure vessels.

5) Additional Comments: _____

_____

_____

(REF: PM546)

Trim Course Code: RPM546HO Supervisor Signature _____

Table 7-5

Tabletop Spill Response Exercise Log

Date: _____

Objective: _____

_____

_____

_____

Exercise Participants: _____

_____

_____

_____

_____

Climatic Conditions: _____

_____

_____

Spill Response Scenario: _____

_____

_____

_____

_____

_____

Chronology of Events: _____

_____

_____

_____

_____

_____

_____

Conclusions/Recommendations: _____

_____

_____

_____

_____

_____

8.0 COMMUNICATIONS

8.1 Available Communication Systems

The following is a description and listing of the various communication systems which are currently available in the event of an oil spill.

In Plant radios

The in-plant two-way radio system is the primary communication system for operating personnel. Two-way radios are also used by maintenance supervisors, key contract supervisors and the person in charge of any vessel product transfer operations at the Marine Terminal dock. Vessel operators also receive a two-way radio when they arrive at one of the marine terminal docks before any product transfer operations commence.

The radio is capable of communicating with other two-way radios. These radios have a geographic operating range of up to 20 miles; however, they are most reliable within a 5 mile radius. Operating protocol and frequencies are listed in Table 8-2 for these radios.

Several of the two-way radios are dedicated for use by outside response agencies such as the fire department. A two-way radio is given to the senior responding fire department officer when any of their units arrive on site to respond to an emergency. This enables the fire department to readily communicate with plant personnel.

The in-plant radios system includes six repeaters, which are described in greater detail in Section 8.3.

Cellular Telephone

USOR primarily utilizes Sprint Cellular phone network with coverage throughout the Puget Sound area. The system allows for land and water coverage and can also be reached through local phone access lines. USOR currently has cellular units dedicated to individuals or organizations whose duties include responding to emergencies. The distribution of these cellular units is outlined in USOR phone list as well as Appendix C, Section C-5.

Telephone

A third communication system employed by USOR includes the use of the PBX telephone network. This function is used extensively for in-plant as well as communications outside of the plant through local telephone access lines. The PBX telephone network is compatible with all other communication systems discussed in this chapter including local telephone access lines. In addition to the office building, PBX network telephones are strategically located throughout the refinery process areas as well as the marine terminal dock area. Refer to the published internal telephone list for all PBX extensions.

The PBX telephone network is equipped with a UPS (Uninterruptible Power Supply). In the event of power failure, the refinery phone network will remain operational (with the exception of cordless phones).

In the event of a power failure and UPS failure, two phones will automatically switch to independent outside lines. These two phones will be available to receive and transmit. Table 8-1 identifies the locations and access numbers for these phones. All other PBX based phones will be non-operational.

VHF Radios at Marine Terminal

There are two portable VHF Radios and one base station at the Marine Terminal. The VHF radios and base station are programmed with marine channels 16 and 83 to allow communication with the U.S. Coast Guard.

8.2 Communication System Usage

Initial notification of an oil spill by a refinery worker shall first be made to the shift supervisor using the two-way radios (Channel 1 or 2), the PBX telephone network, or in person. The shift supervisor will in turn notify one of the primary supervisors using either the PBX telephone network or two-way radio. If a spill is deemed serious enough to warrant a full scale emergency response, the primary supervisor shall then have the authority to enlist the aid of all other primary supervisors, secondary supervisors, outside contractors/cooperatives, response agencies, refinery workers and any other additional personnel that are deemed necessary to initiate cleanup. This action would require utilizing the above-mentioned communication functions on one or several of their corresponding frequencies.

Any of the above mentioned communication systems and associated frequencies discussed in this chapter could be utilized as required by primary supervisors, support supervisors, refinery workers, outside contractors/cooperatives, response agencies, and other enlisted USOR personnel during the cleanup phases of an oil spill. These communication systems is currently used during daily operations and is compatible with each other. Depending on individual spill response circumstances, additional communication procedures and/or assignment of specific communication systems/frequencies will be developed on an as-needed basis.

NWACP Section 9650 titled "Communications Manual" is incorporated into this chapter by reference.

8.3 Radio Repeater Description

There are a total of six repeated radio channels available on site. Repeaters are installed in the following locations:

1. Maintenance shop electrical room. The three repeaters, UPS and four extra batteries are rack-mounted above the north door. The three repeaters have 6 hours of run time on UPS power. Power is fed from Panel 2A, circuit 26 in the same room.

   The three repeaters operate on the following channels:

   Channel 1. Transmit power is 35 W. Receive / transmit frequencies are 451.78750 / 456.78750 MHz. The antenna is at the SW corner of the maintenance shop roof.

   Channel 4. Transmit power is 35 W. Receive / transmit frequencies are 451.93750 / 456.93750 MHz. The antenna is at the center of the West side of the maintenance shop roof.

   Channel 5. Transmit power is 35 W. Receive / transmit frequencies are 453.01250 / 458.01250 MHz. The antenna is at the NW corner of the maintenance shop roof.

2. Instrumentation building 2 (IB2). The power supply is a UPS fed from sub 7 MCC building backed up by generator GE-1. Run time is on the UPS is 30 minutes. The generator should start within 30 seconds of power loss allowing the radio to run indefinitely.

   The repeater operates on Channel 2. T ransmit power is 35 W. Receive / transmit frequencies are 452.15000 / 457.15000 MHz. The antenna is on roof of IB2.

3. Storage room for janitor supplies adjacent to main conference room. There are two identical repeaters mounted adjacent to each other. Only one repeater is in service at a time and the other is a backup. The power supply is a UPS with two extra batteries. Run time is on the UPS is 6 hours.

   The repeater operates on Channel 3. Transmit power is 20 W. Receive / transmit frequencies are 451.67500 / 456.67500 MHz. The antenna is on the pole adjacent to the Main Conference Room.

4. A repeater is located on Gold Mountain (seven miles west of Bremerton). This is owned and operated by Marine Spill Response Corporation (MSRC). The repeater operates on Channel 12. Receive / transmit frequencies are 454.0000 / 459.0000 MHz.

Table 8-1

PBX Phone Availability

During Power Failure with UPS Failure

With Power	Without Power/UPS	Location
PBX Ext. 424	253-383-1651	Scale House Coordinator
PBX Ext. 241	253-383-6320	Administrative Services Mgr

Note: The 10-digit numbers will ring to the front desk when we have power and to the specified location when we do not have power.

Table 8-2
USOR Radio Programming Specification
(Regular operation – Non-Turnaround)

Channel	Receive / Transmit	USER	Repeater
1 (no scan)	451.78750 / 456.78750	USOR Personnel/ Emergency Reporting (Note A)	Yes
2 (no scan)	452.15000 / 457.15000	USOR Operations (Note B)	Yes
3 (no scan)	451.67500 / 456.67500	USOR Operations – use existing Ch. 1 repeater by main conference room (Note B)	Yes
4 (scans 1)	451.93750 / 456.93750	Maintenance & Construction Contractors (scan Ch. 1) Fire & Safety Watches – (scan Ch. 1)	Yes
5 (scans 1)	453.01250 / 458.01250	Overflow channel (scan Ch. 1)	Yes
6	451.78750 / 451.78750	Talk around for channel 1 – radio to radio	No
7	451.16750 / 451.16750	Simplex channel – radio to radio	No
8	451.23750 / 451.23750	Simplex channel – radio to radio	No
9	456.16250 / 456.16250	Simplex channel – radio to radio	No
10	456.23750 / 456.23750	Simplex channel – radio to radio	No
11	454.00000 / 454.00000	MSRC- Radio to Radio	No
12	454.00000 / 459.00000	MSRC- Gold Mountain Repeater (Note F)	Yes
13	453.4875 / 458.4875	Port of Tacoma Security (Notes C & D)	

Notes:

A. This channel is reserved for all USOR employees (Operations, Maintenance, Laboratory, Scalehouse, Engineering, Environmental, and Safety).

B. This channel is reserved for USOR Operations. This provides USOR Operations a second channel for communication during special circumstances (i.e. shut-downs, training etc). The purpose would be for less radio traffic during emergencies allowing quicker access onto the channel.

C. This channel is on selected radios: Refinery Manager, Engineering Manager, Environmental Manager, Safety/Security Manager, Safety Administrator, Safety/Security Administrative Assistant, Manager of Administrative Services, Shift Supervisor and Scalehouse.

D. This channel is not an USOR owned frequency.

E. Safety Supervisor's Radio is programmed to scan channel 4. Jim Lake's radio is programmed with Madsen's channel 2 frequency.

F. The Gold Mountain Repeater cannot always be reached; therefore a portable base station is required for consistent communication on this channel.

G. Base Stations are installed in the Scalehouse, and Main Control Building (A-Reformer & A-Crude)

9.0 HEALTH AND SAFETY

9.1 Emergency Response Health & Safety Plan

USOR is committed to a comprehensive pollution prevention program and has implemented a spill response plan that will mitigate impact to the environment should a spill incident occur. Paramount in this prevention and preparedness process is the health and safety of employees, contractors and the public. At no time will USOR place protection of the environment above the life, health and safety of an individual. To ensure that this goal is met, USOR has developed a comprehensive Emergency Response Health & Safety Plan to assist in the preparation and response to potential refinery emergencies. This plan, which is located in Appendix B, is not only designed to be a flexible working document but also serves as the basis for a post emergency Health & Safety Plan since each emergency is unique. This plan addresses site evaluation, communication, decontamination, selection of personal protective equipment and incident command.

USOR has established contacts and developed vendor lists to provide emergency services and/or safety equipment. These vendors, who provide services and equipment on a routine basis, are able to provide services and equipment in the event of a refinery emergency, fire or oil spill. Appendix C contains a list of vendors who can be contacted in the event of an emergency to provide response services and/or safety equipment.

USOR utilizes a computerized equipment/parts inventory tracking and reordering system for maintaining approximately 17,000 inventoried items. This inventory, which includes response resources and safety equipment, is located on-site in the Receiving Dept. warehouses. Examples of safety/response resources maintained in inventory include personal protective equipment, spill booms and cleanup materials, first aid supplies, decontamination materials and exposure monitoring instruments. This plan does not provide specifics on inventoried items due to the large number of items in inventory. Specifics regarding this inventory can be obtained through USOR's computerized parts inventory database. Reordering of inventoried items is automatic and is based on minimum and maximum inventories established for each part and piece of equipment.

Safety and/or response equipment items that are seldom used are either rented or purchased on an as-needed basis. USOR maintains a large inventory of safety related equipment on-hand due to usage requirements necessary to support daily operations.

Appendix M contains Material Safety Data Sheets for oil products and other hazardous materials that are handled, stored or transported at our facility in bulk.

NWACP Section 9660 titled "Health and Safety Manual" is incorporated into this chapter by reference.

10.0 SPILL PREVENTION PLAN

10.1 USOR Spill Prevention Philosophy

USOR makes every attempt to prevent spills from occurring. Engineering design of all equipment is in accordance with accepted engineering practices and coded regulations in order to avert equipment failures which could cause spills. All equipment is monitored on a regular basis to spot potential problems. The details on design and operating procedures described throughout this chapter focus on the specifics of those procedures designed to prevent spills as well as the responsibility for equipment monitoring at locations where potential spills are likely. Additional details regarding oil spill prevention are discussed in USOR's Facility Oil Spill Prevention Control & Countermeasures Plan, USOR's Marine Terminal Operations Manual as well as the operations and maintenance manual for McChord Pipeline Co. USOR will continue to update applicable plans, policies and procedures for inspecting and upgrading existing facilities as new equipment standards and requirements are developed.

10.2 Discharge Detection and Spill Prevention Systems

10.2.1 Aboveground Storage Tanks

The materials of construction for all USOR hydrocarbon storage tanks are compatible with the products being stored as well as the physical conditions under which the products are being stored. All USOR hydrocarbon storage tanks are of welded construction. A majority of the hydrocarbon storage tanks were constructed meeting the requirements of API Standard 650. It is USOR policy that all new hydrocarbon tanks are of welded construction in accordance with API Standard 650.

Where process conditions require internal heating, potential steam coil leakage is determined by monitoring product and raw material tankage for Bottom, Sediment & Water (BS&W). This is accomplished as weekly samples are collected from these tanks and subsequently analyzed for various parameters including BS&W. As long as there is steam flow, any heating coil leaks will result in steam leaking into the product. When a steam coil is not in service, however, potential oil leakage into the coil is controlled by visually monitoring steam trap condensate for oil. In most cases, external heating systems are used in lieu of internal steam coils.

Ancillary rotating equipment and flanges are visually monitored for packing and flange leaks with appropriate maintenance work orders issued as required to repair leaking equipment.

All valves which permit direct outward flow of a tank's contents are closed but not locked when in non-operating and non-standby status. Starter controls on all oil pumps are located at a site accessible only to authorized personnel.

One per shift USOR's operations personnel are required to walk through the tank farm areas to look for any possible oil leakage or other abnormal operating conditions involving the tank or secondary containment. An example tank farm inspection form is provided in Table 10-1. Upon completion, this form is returned to the Operations Department.

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[redacted]

During transfers from storage tanks to tank vessels, constant communication is maintained between the vessel's person-in-charge, USOR's person-in-charge and the pumper-gauger. Both the affected storage tank and the tank vessel are gauged at regular intervals during the transfer process to determine an accurate transfer rate and subsequent time of completion. The storage tank transfer rates are regularly compared to tank vessel transfer rates with corrections being made to these rate determinations as necessary. A 10 minute warning is provided by the vessel's person-in-charge to USOR's person-in-charge alerting them that the vessel is almost full. Upon final notification from the vessel's person-in-charge, USOR's pumper-gauger will shut off flow.

To further prevent tankage overfills, USOR has a standing order in place which governs the transfer of oil at the refinery and marine terminal. A system of stock transfer records and rundown logs is used to keep track of each oil movement. Specific items contained in this standing order are as follows:

1. When valves are opened for a transfer, it is shown on the stock transfer report as an active transfer.
2. The transfer is maintained on the stock transfer report as long as valves for the transfer are left open. These valves should be closed as soon as practical, but no later than two hours upon completion of the transfer.
3. All transfer and transfer systems are isolated at the tank valves regardless of which other valves are used in the transfer. This provides maximum protection from a piping or equipment failure and from a mix-transfer to the wrong tank. If in doubt on a specific situation, contact the Shift Supervisor.
4. All lineups will be physically walked prior to the opening of the transfer valves to confirm the position of other valves and the integrity of the lineup route. **Do not assume** the position of other valves or condition of piping or equipment in the transfer lineup.
5. All transfers are to be shown including water draws. Routine transfers are to be shown on the transfer report. Pumping of bottoms product is a transfer. Any movement of tank material or unit rundown is a transfer and will be treated and logged as a transfer.
6. When a transfer is made into or out of a unit rundown tank, the starting and stopping gauge for the transfer still needs to be recorded. It is not acceptable to put down "RG" for running gauge.

To further protect against overfills, USOR employs the following practices for those tanks, which are not equipped with a high level alarm system:

1. The normal fill level for each tank has been established and is displayed on the side of the tank near ground level tank gauge.
2. Frequent communication is maintained between both parties involved in a product transfer so that flow can be shut down or diverted if necessary. This communication involves using one of the methods discussed in Chapter 8 of this document. Parties involved in a product transfer typically consist of the East pumper-gauger, West pumper-gauger, Dock pumper-gauger (also known as the USOR person-in-charge) and/or the vessel person-in-charge.
3. Prior to any product transfer, a starting gauge is taken on all tanks involved in the transfer. One of the obvious benefits of this action is to ensure that there is adequate capacity available to perform this transfer.
4. It is important to reiterate that all lineups will be physically walked prior to the opening of the transfer valves to confirm the position of other valves and the integrity of the lineup route. Once the transfer has commenced the appropriate USOR pumper-gauger will check the gauges and rates at both ends of the transfer within one hour to confirm that the transfer lineup is correct.
5. During product transfers, the tanks at both ends of the transfer are checked periodically to ensure that the product is flowing to the correct tank and that the tank has sufficient capacity to continue receiving product. Active transfers are observed at intervals appropriate to the transfer size and time. At this point, the time remaining for the transfer is verified and updated as necessary. Open/closing gauge readings are recorded in accordance with Standing Order #PG-1.

6. Once per shift USOR's operations personnel are required to walk through the tank farm areas to look for any possible oil leakage or other abnormal operating conditions involving the tank or secondary containment. An example tank farm inspection form is contained in Table 10-1. Upon completion, this form is returned to the Operations Department.
7. It is USOR's policy not to fill tanks above their normal fill level, however, any actions contrary to this policy require approval from Operations Department Supervision. If a tank is to be filled above its normal fill level, USOR Operations personnel will continuously monitor product receipt as the volume of product approaches the tank rated capacity. This level of monitoring will continue until the transfer is complete.

TABLE 10-1

TANK FARM INSPECTION FORM

OPERATIONS POSITION:_____

INSPECTION DATE:_____

TANK AREA	TIME/OPERATOR DAY SHIFT		TIME/OPERATOR NIGHT SHIFT	
	10:00	16:00	22:00	04:00

10.2.2 Tankage Secondary Containment

Permanent and portable oil storage tanks are provided with secondary containment berms as necessary to prevent spilled oil from reaching navigable waters. All secondary containment berms meet or exceed the requirements set forth in NFPA 30 for sizing of containment including sufficient volume capacity necessary to hold the entire contents of the largest tank in each individually contained area plus the quantity of rain water (minimum) associated with the estimated 25-year frequency 24-hour rainfall event (3.5" for Tacoma, Washington).

Secondary containment berms are constructed of natural earthen material and/or concrete. Some of these berms are provided with a solid asphalt coating to reduce erosion. The surface geology of the area is sufficiently impervious to contain spilled oil until it is recovered prior to any unauthorized discharge. The effluent discharges from all secondary containment berms are controlled by valves prior to discharge into the refinery's wastewater treatment system. These valves are normally kept closed and are regularly monitored through the USOR tank farm inspection procedures. Piping penetrations through berm walls are regularly inspected for a sufficient seal. See Appendix H for locations and capacities of secondary containment berms.

There are bulk storage tanks located in the southwestern area of the refinery that typically contain only asphaltic materials. These bulk storage tanks are not located within a separate secondary containment system, but are within areas that drain to a sewer with adequate capacity and control to prevent unauthorized discharge. In addition, a tertiary containment berm has been constructed along the northern and southwestern edge of the refinery. This tertiary berm not only provides containment for the asphalt tanks located in the southwestern part of the refinery, but also provides additional containment along the north and southwest portions of the refinery in the unlikely event secondary containment is breached.

It is important to note that asphaltic materials produced at USOR are extremely viscous and would solidify at ambient temperatures thereby making is extremely unlikely that any asphalt spills would flow off-site. Water coming in contact with this asphaltic material (rainwater or other surface water) may, however, acquire a hydrocarbon sheen. As such, area drains located at key areas serve to collect this water an direct it to the refinery wastewater treatment plan via the refinery stormwater sewer system.

USOR has a berm maintenance program to ensure that refinery secondary containment systems are being maintained using standardized procedures consistent with Federal, State and local standards including the Washington State Design Standards Rule (WAC 173-180-320). USOR's berm maintenance program consists of the following:

1. An inspection checklist including appendices to provide the inspector sufficient information to effectively perform an inspection.
2. A maintenance schedule using work orders to ensure noted discrepancies are corrected.
3. An in-depth inspection procedure using the checklist contained in Table 10-2 to outline discrepancies and make recommendations to management for scheduling repairs.
4. The secondary containment field inspection package consists of the following components:
   - Oil storage tanks must be located within secondary containment
   - The secondary containment must be designed, constructed and operated to prevent discharged oil from entering waters of the state.
   - The secondary containment must contain 110% of the largest tank.
   - Construction material must be compatible with stored fluid.
   - Construction material must be of sufficient strength to prevent failure when filled with fluid.
   - Construction material will be sloped to drain fluid away from tanks and piping.
   - Monthly visual inspections.
   - Secondary containment must be free of debris and other materials, including excess precipitation and maintained to control vegetation and burrowing animals.
   - Containment berm water must be monitored prior to discharge.
   - All pumps, siphons and valves must be in food working order.
   - Drainage must be controlled by positive shut-off valves.
5. A monthly inspection checklist and berm drawings are used to facilitate routine inspections.

Table 10-2

U.S. Oil & Refining Co.

Secondary Containment - Monthly Inspection Checklist

Date: _____ Berm Section #: _____ Inspector: _____ P.M. # _____

Inspection Item	*Status*	*New/Prev Noted*	*Comments*	*Action Required*	*Action Taken*
1. Berm damage					
a. Erosion					
b. Mechanical (traffic)					
c. Rodent					
d. Vegetation					
e. Debris					
2. Berm drain valves					
a. Condition					
b. Operation					
c. Secured					
d. Indicator flags					
3. Slopes away from tk to drain					
4. Berm stair condition					
5. Accumulated liquid in berm					
6.					
7.					
8.					

W.O. Completion

Date: _____ Completed By: _____ Reviewing Supervisor: _____ Date: _____

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6. Berms will be liquid tight and of earthen construction. Berms will be maintained and restored, reconfigured and/or reshaped to conform to the berm repair specifications contained in the berm maintenance program. Key components of the berm repair specifications address the following:
   - berm height
   - vehicle berm crossings
   - secondary containment volume
   - maintaining proper berm shape
   - berm surfacing
   - berm sloping
   - berm surveying

USOR has further enhanced the integrity of berms by implementing the following items. Items #1 and #2 also meet the safety standards outlined in Title 296 of the Washington Administrative Code.

1. Refinery walkways and stairs are configured/located to enhance usability thereby encouraging personnel to cross berms at unauthorized locations.
2. Perimeter and intermediate berms are typically capped with a compacted crushed rock layer or a "sprayed on" asphalt coating to minimize wind and rain erosion and thereby prevent sloughing.

Each year USOR hires a licensed contractor to apply herbicide throughout the refinery, as necessary, in order to control vegetation. This program is necessary to mitigate the fire danger posed by mature vegetation.

10.2.3 Refinery-to-Dock Pipeline

The transfer pipelines between the dock and the refinery are considered part of the USOR transportation-related facility and are controlled in accordance with U.S. Coast Guard regulations. The transfer pipelines from the refinery to the dock were entirely replaced during 2007 with seamed welded steel pipe. All valves, flanges and fittings meet the appropriate ANSI/API standards. Any new piping within the refinery or dock property limits is installed in accordance with ANSI/ASME B31.3. Any new piping installations or modifications to existing piping in the easement between the plant and dock are performed in accordance with 49 CFR 195 and ANSI/ASME B31.4.

An expansion loop for thermal expansion has been added to the 24" refinery-to-dock pipeline since it is the only refinery-to-dock pipeline subject to thermal expansion. All pipe supports, including those used for expansion loops, are designed to minimize abrasion and corrosion and allow for expansion and contraction.

USOR has completed an investigation of all refinery-to-dock transfer pipelines to ensure that proper thermal relief exists. The thermal relief systems consist of restriction orifice piping around block valves and ASME stamped relief valves at critical locations. The systems provide relief across every block valve to an appropriate storage tank. USOR's Operations Department uses pipeline pressure information provided by the Pressure Point Analysis (PPA) system to monitor relief valve performance and initiate repairs as required.

10.2.4 Inplant Refinery Piping

Most process piping in the refinery is above ground and is primed and painted to prevent corrosion. Underground pipelines are wrapped and coated to reduce corrosion. Cathodic protection is not typically provided based on results of electrolytic testing of the soil. Any below ground piping that was installed or replaced after August 16, 2002 has protective wrapping and coating and cathodic protection or otherwise, satisfies the corrosion protection provisions for piping in 40 CFR Part 280 or a state program approved under 40 CFR Part 281. As an alternative, buried hydrocarbon piping that penetrated through berm walls or crosses underneath roadways is cased. Cased piping is fitted with spacers along with casing vents and/or flexible end seals. USOR's Engineering Department ensures that these design criteria are met. Exposed buried piping will be inspected for deterioration and, if corroded, then corrected as necessary. In any instance that a protective measure, such as coating, wrapping or cathodic protection, is not provided, aspects related to provisions of "equivalent environmental protection" will be documented. As documented in the Mechanical Integrity Manual, USOR has developed a program to inspect and repair underground pipelines in petroleum hydrocarbon service in accordance with API 570.

Pipeline terminal connections are capped or blind-flanged if the pipeline is not in service or on standby service for extended periods. When a pipeline is removed from service, blinds are installed to isolate the idle line from active systems.

All pipe supports, including those used for expansion loops, are designed to minimize abrasion and corrosion and allow for expansion and contraction of the supported piping. In-plant piping system are typically monitored for overpressure conditions and are equipped with pressure relief valves that, in the case of liquids, drain to recovery circuits.

Any spillage from process piping is captured by the facility on-site storm water or process wastewater systems.

10.2.5 Pipeline Leak Detection Systems

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USOR's PPA system meets the requirements of transfer pipeline leak detection systems as set forth in WAC 173-180-340 (11). To verify initial compliance with Ecology leak detection requirements, USOR performed leak detection tests on the PPA system during June 1995 and subsequently submitted the results of these tests to Ecology.

There are limitations to every leak detection system presently available on the market. Since PPA alarms are based upon pressure fluctuations in the pipeline, some normal operating conditions cause the PPA system to alarm. These situations include: vessel stripping operations, tank switches within the plant, varying pump rates and pressures, thermal relief situations and valve operations on the line of concern. USOR has a detailed alarm response procedure to address these types of alarms. These procedures which are highlighted below are also discussed in further detail in Section 5.6 of USOR's Marine Terminal Operations Manual. The PPA system, coupled with daily visual inspection by Operations personnel, provides an excellent leak detection system for USOR.

In general, the following sequence has been established for Dock Operations personnel to respond to PPA system alarms:

1. Acknowledge the alarm,
2. If alarm cause is known (tank switch, vessel stripping, etc.), log time and cause of alarm in log book and monitor pipeline pressure to ensure pressure is not continuing to drop,
3. If alarm source is unknown, contact refinery and vessel operations personnel to determine any operating changes. If an operating change caused the system to alarm, log the cause and time and monitor pressure to ensure steady state,
4. If the source remains unknown, use the PPA system to determine the magnitude of the pressure drop. If the pressure drop is more than 5 psig, shut down the vessel immediately and conduct a visual inspection of the line from the refinery to the dock face. If the pressure drop is less than 5 psig, perform a visual inspection without shutting down the vessel. All results of the inspection should be written in the log book.

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[redacted]

10.2.6 Cathodic Protection System for Transfer Pipeline

During December 1995 USOR installed and commissioned an impressed current cathodic protection system for the five transfer pipelines that run from the refinery to the Marine Terminal. This system was installed to control pipeline corrosion while ensuring compliance with WAC 173-180-340 (5) of the Design Standards for Class 1 Facilities rule. Key system components consist of a rectifier, deep well anodes and cabling necessary to connect system components.

Initial startup consisted of performing a startup survey necessary to adjust the cathodic protection system to provide an effective level of protection. Based on survey results, the cathodic protection system was adjusted so that the pipe-to-soil potentials were in accordance with NACE Standards. Following a polarization period of approximately three weeks, the entire system was tested again and final operating characteristics established.

To assure that the proper level of cathodic protection is maintained USOR has established a system monitoring and maintenance program. Periodic testing is required to determine if the cathodic protection system is out of adjustment in which case the transfer pipelines would either become overprotected or underprotected. The under protected case results in corrosion damage to the pipelines, while overprotection may cause damage to the protective coating being used. In order to diagnose any changes or problems in the cathodic protection system, an accurate record of measurements taken from time of activation to time of diagnosis is required.

Furthermore, a complete history of the system in the form of records of previous measurements and a complete schematic of the system and its components provide a baseline for comparing future measurements and is useful in trouble shooting system problems.

Outside of initial startup, essential components of the cathodic protection system maintenance program are as follows:

- Rectifier monitoring (Frequency = monthly the first year and bi-monthly thereafter).
- Structure Potential Survey on Cathodically Protected Pipeline (Frequency = annually and/or when new connections or alterations occur).
- Insulating fittings, continuity bonds, casing insulators (Frequency = annually).
- Pipe and coating condition when buried structure is exposed (Frequency = each occurrence).

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[redacted]

TABLE 10-3

Pipeline MAWP and Maximum Relief Valve Settings

Name	MAWP (PSIG)	Maximum Relief Valve Setting (PSIG)
Dock #1 Product Lines That Originate at the Refinery		
24" Crude Oil Line	250	250
10" Jet Line	250	250
8" Diesel Line (See Note #1)	250	250
8" Gasoline Line	250	250
Dock #1 Product Lines That Originate at the Marine Terminal		
8" Fuel Oil Line	150	150
4" Marine Diesel Oil Line (See Note #2)	150	150
Dock #2 Product Lines That Originate at the Refinery		
10" Jet Line	250	250
8" Diesel Line	250	250
Dock #2 Product Lines That Originate at the Marine Terminal		
10" Fuel Oil Line	150	150
8" Marine Diesel Oil Line (See Note #2)	150	150

Note #1: There is a 4" diesel branch line off of the 8" diesel line at both docks #1 and #2. In addition, there is a 2" diesel branch line off of the 4" diesel line at both dock #1 and #2. The MAWP for the 4" and 2" lines is 250 psig and the maximum relief valve setting for both the 4" and 2" lines is 150 psig.

Note #2: Marine Diesel Oil is also known as ISO-DMB.

10.2.8 Marine Terminal Transfer Hoses & Loading Arms

The only loading arms used at the marine terminal consist of two identical 16" hydraulic loading arms used at Dock #1. These loading arms, which are depicted in Figure 10-1, are designed to handle crude oil and other refined products that can be transferred to/from the refinery using the 24" transfer line. These arms are operated by a remote-radio controlled "terminal". This radio controlled terminal allows the person operating an arm to move freely around the dock and to go on board a vessel) to closely monitor the connecting flange positions. Both of these loading arms can be operated via the base unit. Maintenance Department personnel are responsible for using the radio controlled terminal to connect these loading arms to the vessel manifold. The MAWP for both of the hydraulic loading arms is 250 PSIG while the maximum relief valve setting is also 250 PSIG.

Figure 10-1

Dock #1 Hydraulic Loading Arms

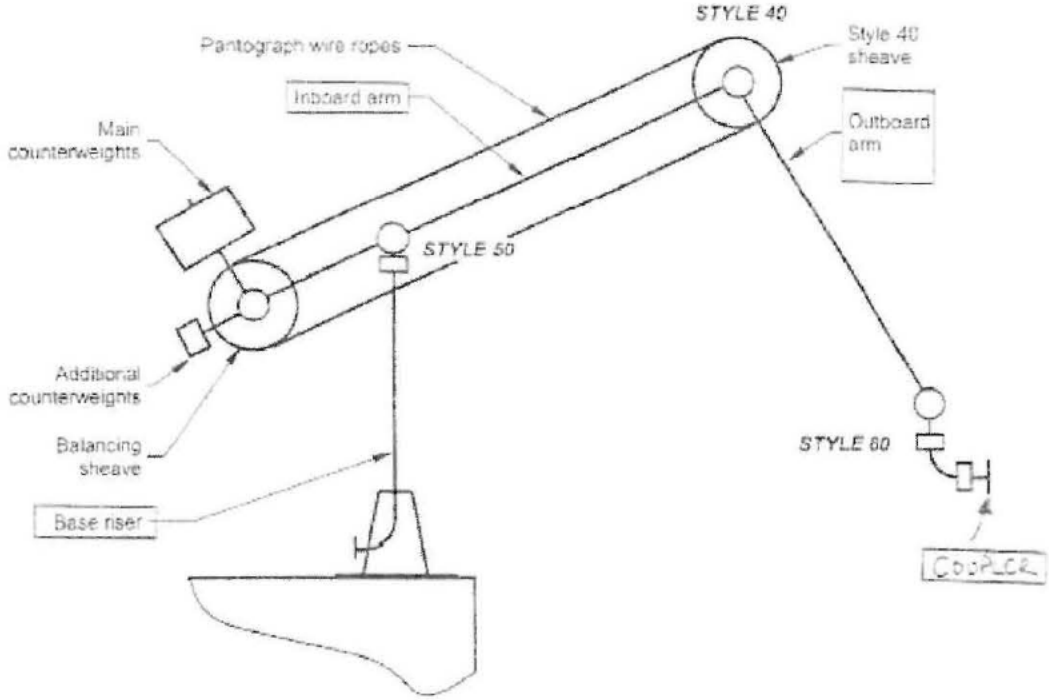

Fig. 1.: Typical view of a RCMA marine loading arm

Each of the hydraulic loading arms has a capacity of 29 bbls total. The base riser and inboard arm section holds 20 bbls and the outboard arm section holds 9 bbls.

USOR utilizes transfer hoses that range in diameter from 2" to 6" at both Dock #1 and Dock #2 to facilitate product transfer operations. Each hose assembly used for transferring oil meets the following requirements:

1. The minimum design burst pressure for each hose assembly is 600 PSI minimum. This meets Coast Guard requirements which state that the minimum design burst pressure for each hose assembly must be at least four times the sum of the pressure of the relief valve setting plus the static head pressure of the transfer system at the point where the hose is installed.
2. The maximum allowable working pressure (MAWP) for each hose assembly is 150 PSI minimum. This meets Coast Guard requirements which state that the MAWP for each hose assembly must be more than the sum of the pressure of the relief valve setting plus the static head pressure of the transfer system at the point where the hose is installed.
3. Each hose assembly is of reinforced rubber construction and designed for transferring petroleum products.
4. Each hose assembly is equipped with flange connections that meet American National Standards Institute (ANSI) Standard B16.5 for steel pipe flanges and flange fittings. Flange fittings meet hose design pressures.
5. Each hose assembly is marked with the words "OIL SERVICE" as well as the Maximum Allowable Working Pressure (MAWP). The date of manufacture and date of the latest equipment pressure test will either be recorded on the transfer hose and/or hose assembly equipment records.
6. Equipment records will be maintained for each of the hose assemblies noting the (1) date of manufacture, (2) date of the latest test, (3) the hose burst pressure, and (4) the pressure used for each pressure test.
7. Compatible products that can be transferred through both the transfer hoses (6" and less) located at the Marine Terminal include petroleum fuels ranging from gasoline through #6 fuel oil.

The transfer hoses and loading arms utilized at Dock #1 and Dock #2 meet the following criteria:

1. Both transfer hoses and loading arms are long enough to allow the vessel to move to the limits of its moorings without placing strain on the hose assembly, mechanical loading arm or transfer piping system.
2. Each hose is supported to prevent kinking or other damage to the hose and strain on its coupling.
3. Hoses are inspected to ensure that there are no unrepaired loose covers, kinks, bulges, soft spots, gouges, cuts or slashed penetrating the outer hose reinforcement layer.
4. Hoses and piping are supported such that they are not permitted to chafe on the dock or vessel so as to affect the integrity of the hoses.
5. Each part of the transfer system is properly aligned to facilitate oil flow.
6. All connections in the transfer system are maintained in a leak free condition during transfer operations.

10.2.9 Rapid Shutdown Procedures

USOR follows a set procedure during transfers to ensure that overpressure situations do not occur. When transferring from a vessel to a tank, the valves are opened in succession from the tank to the vessel. The vessel is not given approval to begin the transfer until it has been verified that all valves are in an open position. A similar procedure is followed on transfers from the refinery to a vessel. The valves are opened in succession from the vessel to the tank. Pumping does not begin until there is an authorization from the vessel and all valves have been verified as open.

Valves used to isolate the pipelines consist of (b) (7)(F) [redacted]s. The purpose of these valves is to provide quick isolation of the leaking pipeline segment in the event of a spill as well as provide quick isolation of the Dock face if necessary. These valves, which are painted a bright green color to permit easy identification, are equipped with manual gear operators for ease in closing. The estimated closing time for these valves is 15 to 30 seconds. These valves are installed at the end of each pipeline which runs from the refinery to the marine terminal. Valve locations allow isolation between the shore and the dock face, shore and refinery and the refinery and tankage. See Table 10-4 as well as facility plot plan drawings located in Appendix H for exact location of these valves.

The sequence for investigating and responding to a leak scenario is discussed in Section 10.2.5 of this document. Upon completion of the investigation, the vessel or refinery operator can be notified by radio immediately to discontinue pumping. Once pumping is discontinued, USOR's person-in-charge is responsible for ensuring that the pipeline isolation valves at the marine terminal are immediately closed whereas the pumper-gauger is responsible for ensuring that the pipeline isolation valves at the refinery are immediately closed. This process takes a maximum of fifteen minutes.

(b) (7)(F) [redacted]ines. Further, pipeline conditions are monitored using the PPA system, which is monitored from a computer located in the dock building. This computer provides information to the operator regarding on-line status, pressure and other PPA statistics. This computer screen also notifies the operator of leak alarms and the respective line of concern. System status can be determined by glancing at the PPA computer screen.

10.2.10 Minimization of Post-Shutdown Drain-Out

To minimize post-shutdown drainout, USOR transfer pipelines have valves located on the dock face, shoreside of the dock and inside the plant boundary to provide line isolation. There are also root valves on every tank and isolation valves on every branch connection to the pipeline. All isolation valves are gate valves constructed to the appropriate ANSI/API standards.

USOR has detailed drawings of all transfer lines including the isolation valve locations. In the event of a pipeline leak, these drawings will be used in conjunction with operating experience to locate and properly isolate the pipeline. The leak location will dictate precisely which valves require closure.

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[redacted]

10.2.11 Corrosion Control Coatings

All USOR tankage is externally coated for corrosion protection except tankage which is insulated. The coatings on these tanks are monitored through external inspections and recoated as necessary. New piping installations are external coated as part of the project. Existing piping is externally coated on a unit-by-unit basis as the need arises. Any insulated piping is primed prior to the installation of insulation.

Each tank is evaluated for internal coating application on a case-by-case basis. There are also tanks in asphalt emulsion service that have coal tar epoxy or equivalent coatings to minimize corrosion. The need for internal coatings is based upon corrosion rates and the anticipated tank service life. USOR inspects the conditions of the coating whenever the tanks are removed from service and cleaned. Coating repairs are also made during these tank shutdowns.

10.2.12 Wastewater Treatment System

The refinery is located on a 122 acre site. About 40 acres of the refinery remain undeveloped. Drainage from this undeveloped acreage is uncontrolled and not subject to any type of treatment. Water drainage from the developed portions of the refinery is treated in the refinery wastewater treatment system. Water originating from inside the refinery can be classified as follows:

1. Sanitary sewage
2. Process wastewater
3. Tank water-draw water
4. Stormwater

Sanitary Sewage

The sanitary sewage system is completely segregated from other types of wastewater and is pumped to the Tacoma City municipal sewage treatment system for treatment and disposal. USOR does not accept/process wastewater from off-site sources or ballast water from vessels.

Process Wastewater

The process wastewater is treated by both primary and secondary treatment technology prior to disposal to our NPDES permitted outfall, Permit No. WA 000178-3. The wastewater outfall discharges to a City of Tacoma storm drain located adjacent to the refinery along Port of Tacoma Road. This storm drain flows into the enclosed portion of the Lincoln Avenue drainage ditch where it intersects with Port of Tacoma Road prior to discharging into the Blair Waterway. USOR routinely samples and inspects the outfall for possible system upsets. Routine sample analysis are also required by NPDES permit provisions.

USOR's wastewater treatment facility has the capacity to handle anticipated organic loading resulting from the collection of water associated with an oil spill cleanup. Furthermore, USOR's wastewater treatment facility consists of an oversized system which enables us to process additional water volumes as necessary.

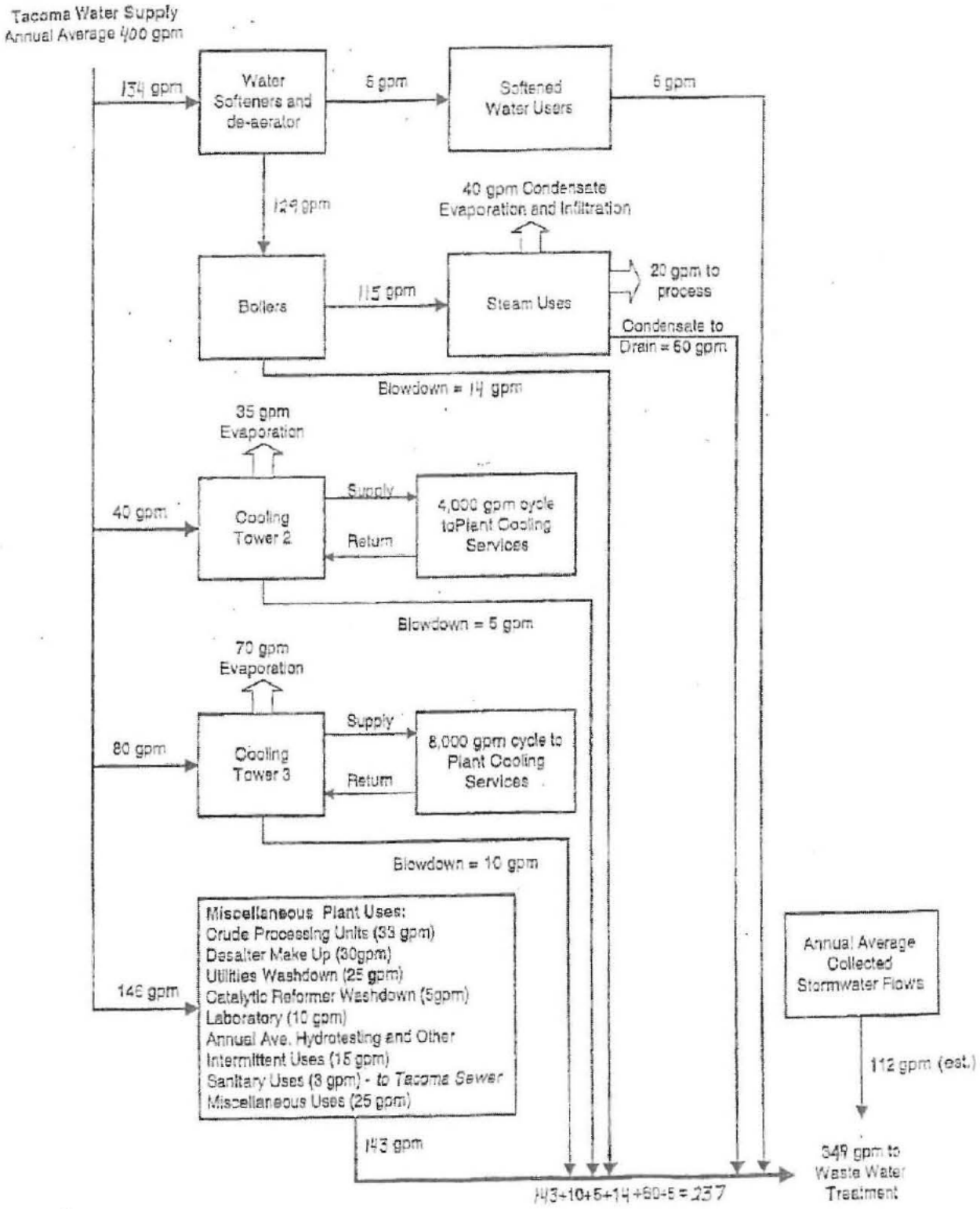
Primary treatment facilities for process wastewater include an API pond and an Induced Air Flotation (IAF) unit. All process wastewater and stormwater runoff from the process area is routed to the primary wastewater treating unit. The treated water then goes to Tank 80008 which provides retention capacity and serves as a equalization reservoir.

The design capacity of the IAF is 330 gpm. Operating experience indicates the unit can satisfactorily process 400 gpm. Although higher flows are attainable, flows increases beyond 400 gpm affect oil/water separation efficiency. When stormwater runoff causes the API pond effluent to exceed the capacity of the IAF, storm pumps automatically transfer the excess wastewater to the stormwater retention pond. The maximum transfer rate of these storm pumps is 4000 gpm.

Secondary treatment facilities for process wastewater consist of an activated sludge biological unit (Orbal) followed by a clarifier. The Orbal typically operates between 150-600 gpm and can satisfactorily operate up to 700 gpm. Treated effluent is then normally routed to the permitted outfall, however, it can be diverted to two wastewater ponds during upset conditions. These ponds consist of the former equalization pond and south off-test pond.

FIGURE 10-2

Refinery Wastewater Nominal Flow Balance



Tank Waterdraw

Tank waterdraw systems allows for the removal of water that has accumulated in the heel of crude oil and product storage tanks. This water is periodically drained out of these tanks in a controlled manner and routed to oil/water separator tanks. Wastewater effluent from these tanks is then routed to the API pond where it is combined with process wastewater for further treatment. The source of this water is primarily from crude oil deliveries, however, rainwater and other sources contribute to this waste stream as well.

Stormwater

Stormwater runoff from tank berms and roadways within the refinery drains to the concrete pump basin where it is transferred to the stormwater retention pond. The transfer rate from the concrete pump basin to the stormwater retention pond is 10,000 gpm. The refinery stormwater runoff as well as wastewater drainage plans are located in Appendix H.

Standard operating practice is to keep all tank berm drains closed except to periodically drain accumulated stormwater to the concrete pump basin. This allows the stormwater runoff into tank areas to be introduced into the wastewater storage/treatment system in a controlled manner as well as ensure that adequate secondary containment is maintained. During periods of heavy rainfall, stormwater may be allowed to accumulate inside the tank berms until sufficient wastewater storage capacity is available.

Stormwater from the stormwater retention pond is normally routed to the Orbal or Tank 80008. The stormwater retention pond can also be routed to the former equalization pond, south offtest pond, or to the API oil/water separator. A maximum of 200 gpm can be transferred from the stormwater retention pond to the orbal/off-test ponds. The maximum transfer rate from the stormwater retention pond to Tank 80008 is 1500 gpm.

Excluding the retention capacity within the tank berms, the refinery wastewater retention capacity consists of 3 ponds and 2 tanks; the concrete pump basin, stormwater retention pond, former equalization pond, south off-test pond and Tank 80008. The nominal size of each of these reservoirs and the normal available capacity is presented in Table 10-5.

The average dry weather wastewater discharge rate from this facility is approximately 230 gpm when excluding hydrotest water. Figure 10-1 depicts the approximate distribution of wastewater from the refinery.

USOR's NPDES permit also allows for clean stormwater to be discharged directly offsite from the following locations described below. A plot plan showing stormwater flow patterns is contained in Appendix H. Stormwater discharged to these outfalls must be monitored in accordance with USOR's NPDES permit.

1. Outfall #001B: This outfall is located on the north side of the refinery and discharges into Lincoln Ave. Ditch. This outfall serves the tank farm containing Tks #80005, #80006, #80007 and #80008 and the tank farm containing Tks #80009, #80012, #80011, #80012, #80013, #80014, #80015 and #80020. Stormwater collected in these tank farm areas can be discharged to either Outfall #001B or to the stormwater collection system where it is then treated in the refinery secondary wastewater treatment plant. The discharge valve to Outfall #001B is kept closed and is only opened to discharge stormwater after this water has been evaluated.

2. Outfall #002: This outfall is located on the west side of the refinery and discharges into Lincoln Ave. Ditch. This outfall serves the tank farm containing Tks #80021, #80022, #300001 and #300002. Stormwater collected in this tank farm area can be discharged to either Outfall #002 or to the stormwater collection system where it is then treated in the refinery secondary wastewater treatment plant. (b) (7)(F) [redacted].

3. Outfall #004: This outfall is located on the south side of the refinery adjacent to Receiving and discharges into Marshall Ave. Ditch. This outfall serves the open areas generally located to the North (contractor laydown and fabrication) and to the East (contractor parking lot & Receiving equipment tents). The drainage ditch just upstream of this outfall is fitted with several check dams to help control/settle out suspended solids.

4. Outfall #005: This outfall is located on the south side of the refinery adjacent to the contractors parking lot entrance gate. This outfall serves the areas on the eastern portion of the refinery around USOR's maintenance shop and trailers as well as contractor trailer, fabrication and laydown areas. These areas drain to lift stations that pump collected effluent into a divided stormwater settling pond. This pond is equipped with an overflow that discharges to Outfall #005.

5. Outfall #006: This outfall is located on the east side of the refinery adjacent to the Port of Tacoma Road refinery entrance gate. This outfall generally serves the paved cul-de-sac area that defines this entrance. Stormwater from this area is captured in a trench drain that flows through a cartridge filter system prior to discharge to Outfall #006.

TABLE 10-5

Wastewater Retention Capacities

	Nominal Size (Gallons)	Normal Available Surge Capacity (Gallons)
Concrete Pump Basin	100,000	50,000 (1)
(b) (7)(F) [redacted]		
Stormwater Retention Pond	1,000,000	700,000 (2)
Equalization Pond	360,000	250,000 (2)
South Off-test Pond	390,000	270,000 (2)
Total	5,210,000	2,950,000

(1) Based on typical operating level = 50 Percent full
(2) Based on typical operating level = 30 Percent full

10.2.13 Truck and Rail Car Transfer Operations

Procedures for the loading and unloading of trucks and rail cars meet the industry standards and requirements contained in Department of Transportation regulations. The following paragraphs describe each type of tank car/tank truck transfer operation used at USOR:

Rail Car Facilities

There are a total of six rail car loading/unloading facilities at USOR which are located in two general geographic areas which are referred to as the original rail spur line along 2nd Street and the Phase 3 Rail Car Unloading Area along F Street. There are five separate rail car loading and unloading facilities associated with the 2nd Street rail spur line and one larger facility associated with the Phase 3 Rail Car Unloading Area. The location of these railcar facilities is shown on the refinery plot plan contained in Appendix H.

In general, each of these railcar loading/unloading facilities are inspected continuously during transfers. Premature departure, which could result in a spill, is prevented by using physical blocks, warning signs and warning lights for all railroad tank car transfers. In addition to the controls discussed above, a tertiary containment berm is located along the northern and southwestern edge of the refinery which provides contingency containment for the Rail Car Facilities. This tertiary berm not only provides containment for asphalt tankage located in the southwestern part of the refinery, but also provides additional containment along the north and southwest portions of the refinery in the unlikely event the secondary containment is breached. This tertiary containment berm coupled with the area topography and a diversionary shunt on the access roadway adjacent to the rail spur also provides additional containment for railcars that may be spotted closer to the rail spur entrance located on the north side of the refinery. A separate soil pile is also staged next the northern refinery rail spur entrance in the event additional material is needed to prevent any oil from escaping the refinery via the northern rail spur entrance and vehicle access gate.

2nd Street Rail Spur Line Facilities

First Facility:

The first facility is for liquefied petroleum gas.

Second Facility:

The second facility is for loading asphalt products into tank cars and consists of one loading station. Rail cars are inspected prior to each transfer operation and before departure to ensure all outlets are secured as necessary. Premature departure, which could result in a spill, is prevented by using physical blocks, warning signs and warning lights for all railroad tank car transfers. Any water collected in the asphalt rail car loading area may be contaminated with a hydrocarbon sheen. An area drain is provided and serves to route any water in this area to treatment via the stormwater sewer system.

Third Facility:

The third railcar unloading facility consists of two railcar unloading sites for ethanol. These unloading stations do not meet the definition of a loading rack under 40 CFR 112.2. However, these unloading areas are provided with spill containment pans that collect the release of any ethanol and routes it to the stormwater collection system where it is then treated in the refinery secondary wastewater treatment plant.

Fourth Facility:

The fourth facility (also referred to as the Phase 1 unloading area) consists of three unloading stations for railcars containing crude oil or cutterstock. Railcars are unloaded by gravity flow through a common manifold. Valves are in place so that the unloading of each railcar can be controlled separately. Each unloading station is equipped with a spill containment pan that discharges to the refinery wastewater treatment plant. The topography in this area is such that the escape of any oil from the spill containment pan would be contained in the general area where it can be readily cleaned up with a vacuum truck.

Fifth Facility:

The fifth facility (also referred to as the Phase 2 unloading area) consists of four unloading stations for unloading railcars containing crude oil. While not currently used for this purpose, these unloading stations are also capable of unloading railcars containing cutterstock. Railcars are unloaded by gravity flow through a common manifold. Valves are in place so that the unloading of each railcar can be controlled separately. Each unloading station is equipped with a spill containment pan that discharges to the refinery wastewater treatment plant. The topography in this area is such that the escape of any oil from the spill containment pan would be contained in the general area where it can be readily cleaned up with a vacuum truck.

Phase 3 Rail Car Unloading Area

Sixth Facility:

The sixth facility consists of 60 unloading stations for unloading railcars containing crude oil. These sixty unloading stations are divided among six sets of tracks. The first two sets of tracks can accommodate 11 railcars each, the second two sets of tracks can accommodate 10 railcars each and the third two sets of tracks can accommodate 9 railcars each. Each of the track pairs mentioned above is served by a common manifold for a total of three separate manifolds. Railcars are unloaded by gravity flow into one of three separate manifolds. Valves are in place so that the unloading of each railcar can be controlled separately. Each unloading station is equipped with a spill containment pan that discharges to the refinery wastewater treatment plant. The general area surrounding these railcar unloading stations is sloped such that it discharges to the refinery stormwater sewer system where it is subsequently treated in the refinery secondary wastewater treatment plant.

Tank Truck Facilities

Light Products Loading Rack

Light products, which consist of gasoline, diesel, and jet fuel, are loaded at the light products loading rack. Emergency shutdown switches for loading operations are installed locally at the truck rack and refinery scalehouse. Each truck is connected to a grounded interlock system while bottom loading. If the truck should move or overfill, loading is automatically shut down. The light products loading rack is located on a concrete pad which drains to the refinery's wastewater treatment system.

Gasoline, jet fuel and diesel transfers are monitored by the individual truck drivers while scalehouse personnel are responsible for inspecting the loading rack daily for leaks, equipment integrity, and general housekeeping. Liquid cargo tanks are inspected prior to each transfer operations and before departure to ensure all outlets are secured as necessary.

Any spillage from tank truck loading operations will be captured by the facility stormwater system. Oil collected in the stormwater system is sent to primary treatment where the oil can be recovered and reprocessed. This water is then routed to the refinery wastewater treatment plant.

Tank Truck – Asphalt Loading

Asphalts and heavy black oil loadings/unloadings are top-loaded and continuously monitored by the asphalt truck drivers and in some cases USOR loaders as well. USOR personnel, however, retain overall control over the transfer operations that occur at each asphalt loading rack including inspecting each truck to ensure that all outlets are closed. Liquid cargo tanks are inspected prior to each transfer operation and before departure to ensure that all outlets are secured as necessary.

Each asphalt loading rack is positioned over a crushed rock lined concrete pad. This not only serves to capture small amounts of spillage but also facilitates cleanup operations as well. Once asphalt spillage reaches the ground it quickly cools thereby causing this material to solidify. This physical change impedes the asphalts ability to spread any significant distance from the source of the spill. As necessary, techniques used by USOR to prevent migration of asphalt spillage include using earth moving equipment to build a dike downgradient from the source of the spill or using any other available materials to block the path of the spill. Absorbant pads may be used to help clean up sheening associated with an asphalt spill. Any water that is contaminated by trace amounts of oil due to an asphalt spill is collected by area drainage that is routed via the stormwater system to the refinery wastewater treatment plant.

Tank Truck - Unloading

USOR periodically receives heavy hydrocarbon liquids via tanker truck at an offloading station located adjacent to the rail spur West of Tank 80002. Specific precautions are taken to prevent movement of the vehicle before there is complete disconnection of the unloading lines. This offloading station is located over a concrete pad that is sloped to allow any spillage/rainwater to flow to a low point catch basin where it is pumped to the refinery wastewater treatment plant.

10.2.14 Marine Terminal Dock Transfer Operations

The dock and refinery pumper-gaugers are responsible for oil transfers to and from the Marine Terminal dock. The dock watch monitors transfer operations to and from the vessel while the plant pumper-gauger is responsible for monitoring the movement of oil to and from the refinery. The dock facility and vessel are inspected each half hour during transfer operations. Portable lamps are used as necessary to inspect non-lighted areas.

Portable spill containment is used whenever there is a transfer in which the hose connection is located outside of either the Dock #1 or #2 fixed containment sumps. In addition, USOR's vacuum truck service can be called in, as necessary, to remove products from dock tankage as well as portable or fixed containment for transport to the refinery.

Fixed sumps, which are located at both Dock #1 and #2, are positioned under each respective dock face manifold connection area. The purpose of these collection facilities is to collect drainage from loading arms and any potential leakage from cargo connection points thereby preventing product leakage from entering the Blair Waterway. Product transfer operations are started slowly while all hoses and connections are checked for leaks. When transfer operations are completed, the hoses and loading arms are drained into the sumps and the piping secured to prevent cargo spillage. The drippage collection facilities for both Dock #1 and #2 are described in the following paragraphs.

Dock #1

Separate enclosed sump systems are used to collect drippage under both of the Dock #1 transfer line manifolds. Product collected within these sumps is pumped back to Tk #901, which has a capacity of 959 bbls and is located on-shore inside secondary containment. On occasion, Tank #901 also receives material resulting from line clears.

The south Dock #1 manifold collection sump has a capacity of 19.5 bbls. These sump transfer pumps (J-230A and J-230B), which are normally set to operate automatically, can also be operated manually. Each of these two sump pumps are capable of pumping at 50 gpm at 75 psig. When operated automatically these pumps are activated by separate level switches located in the collection sump. J-230A is activated when the liquid level is 8" from the top of the sump whereas J-230B is activated when the liquid level is 6" from the top of the sump. A local strobe light flashes when either or both of these pumps are running. An audible high-high alarm sounds inside the adjacent Dock #1 operations building if the sump reaches a level that is 4" below the top of the sump. These warning systems shut off once the transfer cycle is completed.

The sump high level alarm system is totally separate from the pump switches. When activated this alarm (1) emits a solid tone which can be heard throughout the Marine Terminal and (2) displays a light on the alarm board located in the dock office. The alarm board light stays on after the horn is silenced until the level in the sump returns to normal.

The north Dock #1 manifold collection sump serves the 16" hydraulic loading arms. This containment sump is designed to hold 37 bbls (1554 gallons). The containment sump is drained using 2 sump pumps (J-1811A & B). Each pump is designed to pump 50 gpm (at 75 psig). The discharge of either pump can go to Tank #901 or back into the 24" crude oil line. (b) (7)(F) [redacted]

(b) (7)(F) [redacted] float. As necessary, the contents of Tank #901 are removed by pumping this material back to the refinery. Usually this is done after a crude oil transfer.

Dock #2

The approximate capacity of the collection sump including the overflow pan is 10.6 bbl. Sump accumulation at Dock #2 is removed by pumping it to a 1000 gallon day tank (Tk #112) located shoreside. The transfer pump, which is set to operate automatically, can also be operated manually. When operated automatically the pump is activated by a level float located in the collection sump. The level float activates the sump pump when the liquid level is 13" from the top of the sump. An amber colored warning light located at Dock #2 is activated to alert the dock watch that the transfer pump is operating. This warning light shuts off once the transfer cycle is completed.

In addition, there is also a high level sump alarm which is activated when the liquid level is 8" from the top of the sump. The sump high level alarm system is totally separate from the pump switches. When activated this alarm (1) emits a solid tone which can be heard throughout the Marine Terminal and (2) displays a light on the alarm board located in the dock office. The alarm board light stays on after the horn is silenced until the level in the sump returns to normal.

Tk #112, which is located in secondary containment, is equipped with a high level amber colored warning light located along the fence line adjacent to this tank. This light is activated when the product level in the day tank reaches a high level condition. This warning light will shut off once the level in the day tank recedes below the warning level float. Using a preventative maintenance work order, the contents of this day tank are removed weekly by vacuum truck and transported to the refinery for placement into recovered oil tankage.

10.2.15 Containment System for Dock Operations

USOR's marine terminal is located on an 11.5 acre site approximately ¾ mile northeast of the main refinery. A lined secondary containment system serves Tanks #8503, 35001 and 30004 (see Table 7-A, Appendix H). This containment area has a 6" clay liner.

The lined secondary containment area is served by a storm water system consisting of a concrete vault collection sump, a submersible sump pump and a stormwater percolation basin. The concrete vault functions as an oil/water separator. Floating oil is trapped behind the weir at the inlet side of the vault whereas settleable solids will settle out in the bottom of the vault. Water flows under the weir to the outlet side of the vault, which is equipped with a submersible sump pump. Upon manual activation, this pump discharges the water to the infiltration basin noted on Drawing #AD08049 located in Appendix H. The sump pump, which has a capacity of 60 gallons per minute, is manually controlled with an on/off station. The pump is protected from running dry by a low-level switch in the sump, which automatically shuts off the pump when the level in the concrete basin reaches a preset level. In addition, the pump discharge is protected from siphoning by a siphon break.

Operational requirements that will be observed by all dock operators concerning this system are as follows:

- No oil or oily water will be pumped into the percolation pond area.
- The pump system will normally be operated during daylight hours so any oil contamination can be readily seen. The dock operator will manually start the sump pump if there is stormwater accumulation within the containment berm and there is no oil sheen present on the water.
- The dock operator will not pump any water if any oil is present, rather, the shift supervisor will be immediately notified so that appropriate cleanup activities can be initiated as necessary.
- The pump will be checked every 4 hours when operating to assure that no oil is present in the storm water. This will also include an inspection of the infiltration basin to ensure that it is not overfilling.
- The pump system will automatically shut down when the storm water is removed or the dock operator will manually shut down the pump when daylight is gone.
- Excessive rainfall may require operation of the sump pump outside of daylight hours. This decision will be made by the Oil Movements Operations Superintendent on a case by case basis with written orders being issued to pump beyond daylight hours.

The discharge into the infiltration basin is permitted as Outfall #003 in USOR's NPDES permit. A grab sample is collected on a monthly basis when effluent is being discharged into the infiltration basin and analyzed for oil and grease and pH. In addition, a grab sample is collected on an annual basis when effluent is being discharged into the infiltration basin and analyzed for BOD, COD and NWTPH-Dx.

In addition, Tanks #901 (recovered oil), #206 (out-of service), #203 (water storage) and #204 (water storage) are located inside a separate unlined secondary containment area.

10.2.16 Vessel Pre-Booming Operations

During September 2006, Ecology adopted Facility Oil Handling Standards in response to legislation passed in 2003. While Ecology's standards apply to all oil transfers that involve any jet fuels, diesels, heating oils and any other oils that are recoverable when spilled to water, they do not apply to facilities delivering gasoline, aviation gasoline and other highly volatile products with similar characteristics. With the adoption of Ecology's Facility Oil Handling Standards, USOR's marine terminal is designated as a "Rate A" oil transfer operation since the transfer rates at dock #1 and #2 are both greater than five hundred gallons per minute.

Figures 10-3 through 10-5 depict how the containment boom is deployed at docks #1 and #2. Both barges and vessels can conduct transfer operations at Dock #1 whereas barges generally conduct transfer operations at Dock #2.

USOR's pre-booming practices predate Ecology's rule making in that USOR has been pre-booming all vessel oil transfers at the marine terminal for 30+ years. However, as allowed by Ecology regulations, USOR discontinued the practice of pre-booming transfers of single cargoes of gasoline and other highly volatile products during November 2009. This procedural change was in response to a growing consensus among industry experts and regulatory agencies, including the Coast Guard, that spills of these light products types should not be contained but rather allowed to dissipate as rapidly as possible for fire safety reasons.

USOR has approximately 2700 feet of containment boom staged in the water adjacent to the floating walkway at dock #1 and #2. This boom is deployed using a 16 foot Boston Whaler workboat, which is moored in a boathouse at dock #2. Both the containment boom and workboat are used to support pre-booming operations at USOR's marine terminal. Further, the containment boom, work boat and other associated deployment equipment are appropriately sized and designed for the variety of environmental conditions encountered at the marine terminal.

The amount of containment boom staged at the marine terminal exceeds the minimum threshold of two thousand feet. The containment boom is deployed around the vessel prior to each transfer and secured to the floating walkway, which functions as a containment device. This combination allows each oil transfer to be completely encircled. Typical pre-booming configurations for oil transfers at dock #1 and #2 are shown in Figures 10-3, 10-4 and 10-5. This procedure is followed whether the oil transfer involves a single transfer or multiple transfers. When deployed, the containment boom has a minimum stand-off of five feet from the side of the vessel. This stand-off can be modified as necessary for short durations to allow a supply vessel to come alongside the oil transfer vessel in order to support their needs. The positioning of the containment boom will be periodically checked during the oil transfer operation and adjustments will be made as necessary to account for shifting of the containment boom due to significant wind/wave events or tidal changes.

Oil transfer pre-booming operations are conducted at all hours of the day by USOR's Maintenance Department personnel. These personnel are trained in the proper storage, deployment and maintenance of the containment boom, workboat and other equipment associated with the deployment of this boom. These personnel are also responsible for removing the containment boom at the conclusion of an oil transfer.

10.2.17 Pretransfer Conference

Prior to each oil movement at the Marine Terminal, USOR conducts a face-to-face pretransfer conference with the vessel's person-in-charge. Before cargo transfer begins, both the vessel's person-in-charge and USOR's person-in-charge review and inspect all items contained in the Declaration of Inspection Packet to verify compliance with all applicable transfer and security requirements. Agreement/compliance is recorded when both the vessel's person-in-charge and

USOR's person-in-charge initial each applicable item contained in the Declaration of Inspection (DOI), Declaration of Security (DOS), Pre-Transfer Conference Check List and Cargo Transfer Pre-Plan. In addition, the DOI and DOS forms are each signed by the vessel's person-in-charge and USOR's person-in-charge attesting that all noted conditions are satisfactory. USOR's DOI addresses all applicable requirements contained in 33 CFR Part 156.120 and WAC 173-180-235 whereas USOR's DOS addresses all applicable requirements required by 33 CFR Part 105.245.

USOR's Declaration of Inspection Packet consists of the following:

- Dock Check-Off List
- Port Log
- Dock Transfer Inspection Sheet
- Declaration of Security Form
- Containment Boom Deployment Notification
- Containment Boom Securing Notification
- Declaration of Inspection Form
- Marine Terminal Regulations (General Rules, Safety, Pollution Prevention)
- Pre-Transfer Conference Check List
- Cargo Transfer Pre-Plan

USOR's DOI form, which is part USOR's Declaration of Inspection Packet located in Appendix C of the Marine Terminal Operations Manual, contains (at a minimum) the following key information:

- The name or other identification of the transferring vessel or facility and the receiving vessel or facility;
- The address of USOR's Marine Terminal facility;
- The date and time the transfer operation is started;
- The date and time the transfer operation is completed;
- A list of the requirements contained in 33 CFR Part 156.120 titled "Requirements for Transfer" with spaces on the form following each requirement for the person in charge of the vessel or facility to indicate by initialing that the requirement is met for the transfer operation;
- A space for the date, time of signing, signature and title of each person in charge during transfer operations on the transferring vessel or facility and space for the date, time of signing, signature, and title of each person in charge during transfer operations on the receiving facility or vessel. These signatures certify that all tests and inspections have been completed and that both parties are ready to begin transferring product.

The Declaration of Security form is discussed in USOR's Facility Security Plan. A blank copy of the Declaration of Security form is also included in the Declaration of Inspection packet located in Appendix C of the Marine Terminal Operations Manual.

A copy of the oil transfer load plan and instructions is included as part of the Declaration of Inspection packet located in Appendix C of USOR's Marine Terminal Operations Manual. Discussion/completion of the oil transfer load plan is conducted during the pre-transfer conference between the vessel PIC and USOR's PIC. USOR retains a copy of each completed oil transfer load plan for a minimum of 30 days. Each oil transfer load plan includes (at a minimum) the following elements:

- Identification, location and capacity of the vessel's tanks receiving oil,
- Level and type of liquid in all bunker/cargo oil tanks prior to the oil transfer,

- Final ullage or innage, and the percent of each tank to be filled,
- Sequence in which the tanks are to be filled, and
- The facility or vessel's procedures to regularly monitor all receiving tank levels and valve alignments during the transfer operation to ensure that the available capacity in the receiving tanks is greater than the volume of oil to be transferred and to ensure that there are no other valves which could adversely influence the routing of the oil being transferred.

A copy of the signed Declaration of Inspection and Declaration of Security will be retained by both the vessel and facility persons-in-charge for the duration of the transfer operation. With the exception of the Declaration of Security, USOR will retain a copy of all signed forms located in the Declaration of Inspection packet for a minimum of one month from the date of the oil transfer operation. Completed Declaration of Security forms will be retained for a minimum of 90 days from the completion of the cargo transfer since USOR's Facility Security Plan requires that a new Declaration of Security form be completed for each cargo transfer.

USOR's PIC will refuse to initiate or will cease transfer operations in which the vessel:

- Has not provided complete information as required by the DOI,
- Has refused to correct deficiencies identified by the PIC during the pre-transfer conference, or
- Does not comply with the operations manual or does not respond to concerns identified by USOR's PIC.

10.2.18 Process Units

All process unit construction is in accordance with applicable codes and regulations and in accordance with proper engineering practices (NFPA, API, etc.). In addition, process units are monitored by Operations Department personnel at all times. Constantly monitored pressure and flow instruments coupled with alarms capable of signaling low flows, high levels, high pressures, etc. give operating personnel indications of possible leaks.

Process units and associated loading racks are constructed on concrete pads sufficiently sloped to drain to sewer drains. Spills and surface drainage are collected in a system of sumps which gravity flow into the refinery wastewater treatment system.

10.2.19 Underground Storage Tanks

UOSR owns three steel underground storage tanks located at the refinery. (b) (7)(F) [redacted] USOR scalehouse personnel gauge all three tanks on a daily basis. USOR is responsible for ensuring that these tanks are pressure tested and inspected annually and meet all applicable underground storage tank regulations.

10.2.20 Suspension of Operations

USOR does not suspend operations when a leak detection system or spill control system is inoperative. Every effort is made to return these systems to service as quickly as possible. During the interim period, visual inspections and monitoring of transfers and filling operations are increased. Operations personnel are informed of the importance of the transfer/filling operations and the importance of the missing alarm systems. Additional manpower is assigned as required to ensure operations can continue safely until the systems are returned to service.

Suspension of refinery-to-dock transfer operations could occur if USOR experiences one of the following emergencies:

Figure 10-3

BARGE CONTAINMENT BOOM DEPLOYMENT - DOCK #1

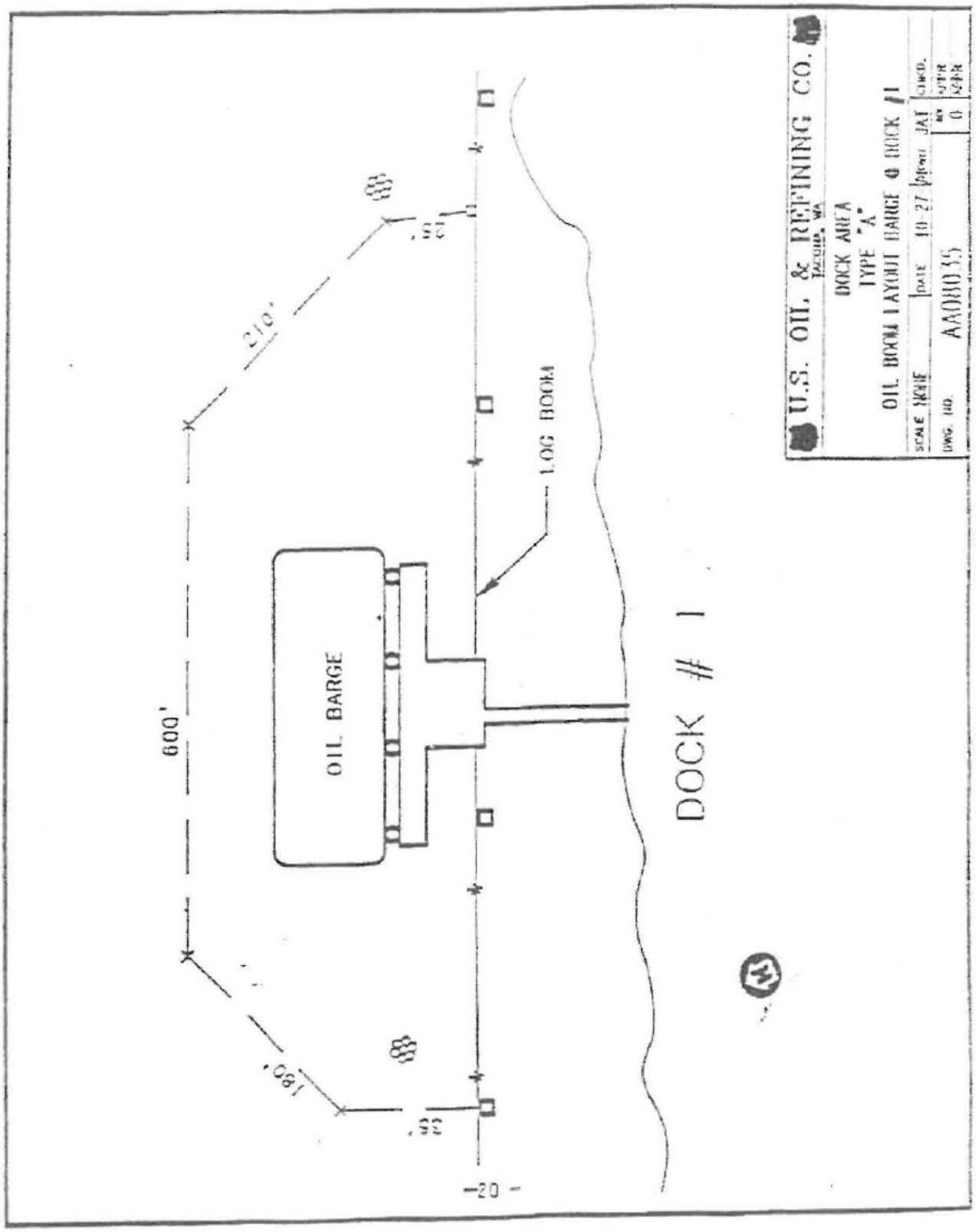


Figure 10-4

VESSEL CONTAINMENT BOOM DEPLOYMENT - DOCK #1

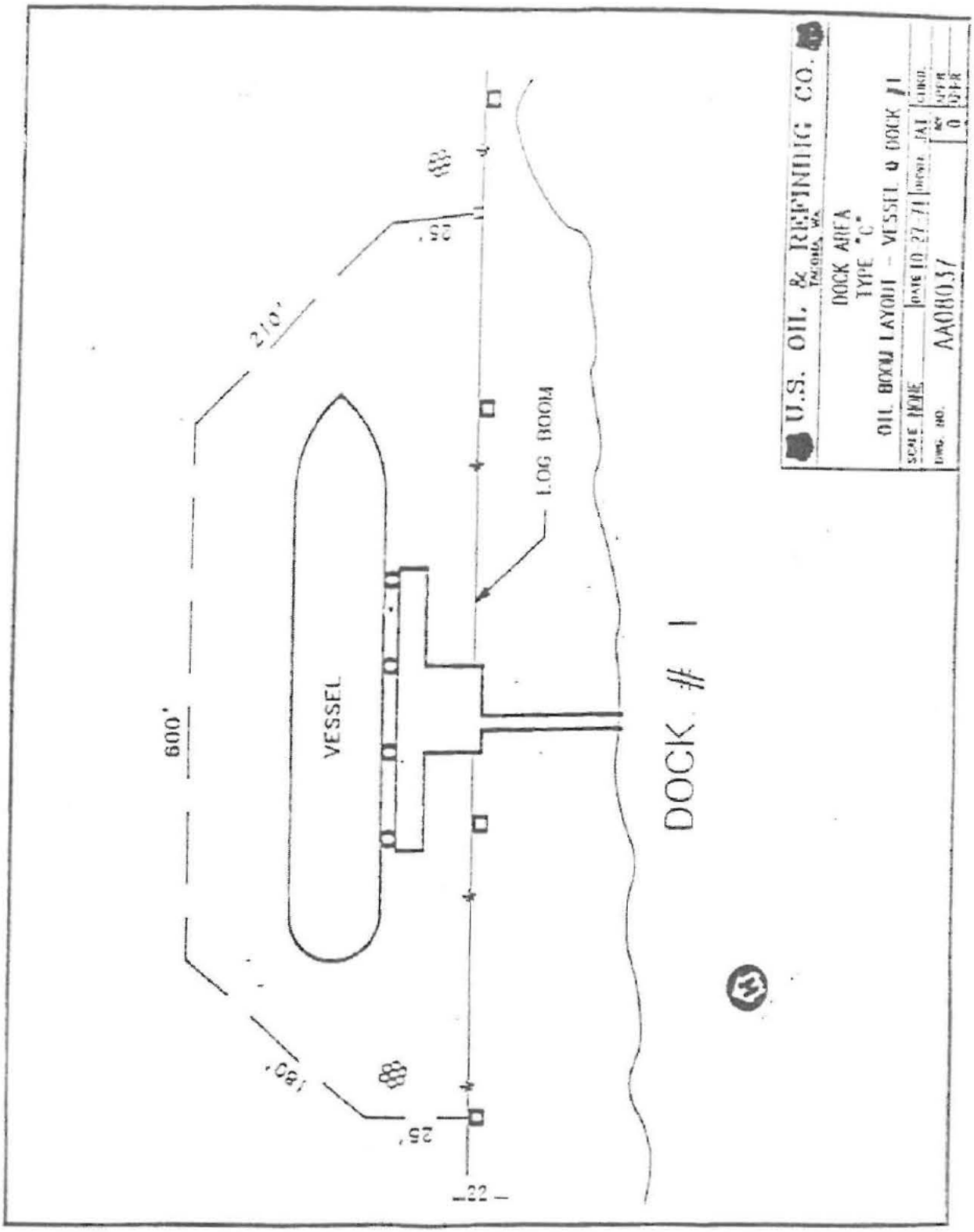
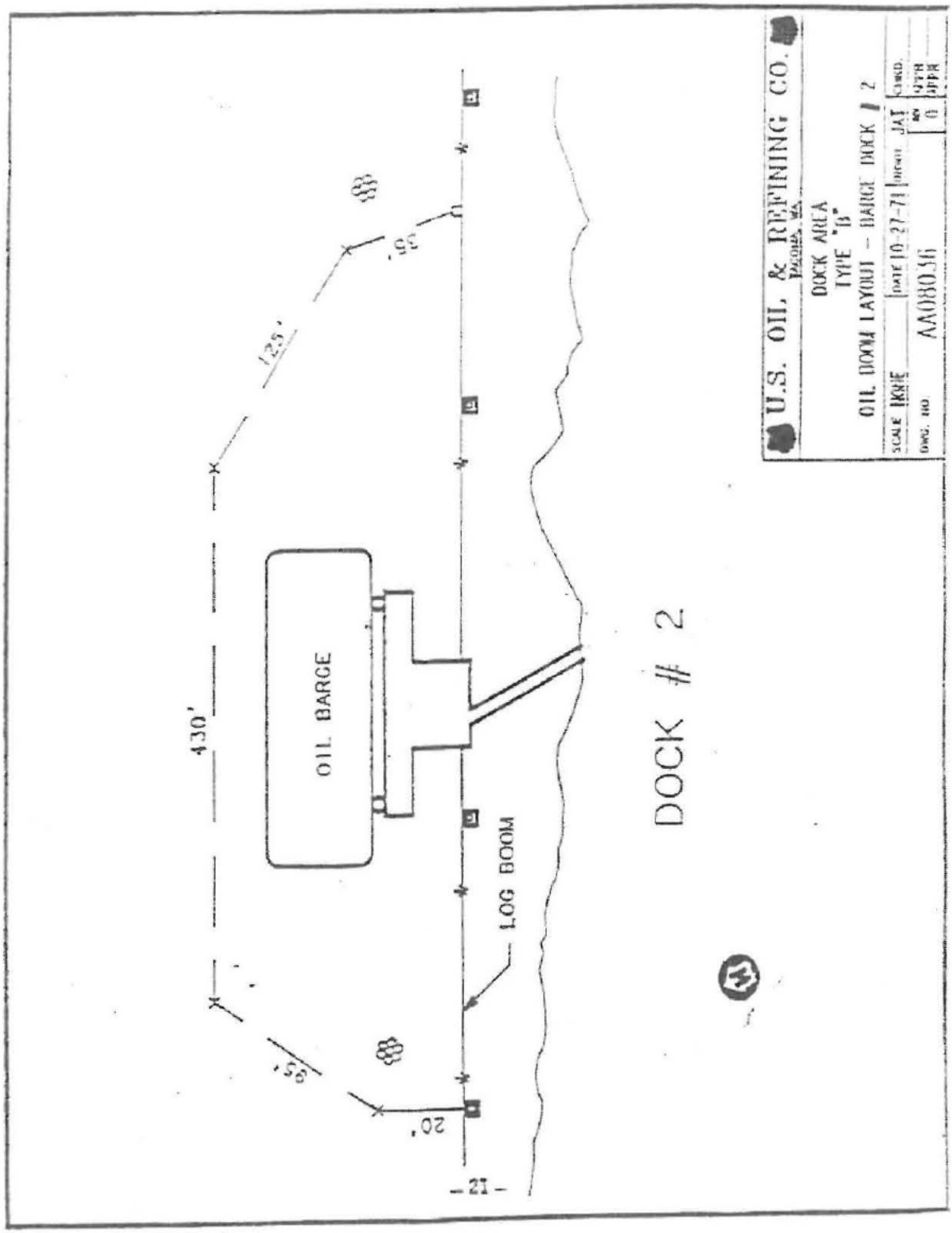


Figure 10-5

BARGE CONTAINMENT BOOM DEPLOYMENT - DOCK #2



Suspension of refinery-to-dock transfer operations could occur if USOR experiences one of the following emergencies:

1. The pipeline leak detection system indicates there is a leak event using the criteria established in Section 10.2.5 of this document.
2. There is an oil spill at the Marine Terminal.
3. There is a severe electrical storm.
4. There is an electrical failure at the Marine Terminal and/or the refinery.
5. There is a fire involving a tanker, barge or the Marine Terminal facility.
6. There is a personal injury.

10.3 Maintenance and Inspection Program

10.3.1 Refinery Oil Handling Equipment

Tankage

USOR's tankage inspection program is documented within the Mechanical Integrity Manual under Section 6 titled "Storage Tanks Inspection Procedure". This section provides a condensed overview of this inspection program. This program consists of the following types of inspections:

1. Tank seals, pressure & vacuum relief devices, other tank appurtenances (Frequency ≤ semiannually in accordance with U.S. Oil's Title V Air Operating Permit for tanks regulated by 40 CFR 60 Subparts Kb and QQQ as well as 40 CFR 63 Subpart CC)
2. Tank gauging equipment (Frequency ≤ 1 year) In addition, USOR Operations personnel compare the gage readings between the tank gage, hand gage and the remote tank gaging system at the end of each month.
3. API 653 Tank Inspection Program (for tanks regulated by WAC 173-180A and 40 CFR Part 112)
   - External tank inspection (Frequency = monthly)
   - Formal visual external inspection (Frequency ≤ 5 years)
   - In-service shell thickness measurement (Frequency ≤ 5 years where the corrosion rate is not known and up to a maximum of 15 years where the corrosion rate is known.)
   - Tank vent inspections (Frequency ≤ 10 years)
   - Internal tank inspection (Frequency ≤ 20 years)
4. Inspection Program for tanks regulated by 40 CFR Part 112

With the exception of internal tank inspections, all other inspection types are generally performed while the tank is in service. Prior to performing an internal tank inspection, the tank is removed from service and cleaned. At any time, however, visible oil leaks resulting in the loss of oil from tank seams, gaskets, bolts and attached piping will be promptly secured and corrected.

Pipelines – Program Overview

The inspection program for USOR's pipelines is documented within the Mechanical Integrity Manual in Section 1 titled "Piping Inspection Procedure". This procedure details the approach to the inspection of plant metallic process piping systems, to ensure that the appropriate inspections are performed in a consistent, documented and accessible manner. It is intended to serve as a guide to good inspection practices which will reveal defects or corrosion before these conditions become serious. This procedure is updated, as necessary, to ensure compliance with current refinery and regulatory recommended practices and guidelines.

The monitoring of an extensive sampling of inspection points on all plant metallic piping forms the basis of this procedure. The inspection issues covered by this Piping Inspection Procedure include: piping system classification; types, frequency and methods of inspection; thickness measurements; weld inspection; insulation and coating inspection; and data base entry and records management.

The fundamental mission of piping system inspections is to assess the integrity of the piping systems for safety and continued service. This is accomplished by inspecting the piping systems to assess the condition of their protective coatings, to verify the integrity of their support systems, to determine the remaining wall thickness, calculate corrosion rates and remaining life, and to assess the effects of system degradation due to causes and effects other than corrosion.

This procedure sets forth the requirements and guidelines necessary for the inspection and record keeping of the plant metallic process piping systems. This document incorporates, to the extent possible, recommended industry guidelines, recognized and acknowledged good plant practices, all applicable codes presently in force, as well as local jurisdictional requirements. Should cases of conflict arise, it is the general intent that the more stringent requirement applies. The U.S. Oil & Refining Co.Chief Inspector will ultimately be responsible to evaluate and rule in such cases.

The piping systems are thoroughly inspected per API RP-570. The integrity of the piping systems will be better served through more thorough inspections and documentation, performed less frequently, than more frequent inspections performed with a lesser degree of thoroughness.

The effectiveness of this procedure is based on maintaining a remaining wall thickness management database that covers an extensive sampling of inspection points on all metallic process piping. Inspection points have been and are selected with the specific intent of establishing an accurate assessment of the integrity of the plant piping systems.

Where inspections reveal that conditions exist to prevent the long term safe operation of a system(s), it is plant's policy to replace the system while it still has an adequate margin of safety against unexpected failure. In some cases, to ensure continued safe service, a continual program of frequent inspections may be necessary until the unsafe conditions have been eliminated.

Transfer Pipelines

The transfer pipelines include the four pipelines that run from the refinery to the marine terminal. Components of the transfer pipeline inspection program include the following:

1. USOR's Engineering Department currently performs a formal visual inspection of the transfer pipeline and associated valves, flanges and other transfer system components every week. This inspection form reviews the following:

   - Surface (grade) conditions on and adjacent to the pipeline right-of-way.
   - Indications of leaks.
   - Construction activity by others performed near the pipeline right-of-way (such as road construction, ditch clean-outs, excavations etc.).
   - Situations which may result in excessive impact or other additional load on the pipelines.
   - Pipeline or wear plate wear at all pipe supports.
   - Exterior coating condition.
   - Any other condition which represents a potential risk to pipeline integrity.

2. Transfer pipelines from the refinery to the dock are visually inspected daily by Operations personnel.

3. On a yearly basis ultrasonic thickness gauging is performed at various locations along the transfer pipelines to monitor corrosion. Data obtained during thickness gauging is used to calculate corrosion rates and ultimately determine the life expectancy of a pipeline. When the thickness of the pipe becomes less than the minimum allowable thickness, the section under consideration is replaced.

4. The dock transfer lines along with the transfer loading arms are pressure tested with water annually. USOR does not perform pressure tests using product as the testing media. Maximum Allowable Working Pressure (MAWP) for all transfer lines is located in Table 10-3. The lines are tested at 1.5 times the MAWP. The lines are held at the test pressure for a duration of four hours with a pressure recorder on the line. If there is a drop of more than 5% over this time period, the line is inspected for leak sources and retested.

5. The hydraulic arms at Dock #1 are pressure tested annually. This test is performed in the same manner as that used for the dock transfer lines.

6. USOR performs internal inspections on the transfer piping whenever a section of pipe is removed or opened. At that time, the removed section is visually inspected, pit gauged, and repaired as appropriate.

7. There are PMWO's in place to check all transfer pipeline flanges every six months and tighten as necessary.

8. USOR conducts an annual survey of the transfer pipeline cathodic protection system and a monthly test of the cathodic protection system rectifier.

Any pipeline equipment that has lost its integrity or the thickness is below minimum thickness requirements, will be repaired or replaced as necessary. Reports which document the results of these inspections are filed in the Dock Transfer Line Inspection Records file located in the Engineering Department. Also, the Maintenance Department maintains a computerized database which denotes the maintenance history on refinery equipment.

Pumps & Valves

The Maintenance Department is responsible for performing maintenance on valves and pumps associated with the transfer pipeline. USOR has PMWO's in place to inspect pipeline pumps and valves to ensure that they are maintained in accordance with manufacturer's recommendations and/or industry standards. The frequency of inspection for the pumps is annually whereas valves are semi-annual. The frequency of pump PMWO's may be less than one year depending on pump design and pump service. Pump PMWO's primarily focuses on inspecting, lubricating and servicing and screen cleaning as necessary. The scope of the valve PMWO's includes the following:

1. Visually inspect all valves for any leaks as well as broken, missing or loose parts. Adjust packing and lubricate valve as necessary. Document problems found and corrective actions taken.
2. Operate valves from a fully open to a fully closed position. Document problems found and corrective actions taken.

Reports which document the results of these inspections are filed in the Maintenance Department inspection file.

Pressure Relief Devices

USOR's inspection program for pressure relief devices is documented within the Mechanical Integrity Manual in Section 11 titled "Pressure - Relief Devices and Vent Systems". All pressure relief devices on the transfer lines are tested on a twelve month frequency to ensure that they will open at or below their respective design relief pressures as noted in Table 10-3. Any necessary maintenance on these valves is performed at the time of testing. All testing and repair is performed at a licensed valve repair shop with a valid ASME valve repair stamp. Records of these tests are kept in the Dock Transfer Lines Inspection Records file located in the Engineering Dept.

Transfer Hoses

USOR has a PMWO that is issued on an annual basis to inspect and hydrotest transfer hoses. Transfer hoses used at the Marine Terminal are also tested in accordance with the procedures identified by RMA/IP-11-4 titled "Manual for Maintenance, Testing and Inspection of Hose" as issued by the Rubber Hose Manufacturers Association RMA). Transfer hoses dedicated to refinery usage will not be used at the Marine Terminal. This PMWO includes the following:

1. Each transfer hose is inspected to ensure that is does not have kinks, bulges, unrepaired loose covers, soft spots, gouges, cuts, slashes or any other deterioration or defects which would cause an oil release.
2. Each transfer hose is hydrotested (using water) under a static liquid pressure of at least 1.5 times the MAWP for 30 minutes.
3. Marine Terminal transfer hose test results are compared against the RMA Standard which has calculations and criteria for removing hoses from service. The RMA requirements are meant to provide additional assistance in evaluating the deterioration of hoses.

4. Upon completion of the testing, the hoses are to be stenciled with both the test date and the MAWP.

Transfer hoses that fail their annual inspection are replaced. Copies of all completed PMWO's including inspection and hydrotest results are maintained in the Maintenance Department computerized database. Copies of the most recent hydrotest results are located in Appendix P of the Marine Terminal Operations Manual.

The following points summarize key components included in the RMA manual:

1. The RMA manual sets guidelines for performance of pressure tests. Hose measurements are to be taken at the following points during a test: 10 psi, 1.5 times MAWP, immediately after pressure release and 15 minutes after pressure release. Calculations are then made to compare the test data to its original condition. The RMA manual also contains guidance for visual inspection, vacuum testing of hoses and record keeping.
2. A spreadsheet was developed for storing the RMA information and performing the RMA calculations. When data is entered into the spreadsheet, the RMA calculations are performed and shown in the appropriate columns. When the elongation exceeds RMA requirements, a "REPLACE" will appear in the appropriate column. If the hose elongation is within specifications, an "OK" will appear in the columns. In order for the hose to remain in service, ALL THREE columns must be "OK". A "REPLACE" in any of the three columns means that the hose should be removed from service immediately and replaced. A copy of the RMA hose test spreadsheet is contained in Table 10-6.
3. The RMA manual contains guidelines for visual inspection of the hoses for cracks, gouges, alligator cracking, etc.
4. The RMA manual also has guidelines for vacuum testing hoses that are of solid smooth bore construction. This test will indicate whether the inner layers of the hose have separated or are torn. This is another early warning signal that the hose is deteriorating and should be replaced. This test has limits as the hose must not collapse under vacuum and must have a large enough diameter to allow visual inspection down its length.

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Table 10-6

RMA Hose Test Spreadsheet

HOSE MANUFACTURER:										
SERIAL NUMBER:								HOSE CONDITION (OK OR REPLACE)		
TEST DATE	Orig. Length Lo(in) 10 psi for 5 min	Test Press Length, Lt(in) 1.5xMAWP for 15 min	Immediate Release Length Li(in)	Perm Release Length Lp(in)after 15 min rest	Test Pressure Elong. (A) %	Immediate Release Elong. (B) %	Perm Release Elong. (C) %	Based On (A)	Based On (B)	Based On (C)
Original Hose Info					%	%	%			

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10.3.2 Storage Tank Integrity Testing Program

USOR performs integrity testing on storage tanks as part of an API 653 inspection/repair program. As required, the tank is then hydrotested to full filling height in accordance with API 653 guidelines.

Brittle fracture analysis (BFA) are performed in accordance with API 653. USOR performs a brittle fracture analysis (BFA) if a field constructed container undergoes a repair, alteration, reconstruction, or a change in service that might affect the risk of a discharge or failure due to brittle fracture. USOR's Engineering Department coordinates BFA evaluations. While brittle fracture analysis became a new obligation within the July 2002 SPCC Rule, USOR has been performing this analysis since the early 1990's as part of the tank inspection program that was implemented in order to comply with Ecology's Design Standards Rule. Documentation of BFA evaluations are kept in the Engineering Department at the Refinery.

10.3.3 Transfer Pipeline Integrity Testing Program

Maximum Allowable Working Pressure (MAWP) for all transfer lines is located in Chapter 7. The lines are tested at 1.5 times the MAWP. The lines are held at the test pressure for a duration of four hours with a pressure recorder on the line. If there is a drop of more than 5% over this time period, the line is inspected for leak sources and retested. USOR does not perform pressure tests using product as the testing media. The dock transfer lines are pressure tested with water at six month intervals. Other transfer lines are pressure tested annually.

10.3.4 Underground Pipeline Integrity Testing Program

Underground piping systems are inspected and maintained in accordance with Section 1 of USOR's Mechanical Integrity (MI) Manual titled "Piping Inspection Procedure". Underground piping is identified as piping that is buried or otherwise in contact with the soil.

All below ground piping in hydrocarbon service that was installed or replaced after August 16, 2002 has protective wrapping and coating and cathodic protection installed for external corrosion control or otherwise satisfies the corrosion protection provisions for piping in 40 CFR Part 280 or a state program approved under 40 CFR Part 281. If any below ground piping that is installed or replaced after certification of this Plan does not have protective wrapping and coating and cathodic protection, then USOR will demonstrate in the Plan that the corrosion protection installed will provide equivalent environmental protection in accordance with 40 CFR Part 112 §112.7(a)(2). As an alternative, buried hydrocarbon piping that penetrates through berm walls or crosses underneath roadways is cased. Cased piping is fitted with spacers along with casing vents and/or flexible end seals. Records are be kept by the USOR Engineering Department.

Key elements of the underground piping inspection program are as follows:

Scope

As directed by Department of Ecology Amended Order #5704, USOR's API 570 program was updated to implement recommendations made following a review conducted by an engineering company experienced in API 570. These buried pipelines are inspected according to the following procedures as supplemented by API 570, the MI-Piping document and the Mechanical Integrity Manual.

Inspection Personnel and Procedures

Inspection personnel for pressure piping must meet the minimum requirements for training and proficiency according to API 570 or who are authorized by USOR as being qualified to conduct underground piping inspections.

Personnel conducting NDE examinations must be certified according to Sections 17-20 of USOR's Mechanical Integrity Manual.

Documentation

Each underground inspection location is assigned a unique identifier, which is provided on the inspection report. Results of the inspection along with the date of the next scheduled inspection are maintained in the UltraPipe software database.

Risk Ranking

Underground piping within the facility is assigned a risk ranking based on the reaching the potential useful life of the piping system. The risk ranking is based on parameters such as operating pressure, fluid transported, corrosivity of the soil, etc.

Inspection Methods and Frequency

Applicable inspection methods as indicated in the MI-Piping document shall be implemented in the inspection of underground piping. Additional methods specific to underground piping as defined in Section 9 of API 570 shall also be utilized. The methods shown in Table 10-7 include:

Table 10-7

External Inspection Methods for Underground Piping

Inspection Method	Frequency
Above ground visual surveillance documented in accordance with Section 3 of the MI Manual	Approximately every six months
Soil corrosivity performed on sections of buried piping in lengths of >100 feet and not cathodically protected.	Every five years
External inspections of underground piping shall be inspected in lengths of 6-8 feet in areas of expected to be most susceptible to corrosion. The piping shall be excavated and inspected full circumference for type and extent of corrosion. The condition of the pipe coating shall also be determined. If the inspection reveals damaged coating or corroded piping, additional piping shall be excavated until the full extent of the condition is identified. Additional methods as provided in the MI-Piping document may be used in the evaluation.	Every five years
Soil to air interfaces require excavation of the soil surrounding the piping to approximately 6-12 inches in depth. If the coating or wrap is in poor condition, further excavation is required until good coating or wrap is found. Removal or replacement of the wrap may be required. Methods identified in the MI-Piping document may be used in evaluating soil-air interfaces. The Inspector following the guidance of API 570 may require that the piping be fully excavated and replaced as necessary.	Frequency of inspection shall be determined by Table 6-1 of API 570
Concrete to air interfaces will be evaluated primarily by visual examination or other methods Specified in the MI manual.	Frequency of inspection shall be determined by Table 6-1 of API 570

In addition to external inspections of underground piping, USOR performs internal inspections on the transfer piping whenever a section of pipe is removed or opened. At that time, the removed section is visually inspected and pit gauged if appropriate. Repairs are made as necessary.

10.3.5 Corrosion Detection & Repair Program

Visual external inspections are performed on tanks and pipelines in accordance with Section 10.3.1 of this document. Any significant external corrosion is given a more thorough inspection including pit gauging and ultrasonic thickness gauging. When the thickness of the pipe or tank becomes less than the minimum allowable thickness, the section under consideration is replaced.

A similar procedure is used for the internal inspections of tanks. Previous inspection records are reviewed and compared to the present inspection results. If significant corrosion has occurred since the last internal inspection, the tank is reviewed more closely. Any areas where significant internal corrosion has occurred are inspected using pit gauging and ultrasonic thickness gauging. Repairs are made to any areas which are less than minimum thickness.

10.3.6 Equipment Repair/Replacement Damage Criteria

Any equipment which becomes damaged is inspected to determine the extent of damage. If damage is such that equipment has lost its integrity or the thickness is below minimum thickness, the equipment will be repaired or replaced.

10.3.7 Maintenance and Inspection Records Index

USOR has detailed equipment files on all storage tanks in the Engineering Library. Each tank also has a maintenance and inspection file in the tankage section of the inspection files in the Engineering Library. The inspection records for each tank are kept in these files. These records encompass the entire service history of each tank.

USOR has established a Dock Transfer Lines Inspection Records file cabinet in the Engineering Inspection Department. This cabinet contains a copy of the formalized inspection program, the bi-weekly visual inspection reports, hydrotest records, thickness gauging results, relief valve testing reports, general correspondence, transfer line photos and blank inspection forms.

10.4 Spill Prevention Program for McChord Pipeline Co.

This section provides a description of spill prevention technology program for McChord Pipeline Co. Additional discussions of spill prevention technologies and maintenance requirements are contained in the McChord Pipeline Co. Operations and Maintenance Manuals respectively. These manuals are kept at locations where operations and maintenance activities are routinely conducted.

10.4.1 Overview of Pipeline Transfer Operations

The pipeline starts at USOR's pump station, which is located adjacent to jet fuel tanks #30002 and #30003, and terminates at the McChord AFB fuel depot. The entire length of the 14.25 mile pipeline consists of 6" diameter pipe. Valve locations between USOR and McChord AFB consist of the following and are generally only operated during pipeline maintenance activities:

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[redacted]

Elevations and free-standing nominal pressures along the pipeline are as follows:

- At USOR pump station Elevation: 10 ft. Pressure: 135 psig
- At high point Elevation: 420 ft Pressure: 0 psig
- At McChord AFB Elevation: 280 ft Pressure: 45 psig

A normal transfer will last 8 - 10 hours at 650 barrels per hour (BPH) at 450 psig at the USOR end of the pipeline. Only one of two transfer pumps is used for each transfer The MAWP for this pipeline is 720 psig and the pipeline has a gross capacity of 2,901 bbls.

10.4.2 Initial Pipeline Evaluation

USOR conducted a detailed engineering review of the pipeline at the time of purchase to evaluate pipeline integrity. Part of this review included conducted a hydrotest on the pipeline during July 1996. This test was conducted over an eight hour period at 1170 psig, which is approximately 1.5 times the Maximum Allowable Working Pressure (MAWP). The pipeline subsequently passed the pressure test. In accordance with 49 CFR Part 195.300, any new piping section installations will be hydrotested prior to placing them into service.

10.4.3 Transfer Pump Shutdown Thresholds

The transfer pumps can be manually shutdown at the pump station or from the Central Control Room. These pumps are also equipped with the following automatic shutdown devices:

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10.4.4 Cathodic Protection System

The McChord Pipeline is equipped with an impressed current cathodic protection system for the entire length of the 14.25 mile pipeline. Key system components consist of a rectifier, well type anodes and cabling necessary to connect system components. See additional cathodic protection system discussions in Section 10.5.4 of this document.

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The receiving facilities at McChord AFB are protected from excessive transfer pump pressure by a reverse check valve that will automatically close if the transfer line pressure at McChord AFB exceeds 120 psig. It is important to note that this will shutdown the pipeline transfer since the transfer pumps will trip on high pressure. In addition, an excess flow valve is installed on the outlet of each McChord AFB coalescer to prevent pumping rates above 600 gpm.

10.4.6 Leak Detection System

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Leak detection for the McChord Pipeline consists of monitoring key variables for both the jet transfer mode and the static (no jet transfer) mode.

During the jet transfer mode, the key leak detection variable is the jet volume difference between the jet gallons received at the AFB and the jet gallons sent from the USOR pump station. Procedures specify to shutdown and immediately check the pipeline operation if the gallon difference exceeds 2000 gallons. This indicates a possible loss of jet fuel somewhere in the system. The pipeline pressure at the USOR pump station is also monitored for any unexplained drop in pressure exceeding 15 psig during operation. A drop in pressure requires an immediate check of the jet volumes transferred.

If the pipeline telemetry system from the AFB is inoperative for some reason during a transfer, the jet difference will be performed manually at one hour intervals. The USOR operator will call the AFB operator to obtain the meter reading. The USOR operator then calculates and logs the jet volume difference.

The second mode of leak monitoring, static (no transfer) mode, consists of monitoring the pipeline static pressure. The pipeline is isolated at both ends and maintained at a minimum of 200 psig at the USOR pump station. Any sudden unexplained pressure drop in excess of 15 psig will result in an alarm on the DCS. This will result in pipeline supervisor and inspector notification by the on-site operator. Investigation for a possible leak somewhere in the pipeline system then will be undertaken.

Operating procedures call for the shutdown of the pipeline transfer if there is a loss of both the primary and secondary communication systems between the USOR person in charge and the McChord AFB person in charge.

10.4.7 Abnormal Operations

Abnormal operations that could be expected for McChord Pipeline are discussed in the McChord Pipeline Operations Manual in accordance with 49 CFR 195.402 (d). Therefore, Section IV titled "Abnormal Operations" of the McChord Pipeline Operations Manual is incorporated into this section by reference. As discussed in the McChord Pipeline Operations Manual, the following is a list of abnormal operations and corresponding procedures that have been established to eliminate or mitigate the threat of a worst case discharge.

1. Leak indications during transfer
   - Excessive flow at USOR's pump station meter or decreased flow at the McChord AFB fuel terminal.
   - Decreased pressure at USOR's pump station or decreased pressure at the McChord AFB fuel terminal.
2. Leak Indications while the pipeline is in static non-transfer status.
3. Valve closure during transfer
4. Communications failure
5. Fire
6. Vapor release
7. Liquid release
8. Chemical tank overflow/release
9. Power failure
10. Steam failure
11. Instrument failure
12. Other plant problems
13. Unintended pipeline shutdown
14. Pipeline overpressurization

10.5 Maintenance Program for McChord Pipeline Co.

This section provides a description of the requirements specific to the maintenance of the pipeline owned by McChord Pipeline Co. The brief description of the spill prevention technology program for McChord Pipeline Co. is discussed in Section 10.4. Additional discussions of spill prevention technologies and maintenance requirements are contained in the McChord Pipeline Co. Operations and Maintenance Manual respectively. These manuals are kept at locations where operations and maintenance activities are routinely conducted.

10.5.1 Pipeline Repairs

Piping that is damaged or defective will be repaired or removed in a prompt, safe manner to minimize operating downtime. Any pipe that is found to be generally corroded so that the remaining wall thickness is less than the minimum thickness required by the pipe specification tolerances will be replaced or repaired as necessary. Whenever any pipe is removed from the pipeline for any reason, USOR will inspect the internal surface for evidence of corrosion. If the pipe is generally corroded such that the remaining wall thickness is less than the minimum thickness required by the pipe specification tolerances, USOR will investigate adjacent pipe to determine the extent of the corrosion. Pipe that is determined to meet this requirement will be replaced as necessary.

Pipeline sections which are leaking or are suspected of leaking will require an assessment of area hazards prior to initiating a leak repair. USOR's Emergency Response Health & Safety Plan will implemented, as necessary, to serve as guidance in performing this assessment. Worker safety is paramount in completing a successful pipeline repair. Procedures specific to repairing leaking pipes are contained in the McChord Pipeline Co. Maintenance Manual.

Prior to commencing any excavation work necessary to facilitate a pipeline repair USOR personnel will obtain all required permits, contact underground utility companies proximal to the proposed excavation to locate their utility, and notify the affected property owners of the need to enter their property. As necessary, permits internal to USOR will be issued to ensure that all work is performed in a manner that is safe and conducted in accordance with applicable safety regulations contained in 29 CFR, WAC 296-62 and WAC 296-155.

In accordance with 49 CFR Part 195, Subpart D, welding activities will be done by qualified welders using acceptable welding procedures, which will ensure that all weld metal is thoroughly fused to previously deposited metal and to the parent metal to produce a joint at least a strong as the parent metal and free of imperfections that may allow the release of a hazardous material.

Replacement pipe designated for pipeline repairs will be certified and free of any defects which could jeopardize the integrity of the pipe. Replacement pipe will pass hydrostatic testing prior to placement into service. Underground piping, valves and fittings will be coated prior to installation and/or repair to minimize corrosion and reduce cathodic protection current requirements.

10.5.2 Pipeline Valve Site Inspections

Pipeline valves located in fenced areas will be inspected by USOR personnel an annual basis. The following items are included in this inspection:

- Fencing including associated hardware will be inspected for damage and proper operation.
- Soil conditions in and around the fenced area will be inspected to ensure that there is no evidence of oil contamination and that these areas are free of oil, weeds and debris.
- Both the "No Smoking" sign and the "Emergency Notification" sign will be inspected to ensure that they are present and in good condition.
- Ensure that access to the valve site is clear.

10.5.3 Pipeline Valve Maintenance

The following program has been implemented to ensure adequate pipeline valve maintenance:

- Each valve will be inspected and lubricated as necessary to ensure that it is functioning properly (6 month basis).
- Each valve will be visually examined to determine if the valve body, stem packing, small accessory piping or flanges show any evidence of leaking (6 month basis).
- Each valve body and associated equipment will be maintained free of surface corrosion or coating deterioration (annual basis).

10.5.4 Cathodic Protection System

The McChord Pipeline is equipped with an impressed current cathodic protection system for the entire length of the 14.25 mile pipeline. Key system components consist of a rectifier, well type anodes and cabling necessary to connect system components.

To ensure that the proper level of cathodic protection is maintained McChord Pipeline Co. has established a system monitoring and maintenance program. Periodic testing is required to determine if the cathodic protection system is out of adjustment in which case the transfer pipelines would either become overprotected or underprotected. The underprotected case results in corrosion damage to the pipelines, while overprotection may cause damage to the protective coating being used. In order to diagnose any changes or problems in the cathodic protection system, an accurate record of measurements taken from time of activation to time of diagnosis is required. Furthermore, a complete history of the system in the form of records of previous measurements and a complete schematic of the system and its components provide a baseline for comparing future measurements and is useful in trouble shooting system problems.

Outside of initial startup, essential components of the cathodic protection system maintenance program are as follows:

- Rectifier monitoring (bi-monthly basis).
- Structure Potential Survey on Cathodically Protected Pipeline (annual basis and/or when new connections or alterations occur).
- Insulating fittings, continuity bonds, casing insulators (annual basis).
- Pipe and coating condition when buried structure is exposed (each occurrence).

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12.0 Oil Spill Claims Procedure

12.1 Oil Spill Claims Management

Management of all claims will be facilitated by U.S. Oil's Comptroller who also serves as the ICS Finance Section Chief. Outside contractors may be hired as necessary to support claims processing during large oil spill events. The person assigned to facilitate U.S. Oil's oil spill claims process is as follows:

U.S. Oil's Comptroller:	Rupesh Sansgiri
Telephone:	(253) 383-1651
Fax:	(253) 383-9970
Email:	rss@usor.com

12.2 Insurance Coverage

U.S. Oil has numerous insurance policies to help protect against a variety of financial risks in the event of an incident including oil spills. Claims against these policies are made as necessary depending on the nature of the incident. The U.S. Oil person who manages these insurance policies is as follows:

U.S. Oil's Chief Financial Officer:	David Reitmann
Telephone:	(253) 383-1651
Fax:	(253)383-9970
Email:	der@usor.com

12.3 Claims Handling Process

U.S. Oil establishes the claims process when an incident poses a potential impact to personal injury and/or property as determined by Unified Command. Once established, implementation of the claims process is facilitated by U.S. Oil's Finance Section Chief. After the need for a claims process has been established, U.S. Oil will establish/publish a toll free claims number on the company website at www.usor.com , communicate it to the local media via news releases, publish a claims advertisement in the local newspaper and/or provide this information through community meetings as appropriate. These various claims communication options will provide the Claimant with additional details regarding how to file a claim.

More than any other factor, the geographic extent of the oil spill will dictate the publications that claim advertisements will run. At a minimum, claims advertised in the local newspaper will appear in the Tacoma News Tribune (Tacoma, WA). Additional publications will be considered on a spill-specific basis. The length of time paid advertisements will run in local publications will be based on recommendations provided by Unified Command and U.S. Oil's legal counsel.

In general, Claimant's should use U.S. Oil's claim form shown in Table 12-1 to submit their claim, but other claim forms that provide an equivalent amount of information will be accepted. Completed claim forms must be legible, signed in ink by the claimant, provide a sum certain monetary amount claimed, and be accompanied by supporting documentation. In good faith, U.S. Oil is committed to working with claimants to help them understand the type and amount of documentation that might be required to support their claim, but ultimately the responsibility to prove their claim remains with them.

The postal mailing address for submitting oil spill claims is as follows:

U.S. Oil & Refining Co.
P.O. Box 2255
Tacoma, WA 98401-2255

Depending on the number of expected or anticipated number of claims related to the spill, U.S. Oil may or may not establish a local claim center. Claims related to the reimbursement of Uncompensated Oil Spill Removal Costs will be accepted by U.S. Oil up to 6-years from the date cleanup was completed. All other types of claims will be accepted up to 3-years from the date that U.S. Oil began advertising for claims or 3-years from the date that the injury or damage being claimed was reasonably discovered, whichever date is earlier. Natural Resource Damage (NRD) claims are handled separately from other claims, and may be accepted by U.S. Oil in a manner and timeframe agreed to by the company and the lead federal and/or state trustee agency.

In general, U.S. Oil will process claims in the order that they are received. U.S. Oil will review each claim received to ensure, as much as possible, that all needed information to make a claim decision has been provided by the claimant. If additional information is needed, U.S. Oil will request that the claimant forward that information to us so it can be added to the claim and considered during adjudication. If the information requested is not received, U.S. Oil will adjudicate the claim with the information it has available. This may result in a reduction of possible claim compensation or an outright denial of the claim. If they accept the offer, the claimant must sign a release before U.S. Oil will process the offer for payment. If the claimant rejects the offer, they can provide additional information and ask U.S. Oil to reconsider the claim determination; typically, this would start an entirely new review process with another claim determination made as a result of the reconsideration - "reconsideration" is not "negotiation." Once a signed agreement has been reached with the claimant, claims submitted to U.S. Oil are usually paid within 30-days.

Table 12-1

U.S. Oil & Refining Co. Oil Spill Claim Form

1. Claimant Information:

Name:

Point of Contact:

Address:

Telephone: Fax:

E-mail:

2. Provide Incident Details, if available:

Date & Time Injury or Damage:

Location of Injury or Damage (include Latitude/Longitude as necessary):

3. Describe the injury or damage you are claiming:

4. Did you have any prior contact with U.S. Oil & Refining Co. regarding your claim? If so, who?

5. What is the type of claim are you submitting and what is the total monetary amount you are claiming in U.S. dollars?

Claim Type: _____

Total Amount Claimed: $_____

6. Have you or your legal representative submitted the claim to an insurer or another responsible party before submitting this claim to U.S. Oil & Refining Co.? (Yes/No) – if "yes" provide date claim submitted to insurer or other RP and provide contact information

Table 12-1 (Continued)

U.S. Oil & Refining Co. Oil Spill Claim Form

7. If the claim was submitted to an insurer of another responsible party, what response (written or verbal) or payment did you receive?
(i.e. Insurer or responsible party took no action, denied the claim, stated they had no money to pay the claim, made only a partial payment of $$$, or other – explain)

8. Have you commenced an action in court to recover costs which are the subject of this claim? (Yes/No) – if "yes" provide contact information for your attorney (name, address, telephone number), the court in which action is pending, and the civil action number

9. Describe the nature and extent of injuries or damages claimed, as supported by the documentation you are submitting with this claim:

10. Description of how the injury or damage was caused:

11. What actions did you take, if any, to minimize the injury or damages you claim:

12. Witnesses:
(Provide the name, address, telephone number, & email address) of anyone who witnessed the injury or damage you claim. Also provide a summary of each witness's knowledge of the injury or damage claimed, and/or the incident which caused the injury or damage.

Name:
Address:
Telephone Number:
Fax Number:
Email:
Summary:

Table 12-1 (Continued)

U.S. Oil & Refining Co. Oil Spill Claim Form

13. List of Documents & Attachments:

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14. Claimant's Signature & Date:

I, the undersigned, agree that upon acceptance of any compensation from U.S. Oil & Refining Co., I will cooperate fully in any claim or action by U.S. Oil & Refining Co. to recover costs paid out in claims from any 3rd Party or entity that may also be responsible for the oil spill. This cooperation shall include, but is not limited to, immediately reimbursing to the Fund any compensation received from any other source for the same costs and/or damages and, providing any documentation, evidence, testimony, and other support, as may be necessary for the Fund to recover such compensation.

I, the undersigned, certify that, to the best of my knowledge and belief, the information contained in this claim represents all material facts and is true. I understand that misrepresentation of facts may result in legal action against me.

_____ **Date** _____ **Signature of Claimant**

15. Legal Representative's Signature & Date:

Is this claim being presented to U.S. Oil & Refining Co. by your legal representative? If so, the legal representative must also sign this claim and provide contact information.

_____ **Date** _____

Signature of Legal Representative

Representative's Name:
Address:
Telephone Number:
Fax Number:
Email:

APPENDIX A
TECHNICAL GLOSSARY

ACP	Area Contingency Plan
A.F.B.	Air Force Base
ANSI	American National Standards Institute
ANSI/ASME B31.3	Standard for Chemical Plant & Petroleum Refinery Piping
ANSI/ASME B31.4	Standard for Liquid Petroleum Transportation Piping Systems
API	American Petroleum Institute
API 650	Standard for Welded Steel Tanks for Oil Storage
API 653	Standard for Tank Inspection, Repair, Alteration, and Reconstruction
ASME	American Society of Mechanical Engineers
Ave	Avenue
Bailey Net 90	Distributive Computer Controlled System for Refinery Process Units
bbl	Barrel - Unit of volume equivalent to 42 gallons and commonly used to measure a quantity of oil.
bph	barrel per hour
BS&W	Bottom, Sediment & Water
Central Control Room	Main Control Room for the Process Units
CFR	Code of Federal Regulations
Ch	Channel
CHRIS	Chemical Hazards Response Information System
Clean Sound	Clean Sound Cooperative Inc. (merged with MSRC during 2005)
Const.	Construction
CWA	Clean Water Act
Dept.	Department
Dock Watch	A USOR refinery worker who is positioned at the Marine Terminal dock 24 hours per day and responsible for observing all operations including product transfers.
DOI	Declaration of Inspection

DOS	Declaration of Security
DOT	Department of Transportation
Ecology	Washington State Department of Ecology
EDRC	Effective Daily Recovery Capacity
EFA	Ed Farmer & Associates, Inc. - Developer of the PPA System
EH&S	USOR Environmental, Health & Safety
Emergency Response Coordinator	This is EPA terminology for USOR's Refinery Incident Commander
EPA	Environmental Protection Agency
etc.	Etcetera
ext.	Extension
°F	Degrees Fahrenheit
FEMA	Federal Emergency Management Agency
FOSC	Federal On-Scene Coordinator
Gal	Gallons
GRP	Geographic Response Plan
HAZMAT	Hazardous Materials
HAZOP	Hazard and Operability Study
HAZWOPER	Hazardous Waste Operations & Emergency Response
HP	Horsepower - Unit of Power
H_2S	Hydrogen Sulfide
IAF	Primary Wastewater Treatment Induced Air Flotation Unit
IAP	Incident Action Plan
IC	Incident Commander
ICS	Incident Command System
JIC	Joint Information Center
LAN	Local Area Network

LEL	Lower Explosive Limit
LEPC	Local Emergency Planning Committee
MARSEC	Maritime Security Threat Level
MAWP	Maximum Allowable Working Pressure
MGD	Millions of Gallons Per Day
M.P.	Milepost
MPL	McChord Pipeline
MRU	Mobile Rehabilitation Unit (for oiled wildlife)
m/s	Meter per Second - Unit of Velocity
MSDS	Material Safety Data Sheet
MSRC	Marine Spill Response Corporation
MTCA	Model Toxics Control Act
NACE	National Association of Corrosion Engineers
NAICS	North American Industrial Classification System
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NFPA	National Fire Protection Association
NFPA 30	Flammable & Combustible Liquids Code
NIIMS	National Interagency Incident Management System
NOAA	National Oceanographic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRC	National Response Center
NRDA	Natural Resource Damage Assessment
NRT	National Response Team
NVIC	USCG Navigation and Vessel Inspection Circular
NWACP	Northwest Area Contingency Plan
Old Control Room	Instrumentation and Break Room for Crude Operators and Pumper-Gaugers

OPA	Federal Oil Pollution Act of 1990
OR	Oregon
Orbal	Secondary Wastewater Treatment Activated Sludge Biological Unit
OSC	On-Scene Coordinator
OSHA	Occupational Safety & Health Administration
PA	Public Announcement System
PBX	Private Branch Exchange
PHMSA	Pipeline and Hazardous Material Safety Administration
PIO	Public Information Officer
PMWO	Preventative Maintenance Work Order
POT	Port of Tacoma Road
PPA	Pressure Point Analysis Leak Detection System for the Refinery to Marine Terminal Dock Transfer Pipelines
PPE	Personal Protective Equipment
PREP	Preparedness for Response Exercise Program
PRV	Pressure Relief Valve
PSCAA	Puget Sound Clean Air Agency
PSIG	Gage Pressure Expressed in Pounds Per Square Inch
Pumper-gauger	A USOR refinery worker responsible for oil movements/transfers and gauging of available tankage.
QI	Qualified Individual. This person also serves as USOR's Refinery Incident Commander
RA	Regional Administrator
RCRA	Resource Conservation and Recovery Act
RCW	Revised Code of Washington
Rev/Ltr	Revision Letter
RP	Responsible Party
RRT	Regional Response Team
RSPA	Research and Special Programs Administration

RVGO	Raw Vacuum Gas Oil
SARA	Superfund Amendments and Reauthorization Act
SCBA	Self Contained Breathing Apparatus
SDWA	Safe Drinking Water Act of 1986
SERC	State Emergency Response Commission
SI	Surface Impoundment
SIC	Standard Industry Codes
SOSC	State On-Scene Coordinator
SPCC	Spill Prevention, Control & Countermeasures Plan
Supt.	Superintendent
Supvr.	Supervisor
Tk	Tank
TSD	Treatment, Storage and Disposal Facility
TSFD	Tacoma City Fire Department
Turnaround	Term used to denote equipment or process units that are taken out of service for maintenance purposes.
ULSD	Ultra Low Sulfur Diesel
UPS	Uninterruptible Power Supply
USCG	United States Coast Guard
USGS	United States Geological Survey
USOR	U.S. Oil & Refining Co.
VTS	USCG Vessel Tracking System
WA	Washington
WAC	Washington Administrative Code
WAC 173-10	Vessel Contingency Plan Standards & Contractor Standards
WAC 173-180D	Facility Oil Spill Prevention Plan Standards
WAC 173-181	Facility Contingency Plan and Response Contractor Standards
WAC 173-303	Washington State Department of Ecology Dangerous Waste Regulations

WAC 173-304	Washington Minimum Functional Standards for Solid Waste Handling
WCD	Worst Case Discharge
WDW	Washington Department of Wildlife
WRIA	Water Resource Inventory Area
WRRL	Western Response Resource List
WSPA	Western States Petroleum Association
WUTC	Washington Utilities & Transportation Commission

APPENDIX B

SECTION B-1

U.S. OIL & REFINING CO.

EMERGENCY RESPONSE HEALTH & SAFETY PLAN

For Oil Spills &
Refinery Emergencies

NOTE: The U.S. Oil & Refining Co. Emergency Response Health & Safety Plan also applies to the McChord Pipeline Co.

U. S. OIL & REFINING CO.
EMERGENCY RESPONSE HEALTH & SAFETY PLAN

For Oil Spills & Refinery Emergencies

The following Emergency Response Health & Safety Plan has been developed to assist U. S. Oil & Refining Co. in preparation and response to potential refinery emergencies. This plan has been developed as a working document, since each emergency is unique. This plan is designed to allow the incident commander and safety supervisor to evaluate potential hazards, document appropriate precautions and select necessary personal protective equipment. The blank spaces and hazard evaluation should be completed for each specific incident requiring use of the plan.

A. Pre-Emergency Planning

U. S. Oil & Refining Co. has established contacts and developed lists to provide response in the event of a refinery emergency, fire or oil spill. Formal training is provided to supervisors and refinery personnel to respond to refinery emergencies such as those mentioned above. For example; all shift supervisors and mechanical supervisors receive annual CPR training and are First Aid certified. Specific fire training received by employees is discussed in the U.S. Oil Emergency Procedures Manual and oil spill training and certification is discussed in Chapter 7 of the Facility Oil Spill Response Plan. In addition, U.S. Oil has a rigorous post qualification training program.

Spill prevention is an integral part of the design of the refinery and all refinery personnel receive training on spill prevention and control. A comprehensive Spill Prevention Control and Countermeasure Plan has been developed to ensure the refinery has evaluated possible spill scenarios and has controls in place to mitigate those events. U. S. Oil is a member of the Marine Spill Response Corporation (MSRC) and maintains its own, as well as, MSRC spill response equipment, on site, to respond to spill events. The company also has contacts with vacuum truck companies and spill response contractors to provide trained personnel and equipment. The company is inspected at least annually by the Tacoma Fire Department and holds periodic training/familiarization meeting for City of Tacoma responding personnel. U. S. Oil is also a member of a mutual aid group consisting of the major oil refining companies in Washington state. This mutual aid group provides additional support equipment in the event of a fire at the refinery.

B. Organization for Emergency Spill Response

The spill response team at U. S. Oil is divided into two groups consisting of primary supervisors and secondary supervisors. Primary supervisors are charged with assessment of spills, agency contacts, MSRC notifications, public relations and on-site management. Secondary supervisors are charged with supervisory duties at the direction of the primary supervisor. The shift supervisor has responsibilities related to

initial notifications of Primary Supervisors and agency notifications. Every employee of U. S. Oil has the responsibility to be aware of leaks and spills which come to their attention and to notify the proper company official. Notification of a spill by an employee should first be made to the shift supervisor who in turn will notify a primary supervisor. Upon advice from the shift supervisor the ranking company officer will determine whether notification of additional primary supervisors is necessary and whether their presence at the sight is required. The primary spill supervisor shall have the authority to enlist the aid of any outside contractors or additional personnel he deems necessary to expediently prosecute a cleanup. Attachment (1) lists U. S. Oil's basic incident command structure.

C. Site Description

U. S. Oil & Refining Co.'s Tacoma refinery is a continuous processing plant with a 42,000 barrels per day crude oil charge rate. Products produced at the refinery include gasoline, jet fuel, diesel fuel, marine fuels, gas oils (intermediate product), emulsified, medium curing and road asphalts.

Physically, the plant consists of two areas which are as follows: The crude process area, tank farm, loading racks and office are located at 3001 Marshall Ave. It is bounded to the south by Marshall Avenue, Port of Tacoma land to the east and west, and Lincoln Avenue to the north (Attachment #2). The second site is the refinery's marine terminal, located at 1735 Port of Tacoma Road. This site is approximately 3/4 of a mile northeast of the refinery on the Blair Waterway. The terminal is bounded by Port or Tacoma on the south and Concrete Technology to the north. To the west is Port of Tacoma Road (Attachment #3).

D. Communication/Emergency Procedures

Refinery two-way radios will be used in the event of an emergency and for post emergency activities. Personnel working in an exclusion area shall remain in visual contact with a standby equipped with a plant radio. For in plant emergencies a 30 second blast from the refinery emergency whistle will be used to evacuate all personnel. An emergency telephone is located in the Scalehouse in addition to a radio receiver to receive reports requiring immediate attention.

The number for this emergency phone is 333 for all in plant phones. The Scalehouse dispatcher will make appropriate emergency calls and notifications. The above number is to be used only in an emergency. The Scalehouse dispatcher will meet emergency vehicles at the scale entrance and put them in contact with the shift supervisor. They will also provide a portable radio to the first Tacoma City Fire Department (TCFD) personnel arriving at the scene. The portable radio has the U.
S. Oil radio frequency and allows TCFD personnel to communicate with the shift supervisor. This radio is dedicated for TCFD use and will not be made available to refinery personnel.

E. Decontamination

In order to assure that contaminated materials are not spread from the site, proper decontamination (decon) procedures will be employed for both equipment and personnel. For hydrocarbon contamination this will normally consist of a diesel scrub pool, a detergent wash rinse pool and a water rinse pool. Personnel with known or suspected contamination will decontaminate fully before eating or leaving the work site.

F. Air Monitoring

Air monitoring must be conducted on an ongoing basis during an oil spill or hazardous materials incident. The primary hazards that need to be considered in the refinery are; % Lower Explosive Limit (LEL), % oxygen, benzene and hydrogen sulfide (H2S). Specific monitoring parameters will be established by the incident commander and safety supervisor. Attachment #4 contains a form to be used to record all air monitoring results.

G. Incident Evaluation

The information checklist located in Attachment #5 shall be completed *for* each specific incident requiring use of this plan. Key information included in this attachment includes the following:

a. General Incident Description

- Date:
- Location:
- Area affected:
- Weather conditions:
- Additional Information:

b. Entry Objectives (initial work activities):

c. On-site control. A safe parameter and exclusion zone have been established as follows:

d. Command post and staging area have been established at:

e. On-site work plans describe scope of work to be performed.

f. Specific decontamination will consist of the following:

g. Decon Stations are located in the following areas:

H. Physical Hazards Evaluation

Check Applicable Hazards and precautions taken.

	PHYSICAL HAZARD:		PRECAUTIONS TAKEN:
_____	Flammable or explosive vapors/liquids or gases.	_____	Fire extinguishers on site
		_____	Test air
		_____	10% LEL (or higher %)-Use only explosion proof equipment.
_____	Trenches or pits (5 ft or more deep)	_____	Slopped walls or sides
		_____	Shored walls or sides
		_____	Test air – See airborne hazards section
_____	Hazardous liquids splashing or spraying (includes pipe line transported hydrocarbon liquids)	_____	Safety glasses
		_____	Chemical goggles
		_____	Face Shield
		_____	Slicker suit coveralls
_____	Overhead work	_____	Hardhats
		_____	Signal man
_____	Trip, slip or fall	_____	Shoes with well defined heels
		_____	Handrails
_____	Noise (Disturbs normal conversation of 2 people 3 ft apart.)	_____	Hearing protectors
		_____	Powered megaphones
_____	Bodies of water	_____	Life vests
		_____	Life lines or ropes
_____	Confined spaces	_____	Test air for oxygen, H2S
	Hydrocarbon vapor & benzene as appropriate	_____	Standby
		_____	Rescue provisions ready
_____	Skin contact with leaked material	_____	Rubber gloves
		_____	Rubber boots
		_____	Slicker suits
		_____	Tyvek coveralls
_____	Burns, cuts, other injuries	_____	Decontamination provisions
		_____	Fist Aid Kits
		_____	First Aid Trained workers

PETROLEUM PRODUCTS

	EPA LEVEL OF PROTECTION	CHEMICAL RESISTANT			RESPIRATOR
		CLOTHING	GLOVES	BOOTS	
CRUDE OIL	LEVEL D (up)	PVC	NITRILE NEOPRENE	NEOPRENE PVC	Not necessary
	LEVEL C (a)				HFP-OV
SOUR PRODUCTS Sour crude Sour products Sour intermediates High sulfur fuel oils	LEVEL B (> 10ccm H2S)	PVC	NITRILE NEOPRENE	NEOPRENE PVC	SCBA or SUPPLIED AIR
	Downgrade to LEVEL D (up) LEVEL C (a) (<10ccm H2S)				Not necessary: Level D (up) HFP-OV (Level C: for hydrocarbon vapors only, not H2S)
MOTOR FUEL Gasolines Condensate	LEVEL C* or LEVEL D (up)	PVC	NITRILE NEOPRENE	NEOPRENE PVC	HFP-OV or FFP-OV Not necessary
	Upgrade to LEVEL B (a)	PVC			SCBA or SUPPLIED AIR
AVIATION FUELS JP-4/JP-5 Jet-A AV gas	LEVEL C* or LEVEL D (up)	SLICKER	NITRILE NEOPRENE	NEOPRENE PVC	HFP-OV or FFP-OV Not necessary
	Upgrade to LEVEL B (a)	PVC			SCBA or SUPPLIED AIR
DISTILLATES Diesel Kerosene #2 fuel oil Cat feed/LCO Cat bottoms	LEVEL D (up)	PVC	NITRILE NEOPRENE	NEOPRENE PVC	Dependent on ambient conditions and spill size
	Upgrade to LEVEL C (a)	PVC			HFP-OV FFP-OV
RESIDUALS/ASPHALT Heavy fuel oils Weathered crude tar	LEVEL D (up)	PVC	NITRILE NEOPRENE	NEOPRENE PVC	Usually not needed
	Upgrade to LEVEL C (a)				HFP-OV (eg. Nuisance odors)

* Use of respirators is determined by monitoring and decision of the Incident Commander:

HFP-OV= half-facepiece respirator with organic vapor cartridges

Hydrocarbon vapors up to 1000 ppm (<~5% LEL)
Benzene up to 10 ppm
Nuisance odors

FFP-OV = full-facepiece respirator with organic vapor cartridges

Hydrocarbon vapors up to 1000 ppm (<% LEL)
Benzene up to 50 ppm
Face/eye protection while wearing respirator

(a) Upgrade when
1). Vapor level exceeds air-purifying limits.
2). Vapors cause symptoms (nausea, eye irritation, dizziness, etc.)
3). Gross body contamination is possible (eg. Wading in product pool), or a stronger fabric may be necessary (more resistant to tearing, etc.)

EPA LEVEL	EQUIPMENT
Level D	Normal work uniform
Level D (up)	Chemical resistant clothing: 2-piece suit or coveralls (in hot weather, pants or bib overalls may suffice) Chemical goggles (for splash potential) Gloves and boots
LEVEL C	Level D (up) w/ HFP or FFP
LEVEL B	Level D (up) w/ SCBA
Note need for clothing upgrade for level C & B upgrade.	

PPE should be purchased for worst case conditions (Level C and B) as well as Level D (up). This equipment must be properly stored and designated EMERGENCY USE ONLY.

MICELLANEOUS SUBSTANCES

	EPA LEVEL OF PROTECTION	CHEMICAL RESISTANT			RESPIRATOR
		CLOTHING	GLOVES	BOOTS	
ACIDS Sulfuric acid Hydrochloric acid	LEVEL A (a)	PVC	NITRILE NEOPRENE	NEOPRENE PVC	SCBA or SUPPLIED AIR for LEVEL A
	Downgrade to LEVEL D (up) (b)	PVC			Usually not necessary: however, some neutralizing methods may release fumes requiring respirator.
CAUSTICS Sodium hydroxide	LEVEL A (a)	PVC	NITRILE NEOPRENE	NEOPRENE PVC	SCBA or SUPPLIED AIR for LEVEL A
	Downgrade to LEVEL D (up)	PVC			Usually not necessary
CHLORINE AMMONIA (ANHY) liquid gas	LEVEL A (a)		NITRILE NEOPRENE	NEOPRENE	SCBA or SUPPLIED AIR
	Downgrade to LEVEL B (c)	NOT NECESSARY			
ACID GASES Hydrogen sulfide Sulfur dioxide ammonia	LEVEL B (> 10 ppm) (> 2 ppm) (> 25 ppm) (or for irritation)	Usually not necessary	Usually not necessary	Usually not necessary	SCBA or SUPPLIED AIR

* Use of respirators is determined by monitoring and decision of the Incident Commander.

HFP-OV= half-facepiece respirator with organic vapor cartridges

Hydrocarbon vapors up to 1000 ppm
Benzene up to 10 ppm
Tolune/Xylenes up to 1000 ppm

FFP-OV = full-facepiece respirator with organic vapor cartridges

Hydrocarbon vapors up to 1000 ppm
Benzene up to 100 ppm
Tolune/Xylenes up to 1000 ppm
Face/eye protection while wearing respirator

(a) Fully-encapsulating suit for complete splash protection and minimal gas permeation. Entry into active leak area.
(b) Spill clean-up. Routine splash protection.
(c) Small leak response (flange or tubing leak etc.)
(d) Upgrade when
1). Vapor level exceeds air-purifying limits.
2). Vapors cause symptoms (nausea, eye irritation, dizziness, etc.)
3). Gross body contamination is possible (eg. Wading in product pool), or a stronger fabric may be necessary (more resistant to tearing, etc.)

PPE should be purchased for worst case conditions (Level C and B) as well as Level D (up). This equipment must be properly stored and designated EMERGENCY USE ONLY.

EPA LEVEL	EQUIPMENT
Level D	Normal work uniform
Level D (up)	Chemical resistant clothing: 2-piece suit or coveralls (in hot weather, pants or bib overalls may suffice) Chemical goggles (for splash potential) Gloves and boots
LEVEL C	Level D (up) w/ HFP or FFP
LEVEL B	Level D (up) w/ SCBA
LEVEL A	Fully encapsulating suit with SCBA or supplied air.

PERSONNEL HAZARD ASSESMENT AND DECONTAMINATION FOR PETROLEUM PRODUCTS

	IMMEDIATE HAZARD	EXPOSURE	PERSONNEL DECONTAMINATION
CRUDE OILS	SKIN IRRITATION	PROLONGED/REPEATED	WATERLESS HAND CLEANER Remove from skin in a timely manner.
	INHALATION-NARCOSIS BENZENE	SHORT-TERM	
SOUR PRODUCTS	INHALATION – H2S For other hazards see product	IMMEDIATELY TOXIC AT > 10 PPM H2S	Not necessary for H2S see particular product.
MOTOR FUELS and	INHALATION-NARCOSOS BENZENE (inhalation) MAY BURN SKIN	SHORT-TERM	SOAP AND WATER WATERLESS HANDCLEANER Remove IMMEDIATELY from skin
	Skin irritation	REPEATED/PROLONGED	
AVIATION FUELS	INHALATION-NARCOSOS Skin irritation	SHORT-TERM	SOAP AND WATER WATERLESS HANDCLEANER Remove IMMEDIATELY from skin
DISTILLATES	SKIN IRRITATION	PROLONGED/REPEATED	WATERLESS HAND CLEANER Remove from skin in a timely manner.
	Odor-mild narcosis	SHORT-TERM	
RESIDUALS	SKIN IRRITATION	PROLONDED/REPEATED	WATERLESS HAND CLEANER Remove from skin in a timely manner.
	HOT PRODUCT – BURNS	IMMEDIATE	
	Odor	NUISANCE	

Always consult MSDS or product label if possible for specific Hazards.

PROLONGED/REPEATED — These products exhibit irritation on or dry/defat the skin if left in contact with the skin for longer periods of time such as during an entire shift; or if the skin is exposed on a daily basis.

SHORT-TERM — These effects are almost immediate or can occur within a very short period after exposure. NARCOSOS includes dizziness, nausea, loss of consciousness, etc. BENEZE may be present in some hydrocarbon vapors. Benzene can cause blood disorders and is a carcinogen (leukemia).

I. Airborne Hazards Evaluation

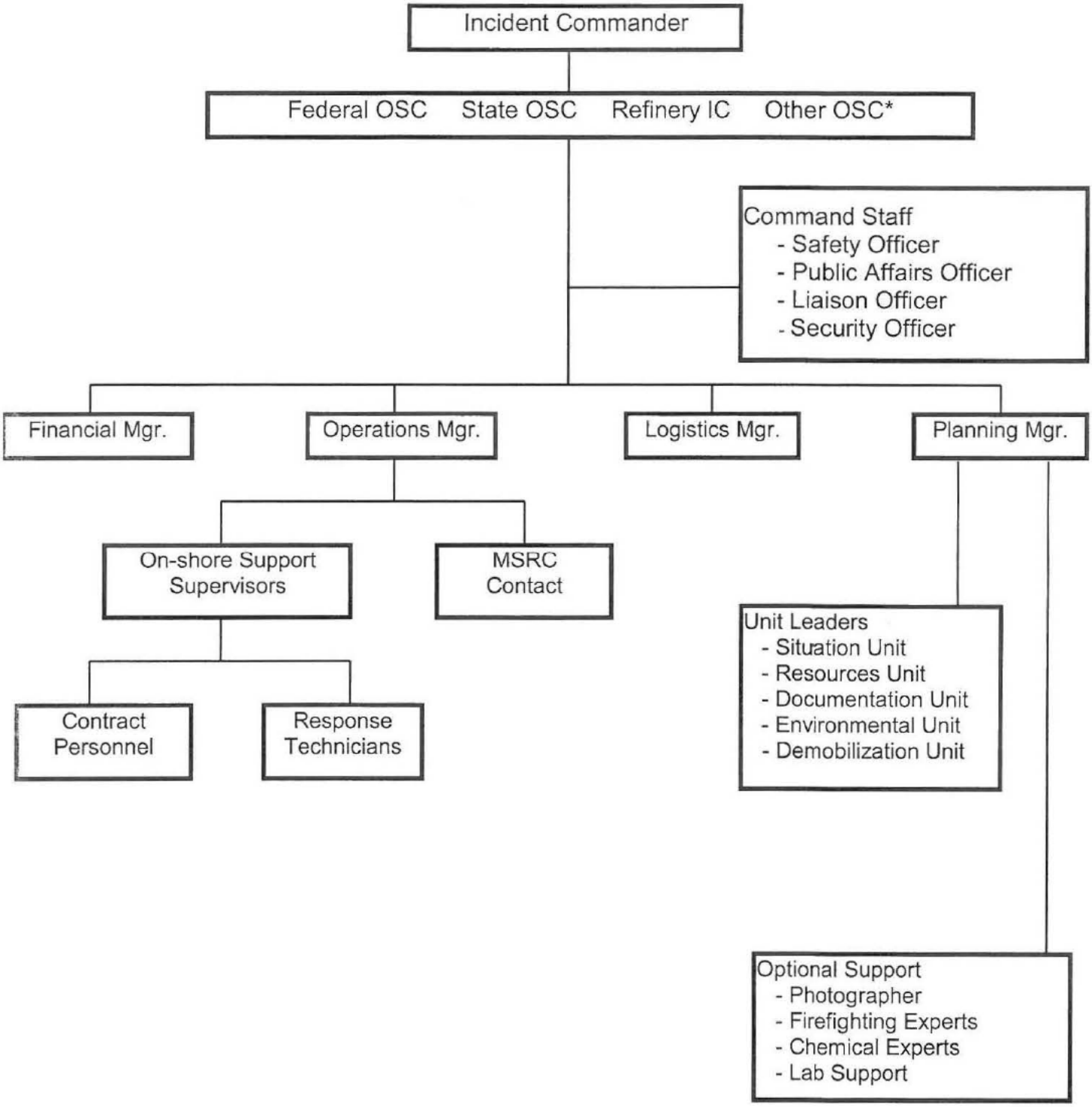
Check applicable hazards and precautions taken.

	AIRBORNE HAZARD:		PRECAUTIONS TAKEN:
____	Hydrocarbon Vapors (Could be present in hazardous concentrations with any spill or leak)	____	Conduct periodic air testing as conditions change
		____	2% LEL or higher % EVACUATE
		____	10% LEL or higher %- Use only explosion proof equipment
		____	0-2% LEL-No respirator needed unless for other hazard 3-8% LEL-Organic Vapor Cartridge respirator needed 9-20% LEL-Air mask respirator needed for area entry 21% LEL or higher %-NO ENTRY unless critical to protect human lives or to prevent environmental damage. Positive pressure 30 min air mask and bunker gear to be worn for entry.
____	Hydrogen Sulfide (H2S) (Could be present in hazardous concentrations from sour crude oil spill or leak) (Measure with draeger tubes or calibrated instrument such as monitrox)	____	0-10 ppm No respirator unless other airborne haz. Present
		____	51 PPM or higher-positive pressure 30 minute SCBA or positive pressure air line full facepiece respirator with 5 minute escape bottle.
____	Benzene (Could be present above 1 ppm from crude oil which has weathered 8 hours or from gasoline spill or leak. Contact Safety Department for Benzene concentration testing as soon as possible.)	____	0-1 PPM No respirator unless other airborne hazards present
		____	10 PPM – Half facepiece organic vapor respirator
		____	11-50 ppm – Full facepiece organic vapor respirator.
____	Oxygen Deficiency (Could be present in spill areas with restricted air movement or in trenches, pits, sumps storage tanks) (Measure with Oxygen meter set to 20.8% in normal atmosphere)	____	19.5% or higher % no respirator unless for other airborne hazard.
		____	19.4% or lower %-Positive pressure 30 minute air mask or a positive pressure air line full facepiece respirator with 5 minute escape bottle

IT MAY BE NECESSARY TO WEAR AN AIR MASK WHILE TESTING AIR CONTAINMENT CONCENTRATIONS.

ATTACHMENT #1

Unified Command Structure



* Local and Tribal OSC's will be included in this command structure as appropriate.

(b) (7)(F)

[redacted]

ATTACHMENT #3

(b) (7)(F)

[redacted]

ATTACHMENT #4

Air Monitoring Log

DATE	TIME	PARAMETER	CONCENTRATION	LOCATION	TESTER

CERTIFICATION

I herby certify that I have read and understand the U.S. Oil & Refining Co. Health and Safety Plan. I agree to follow the guidelines set forth in this plan during all on-site activities.

ATTACHMENT #5

SPECIFIC SITE SAFETY PLAN (SSSP)

APPLIES TO SITE:	
DATE/TIME:	INCIDENT:
PRODUCTS:	(ATTACH MSDS)

SITE ASSESSMENT: ☐ Marine Vessel ☐ Pipeline ☐ Storage facility ☐ Truck/Rail car ☐ Other_____

Water ☐ Shoreline ☐ Wetlands ☐ Muddy ☐ Ocean_____ ☐ Rocky ☐ Sandy ☐ Bay ☐ Other_____ ☐ River ☐ Creek ☐ Canal

Land ☐ Mountains ☐ Hills ☐ Brushland ☐ Forest ☐ Grassland ☐ Other_____

Use ☐ Public ☐ Government ☐ Residential ☐ Commercial ☐ Recreational ☐ Industrial ☐ Farmland ☐ Other_____

Weather ☐ Temp____ F ☐ Wind Dir____ mph ☐ Rain ☐ Snow ☐ Ice ☐ Other_____

Pathways for Dispersion ☐ Air ☐ Water ☐ Land ☐ Other_____

Site Hazards

- ☐ Boats
- ☐ Chemical Hazard
- ☐ Cold Stress
- ☐ Confined Spaces
- ☐ Drowning
- ☐ Drum Handling
- ☐ Fire/Explosion
- ☐ Hand/power tools
- ☐ Heat stress
- ☐ Heavy Equipment
- ☐ Lifting
- ☐ Motor Vehicles
- ☐ Noise
- ☐ Poor Visibility
- ☐ Pump, hoses
- ☐ Slips, trips, falls
- ☐ Steam, hot water
- ☐ UV Radiation
- ☐ Weather
- ☐ Wildlife/plants
- ☐ Other:_____

Air Monitoring

%O2: _____ %LEL:_____ H2S:_____ CO:_____ VOC/TPH_____

PPM Benzene_____ ☐ Other:_____

☐ See Attachment - Monitoring Program (Action Levels and Log)

CONTROL MEASURES:

Engineering Controls

- ☐ Source of release secured
- ☐ Valve(s) closed
- ☐ Facility shut down
- ☐ Site Secured
- ☐ Energy sources locked/tagged out
- ☐ Other_____

Personnel Protective Equipment (PPE)

- ☐ Impervious suits _____
- ☐ Inner gloves_____
- ☐ Outer gloves_____
- ☐ Boots_____
- ☐ Hard Hats _____
- ☐ Respirator_____
- ☐ Eye Protection_____
- ☐ Personal Flotation_____
- ☐ Other_____
- ☐ See Attachment-Initial Site Entry Form

Decontamination

☐ Stations established (see Site Map for location and Decontamination Attachment)

SPECIFIC SITE SAFETY PLAN (SSSP)

CONTROL MEASURES (Con't):

Sanitation
- ☐ Facilities provided per OSHA 1910.120(n)

Illumination
- ☐ Facilities provided per OSHA 1910.120(m)

Medical Surveillance
- ☐ Will be provided per OSHA 1910.120(l)

WORK PLAN: (Buddy system must be used)

☐ Booming ☐ Skimming ☐ Vac. trucks ☐ Pumping ☐ Excavation
☐ Heavy equip. ☐ Sorbent Pads ☐ Patching ☐ Hot Work ☐ Shoring
☐ Appropriate permits issued ☐ Site Assessment
☐ Other (describe): _____

TRAINING: (see Training Program Attachment)
- ☐ Verified site workers trained per OSHA 1910.120

ORGANIZATION: Complete below or see Attachment - Communication / Organization

Incident Commander _____ Radio/Telephone: _____

Deputy Incident Comm. _____ Radio/Telephone: _____

Safety Officer _____ Radio/Telephone: _____

Public Affairs Officer _____ Radio/Telephone: _____

EMERGENCY PLAN: (See Site Map and Site Emergency Response Plan Attachments)

☐ Alarm system: _____

☐ Evacuation Plan: _____

☐ First aid locations: _____

Notify the following as soon as possible:

☐ Hospital: _____ Phone: _____
☐ Ambulance: _____ Phone: _____
☐ Air Ambulance _____ Phone: _____
☐ Fire: _____ Phone: _____
☐ Police: _____ Phone: _____

PRE-ENTRY BRIEFING for RESPONDERS ENTERING EXCLUSION ZONE :

☐ Date/Time completed: _____ By: _____
☐ Hazards discussed (attach training documentation)
☐ Other topics: _____

Date Plan Completed: _____ By: _____

SPECIFIC SITE SAFETY PLAN (SSSP) - SITE MAP

Site Map may include the following information:

- Site Name and Location
- Work Zones
- First Aid Locations
- Surrounding Land Uses
- Primary and Secondary Evacuation Routes
- Assembly Points
- Alarm System

Attach Map in place of this form.

SAFETY MEETING

Date: _____ Time: _____

Location/Project: _____

☐ Slips,Trips,Falls / Lifting	☐ Hydration/Warm Fluids/Food	☐ Heat/Cold Stress/Fatigue	☐ Weather Conditions
☐ Define PPE / PFD Needs	☐ NO Work Alone/ NO Smoking	☐ Security Briefing Issues	☐ Wildlife/Vegetation
☐ Respiratory Protection	☐ Safety Stop!/ TAKE 5!!!! (Anyone can stop/Sup must start)	☐ Rigging Equipment	☐ Communications
☐ First Aid/Medical	☐ Vehicles / Vessels	☐ Decontamination	☐ Job Tickets
☐ Personal Medications	☐ Emergency Procedure / Alarms	☐ Hazardous Materials	☐ Media Contact Protocol
☐ Day or Night Op Needs	☐ Bathrooms	☐ Hazwoper Training	☐ SSSP/SSP Review

Other Hazards/Information: _____

	PRINT NAME & Co.	SIGNATURE		PRINT NAME & Co.	SIGNATURE
1			11		
2			12		
3			13		
4			14		
5			15		
6			16		
7			17		
8			18		
9			19		
10			20		

Supervisor: _____

Copy to Site Safety Officer: (YES or NO)

Site Safety Officer's Name: _____

Date copy given: _____ Time: _____

APPENDIX C
CALL OUT LISTS

(USOR Personnel, Contract Personnel, Vendors)

For Oil Spills &
Refinery Emergencies

Section C-1, List #1
USOR Spill Management Personnel Call Out List

Name		Phone Number
Primary Supervisors (Listed in order of priority)		
D.H. Yoder	VP Manufacturing	(253) 383-1651 ext. 220 Work (253) 426-0838 Cellular
G.A. Hills	Maintenance & Const. Mgr.	(253) 383-1651 ext. 288 Work (253) 377-2189 Cellular
R.J. Mori	Operations Supt. Zone #3	(253) 383-1651 ext. 251 Work (253) 377-0909 Cellular
H.R. Van	Operations Mgr.	(253) 383-1651 ext. 224 Work (253) 377-0902 Cellular
R.W. Smith	Engineering Mgr.	(253) 383-1651 ext. 272 (253) 377-0927 Cellular
T.T. Hullinger	Laboratory Mgr.	(253) 383-1651 ext. 257 Work (253) 377-0921 Cellular
Support Supervisors (No Priority)		
H.C. Ballou	Maintenance Supvr.	(253) 383-1651 ext. 285 Work (253) 377-0911 Cellular
D.M. Barkley	Inspector	(253) 383-1651 ext. 248 (253) 606-4432 Cellular
H.B.Brigham	Economics & Planning Mgr.	(253) 383-1651 ext. 264 Work (253) 377-0926 Cellular
R.P. Calhoun	Maintenance Supvr.	(253) 383-1651 ext. 263 Work (253) 377-0914 Cellular
D.A. Palmer	Maintenance Supvr.	(253) 383-1651 ext. 278 Work (253) 255-8194 Cellular
S.W. Carrell	Maintenance Supvr.	(253) 383-1651 ext. 210 (253) 405-1161 Cellular
E.E. Henningsen	Maintenance Supvr.	(253) 383-1651 ext. 320 (253) 377-0918 Cellular
P.R. Borth	Operations Supt.	(253) 383-1651 ext. 259 Work (253) 377-0903 Cellular
E.A. Kontos	Operations Supt.	(253) 383-1651 ext. 200 (253) 377-2191 Cellular
P.E. Noges	Staff Planner	(253) 383-1651 ext. 284 Work (253) 377-2386 Cellular
J.B. Phipps	Operations Engineer	(253) 383-1651 ext. 286 (253) 377-2201 Cellular

Support Supervisors (Continued - No Priority)

J.D. Shields	Senior Project Engineer	(253) 383-1651 ext. 217 Work (253) 377-2384 Cellular
B.M. Winder	Process Engineering Manager	(253) 383-1651 ext. 258 (253) 377-0915 Cellular
J.P. Williamson	Senior Pipeline Inspector	(253) 383-1651 ext. 282 (253) 377-0933 Cellular

Oil Movement Supervisors (Listed in order of priority)

R.J. Mori	Operations Supt. - Oil Movements	(253) 383-1651 ext. 251 Work (253) 377-0909 Cellular
M.J. Smith	Construction Coordinator	(253) 383-1651 ext. 232 (253) 377-0946 Cellular
J.B. Waugh	Day Coordinator	(253) 383-1651 ext. 273 (253) 377-3088 Cellular

Safety & Training

C.C. Moritz	Safety Supvr./On Site Fire Fighting Coordinator	(253) 383-1651 ext. 260 Work (253) 606-3565 Cellular
S.A. Arnold	Manager of Safety & Security	(253) 383-1651 ext. 265 (253) 405-1498 Cellular
P.M. Whipple	Safety Administrator	(253) 383-1651 ext. 605 (253) 377-5656 Cellular

Logistics Support

J.E. Granrud	Material Control Supervisor	(253) 383-1651 ext. 270 Work (253) 377-0935 Cellular

Environmental Support

T.J. Gaub	Environmental Mgr.	(253) 383-1651 ext. 239 Work (253) 377-0934 Cellular
K.B. Iams	Staff Environmental Engineer	(253) 383-1651 ext. 266 Work (253) 377-3091 Cellular

Public Relations

M.E. Nielsen	Administrative Services Mgr.	(253) 383-1651 ext. 241 Work (206) 377-2750 Cellular

Shift Supervisors (Priority based on who is on duty)

K. Bush	Shift Supvr.	(253) 383-1651 ext. 237 Work (253) 377-0910 Cellular
M. Daniels	Shift Supvr.	(253) 383-1651 ext. 237 Work (253) 377-0910 Cellular
J. Morrison	Shift Supvr.	(253) 383-1651 ext. 237 Work (253) 377-0910 Cellular
M. Look	Shift Supvr.	(253) 383-1651 ext 237 Work (253) 377-0910 Cellular
F.R. Johnson	Shift Supvr.	(253) 383-1651 ext 237 Work (253) 377-0910 Cellular
D. Mac Arthur	Shift Supvr.	(253) 383-1651 ext 237 Work (253) 377-0910 Cellular

Insurance Representative

D. E. Rietmann	USOR	(253) 680-3298 Work

Section C-2, List #2

USOR Spill Response Personnel

This consists of additional USOR personnel from the Engineering Department, Design Department, Maintenance Department and Operations Department. USOR maintains an updated list of all USOR personnel at the scalehouse including their addresses and phone numbers since scalehouse personnel would serve an integral role in notifying appropriate spill response personnel in the event of an emergency. This information was not printed in this section in order to protect the confidentiality of the employees involved.

Neighboring Property Owners

The phone list for property owners who neighbor USOR can be found in Appendix S of USOR's Emergency Response Procedures Manual. This manual can be accessed on the refinery intranet by clicking on the Manufacturing tab, then clicking on the Safety and Security tab, then clicking on the Safety Manuals tab and then clicking on the Emergency Response Procedures tab.

Section C-3, List #3

Federal, State, Local Agency Call Out List

Agency	Phone Number
National Response Center	1-800-424-8802
WA Emergency Management Division	1-800-258-5990
USCG Puget Sound Marine Safety Office	(206) 217-6003
Department of Ecology - Southwest Office	(360) 407-6300
Tacoma Fire Department	911 Emergency Assistance
	(253) 591-5737 Business
Tacoma Police Department	911 Emergency Assistance
	(206) 593-4911 Business
Tacoma/Pierce County LEPC	(253) 591-5798
US Environmental Protection Agency	(206) 553-1263
Dept. of Transportation - Washington, DC (Product Releases from McChord Pipeline Co.)	1-800-424-8802
WA Utilities & Transportation Commission (Product Releases from McChord Pipeline Co.)	1-888-321-9146

Other

Utilities Underground Location Center	1-800-424-5555 or 811

Section C-3, List #3 (Continued)

Oiled Wildlife Care – Contact Information

Agency	Phone Number
Oiled Wildlife Care Contractors	
Focus Wildlife http://www.focuswildlife.net/	(310) 386-5965
International Bird Rescue Research Center http://www.ibrrc.org/index.html	(503) 338-7490
Islands' Oil Spill Association http://iosaonline.org/	(360) 378-5322
Oiled Wildlife Care Network http://www.vetmed.ucdavis.edu/owcn/	(530) 979-7561
Progressive Animal Welfare Society (PAWS) http://www.paws.org/wildlife/about_center/	(425) 787-2500 ext. 815
Tri-State Bird Rescue (This is an East Coast company) http://www.tristatebird.org/	(302) 737-7241
Mobile Wildlife Rehabilitation Trailers	
Marine Spill Response Corporation (MSRC)	(800) 645-7745
Clean Rivers Cooperative (Portland, OR)	(503) 220-2040
Washington Department of Fish and Wildlife (Fife, WA)	(360) 534-8233
Agency Contact Information	
U.S. Fish & Wildlife Service Response Coordinator	(360) 753-9440 main office (360) 971-6000 24-hr pager
Washington Department of Wildlife	(360) 534-8233
U.S. Fish & Wildlife (Enforcement)	(425) 883-8122
U.S. Fish & Wildlife (Permits)	(503) 872-2715

Section C-4, List #4

Primary Spill Response Contractor Call Out List
(Priority Based on Type of Spill)

Contractor	Phone Number
Marine Spill Response Corporation	
24 Hour Emergency Phone	(800) 645-7745 – Primary
24 Hour Emergency Phone	(800) 259-6772 – Alternate
24 Hour Emergency Phone	(732) 417-0175 – Alternate (Commercial)
24 Hour Emergency Phone	(703) 326-5609 – Back-up System
24 Hour Emergency Fax	(800) 635-6772
24 Hour Emergency Fax	(732) 417-0097 – Commercial
Pacific Northwest – Main Office	
1330 Industry Street, Suite 300	(425) 252-1300 - Business Phone
Everett, WA 98203-7123	(425) 339-1229 – Business Fax
Guardian Industrial Services Inc.	(253) 536-0455 - Work (24 Hour)
1813 99th St. E	(253) 405-7255 – Cellular (24 Hour)
Tacoma, WA 98445	(253) 536-3072 – Fax
Global Diving & Salvage Co.	(206) 623-0621 - Work (24 Hour)
3840 West Marginal Way SW	(800) 441-3483 – Work Toll Free
Seattle, WA 98106	(206) 932-9036 - Fax

Section C-4, List #4 (Continued)

Response Resources for Spills to Groundwater
(Priority Based on Type of Spill)

Contractor	Phone Number
Guardian Industrial Services Inc. 1813 99th St. E Tacoma, WA 98445	(253) 536-0455 - Work (24 Hour) (253) 405-7255 – Cellular (24 Hour) (253) 536-3072 - Fax
J&B Excavation Company P.O. Box 1416 Puyallup, WA 98371	(253) 606-0233 – Cellular (Sam Jenkins) (253) 606-1641 – Cellular (John Jenkins) (253) 840-0322 - Fax
Cascade Drilling Inc. 19404 Woodinville-Snohomish Road Woodinville, WA 98072	(425) 485-8908 – Work
Dalton, Olmsted & Fuglevand Inc. 10827 NE 68th St., Suite B Kirkland, WA 98033	(425) 827-4588 - Work (425) 739-9885 – Fax (206) 660-3466 – Cellular (Dave Cooper)

Section C-5, List #5

Ancillary Support Services Specific to McChord Pipeline Co.
(Priority based on need)

Support Service	Phone Number	
Utilities Underground Location Center	1-800-424-5555 or 811	
Summit Water District	(253) 537-7781	
Puget Sound Energy	(888) 225-5773	
Tacoma Public Utilities	(253) 383-2471	
Fire Departments		
Central Pierce Fire & Rescue	911	
Tacoma Fire Department	911	
McChord A.F.B. Fire Dept.	(253) 982-2603	
Puyallup Indian Tribe	(253) 573-7800	General
	(253) 680-5620	Tribal Law Enforcement
	(253) 680-5566	Fisheries Director
McChord A.F.B. Fuel Storage Location Supvr.	(253) 982-7201	
	(253) 982-7202	Fax
McChord A.F.B. Fuel Storage Location Operations	(253) 982-7203	
	(253) 982-7204	
McChord A.F.B. Fuels Officer	(253) 982-3549	
	(253) 982-3719	
McChord A.F.B. Civil Engineering	(253) 982-5739	
Swan Creek Park		
Pierce County Dept. of Emergency Mgmt	(253) 798-7470	(24 hour)
Wellhead Protection Areas (along McChord Pipeline)		
Primary Emergency Notification Contacts:		
Pierce County Dept. of Emergency Mgmt	(253) 798-7470	(24 hour)
Central Pierce/Tacoma Fire Departments	911	
Secondary Emergency Notification Contacts (Affected Water Districts):		
Lakewood Water District	(253) 588-4423	
Parkland Light and Water	(253) 531-5666	(24 hours)
City of Tacoma Water Control Center	(253) 502-8344	(24 hours)
Washington Department of Transportation (Supt. Highway Maintenance – Tacoma Division)	(253) 983-7550	

Section C-6, List #6

Waste Disposal Location Contact List
(Priority based on type of spill)

Waste Disposal Location	Phone Number
Waste Management, Inc. *Columbia Ridge Facility* 18177 Cedar Springs Lane Arlington, OR 97812	(541) 454-3220 - Work (541) 454-3247 - Fax
Contact: Amanda Payne	(206) 763-0590 - Work
Chemical Waste Management 17629 Cedar Springs Lane Arlington, OR 97812 Contact: Kristin Castner	(541) 454-2643 – Work (541) 454-3247 – Fax
Clean Harbors 26328 79th Ave. S Kent, WA 98032 Contact: Leslie Nash	(253) 639-4240 – Work (800) 645-8265 - Work (253) 639-4249 – Fax
Land Recovery Inc. 30919 Meridian St. E Graham, WA 98338 Contact: Ray Thompson	(253) 208-4096 - Work (253) 847-7713 - Fax
Emerald Environmental Services Contact: Eric Orwoll *Tacoma Facility* 1825 Alexander Ave. Tacoma, WA 98421 *Seattle Facility* 9010 E Marginal Way Tukwila, WA 98108-4005	(206) 255-5737 - Work (206) 832-3158 - Fax

Section C-6, List #7

EMERGENCY PHONE BOOK

For

U.S. Oil & Refining Co.

and

McChord Pipeline Co.

Prepared By

U.S. Oil's Maintenance Dept.

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DISTRUBUTIONS

AJC, MEN, TTH, MS (2 EA), JEG, RWS (2), JPW, HEH (2), JBP, SS (4), DMB, JDS, EAK, SAA (2), TJG, CCM, JAT, KBI, PLC, GAH, HRV (2), KAK, PRB, LAW (2), DSH (2), PEN, RJM, MJJ, NDP, EAN, CGH, MRL, MAK, VER, PEC (51)

Section One—VENDORS, EQUIPMENT, SUPPLIES AND MATERIALS

10/20/10

BEARINGS			
	Applied Industrial Technologies (Bearings Inc.)		
		24 Hours	253 383 5363
		After Hours Only cell	253 278 1090
	Kaman Industrial Technologies Corp.		
		24 Hours	253 383 2723
			800 423 7832
	Jeremy Denny	Cell	253 222 4307
	Roger Young	(b) (6)	[redacted]
	Prof. Acct. Manager	Cell	253 376 6007
	Dennis Harvey	(b) (6) [redacted]	
	John Briggs		
	Inside Sales		
	Don Sprague	(b) (6) [redacted]	
	Inside Sales		
	Kris Cline (warehouse manager)		
	Old Gerrish Bearing		
	1011 East "E" ST Tacoma, WA	Office	253-572-7070
	Jason Pingrey	cell	253-820-6280
CONCRETE			
Suppliers	**Holroyd**	Office	253-474-0725
	Randy Campbell	(b) (6) [redacted]	
	Glacier northwest	Days	800-750-0123
		Dispatch	253 272 8314
	Darrell Hermans	Office	206 764 3025
		Cell	206 786 8529
	Michael Wagy	Cell	253 380 2358
	Bruce Lanham	(b) (6)	[redacted]
		Cellular	206 909 1581
COURIER	**Air**		
	Cap Logistics	24 Hr	800 227 2471
	Exel Transportation	24 Hr	800 929 1640
	(Total Transportation Services)		
	Ground		
	Far West Freight Systems	24 Hr	800 999 7581
ELECTRICAL	**Graybar**	Emergency Phone	800-GRAYBAR
	North Coast Electric	24 Hours	253 383-1606
	Lynn Beaulaurier (Branch Manager)	Cell	253 219 9806
	John Oster (U.S Oil rep.)	Cell	253 973 9169

Section One—VENDORS, EQUIPMENT, SUPPLIES AND MATERIALS			
ELECTRICAL (cont)			
	Wesco	24 Hours	800-767-3101
		Pager (24 Hrs.) cell	206-484-4357
	John Bray	(b) [redacted]	[redacted]
		Cell	253 332 3015
	Gex Pro/GE Supply	Emergency Phone	800-243-2124
		Toll Free	800-527-4623
		Fax	425-254-7117
	Bruce Ye		425-254-7170
	Account manager	Pager	360-710-1414
	LT Monson		425-2547179
	Garrett Mock (Branch Mgr.)		425-254-7199
	Huong Delabar (Ops Mgr.)		425-254-7193
	Jim Lewis (Warehouse Supervisor)		425-254-7162
	GE Engineering Service		503-830-8712
FASTENERS			
	Tacoma Screw	Office	253-383-4435
	Joe Calhoun (Mg of tide flats location)	After Hours (Home)	(b) (6) [redacted]
	MT. Hood	Office	503 233 3330
		Alternate #	888 323 3434
	Kevin Bogle	(b) (6) [redacted]	
	Jerry Lind		
	Fastco	Office	253 383 1767
	Lonny Murrey	(b) (6) [redacted]	[redacted]
		Cell	253 278 7782
	Bob Cooley	(b) (6) [redacted]	
	Jim Dunn		
		Cell	253 278 7783
	Tom Phillips	(b) [redacted]	[redacted]

Section One—VENDORS, EQUIPMENT, SUPPLIES AND MATERIALS

GASES, SPECIALTY

Air Liquide America Corp.	24 Hours	800 323 1970
Distribution	(local N2 Delivery)	800 323 1970
Field Service		800 527 4374
Praxair/Field Service	Office	206 624 7033
On Call	After Hours	206 255-3475
Brian Abbott	(b) [redacted]	[redacted]
	Cell	206-396-5534
Northstar Chemical	Office	503 625-3770
	Fax	503-625-1478
	After Hours	503-504-8301
Matt Wergen (Gen.Mg)	Cell	503-793-4515
Walt Story (Ops Mg)	Cell	253-606-3580
Univar	Office	360-752-0306
W.Matthew Parry, P.E.	Cell	206-335-9781
	(b) [redacted]	[redacted]

GASKETS

Paramount Supply	Office	253-303-3111
Edward Orton call first	(b) [redacted]	[redacted]
	Cell	253-686-8612
Bob Watson (rep)	(b) [redacted]	[redacted]
	Cell	253-686-8601
Lamons	Office 24 Hours	360-410-7819
Pete Mosier	Cell	360-733-3831

HOSES

Timco	Office	253-272-0397
Bill Shoopman (lives in Eatonville)	cell	253-732-0745
Rory Beeler	cell	253-606-2917

Machine Shop

Flame Spray Northwest	Office	206-762-4144
	Gary Pattie	253-332-3612
	Chester Orint	206-459-5851
	Cheryl Orint	206-459-7191

Section One—VENDORS, EQUIPMENT, SUPPLIES AND MATERIALS

METALS, SPECIALTY

EDGEN	24 hr	626-337-3788
Terty Luigs		
Dan hirata	Cell 1st contact	

PIPE VALVES & FITTINGS

Puget sound Pipe	Office	253-796-9350
Bill Winters	(b) (6) [redacted]	
Ferguson/Familian		
Tacoma	Office	253-922-9060
Brian Paup	Cell	253-405-0094
Marshall Moffat Home)	Primary	(b) (6) [redacted]
(Facility Manage)	cell	253-405-7955
Larry Beck (Home) Seattle	Secondary	(b) (6) [redacted]
(Warehouse Manager)		
Seattle	Days	206-767-7700
	Off hours	206-467-4031

TUBING

NW Fluid Solutions	Office	425-821-4515
Eric Thompson (sales rep)	Cell	253 222 1395
Bruce Hedlund	Cell	425 765 1800
Suzanne Hedlund	Cell	425 765 2862

RENTAL EQUIPMENT

Aaberg Rentals	Office	253 272 1138
Hank Bacon	(b) (6) [redacted]	
	Cell	253 606 6391
Sunbelt Rentals	Office	253-952-8399
Mike (manager)	Cell	25-405-2992
Hertz Equipment	24 Hours	253 922 3852
N.C. Power	24 Hours	253-896-0890
Northwest Wire Rope	24 Hours	253 572 8981
Rockney Nigretto	(b) (6) [redacted]	
	Cell	253-691-9963

Section One—VENDORS, EQUIPMENT, SUPPLIES AND MATERIALS

RENTAL EQUIPMENT (cont)

Prime Energy Systems	24 Hours	800-736-8267
Star Rental	Office	253 474 0577
Mark Lewis	(b) (6) [redacted]	
	Cell	253-606-1696
Pat Moore	(b) (6) [redacted]	
	Cell	253-606-2622
Colin Linn	(b) (6) [redacted]	
	Cell	253-376-1641
Will Jones	Cell (primary)	253-651-7721
	(b) (6) [redacted]	
United Rental	Office/24 Hr	253-838-7767
	Fax	253-288-0985
Mark Hempfl	Cell	253-250-1457
Mike Grimm	**Cell (Primary)**	253-405-2992

RENTAL TOOLS

Stellar	Days	253 593 3424
	Or	253 383 2700
Mike Matthws	Cell	253-307-3254
Dave Manzanares	cell	253-362-9652
Tomm Murray(wrehse mng)	(b) (6) [redacted]	

SAFETY EQUIPMENT

National Safety	Days	253-872-7471
	Toll Free	800-213-7092
Jeff Wrye	**Cell (Primary)**	360-286-1778

VALVE TESTING & REPAIR

Bay Valve Services	Office 24Hr	206-782-7800
Emergency number will be given at the end of the phone message		
Doug Beck	**Cell (Primary)**	206-300-7668
(Rep F/USOR)		
Collin Kelly	(b) (6) [redacted]	
Field supervisor	Cell	253 334 1169

Section Two—CONTRACTORS

Berg Scaffolding Co Inc.		Office	253-383-2035
	Roberts, Kelly	(b) (6)	[redacted]
		Cell	253-606-9628
	Johnson, Dwight	(b) (6)	[redacted]
		Cell	253-606-9626
C. H. Murphy/Clark-Ullman		Office 24Hr	253 475-6566
			800-234-6255
	Dolan, Mike	(b) (6)	[redacted]
		Cell Phone	253 905-8942
		Pager	253 594-5647
	Hulst, Michael	(b) (6)	[redacted]
		Cell	253 405 1044
Cummin NW		Office/Marine 24 Hour	425 204 5590
		Office/Diesel 24 Hour	425-235-3400
		Brad (Tech) Cell	425-235-3400
Dickinson Eq Co Inc.	24 hr (G-1901)	Office	206-285-1090
(compressor)	Dave Mayfield	Cell	206-396-0459
Dresser-Rand		Office (day)	206-762-7660
	Mark Hartwick	Cell	206-607-7925
	(client service Mg)		
	Jeff Whitman	Cell	360-298-0204
	Rick Manney	Cell	206-819-4315
EA Services	Office/24 hr emerg.		360-693-0703
Electrical Contractors		Office	253-383-5393
	Haislip, Phillip	H(b)	[redacted]
		Cell	253-377-7025
	Haislip, Anthony	Home	(b) (6) [redacted]
		Cell	253-377-7029
on site	Leonard, Sydney	Home	(b) (6) [redacted]
		Cell	253-377-7028
	Dexter, Tyler	Cell	
Flamespray NW	John Everson	Office	206-762-4144
Machine Shop	Gary Pattie	Cell	253-332-3612
	Chester Orint	Cell	206-459-5851
	Cheryl Orint	Cell	206-459-7191

Section Two—CONTRACTORS

General Mechanical		Office	253-627-8155
	Dale Hoover	Home	(b) (6) [redacted]
		Cell	253-606-5982
	Al Boyce	Home	(b) (6) [redacted]
		Cell	253-606-5981
on site	Jim Bertram	Home	(b) (6) [redacted]
		Cell	253-606-3695
on site	Dave Manners	Cell	253-606-5978
Global Diving	Tim Beaver	24 Hr	206-623-0621
Madsen Electric		Office	253-383-4546
	Steve MacDougall	Home	(b) (6) [redacted]
		Cell	253-279-6137
		Pager	253-552-0899
	Brian Foster	Home	(b) (6) [redacted]
		Cell	253-678-0664
	Larry Leslie	Home	(b) (6) [redacted]
	Tony Pellessier	Home	
		Cell	253-380-1752
National Concrete Cutting		Office	206-762-2188
		Toll	800-551-0511
	Chad Fowler	Cell	253-606-2405
	Bob Reardon	Cell	206-714-9909
Ness Crane		Office 24Hr	206-784-1054
		Toll	888-784-1054
	Gary Streitmatter	Cell	206-491-4068
Olympic-Engineered Sale		Office (Day)	425-454-0701
	Dave Kentala	Home	(b) (6) [redacted]
		Cell	206-953-6640
Olympic Tug & Barge		Office 24 Hr	206-628-0051
Performance Abatement		Office (Day)	206-467-8733
	Paul Handway	Cell	206-571-6479
	Gary Hansen	Cell	206-793-1497

Section Two—CONTRACTORS

Performance Construction		Office	206-623-8750
	Steve Dana	Home	(b) (6) [redacted]
		Cell	206-250-1901
	Curt Watts	Cell	206-793-4542
PM Northwest		Office 24 Hrs	360-424-3209
	John Huntley	Cell	360-319-7613
	Dick Huntley Jr.	Cell	360-319-7612
	RW Huntle Sr.	Cell	360-319-7614
Power Serv Inc. (track mobile unit)	Dave Eubanks	Office	971-998-9963
Puget Sound Instrument		Office 24 Hrs	253-922-7890
Streich Brothers		Office	253-383-1491
	Fred Sutterfield	24 Hrs	253-606-5297
	John Streich	Home	(b) (6) [redacted]
Sicklesteel Crane	Tacoma	Office	253-396-1600
	Mt. Vernon	Office 24 Hr	360-428-3811
	Scott Brown	Cell	253-255-5868
Tacoma Marine Repair		Office	253-272-9014
	Greg Grenier	Home (after hours)	(b) (6) [redacted]
Total Western Inc.		Office	360-428-3616
	Tim Jorge	Home	(b) (6) [redacted]
	on site	Cell	253-606-6819
	Allen Gardner	Home	(b) (6) [redacted]
	Operations	Cell	425-508-7143
	Dennis Murry	Home	(b) (6) [redacted]
	Manager	Cell	425-508-7190

Section Three—FIRE & SAFETY EQUIPMENT SERVICES

MEDICAL SERVICES		
AMBULANCE		911 (emergency)
ST. JOSEPH HOSPITAL EMERG		253 426 6663
BURN CENTER (ST. JOSEPH)		253 426 6677
TACOMA GENERAL EMERG.		253 403 1050
PORT CLINIC (7 AM TO 4:30 PM)		253-272-6677
GOVERNMENT AGENCIES		
TACOMA FIRE DEPARTMENT		253 627 0151
Non-Emergency/communication for alarm testing/non-published Business		253 591 5737
PIERCE COUNTY SHERIFF		911 (emergency)
TACOMA POLICE DEPARTMENT		911 (emergency)
Business		253-798-4721
Wa. State Patrol		253-536-6210
U. S. COAST GUARD COMMAND)		206 217 6002 (24 hour)
WASHINGTON STATE DOE		
Business		360 407-6300 (24 hour)
NATIONAL RESPONSE CENTER		800 424-8802 (24 hour)
WASHINGTON EMERGENCY		
Management Division		800 258-5990 (24 hour)
MISCELLANEOUS EQUIPMENT & SERVICES		
Simplex Grinnell	Cell	206-291-1400
BASIC FIRE & SAFETY	Office	360-829-2428
Donna Witkowski	Home	(b) (6) [redacted]
MSA Emergency		800-MSA-5555
Mine Safety Appl,	Direct Day	412-967-3000
Intergrated Protection Service		360 666-8857
John B. Wetterau	Cell	360 921-7497
NATIONAL FOAM		610 363-1400 (24 hour hotline)
Sea Western (SCBA)		800-327-5312
Brian Morris	Cell	206-618-6689
	Home	(b) (6) [redacted]

Section Three—FIRE & SAFETY EQUIPMENT SERVICES (cont)

MISCELLANEOUS EQUIPMENT & SERVICES

WILLIAMS FIRE & HAZARD CONTROL	24 Hr	409-727-2347
		281-999-0276
Tom Henning	Office	562-449-8420
	Cell	562-201-0756
Chemical Emergency Hotline		
CHEMTREC-24 HOUR HOTLINE		800 424-9300

SECURITY CALLOUT LIST

Stephanie Arnold	Cell	253 405-1498
	Home	(b) (6) [redacted]
Alternate Marcia Nelson	Cell	253-377-2750
Securitas		
Dispatch (answer service after hours)		800-9447831

RAIL ROAD

TACOMA RAIL OPERATIONS CENTER

YARD MASTER	253-502-8867
CLERK	253-396-3290
CLERK	253-396-3291
TOWER FAX	253-922-5679

(see contractors Power Serv Inc for Track Mobile Unit)

HIGH VOLTAGE CALLOUT LIST

TACOMA PUBLIC UTILITIES	Office	253-383-2471
DISPATCH/OUTAGE	24 Hour	253-502-8602
UTILITY OPERATOR		253-502-8000
WATER	After Hour	253-502-8344
ASCO SERVICE INC	24 Hour	800-800-2726
(TRANSFER SWITCH)	Office	425-885-1957

Section Four-VACUUM TRUCKS & HEAVY EQUIPMENT (Tank Cleaning)

VACUUM TRUCKS

GUARDIAN INDUSTRIAL		
Primary	Office 24 Hr	253 536-0455
	Dave Cell	253-536-0455
On Site	John Heman Cell	253-405-7255
NRC ENVIROMENTAL SER.	Day office	253-872-8988
AKA River's Edge	after Hrs Emergency	800-377-7455
PSC (AKA Phillips Services)	Office (Bakerfield, Ca)	661-397-4554
"	Ken Kodysz (Primary)	661-301-7178
"	Bret Leavitt Cell (Field Agent)	360-815-0885
"	Jeff Wells (Cell local)	253-377-1228
RESOURCE RECOVERY	24 Hr	253 383-3044
Transprotation Department of PSC		
PRO VAC	24 Hr	253 435 4328
MARINE VACUUM SERVICE	24 Hr	206 762-0240
		800 540-7491
COWLITZ CLEAN SWEEP	24 hour hotline	360 532-4309
NATIONAL RESPONSE CORP	24 hour hotline	206 546 7150
(SEA CORE HOLDING COMP) AKA FOSS ENVIRO SERV		800 337-7455
HEAVY EQUIPMENT & TRUCKS		
WOODWORTH	Offfice (Days)	253 383-3585
	Butch Brooks (Home)	(b) (6)
	(Vice Pres) Personal Cell	253 279-9025
	Work Cell	253-307-4925
J & B EXCAVATION	John Jenkins	253 922-7811
		253-606-1641
	Sam Jenkins	253-606-0233)
	Fran Larken	253 475-8692
		253-606-1690
ASPHALT PATCH	Office Days	253 535-2590
	Mark Looker Cell	253 377-1850
	Home	(b) (6)
	Jay Looker (Home)	(b) (6)
TUCCI & SONS	Office (Days)	253 922-6676
	Mike Fizett Cell	253-606-1037
	Josh Lejeune	253-377-0791
ROADWAY CONSTRUCTION	Office	253 593-5007
	John (Owner)	253-606-5530

Section Five—ANCILLARY SUPPORT SERVICES (Priority based on need)

HELICOPTER SERVICE

Northwest Helicopters Inc	**360-754-7200 (24 hours)**
1000 85th Ave SE	360-754-1767 (Fax)
Olympia WA 98501	
contact Doug Uttecht (General Manager)	
E-Mail (duttecht@nwhelicopters.com)	
World Wind Helicopter/Aero	**425 271 8441 (24 hours)**
800 w. Perimerter Rd #A	Answering service will contact on call pilot
Renton, WA 98055	206-406-2163 (Cell)
Contact 1) Rick Dominy, Gen Mng	425-271-8442 (Fax)
e-mail (rdominy@wwheli.com)	

Oil Off-Loading Locations & Port of Tacoma

Des Moines Marina	**North of Brown's Point**
—S. 227 and Dock Street	206 824-5700
Steilacoom Marine/Ferry Dock	**South of the Narrows**
South of the Narrows	253 582-2600
Port of Tacoma General/Admin.	253 383 5841
Operation (day)	253 383 9420
Blair Terminal (Super. Tom Brown	
On Duty (night)	253 279 2607
Port Security 24 hour (PRIMARY)	**253 383 9472**
Commencement Bay Area	Blair Waterway
USOR Dock	253 383-1651 (ext. 481 or 648)
Husky Terminal & Stevedoring Inc. Terminal 4	253 627 6963
—Jones Stevedoring Terminal 4	206 763-1130 (24 hrs)
Security 24 hour	253 680 2847
—Rob Bohlman – Safety Supv.	253 572-5777
Steve Bassett (Vice President) cell	253 405 4440
Wa. United Terminal	253 396 4900
Security 24 hour	253 396 4913
Pierce County Terminal	253 896 8300
24 hour Security	253 896 8372
Gate	253-896-8313
Totem Ocean Trailer Express Terminal	253 238 8400
—Port of Tacoma Terminal 7	(Sitcum Waterway)
Olympic Container Terminal (Gate)	253 779 6500
APM Terminal (Gate)	253 680 4464
Maersk Sealand	800 321 8807
Horizon Lines	877 678 7447

Section Six—AGENCY NOTIFICATION LIST (from Facility Oil Response Plan)

AGENCY NOTIFICATION LIST	
National Response Center	1-800-424-8802
U.S. Coast Guard, MSO Puget Sound (Command Center)	206-217-6002
U.S. Environmental Protection Agency	206-553-1263
WA Dept. of Ecology, SW Office	360-407-6300
WA Emergency Management Division	1-800-258-5990
Tacoma Fire Department	911
Tacoma/Pierce County LEPC	253-591-5798
Utilities & Transportation Commission (MPL)	1-888-321-9146
DOT – Washington, DC (MPL)	1-800-424-8802
PRIMARY RESPONSE CONTRACTOR NOTIFICATION LIST	
Marine Spill Response Corporation	1 800 645 7745
Global Diving & Salvage Co.	206-623-0621
Guardian Industrial Services, Inc.	253-536-0455
ADDITIONAL PHONE NUMBERS	
Federal Aviation Administration	425-227-1389
AMBULANCE	911
CLASSIC HELICOPTER SERVICE	206 767 0515
INSURANCE REPRESENTATIVE	253 680 3298
KCPQ – TV (Evacuations)	206 674 1313
KIRO TV	206 448 3850
KOMO TV	206-404-4000
KKMO, KGNW, KKOL, KLFE – (Radio Evacuations)	253-922-5293
KIRO – Radio (Evacuations)	206-726-6397
Marine Exchange	206-443-3830
National Weather Service (NOAA)	206-526-6087
Pierce County Sheriff	911
Port of Tacoma Operations	
Switchboard	253 383 5841
Dayshift Superintendent on Duty	253 383 9420
Off shift- Superintendent on Duty	253 279 2607
Security	253 383 9472
J & B Excavation Company(Sam Jenkins Cell)	253 606 0233
St. Joseph Hospital (Emerg)	253 426 6660
Tacoma City Water/Public Utilities (Water Day Number)	253 502 8384
After 4:30 pm (Water)	253 502 8344
TACOMA GENERAL HOSPITAL	253 403 1050
Tacoma Police Dept.	911
U.S. Coast Guard Puget Sound VTS (24 hours)	206-217-6050
WA Dept. of Fish & Wildlife (pager #)	360-534-8233
Washington United Terminal Security 24 Hour	253 396-4913

Section Six—AGENCY NOTIFICATION LIST (from Facility Oil Response Plan)

SUPPORT SERVICES SPECIFIC TO McCHORD PIPELINE CO.	
One Call System Notification (utility center)	1-800-424-5555
Summit Water District	253-537-7781
Fire Departments	
Central Pierce Fire & Rescue	911
Tacoma Fire Department	911
McChord A.F.B. Fire Department	253-982-2603
Puyallup Indian Tribe	253-573-7800
Tribal Law Enforcement	253-680-5656
Fisheries Director	253-845-9225
McChord A.F.B. Fuel Storage Location Supervisor Terry Browning	253-982-7205
	253-982-7202
McChord A.F.B. Fuel Storage Location Operations	253-982-7203
	253-982-7204
McChord A.F.B. Fuels Officer	253-982-5976
	253-982-2107
McChord A.F.B. Civil Engineering	253-982-2583
Swan Creek Park	253-798-7470 24 hr.
Pierce County Dept. of Emergency Mgmt.	
Wellhead Protection Areas (along McChord Pipeline)	
Primary Emergency Notification Contacts:	
Pierce County Dept. of Emergency Mgmt (same as above).	253-798-7470 24 hr
Central Pierce/Tacoma Fire Departments	911
Secondary Emergency Notification Contacts (Affected Water Districts)	
Lakewood Water District	253-588-4423
Parkland Light and Water	253-531-5666
City of Tacoma Water Control Center	253-502-8344 24 hr.

APPENDIX D

SPILL RESPONSE FIELD DOCUMENT

For Oil Spills &
Refinery Emergencies

U.S. Oil & Refining Co.
McChord Pipeline Co.

APPENDIX D

Spill Response Field Document

The following sequence outlines the steps that **MUST** be taken, in order of priority, in the event that you are the first person to discover or arrive at an oil spill:

1. STOP ALL PRODUCT TRANSFER.

2. NOTIFY SHIFT SUPERVISOR OR NEAREST PERSON IN CHARGE.

3. LOCATE SPILL SOURCE, SECURE AND CONTAIN IF POSSIBLE.

4. ELIMINATE KNOWN SOURCES OF IGNITION WHERE A SPARK WILL PRESENT A HAZARD (i.e. ENSURE PERSONNEL SAFETY).

5. ESTABLISH A SAFETY ZONE AROUND THE SPILL AREA.

6. ASSESS THE SPILL SIZE AS FOLLOWS:

    a. Amount of product spilled.
    b. Type of product spilled.
    c. Potential safety/health hazards.
    d. Areas where the spilled product will flow

7. TAKE APPROPRIATE ACTIONS TO CONTAIN THE SPILL.

8. INITIATE APPROPRIATE SPILL CLEANUP (IF POSSIBLE).

OTHER

1. Included in the Spill Response Field Document is a Checklist of Spill Response Operations.

2. Additional phone numbers are listed on both the attached spill report form and spill response contractor call out list.

3. For documentation purposes, complete the attached spill report form to the best of your ability and return it to the Shift Supervisor.

Checklist of Spill Response Operations

Initial Emergency Response Actions

_____ Stop cargo transfer and the product flow, if possible
_____ Shut off all ignition sources
_____ Warn all personnel
_____ Evacuate the area as appropriate
_____ Locate and contain spilled oil if possible
_____ Initiate closure of the Lincoln Ave. Slide Gate if necessary
_____ Notify appropriate agencies, USOR personnel and spill response contractors (See Appendix C)
_____ Establish command and communications structure (See Section 3.5.4)

Assessment (Section 3.5.3)

_____ Size of spill
_____ Type of oil
_____ Equipment needs
_____ Personnel needs
_____ Predict spill movement
_____ Evaluate the potential threat to human health, safety and the environment (Complete the Health & Safety Plan located in Appendix B as necessary)
_____ Evaluate Surface Water and/or Groundwater Impacts (See page D-3)
_____ Environmental sensitivity of the area (prioritize if more than one - see Appendices I & L)
_____ Identify oiled wildlife (Contact WA Dept. of Wildlife as necessary)
_____ Complete ICS201 Initial Briefing Form (Appendix D)

Containment and Protection (Section 3.5.3)

_____ Determine boom needs and availability
_____ Determine booming strategies

Recovery (Section 3.5.3)

_____ Determine skimmer needs and availability
_____ Determine sorbent needs and availability
_____ Beach and shoreline cleanup methods and equipment
_____ Open water cleanup methods and equipment

Disposal (Chapter 4)

_____ Interim storage for recovered oil, oily soil and debris
_____ Permanent disposal options for recovered oil, oily soil an debris
_____ Oily water discharge permit

Surface Water/Groundwater Impact Checklist

Note: Use this checklist to help evaluate potential impacts to sediments, soil, surface water and/or groundwater.

Assessment (Section 3.5.3)

_____ Locate source(s) of contamination
_____ Verify oil type(s)
_____ Evaluate the potential threat to human health, safety and the environment (Complete the Health & Safety Plan located in Appendix B as necessary)
_____ Identify site conditions that could result in ongoing site contamination (e.g. leaking tanks, piping, drums, totes, tank trucks, railcars, construction equipment, motor vehicles, etc.)
_____ Identify underground piping and utilities within the impacted area
_____ Evaluate the size and extent of the contaminated area (soil, sediments, groundwater or surface water)
_____ Identify the soil type and determine if the soil is a continuing source for groundwater contamination
_____ Identify the vertical depth to groundwater and the horizontal distance to nearby wells, surface water, water supply intakes or other off-site receptors
_____ Evaluate the potential for surface water runoff from the site, surface water run on onto the site and the potential for surface water or sediment contamination
_____ Collect site characterization samples as necessary

Response Strategy Evaluation

_____ Develop initial response strategies
_____ Evaluate need to hire a geotechnical consultant
_____ Evaluate long term response strategies including the development of a work plan
_____ Determine appropriate cleanup levels (See WAC 173-340)

Containment & Recovery (Section 3.5.3)

_____ Determine containment needs (e.g. berms, trenches, recovery wells, pumps, absorbants, etc.)
_____ Determine portable pump needs and availability
_____ Determine vacuum truck needs and availability
_____ Determine excavation equipment needs and availability
_____ Determine drill rig equipment needs and availability
_____ Determine support equipment/manpower needs and availability

Disposal (Chapter 4)

_____ Interim storage for recovered oil, oily soil and debris
_____ Permanent disposal options for recovered oil, oily soil and debris
_____ Oily water discharge permit

U.S. OIL & REFINING CO. OIL SPILL NOTIFICATION FORM

Date & Time of Spill: _____

Name/Organization/Phone Number of Individual Who Reported Spill: _____

_____

Location of Spill (*note if spill reached groundwater, flowed into an offsite drainage ditch, creek or river, Blair Waterway, etc.*): _____

_____

_____

Type of Oil or Product Spilled: _____

Estimated Quantity Spilled: _____

Source of Spill (*vessel, pipeline, tank, etc.*): _____

_____

_____

Description of Spill Incident (*note probable cause, any injuries, evacuations, or environmental damages*):

_____

_____

_____

_____

_____

Describe Response Actions Taken/Planned: _____

_____

_____

_____

_____

Weather Conditions (*note temperature, wind speed/direction, cloud cover, visibility, etc.*) _____

_____

Other: _____

IT IS NOT NECESSARY TO WAIT FOR ALL INFORMATION BEFORE BEGINNING NOTIFICATIONS. <u>SEE BACKSIDE OF THIS FORM FOR ADDITIONAL INFORMATION</u>

Rev. S

U.S. OIL PRIMARY SUPERVISOR NOTIFICATION LIST

Notification List	Phone Number	Time Called	By Whom
Shift Supervisor	(253) 383-1651	_____	_____
MPL Pager	(253) 291-2190	_____	_____
MPL Support Truck	(253) 377-0933	_____	_____
Primary Supervisors			
D.H. Yoder - (QI)	(253) 426-0838	_____	_____
G.A. Hills	(253) 377-2189	_____	_____
R.J. Mori	(253) 377-0909	_____	_____
H.R. Van	(253) 377-0902	_____	_____
R.W. Smith	(253) 377-0927	_____	_____
T.T. Hullinger	(253) 377-0921	_____	_____

PRIMARY RESPONSE CONTRACTOR NOTIFICATION LIST

Contractor	Phone Number	Time	Call Made By	Call Received By
Marine Spill Response Corporation	1-800-645-7745	_____	_____	_____
Guardian Industrial Services, Inc.	(253) 536-0455	_____	_____	_____
Global Diving & Salvage Co.	(206) 623-0621	_____	_____	_____

AGENCY NOTIFICATION LIST

Agency	Phone Number	Time Called	Call Made By	Call Received By	Case # (if any)
Notification Centers					
(1) National Response Center	1-800-424-8802	_____	_____	_____	_____
(2) WA Emergency Management Division	1-800-258-5990	_____	_____	_____	_____
Federal Agencies					
U.S. Coast Guard, MSO Puget Sound	(206) 217-6003	_____	_____	_____	_____
U.S. EPA Region 10	(206) 553-1263	_____	_____	_____	_____
U.S. EPA Spill Response Team Hotline	1-800-424-9346	_____	_____	_____	_____
DOT – Washington, DC (MPL)	1-800-424-8802	_____	_____	_____	_____
State Agencies					
WA Dept. of Ecology, SW Office	(360) 407-6300	_____	_____	_____	_____
Utilities & Transportation Comm,. (MPL)	1-888-321-9146	_____	_____	_____	_____
State Emergency Response Commission	1-800-562-6108	_____	_____	_____	_____
Local Agencies					
Tacoma Fire Dept.	911	_____	_____	_____	_____
Tacoma Fire Dept. Dispatch	(253) 591-5733	_____	_____	_____	_____
Tacoma/Pierce County LEPC	(253) 591-5798	_____	_____	_____	_____
Puget Sound Clean Air Agency	1-800-552-3565	_____	_____	_____	_____

ADDITIONAL PHONE NUMBERS

Contractor	Phone Number	Time	Call Made By	Call Received By
Ambulance	911			
Federal Aviation Administration	(425) 227-1389			
Northwest Helicopters (ext. 112)	(360) 754-7200			
Worldwind Helicopters, Inc.	(425) 271-8441			
Insurance Representative	(253) 680-3298			
KCPQ - TV (Evacuations)	(206) 674-1313			
KIRO - TV	(206) 448-3850			
KOMO - TV	(888) 477-5666			
KKMO, KGNW, KKOL, KLFE - Radio (Evacuations)	(253) 922-5293			
KIRO - Radio (Evacuations)	(206) 726-6397			
Marine Exchange	(206) 443-3830			
National Weather Service (NOAA)	(206) 526-6087			
Pierce County Sheriff	911			
Port of Tacoma Operations				
Switchboard	(253) 383-5841			
Dayshift Superintendent on Duty	(253) 383-9420			
Off-Hours Superintendent on Duty	(253) 279-2607			
Security	(253) 279-7650			
J&B Excavation Company	(253) 606-0233			
St. Joseph Hospital	(253) 426-6660			
Tacoma City Water	(253) 502-8384			
Tacoma General Hospital	(253) 403-1050			
Tacoma Police Department	911			
U.S. Coast Guard Puget Sound VTS	(206) 217-6050			
WA Dept. of Fish & Wildlife (pager #)	(360) 534-8233			
WA United Terminals (Hyundai)	(253) 396-4913			

Note: Wellhead Protection Area maps and notification contacts are listed in Appendix C.

Primary Spill Response Contractor Call Out List
(Priority Based on Type of Spill)

Contractor	Phone Number
Marine Spill Response Corporation	
24 Hour Emergency Phone	(800) 645-7745 – Primary
24 Hour Emergency Phone	(800) 259-6772 – Alternate
24 Hour Emergency Phone	(732) 417-0175 – Alternate (Commercial)
24 Hour Emergency Phone	(703) 326-5609 – Back-up System
24 Hour Emergency Fax	(800) 635-6772
24 Hour Emergency Fax	(732) 417-0097 – Commercial
Pacific Northwest – Main Office	
1330 Industry Street, Suite 300	(425) 252-1300 - Business Phone
Everett, WA 98203-7123	(425) 339-1229 – Business Fax
Guardian Industrial Services Inc.	(253) 536-0455 - Work (24 Hour)
1813 99th St. E	(253) 405-7255 – Cellular (24 Hour)
Tacoma, WA 98445	(253) 536-3072 – Fax
Global Diving & Salvage Co.	(206) 623-0621 - Work (24 Hour)
3840 West Marginal Way SW	(800) 441-3483 – Work Toll Free
Seattle, WA 98106	(206) 932-9036 - Fax

Support Services Specific to McChord Pipeline Co.
(Priority based on need)

Support Service	Phone Number	
One Call System Notification	1-800-424-5555	
Summit Water District	(253) 537-7781	
Puget Sound Energy	(888) 225-5773	
Tacoma Public Utilities	(253) 383-2471	
Fire Departments		
Central Pierce Fire & Rescue	911	
Tacoma Fire Department	911	
McChord A.F.B. Fire Dept.	(253) 982-2603	
Puyallup Indian Tribe	(253) 573-7800	General
	(253) 680-5620	Tribal Law Enforcement
	(253) 680-5566	Fisheries Director
McChord A.F.B. Fuel Storage Location Supvr.	(253) 982-7201	
	(253) 982-7202	Fax
McChord A.F.B. Fuel Storage Location Operations	(253) 982-7203	
	(253) 982-7204	
McChord A.F.B. Fuels Officer	(253) 982-3549	
	(253) 982-3719	
McChord A.F.B. Civil Engineering	(253) 982-5739	
Swan Creek Park		
Pierce County Dept. of Emergency Mgmt.	(253) 798-7470	(24 hour)
Wellhead Protection Areas (along McChord Pipeline)		
Primary Emergency Notification Contacts:		
Pierce County Dept. of Emergency Mgmt	(253) 798-7470	(24 hour)
Central Pierce/Tacoma Fire Departments	911	
Secondary Emergency Notification Contacts (Affected Water Districts):		
Lakewood Water District	(253) 588-4423	
Parkland Light and Water	(253) 531-5666	(24 hour)
City of Tacoma Water Control Center	(253) 502-8344	(24 hour)
Washington Department of Transportation (Supt. Highway Maintenance – Tacoma Division)	(253) 983-7550	

1. Incident Name	2. Prepared by: (name) Date Time:	INCIDENT BRIEFING ICS 201-OS (pg 1 of 4)

3. Map/Sketch (include maps drawn here or attached, showing the total area of operations, the incident site/area, overflight results, trajectories, Impacted shorelines, or other graphics depicting situational and response status)

1. Incident Name	2. Prepared by: (name) Date Time:	INCIDENT BRIEFING ICS 201-OS (pg 2 of 4)

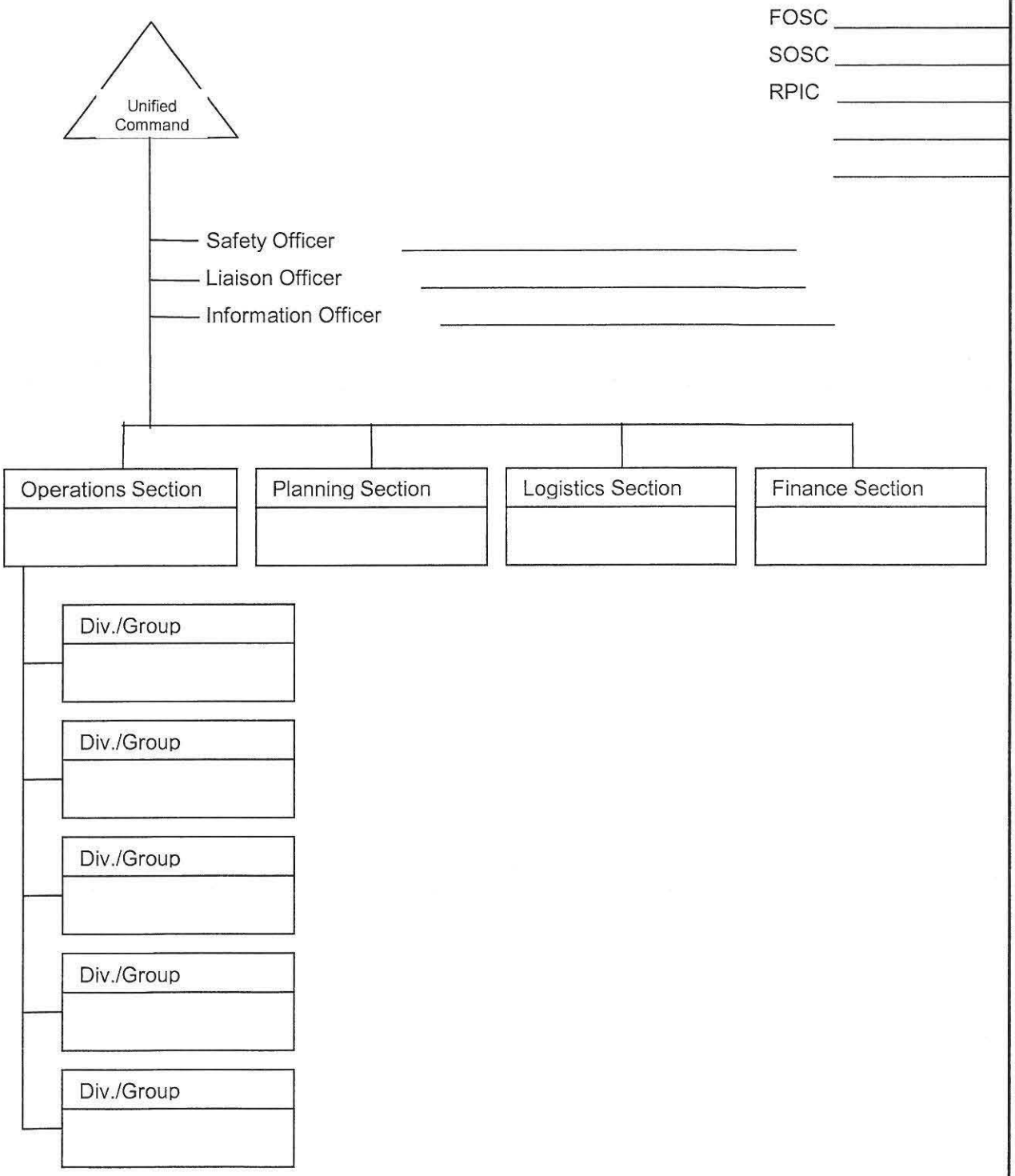
4. Initial Incident Objectives

5. Summary of Current Actions

Time	Action/Note

1. Incident Name	2. Prepared by: (name) Date Time:	INCIDENT BRIEFING ICS 201-OS (pg 3 of 4)

3. Current Organization



1. Incident Name	2. Prepared by: (name) Date Time:	INCIDENT BRIEFING ICS 201-OS (pg 4 of 4)

7. Resources Summary

Resources Needed	Time Ordered	Resources Identifier	ETA	On-Scene? (X)	NOTES: (Location/Assignment/Status)

APPENDIX E

Contractor's Letters of Intent

Section E-1

MSRC
Marine Spill Response Corporation®

Judith R. Norell
Marketing & Customer Service Manager
(703) 326-5617

August 30, 2005

Mr. Ty Gaub
Environmental Manager
U.S. Oil & Refining Co.
3001 Marshall Avenue
Tacoma, WA 98421

Re: Letter of Intent

Dear Mr. Gaub:

This letter certifies that U.S. Oil & Refining Co. has entered into an Agreement with the Marine Spill Response Corporation (MSRC). Pursuant to this Agreement the U.S. Oil & Refining Co. and its accompanying facilities are (1) entitled by contract to MSRC response services, and (2) have the right to cite the capability of MSRC in its Facility Response Plan, in accordance with the terms and conditions of the Standard Form MSRC Service Agreement.

The enclosed Execution Instrument to the MSRC Service Agreement dated April 1, 2005 between U.S. Oil & Refining Co. and MSRC is proof that such a contract exists. In addition, MSRC's contract is an evergreen contract and continues automatically until such time that U.S. Oil & Refining Co. ceases to be a member of the Marine Preservation Association (MPA).

Please let me know if I may provide further assistance to you in the future.

Sincerely,

Judith Norell

Enclosure

220 Spring Street Suite 500 Herndon, VA 20170 Telephone 703 326 5600 Fax 703 326 5660

MARINE SPILL RESPONSE CORPORATION
SERVICE AGREEMENT

EXECUTION INSTRUMENT

The MSRC SERVICE AGREEEMENT attached hereto (together with this execution instrument, the "Agreement"), a standard form of agreement amended and restated as of September 27, 1996, is hereby entered into by and between

U.S. Oil & Refining Co.

[Name of COMPANY]

a corporation incorporated in the State of Delaware

[Type of entity and place of organization]

with its principal offices located at 3001 Marshall Avenue in Tacoma, Washington (the "COMPANY"), and MARINE SPILL RESPONSE CORPORATION, a nonprofit corporation organized under the laws of Tennessee ("MSRC"), and shall be identified as

SERVICE AGREEMENT No. 6MPA 198 [This is to be provided by MSRC.]

IN WITNESS WHEREOF, the parties hereto each have caused this Agreement to be duly executed and effective as of April 1, 2005.

U.S. Oil & Refining Co. [COMPANY]

By: [signature]

Alan J. Cabodi [print name]

Title: Vice President/Manufacturing

Address: 3001 Marshall Avenue
Tacoma, Washington 98421

Telephone: (253) 383-1651 Fax: (253) 383-9970

MARINE SPILL RESPONSE CORPORATION:

By: for

Judith R. Norell
Marketing & Customer Service Manager
220 Spring Street, Suite 500
Herndon, VA 20170
(703) 326-5617; Fax: (703) 326-5660

Marine Preservation Association
8777 N. Gainey Center Drive, Suite 165, Scottsdale, Arizona 85258
Telephone: (480) 991-5599 Facsimile: (480) 991-6085
E-mail: RAldag@MPAz.org

Robert Aldag
President and Chief Executive Officer

March 31, 2005

Mr. Alan J. Cabodi
Vice President Manufacturing
U.S. Oil & Refining Co.
3001 Marshall Avenue
Tacoma, WA 98421 USA

Dear Mr. Cabodi,

It is my pleasure to welcome U.S. Oil & Refining Co. as a new Member of the Marine Preservation Association ("MPA"). US Oil's Membership Effective Date is **April 1, 2005**. Under the terms of the Membership Agreement, US Oil is a Standard Member of MPA.

MPA has received and accepted the Membership Application and Initial Membership Dues of **$26,773** submitted by US Oil. MPA has also received two copies of the signed Membership Agreement. A fully executed copy of the Membership Agreement is enclosed for your records.

As you know, US Oil's membership in MPA, entitles US Oil to sign a Service Agreement with MSRC. US Oil also has the opportunity to participate in several MPA activities. Enclosed is a list of the various advisory committees and subcommittees of MPA. The members of these committees are selected each year from nominees of the Member companies. Members of MPA are also invited to participate in Customer Advisory Boards. These advisory boards help ensure that the program funded with MPA dues is responsive to the needs of MPA Members, and provides a forum for discussions with MSRC personnel regarding the operations of MSRC. If US Oil is interested in participating in any committees, please call me.

Upon request, MPA will provide the following documents for your reference:

1. Articles of Incorporation and By-laws
2. Dues Procedures for Members Paying Dues Based on Qualified Barrels (this documents describes in more detail the procedures for calculating the dues of QB/Standard Members).

If you have any questions regarding these documents please call Brett Drewry or myself at MPA.

We look forward to U.S. Oil & Refining Co.'s participation in the Marine Preservation Association.

Yours very truly,

RA:lds
Enclosures

cc: Judith Norell, MSRC *(w/o encl.)*

STANDARD MEMBERSHIP AGREEMENT

This STANDARD MEMBERSHIP AGREEMENT dated as of April 1, 2005 (this "Agreement") between U.S. Oil & Refining Co. (the "Company") and MARINE PRESERVATION ASSOCIATION, a nonprofit membership corporation organized under the laws of the State of Arizona (the "Association").

WITNESSETH:

WHEREAS, the Association was organized exclusively to promote the welfare and interests of the petroleum transportation, petroleum, and energy industries by addressing the problems caused by spills of oil and petroleum products on water; and

WHEREAS, the Association raises funds through the collection of Annual Dues from its Members and grants the funds to nonprofit oil spill response service entities, such as Marine Spill Response Corporation, a nonprofit membership Tennessee corporation ("MSRC"); and

WHEREAS, the Company desires to become a Member of the Association as a Standard Member of the Association; and

WHEREAS, capitalized terms used herein and not otherwise defined herein shall have the meanings ascribed thereto in Schedule A.

NOW, THEREFORE, in consideration of the premises and the mutual covenants contained herein, the Association and the Company agree as follows:

1. Initial Membership Dues: Admission Effective Date. The Company will become a Standard Member on its Admission Effective Date, which is the date the Company has (i) paid in full its initial Membership Dues as required hereunder and (ii) executed and delivered this Agreement (together with any other documents required by the Association). The Company agrees that, on or before its Admission Effective Date, it shall pay Initial Membership Dues equal in amount to that portion of the estimated Annual Dues of the Company that applies to it for the most recent previous Cash Dues Call for the period in which the Company's Admission Effective Date occurs, as set forth in the Dues Procedures.

2. Annual Dues.Dues to be Paid. The Company acknowledges and agrees that, throughout its Membership Period, it shall pay Annual Dues in such amounts and at such times as shall be determined by the Board of Directors pursuant to the By-laws and as set forth in the Dues Procedures.

(b) Annual Dues Information Report. The Company acknowledges and agrees that, throughout its Membership Period, on or before the due date established each year by the Board of Directors, the Company shall provide to the Association an Annual Dues Information Report, in the form prescribed by the Board of Directors from time to time, so as to allow the Association to make a final determination of the Company's Annual Dues for the prior year with any adjustments applied as set forth in the Dues Procedures, estimate the Company's Annual Dues for the then current year and/or other periods relating to a Cash Dues Call, and determine

whether the Company meets the criteria established for a Standard Member. In addition, the Company hereby agrees to submit to the Association, on or before June 30th of each year, a report, in the form prescribed by the Board of Directors from time to tune, of an independent accountant engaged by the Company, attesting to the completion of the Agreed-Upon Procedures.

(c) Removal for Failure to Perform. The Company acknowledges and agrees that the failure of the Company to (i) pay its Annual Dues on a timely basis, as required by the Board of Directors pursuant to the By-laws, and/or (ii) provide the information required pursuant to Section 2(b), will be "cause" for the Association immediately to remove the Company as a Member of the Association, provided that such removal of the Company shall not relieve the Company of its obligation to pay the Annual Dues or other obligations owing at the time of its removal.

3. Resignation. The Company may resign as a Member of the Association only by giving the Association written notice of such resignation. Resignation shall be effective on the Resignation Effective Date. Resignation of the Company shall not relieve the Company of its obligation to (i) pay the Annual Dues or other obligations owing at the time of its removal or (ii) comply with certain reporting requirements specified in the Dues Procedures.

4. Merger, Consolidation and Reorganization or Sale of Certain Assets. If the Company is a party to a merger, consolidation, reorganization or other change in operations which results in the Company no longer meeting the criteria established for Standard Members, the Company shall promptly (and in any event not later than the fifth (5th) business day prior to such event) notify the Association. The effective date of such event shall be deemed to be the Resignation Notice Date of the Company pursuant to Section 3.

5. Failure to Qualify as a Standard Member. If the Association determines that the Company no longer meets, or will no longer meet at a future point in time, the criteria of a Standard Member (as described in the definition of "Standard Member" in Schedule A), it shall give written notice thereof to the Company. This Agreement shall terminate on the thirtieth (30th) day after such notice, unless the Company promptly provides additional information and evidence reasonably acceptable to the Association demonstrating that the Company continues to meet the criteria established for a Standard Member. The Company may, during such 30-day notice period, apply for membership in the Association as a Regular Member by executing a Dues Agreement and a Call Agreement (if not previously executed) with the Association and complying with its provisions and any other requirements established for Regular Members of the Association (amended as appropriate to recognize that a Standard Member who becomes a Regular Member is not responsible for Debt Service Dues relating to Prior Supported Debt).

6. Severability. It is expressly understood and agreed that the provisions of this Agreement are severable from each other and from the rest of this Agreement and shall be fully effective, operative and enforceable even though the remainder or any part of this Agreement shall be held to be invalid or unenforceable by a court of competent jurisdiction.

7. Successors; No Assignment. Successors by operation of law (by merger, consolidation, reorganization or otherwise) shall be bound by this Agreement. However, neither the Association nor the Company may otherwise assign this Agreement.

8. Term of Agreement. Unless otherwise terminated pursuant to Section 5, this Agreement shall remain in full force and effect until the Resignation Effective Date of the Company.

9. Amendments. No provision of any Section of this Agreement may be amended or waived, without the prior written consent of the Association and the Company.

10. Severalty; Release; Waiver. The obligations of the Company under this Agreement are not joint and several with the obligations of any other Member of the Association pursuant to the terms of any other Membership Agreement or any agreement of any nature. None of the Association or any other Person shall at any time be entitled to assert that such obligations are joint and several or that this Agreement is evidence of any joint venture or partnership among the Members of the Association. To the fullest extent permitted by law, neither failure nor delay by the Association to exercise any right or remedy provided herein or by statute or at law or in equity shall operate as a waiver thereof, nor shall any single or partial exercise of any such right or remedy preclude any other or further exercise thereof or the exercise of any other right or remedy.

11. Representations and Warranties. The Company represents and warrants to the Association on the date hereof that:

(a) It is duly organized and validly existing and in good standing under the laws of the jurisdiction of its organization and has all requisite power and authority to enter into this Agreement and to carry out the terms and provisions hereof and this Agreement has been duly authorized, executed and delivered by the Company and constitutes the legal, valid and binding obligation of the Company enforceable in accordance with the terms of this Agreement except as such enforceability may be limited by bankruptcy, insolvency or other similar laws of general application relating to or affecting the enforcement of creditors' rights or by general equitable principles.

(b) There is no action, proceeding or investigation pending or, so far as the Company is advised, threatened, and no term or provision of any charter, by-law or other organizational document, mortgage, indenture, contract, agreement, instrument, judgment, decree, order, statute, rule or regulation, which action, proceeding or investigation or term or provision would have a material adverse effect on the entering into by it of this Agreement, or the validity of this Agreement as to it or the carrying out by it of any of the terms or provisions of this Agreement.

(c) No approval of any governmental body is required for it entering into or carrying out the terms of this Agreement.

12. GOVERNING LAW. THIS AGREEMENT SHALL BE GOVERNED BY, AND CONSTRUED IN ACCORDANCE WITH, THE LAW OF THE STATE OF NEW YORK.

13. Usage. All accounting terms not specifically defined herein shall be construed in accordance with GAAP. In this Agreement, the singular includes the plural and the plural the singular; "hereof," "herein," "hereto," "hereunder" and the like mean and refer to this Agreement as a whole and not merely to the specific section or clause in which the respective word appears; words importing any gender include the other genders; references to statutes are to be construed as including all statutory provisions consolidating, amending or replacing the statutes referred to; and references to "writing" include printing, typing, lithography and other means of reproducing words in a tangible visible form.

14. Notices. All notices, requests, consents, demands, certificates and other documents and communications required or permitted to be given hereunder shall be in writing ("Written Communications") and shall conform to, and be effective as provided in, the definition of Written Communication set forth in Schedule A hereto.

15. Counterparts. This Agreement may be executed in two counterparts which together shall constitute one and the same instrument and may be executed by either party on either counterpart.

16. Costs and Expenses of Enforcement. The Company agrees to pay on demand all reasonable costs and expenses of the Association, if any (including reasonable counsel fees and disbursements), in connection with the successful enforcement against the Company of this Agreement.

17. No Third Party Beneficiaries. Nothing in this Agreement is intended or shall be construed to give any Person, other than the parties hereto, any legal or equitable right, remedy or claim under or in respect of this Agreement or any provision contained herein or to impose any obligation on the Company other than the obligations specifically set forth herein.

18. Confidentiality. The Association agrees on behalf of itself, its agents and employees that all information not publicly available that is designated in writing as confidential and is provided to it by the Company in connection with this Agreement shall be considered confidential and proprietary in nature, and, therefore, shall not be used for any purpose other than as contemplated by this Agreement. The Association may, after providing, where not expressly prohibited by applicable law, prompt written notice to the entity to which the information applies, disclose such information (i) pursuant to subpoena or other court process; (ii) when required to do so in accordance with the provisions of any applicable law; (iii) at the express direction of any agency of any State of the United States of America or of any other jurisdiction in which the Association conducts its business; and (iv) to the Association's independent auditors and other professional advisors; provided that the Association agrees to furnish to such third parties a copy of this provision and request that such third parties keep such information confidential.

IN WITNESS WHEREOF, the parties hereunto have each caused this Agreement to be duly executed.

MARINE PRESERVATION ASSOCIATION

By_____
Title: President

Address: 8777 N. Gainey Center Drive
Suite 165
Scottsdale, Arizona 85258

Telephone No.: (480) 991-5500
Facsimile No.: (480) 991-6085

By_____
Title: Vice President/Manufacturing

Address: 3001 Marshall Avenue
Tacoma, Washington 98421

Telephone No.: (243) 383-1651
Facsimile No.: (253) 383-9970

SCHEDULE A

to the

STANDARD MEMBERSHIP AGREEMENT

Definitions and Interpretations

The following terms shall have the following meanings (references herein to Sections shall, unless otherwise indicated, be a reference to such Section in the Standard Membership Agreement):

"Admission Effective Date" means the date on which a Person becomes a Member of the Association in accordance with Section 1 and the By-laws.

"Agreed-Upon Procedures" means the procedures, prescribed from time to time by the Board of Directors, to be performed by independent accountants in providing the attestation report with respect to the information contained in the Annual Dues Information Report, as described in Section 2(b).

"Agreement" means the Standard Membership Agreement to which this Schedule is attached, as such agreement may be amended, supplemented, restated or otherwise modified from time to time.

"Annual Dues" means the annual dues assessed to the Members of the Association (including the Standard Members) from time to time by the Board of Directors.

"Annual Dues Information Report" means, with respect to the Company, that certain annual report of the Company required pursuant to Section 2(b).

"Board of Directors" means the board of directors of the Association, as such body might be constituted from time to time pursuant to the terms of the By-laws.

"By-laws" means the by-laws of the Association, as such by-laws may be amended from time to time.

"Call Agreement" means that certain Supplemental Dues Call Agreement (standard form dated July 16,1993) between the Association and all other Members which are responsible for Debt Service Dues as set forth in the Dues Procedures.

"Cash Dues Call" means the periodic call by the Association of dues payable by Members on a specific date as determined by the Board of Directors and as set forth in the Dues Procedures.

"Debt Service Dues" means the amount of dues necessary to fund payments of principal and interest on debt obligations of MSRC, supported by the Association, as set forth in the Dues Procedures.

"Dues Agreement" means that certain Dues Agreement between the Association and all other Members which are responsible for Debt Service Dues as set forth in the Dues Procedures.

"Dues Procedures" means those certain Dues Procedures adopted and/or amended from time to time by the Board of Directors with respect to, the payment procedures for Annual Dues for Members and other related matters.

"GAAP" means generally accepted accounting principles in the United States or in the case of a Person to which generally accepted accounting principles of the United States axe not customarily applied, generally accepted accounting principles of the country that would be customarily applied to such Person.

"Initial Membership Dues" means the initial dues (as specified in Section 1) assessed to each Member of the Association at the time such Person becomes a Member of the Association.

"Member" or "Member" (as the context may require) means a member of the Association, as defined by the By-laws, and shall include Minimum Dues Paying Members, Regular Members and Standard Members.

"Membership Period" means the period during which a Person is a Member of the Association in accordance with the terms of the By-laws and the Agreement, commencing with the Admission Effective Date.

"Minimum Dues" has the meaning specified in the Dues Procedures.

"Minimum Dues Paying Member" means, at any time during a calendar year, a Member who pays Minimum Dues.

"Person" means any individual, corporation, company, voluntary association, partnership, joint venture trust, unincorporated organization or government (or any agency, instrumentality or political subdivision thereof).

"Prior Supported Debt" means, with respect to a Standard Member, debt obligations of MSRC, supported by the Association, that were incurred prior to the Admission Effective Date of such Standard Member, including refinancings of such debt obligations (but not including any new borrowings incurred after the Admission Effective Date of such Standard Member).

"Qualified Barrels" has the meaning specified in the Dues Procedures.

"Regular Member" means, at any time during the calendar year, a Member who pays Annual Dues based upon Qualified Barrels and which Member is responsible for Debt Service Dues relating to Prior Supported Debt.

"Resignation Effective Date" means (i) with respect to a resigning Member, the day which is thirty (30) days after the Resignation Notice Date of such Member, and (ii) with respect to a Member being removed, the date when the Member is actually removed as a Member of the Association.

"Resignation Notice Date" means (i) with respect to a resigning Member, the date on which the Association receives notice in writing of such resignation from such Member, and (ii) with respect to a Member being removed, the Resignation Effective Date for such Member.

"Standard Member" means, at any time during the calendar year, a Member who pays Annual Dues based upon Qualified Barrels and which Member is not responsible for Debt Service Dues relating to Prior Supported Debt. The Company shall no longer qualify as a Standard Member and this Agreement shall terminate as provided in Section 5 if (i) MSRC incurs debt obligations, supported by the Association, subsequent to the Company's Admission Effective Date and the Company's Annual Dues at such time exceed a minimum threshold established by the Dues Procedures (as of the date of this Agreement, $1,000,000), or (ii) the Company at any time otherwise agrees to be responsible for another Member's Debt Service Dues or Resignation Fee (as defined in the Dues Agreement).

"Written Communication" has the meaning set forth in Section 14. All Written Communications shall be addressed to the party for whom intended at its address specified under its signature hereto, or such other address as such party may specify by written notice. Written Communications shall be either delivered personally or sent by mail (first-class mail, postage prepaid in the case of a notice to and from a party with an address in the United States and air mail, postage prepaid in the case of notice to or from a party with an address not in the United States), overnight courier or facsimile transmission (in the case of facsimile transmission, promptly confirmed by mail). All Written Communications shall be effective only when actually received during the recipient's normal business hours. The receiving party of any facsimile transmission shall provide the sending party with acknowledgment of receipt if requested by the sending party; provided, however, that the failure of the sending party to request such acknowledgment or the receiving party to provide such acknowledgment shall not in any way affect the fact the facsimile transmission was effective when actually received during the recipient's normal business hours.

Guardian Industrial Services Inc.

(253) 536-0455 • 1813 99th Street East • Tacoma, Washington 98445

U.S. Oil & Refining Co.

3001 Marshall Avenue

Tacoma, WA 98421

Attn: Mr. Ty Gaub

RE: Letter of Intent to respond to spills

28 AUG 2010

As you know we are at your facility daily performing routine maintenance. This letter is to let you know that we can be called upon for any spill recovery incident that you may encounter. You have my permission to list Guardian Industrial Services, Inc. as a resource for emergency spill response that you may encounter at your facility.

Here is the blanket purchase order number (B132854) that we currently have with you, which is good until 31 DEC 2010 and is renewed annually. All services will be billed out in accordance of purchase order number B132854.

This letter will be valid until 28 AUG 2010.

Sincerely,

John H. Hernan II

Vice President of Operations

GLOBAL
Diving & Salvage, Inc.

August 30, 2010

U.S. Oil & Refining Co.
3001 Marshall Ave.
Tacoma, WA 98421

Attn: Ty Gaub

Re: Environmental Emergency Response

Work Scope and Performance:

Thank you for your inquiry into Global Diving & Salvage, Inc.'s response capabilities. You have our permission to list Global among the response resources in your facility contingency plans. It does not guarantee a performance standard or obligate Global to respond. Any response would be subject to the availability of our personnel and equipment. This authorization extends only to pollution services. Global's personnel, equipment and materials will be billed out in accordance with our most current tariff rates.

Period of Performance:

This listing is valid from January 1, 2010 through January 31, 2011.

For your records, Global Diving & Salvage, Inc. is currently registered as a Washington State Department of Ecology Primary Response Contractor. Please contact Global directly should you require a copy of this certification.

Respectfully Submitted,

Jasmine Gonzalez
Project Manager
Global Diving & Salvage, Inc.

Encl: Current tariff

3840 W Marginal Way SW • Seattle, WA 98106 • WWW.GDIVING.COM • 24 Hr: (206) 623-0621 • Fax: (206) 932-9036

Association of Diving Contractors International
American Salvage Association
AGC of America
THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA
Quality People. Quality Projects.

APPENDIX F

Marine Spill Response Corporation Response Capabilities

Section F-1

MSRC Pacific / Northwest Region Equipment Cascade Matrix
Commencement Bay - Quartermaster Harbor planning standard
WAC 173-182-360
10/10/07 REV 11

Those covered vessel or facility plan holders that transit or operate within a five nautical mile radius of a point Lat. 47 19' 29" N Long. 122 27' 23" W (WGS 1984) the following standards. FOR PLANNING PURPOSES ONLY; ESTIMATES BELOW ARE BASED ON PLANNING ASSUMPTIONS SET FORTH IN WAC CHAPTERS 173-182. ACTUAL TIMES/PERFORMANCE WILL DEPEND ON TRAFFIC/WEATHER/SAFETY/ETC. NOTHING HEREIN IS A PERFORMANCE GUARANTEE OR WARRANTY. RESOURCES SUBJECT TO CHANGE; THE ACTUAL RESOURCES DEPLOYED WILL DEPEND ON CIRCUMSTANCES AND CUSTOMER REQUEST.

3

Delivery Platform Kind / Type	Home Base	Time Onscene [3]	Personnel	EDRC (bpd)	Temporary Storage (bbls)	≥ 42 in Ocean Boom (feet)	Inland Boom (feet)	Total Boom (feet)
WB COOT	Tacoma, WA	1.5	2	-	-	-	1,500	1,500
RV BRANT [1]	Tacoma, WA	1.5	2	4,896	6	-	200	200
WB SCOTER	Tacoma, WA	1.5	2	-	-	-	1,000	1,000
RV SANDPIPER [1]	Tacoma, WA	1.5	2	10,764	4	-	-	-
RV PLOVER [1]	Tacoma, WA	1.5	2	10,764	67	-	-	-
Time (hours) 1.5			10	26,424	79	0	2,700	2,700
Boom / Assessment	- A safety assessment of the spill by a workboat with trained crew and appropriate air monitoring, with 1,000 feet of boom could have arrived.							
WB AVOCET	Seattle, WA	2.	2	-	-	-	1,500	1,500
RV WIDGEON [1, 2]	Seattle, WA	2.	2	3,588	30	-	600	600
TV IBIS	Tacoma, WA	2.	2	-	21,407	-	1,400	1,400
VHO Boom Trailer #45	Seattle, WA	2.	0	-	-	-	5,200	5,200
Time (hours) 2			16	30,012	21,516	0	11,400	11,400
Boom / Assessment	- Additional 2,000 feet of boom or 4 times the length of the largest vessel whichever is less, to be used for containment, protection or recovery could have arrived.							
RV SWB 123-124 [1]	Seattle, WA	3.	0	905	400	-	60	60
VHO Boom Trailers #62 #63 #68	Richmond Beach, WA	3.	0	-	-	4,000	2,000	6,000
RV PEREGRINE [1]	Everett, WA	3.	2	3,588	28	-	-	-
RV MERLINE [1]	Everett, WA	3.	2	3,588	28	-	-	-
VHO Boom Trailers #03 #31	Everett, WA	3.	0	-	-	7,900	7,650	15,550
VHO Storage (TSB)	Everett, WA	3.	0	-	2,105	-	-	-
WB TEAL	Anacortes, WA	4.	2	-	-	-	1,500	1,500
RV CORMORANT [2]	Seattle, WA	5.	2	21,540	90	-	-	-
RV AUKLET [1]	Port Angeles, WA	5.	2	3,588	3	-	-	-
VHO Boom Trailers #41 #43 #44 #65 #66 #75 #76	Anacortes, WA	5.	0	-	220	-	16,560	16,560
VHO Boom Trailers #05 #42 #69 #73 #74	Port Angeles, WA	5.	0	-	-	3,210	9,000	12,210
RV GREBE [1]	Bellingham, WA	5.	2	3,588	30	-	600	600
WB MALLARD	Port Angeles, WA	5.	2	-	-	-	1,500	1,500
VHO Boom Trailers # 40	Bellingham, WA	5.	0	-	-	-	1,000	1,000
RV SWB 21-22 [1]	Port Angeles, WA	5.	0	1,371	400	-	60	60
RV SWB 133-134 [1]	Anacortes, WA	5.	0	905	400	-	60	60
RV SWB 51-52 [1]	Bellingham, WA	5.	0	905	400	-	60	60
VHO Boom Trailers #61 #77	Ferndale, WA	5.	0	-	-	-	6,000	6,000
VHO Boom Trailers #60 #70	Tacoma, WA	5.	0	-	107	-	7,800	7,800
VHO Boom Trailers #17 #27 #67	Blaine, WA	6.	0	-	-	1,320	7,200	8,520
WB OSPREY	Anacortes, WA	6.	2	-	-	-	3,000	3,000
VHO Boom Trailer #02 #57	Astoria, OR	6.	0	-	-	6,600	5,800	12,400
RV SWB 25-26 [1]	Astoria, OR	6.	0	3,017	400	-	60	60
WB CASCADE	Port Angeles, WA	6.	2	-	-	-	1,000	1,000
WB EAGLE	Bellingham, WA	6.	2	-	-	-	3,000	3,000
Time (hours) 6			36	73,007	26,127	23,030	85,310	108,340
Boom / Assessment	- Additional 10,000 feet of appropriate types boom for containment, protection or recovery could have arrived.							
Minimum Oil Recovery Rate % of WCS volume per 24hrs	- Capacity to recovery the lesser of 3% of worst case spill volume or 12,500 barrels within 24 hour period could have arrived.			42,995				
Minimum Storage Volume	- 1 times EDRC (12,500 bbls)							
RV HERON [1]	Bellingham, WA	7.	2	205	7	-	400	400
VHO Boom Trailers #01 #05 #26 #77	Neah Bay, WA	7.	0	-	-	4,070	3,500	7,570
WB LOON	Neah Bay, WA	7.	2	-	-	-	1,500	1,500
RV PINTAIL [1]	Port Angeles, WA	7.	2	2,592	8	-	200	200
RV CURLEW [1]	Portland, OR	8.	2	3,588	3	-	-	-
VHO Boom Trailer #64	Portland, OR	8.	0	-	-	-	2,000	2,000
RV WC PARK RESPONDER [2]	Port Angeles, WA	8.	6	10,567	14,000	2,640	-	2,640
RV SWB 18-20 [1]	Portland, OR	8.	0	3,017	400	-	60	60
RV ALEUTIAN TERN [1, 2]	Anacortes, WA	10.	2	10,764	67	-	-	-
RV SHEARWATER [2]	Port Angeles, WA	10.	4	12,000	1,362	-	800	800
RV ROYAL TERN [2]	Anacortes, WA	11	3	6,000	283	-	-	-
RV WESTERN GULL [2]	Bellingham, WA	12.	3	6,000	296	-	-	-
TV 360	Port Angeles, WA	12.	0	-	38,000	1,320	-	1,320
TV KITTIWAKE	Port Angeles, WA	12.	0	2,914	23,414	-	2,700	2,700
RV SWB 23-24 [1]	Coos Bay, OR	12.	0	3,017	400	-	60	60
Time (hours) 12			64	133,672	104,357	31,060	96,530	127,590
Boom / Assessment	- Additional 20,000 feet of appropriate boom for containment, protection or recovery could have arrived.							
Minimum Oil Recovery Rate % of WCS volume per 24hrs	- Capacity to recovery the lesser of 10% of worst case spill volume or 36,000 barrels within 24 hour period could have arrived.							
Minimum Storage Volume	- 1.5 times EDRC (54,000 bbls)							
TV PELICAN	Bellingham, WA	13.	2	754	11,920	-	1,000	1,000
RV ARCTIC TERN [2]	Neah Bay, WA	16.	3	21,540	283	-	-	-
Time (hours) 24			69	156,266	116,540	31,060	97,530	128,590
Boom / Assessment	- Additional 20,000 feet of appropriate boom for containment, protection or recovery could have arrived.							
Minimum Oil Recovery Rate % of WCS volume per 24hrs	- Capacity to recovery the lesser of 14% of worst case spill volume or 48,000 barrels within 24 hour period could have arrived.							
Minimum Storage Volume	- 2 times EDRC (96,000 bbls)							
RV OREGON RESPONDER [2]	Astoria, OR	25.	5	26,407	14,000	2,640	-	2,640
TV 404	Astoria, OR	38.	0	-	40,000	-	-	-
Time (hours) 48			75	182,673	170,540	33,700	97,530	131,230
Boom / Assessment	- More boom as necessary for containment, recovery or protection.							
Minimum Oil Recovery Rate % of WCS volume per 24hrs	- Capacity to recovery the lesser of 25% of worst case spill volume or 60,000 barrels within 24 hour period could have arrived.							
Minimum Storage Volume	- More as necessary not to slow response.							

[1] Shallow Water Capable Skimmer [2] Open Water Capable Skimmer [3] Based on mobilization planning factor per WAC 173-182-350 from time of notification by customer.

Rev. Q

Organization	Resource	KindType	Identification	Specifications	Recovery	LiquidStorage	Boom	People	HomeBase	State	Staging
MSRC	Barge	PS-4	PS #1	Mini Barge	0	110	0	0	Anacortes	WA	Trailer 43
MSRC	Barge	PS-4	PS #2	Mini Barge	0	110	0	0	Anacortes	WA	Trailer 44
MSRC	Barge	R SWB	Shallow Water Barge 133	Shallow Water Barge, Se	0	400	0	0	Anacortes	WA	Dock
MSRC	Boom	B-2	Trailer 41,Boom, Kepner	8"x12"	0	0	1000	0	Anacortes	WA	Trailer 41
MSRC	Boom	B-2	Trailer 65, Boom, Acme	12"x18"	0	0	4160	0	Anacortes	WA	Tesoro
MSRC	Boom	B-2	Trailer 66, Boom, Versate	12"x18"	0	0	2900	0	Anacortes	WA	Trailer 66
MSRC	Boom	B-2	Trailer 75, Boom, Acme	8"x12"	0	0	5000	0	Anacortes	WA	Trailer 75
MSRC	Boom	B-2	Trailer 76, Boom, Acme	12"x18"	0	0	4000	0	Anacortes	WA	Trailer 76
MSRC	Boom	B-2	TEAL , Boom, Kepner	8"x12"	0	0	1500	0	Anacortes	WA	WB TEAL
MSRC	Boom	B-2	OSPREY, Boom, Kepner	8"x12"	0	0	3000	0	Anacortes	WA	WB OSPREY
MSRC	Boom	B 18	Shallow Water Barge 133	18"-20" Boom	0	0	60	0	Anacortes	WA	Dock
MSRC	Equipment-Propulsion	E Tmaster	Shallow Water Barge 133	Propulsion unit W/ Crane	0	0	0	0	Anacortes	WA	Dock
MSRC	Skimmer P	R PS	Shallow Water Barge 133	QME Tri-Skimmer	905	0	0	0	Anacortes	WA	Dock
MSRC	Skimmer V	RV	ALEUTIAN TERN	Marco Skimmer	10764	67	0	2	Anacortes	WA	In Water
MSRC	Skimmer V	RV-2	ROYAL TERN	JBF Skimmer	6000	276	0	3	Anacortes	WA	In Water
MSRC	Trailer	VHO	Trailer 41	16' Boom Trailer	0	0	0	0	Anacortes	WA	March Pt. Office
MSRC	Trailer	VHO	Trailer 65	53' Boom Van	0	0	0	0	Anacortes	WA	Tesoro
MSRC	Trailer	VHO	Trailer 66	28' Boom Van	0	0	0	0	Anacortes	WA	March Pt. Office
MSRC	Trailer	VHO	Trailer 75	50' Boom Van	0	0	0	0	Anacortes	WA	March Pt. Office
MSRC	Trailer	VHO	Trailer 76	50' Boom Van	0	0	0	0	Anacortes	WA	Tesoro
MSRC	Trailer	VHO	PS #1, Trailer 43	PS#1 Trailer	0	0	0	0	Anacortes	WA	March Pt. Office
MSRC	Trailer	VHO	PS #2, Trailer 44	PS#2 Trailer	0	0	0	0	Anacortes	WA	March Pt. Office
MSRC	Trailer	VHO	Egret, Trailer 17	SB Egret Trailer	0	0	0	0	Anacortes	WA	March Pt. Office
MSRC	Trailer	VHO	SB #2, Trailer 39	SB #2 Trailer	0	0	0	0	Anacortes	WA	March Pt. Office
MSRC	Vehicle	VHO	Mobile 12	Chevrolet Van	0	0	0	1	Anacortes	WA	Cap Sante
MSRC	Vehicle	VHO	Mobile 4	Dodge 3/4 T P/U	0	0	0	1	Anacortes	WA	March Pt. Office
MSRC	Vehicle	VHO	Mobile 2	Dodge Caravan	0	0	0	1	Anacortes	WA	March Pt. Office
MSRC	Workboat	WB-3	TEAL	36' Work Boat	0	0	0	2	Anacortes	WA	In Water
MSRC	Workboat	WB-3	OSPREY	42' Work Boat	0	0	0	2	Anacortes	WA	In Water
MSRC	Workboat	SB-3	EGRET	18ft. Seine Skiff	0	0	0	2	Anacortes	WA	In Water
MSRC	Workboat	SB-3	SB #2	John Boat	0	0	0	2	Anacortes	WA	Trailer 39
MSRC	Barge	V TV	OSRB, 404	Tank Barge	0	40000	0	0	Astoria	OR	Barge
MSRC	Barge	R SWB	Shallow Water Barge 19	Shallow Water Barge, nor	0	400	0	0	Astoria	OR	Trailer
MSRC	Boom	B 26	Intertidal Boom	Texaboom 26"	0	0	2000	0	Astoria	OR	20' ISO Box
MSRC	Boom	B 24	Medium Fenceboom	24" Slickbar	0	0	2000	0	Astoria	OR	20' ISO Box
MSRC	Boom	B 67	Off Shore Boom	EFC 67" Boom	0	0	6600	0	Astoria	OR	Pallet
MSRC	Boom	B 67	OSRV, Oregon Responde	Off Shore 67" Boom	0	0	2640	0	Astoria	OR	Ship
MSRC	Boom	B Trawl	NOFI Oil Trawl	Oil Trawl, NOFI	0	0	675	0	Astoria	OR	Flatrack
MSRC	Boom	B 18	Shallow Water Barge 19	18"-20" Boom	0	0	60	0	Astoria	OR	Trailer
MSRC	Boom	B - 2	Trailer 57,Boom, Kepner	8" x 12"	0	0	1000	0	Astoria	OR	
MSRC	E DD 605gals	0FO	OSRV, Oregon Responde	605 gallons Corexit 9527	0	0	0	0	Astoria	OR	Ship
MSRC	Pump	E TP	OSRB, 404	DOP 250 Pump	0	0	0	0	Astoria	OR	Barge
MSRC	Pump	E TP	OSRB, 404	DOP 250 Pump	0	0	0	0	Astoria	OR	Barge
MSRC	Pump	E TP	OSRV, Oregon Responde	CCN 150 Pump	0	0	0	0	Astoria	OR	Barge
MSRC	R OSRV 1	R OSRV	OSRV, Oregon Responde	Storage, Crew	0	4000	0	6	Astoria	OR	Ship
MSRC	Skimmer P	R PS	Aardvac 800 Skimmer	Vacuum System	3840	0	0	0	Astoria	OR	Flatrack
MSRC	Skimmer P	R PS	Desmi Ocean Skimmer	Moderate Viscosity Oils	3017	0	0	0	Astoria	OR	Flatrack
MSRC	Skimmer P	R PS	Gt-185 Skimmer	Moderate Viscosity Oils	1371	0	0	0	Astoria	OR	Trailer
MSRC	Skimmer P	R PS	OSRV, Oregon Responde	STRESS Weir Skimmer	15840	0	0	0	Astoria	OR	Ship
MSRC	Skimmer P	R PS	Shallow Water Barge 19	GT-185 Skimmer	1371	0	0	0	Astoria	OR	Trailer
MSRC	Skimmer P	R PS	Vikoma 3 Weir Skimmer	Weir Boom	5657	0	1216	0	Astoria	OR	Flatrack
MSRC	Skimmer P	R PS	Walosep W4 Skimmer	Moderate Viscosity Oils	3017	0	0	0	Astoria	OR	Flatrack
MSRC	Skimmer V	R PS	OSRV, Oregon Responde	Transrec Skimmer	10567	0	0	0	Astoria	OR	Ship
MSRC	Storage P	S-PT	Debris Bin	#1 - 57 cu yd Debris Bin	0	0	0	0	Astoria	OR	
MSRC	Storage P	S-PT	Debris Bin	#2 - 57 cu yd Debris Bin	0	0	0	0	Astoria	OR	
MSRC	Storage P	S-PT	Debris Bin	#5 - 57 cu yd Debris Bin	0	0	0	0	Astoria	OR	
MSRC	Storage P	S-PT	Debris Bin	#7 - 57 cu yd Debris Bin	0	0	0	0	Astoria	OR	
MSRC	Trailer	VHO	Trailer 57	24' Trailer	0	0	0	0	Astoria	OR	Warehouse
MSRC	Vehicle	T Stake	Flatbed Ford, 4x4	#57	0	0	0	0	Astoria	OR	Vehicle
MSRC	Vehicle	T Pass	Suburban, Chevrolet	#55	0	0	0	0	Astoria	OR	Vehicle
MSRC	Workboat	V WB	Jon Boat #4	15ft / 25hp - Astoria	0	0	0	0	Astoria	OR	Trailer
MSRC	Workboat	V CB	OSRV, Oregon Responde	6m Rigid Hull Boat	0	0	0	0	Astoria	OR	Ship
MSRC	Workboat	V CB	OSRV, Oregon Responde	6m Rigid Hull Boat	0	0	0	0	Astoria	OR	Ship
MSRC	Workboat	V WB	OSRV, Oregon Responde	Large Support Boat	0	0	0	0	Astoria	OR	Ship

(b) (7)(F)

OwnerID	ContactName	ContactPhone	UniqueID	[redacted]	TransportationMode	Speed	VesselsNeededBoom	AdditionalResources	VesselsNeededEnhance	VOSS
	PACNW Response Mana	425-252-1300	2985	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	2987	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7551	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	2970	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	2972	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	2974	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	2976	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	2978	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	2982	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	2984	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7548	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7549	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7550	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	2989	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	2990	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	2969	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	2971	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	2973	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	2975	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	2977	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	2986	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	2988	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	2993	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	2995	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	3000	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	3001	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	3002	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	2981	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	2983	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	2992	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	2994	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7513	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7554	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7482	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7494	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7503	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7514	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7515	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7552	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	24950	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7464	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7511	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7512	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7516	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7517	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7448	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7462	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7480	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7519	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7553	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7596	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7598	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7518	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7454	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7456	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7458	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7460	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	3025	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7585	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7587	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7487	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7520	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7521	[redacted]			0		0	
	PACNW Response Mana	425-252-1300	7522	[redacted]			0		0	

MSRC	Workboat	V WB	Shallow Water Barge 19	16-3 Utility Boat <29'	0	0	0	0	Astoria	OR	Trailer
MSRC	Barge	TV-2	OSRB, PELICAN	Tank Barge	0	11900	0	2	Bellingham	WA	In Water
MSRC	Barge	R SWB	Shallow Water Barge 51	Shallow Water Barge, nor	0	400	0	0	Bellingham	WA	Trailer
MSRC	Boom	B-2	Trailer 40, Boom, Kepner	8"x12"	0	0	1000	0	Bellingham	WA	Trailer 40
MSRC	Boom	B-2	EAGLE, Boom, Kepner	8"x12"	0	0	3000	0	Bellingham	WA	WB EAGLE
MSRC	Boom	B-2	GREBE, Boom, Kepner	8"X12"	0	0	600	0	Bellingham	WA	RV GREBE
MSRC	Boom	B-2	HERON, Boom, Kepner	8"x12"	0	0	400	0	Bellingham	WA	RV HERON
MSRC	Boom	B-2	PELICAN, Boom, Versate	12"x18"	0	0	1000	0	Bellingham	WA	TV PELICAN
MSRC	Boom	B 18	Shallow Water Barge 51	18"-20" Boom	0	0	60	0	Bellingham	WA	Trailer
MSRC	Equipment	SRO	HERON, Power Pack,Die	diesel/hydraulic	0	0	0	0	Bellingham	WA	RV HERON
MSRC	Equipment	SRO	Destroil DS-150, Power P	diesel hydraulic	0	0	0	0	Bellingham	WA	BARGE PELICAN
MSRC	Pump	TP	PELICAN, MPC System	CCN-150 Off-loading syst	0	0	0	0	Bellingham	WA	TV PELICAN
MSRC	Skimmer P	SCH3	HERON, Morris, Skimmer	disk	206	0	0	0	Bellingham	WA	RV HERON
MSRC	Skimmer P	SCL2	Destroil DS-150, Skimme	weir	754	0	0	0	Bellingham	WA	BARGE PELICAN
MSRC	Skimmer V	RV	GREBE	Marco Skimmer	3588	30	0	2	Bellingham	WA	In Water
MSRC	Skimmer V	RV	HERON	40' Skimmer	0	0	0	2	Bellingham	WA	In Water
MSRC	Skimmer V	RV-2	WESTERN GULL	JBF Skimmer	6000	286	0	3	Bellingham	WA	In Water
MSRC	Storage P	PS-4	HERON, Tank, Portable	Liqultote Tank	0	7	0	0	Bellingham	WA	RV HERON
MSRC	Trailer	VHO	Trailer 40	16' Boom Trailer	0	0	0	0	Bellingham	WA	Colony Wharf
MSRC	Trailer	VHO	Trailer, Jon Boat	15ft / 25hp - Everett	0	0	0	0	Bellingham	WA	
MSRC	Vehicle	VHO	Mobile 3	Dodge 3/4 T P/U	0	0	0	1	Bellingham	WA	Office
MSRC	Workboat	WB-3	EAGLE	42' Work Boat	0	0	0	2	Bellingham	WA	In Water
MSRC	Workboat	V WB	Shallow Water Barge 51	17-3 Utility Boat <29'	0	0	0	0	Bellingham	WA	Trailer
MSRC	Workboat	V WB	Jon Boat #3	15ft / 25hp - Everett	0	0	0	0	Bellingham	WA	Trailer
MSRC	Skimmer P	R-PS	Shallow Water Barge 51	QME Tri-Skimmer	905	0	0	0	Bellingham	WA	Trailer
MSRC	Boom	B-2	Trailer 27, Boom, Acme	12"x18"	0	0	2000	0	Blaine	WA	Trailer 27
MSRC	Boom	B-2	Trailer 27919, Boom, Ver	12"x18"	0	0	3200	0	Blaine	WA	Trailer 27919
MSRC	Boom	B 24	Medium Fenceboom, Tra	24" Slickbar	0	0	2000	0	Blaine	WA	20' ISO Box
MSRC	Boom	B 67	Off Shore Boom, Trailer 7	EFC 67" Boom	0	0	1320	0	Blaine	WA	Trailer
MSRC	Trailer	VHO	Trailer 27	50' Boom Van	0	0	0	0	Blaine	WA	BP
MSRC	Trailer	VHO	Trailer 27919	53' Boom Van	0	0	0	0	Blaine	WA	BP
MSRC	Trailer	VHO	Trailer 7087	48' Flatbed	0	0	0	0	Blaine	WA	BP
MSRC	Barge	R SWB	Shallow Water Barge 23	Shallow Water Barge, nor	0	400	0	0	Coos Bay	OR	Trailer
MSRC	Boom	B 18	Shallow Water Barge 23	18"-20" Boom	0	0	60	0	Coos Bay	OR	Trailer
MSRC	Pump	E TP	Eureka Transfer Pump Sy	CCN 150 Pump	0	0	0	0	Coos Bay	OR	Flatrack
MSRC	Skimmer P	R PS	STRESS Skimmer	CCN 150 Pump	15840	0	0	0	Coos Bay	OR	Flatrack
MSRC	Skimmer P	R PS	Shallow Water Barge 23	DOP 250 Skimmer	3017	0	0	0	Coos Bay	OR	Trailer
MSRC	Workboat	V WB	Shallow Water Barge 23	17-4 Utility Boat <29'	0	0	0	0	Coos Bay	OR	Trailer
MSRC	Boom	B-2	Trailer 16237, Boom, Kep	8"x12"	0	0	800	0	Everett	WA	Warehouse
MSRC	Boom	B-1	Boom, Expandi 4300	20"x23"	0	0	1300	0	Everett	WA	Warehouse
MSRC	Boom	B 26	Intertidal Boom	Texaboom 26"	0	0	2000	0	Everett	WA	20' ISO Box
MSRC	Boom	B 24	Medium Fenceboom	24" Slickbar	0	0	2000	0	Everett	WA	20' ISO Box
MSRC	Boom	B 24	Medium Fenceboom	24" Slickbar	0	0	2000	0	Everett	WA	20' ISO Box
MSRC	Boom	B 67	Off Shore Boom	EFC 67" Boom	0	0	6600	0	Everett	WA	Pallet
MSRC	Boom	B 26	Intertidal Boom	Texaboom 26"	0	0	1650	0	Everett	WA	20' ISO Box
MSRC	Equipment	SRO	Boom Roller	Portable Hyd.	0	0	0	0	Everett	WA	Trailer 49
MSRC	Equipment	SRO	Rope Mop #1, Generator,	Diesel	0	0	0	0	Everett	WA	Warehouse
MSRC	Equipment	SRO	Rope Mop #2, Generator,	Diesel	0	0	0	0	Everett	WA	Warehouse
MSRC	Equipment	SRO	Morris MI-30 #1, Power P	diesel/hydraulic	0	0	0	0	Everett	WA	Tote
MSRC	Equipment	SRO	Poscon, Power Pack	diesel/hydraulic	0	0	0	0	Everett	WA	Warehouse
MSRC	Equipment	SRO	Aquaguard #1, Power Pa	4.8 hp.	0	0	0	0	Everett	WA	Trailer 2
MSRC	Equipment	SRO	Aquaguard #2, Power Pa	4.8 hp.	0	0	0	0	Everett	WA	Trailer 2
MSRC	Equipment	SRO	Hose Fittings Kit	misc. connectors	0	0	0	0	Everett	WA	Warehouse
MSRC	Equipment	0FO	30KW Gen	Portable Genrator	0	0	0	0	Everett	WA	Trailer
MSRC	Equipment	E PLS	Mobile Lite Plant w/ Gene	Portable Generator / Lites	0	0	0	0	Everett	WA	Trailer
MSRC	Personnel	P M	Spill Support Staff		0	0	0	1	Everett	WA	
MSRC	Personnel	P M	Spill Support Staff		0	0	0	1	Everett	WA	
MSRC	Personnel	P M	Spill Support Staff		0	0	0	1	Everett	WA	
MSRC	Personnel	P M	Spill Support Staff		0	0	0	1	Everett	WA	
MSRC	Personnel	P M	Spill Support Staff		0	0	0	1	Everett	WA	
MSRC	Personnel	P M	Spill Support Staff		0	0	0	1	Everett	WA	
MSRC	Personnel	P M	Spill Support Staff		0	0	0	1	Everett	WA	
MSRC	Personnel	P M	Spill Support Staff		0	0	0	1	Everett	WA	
MSRC	Pump	TP-4	Morris #1, Pump, Peristal	110 gpm-29' Lift	0	0	0	0	Everett	WA	Pallet
MSRC	Pump	TP-4	Peristaltic Pump	110 gpm29' Lift	0	0	0	0	Everett	WA	Pallet

	PACNW Response Mana	425-252-1300	7555	46.175	-123.8533333			0	0	
	PACNW Response Mana	425-252-1300	3016	48.755	-122.5133333			0	0	
	PACNW Response Mana	425-252-1300	7570	48	-122.216667			0	0	
	PACNW Response Mana	425-252-1300	3004	48.755	-122.5133333			0	0	
	PACNW Response Mana	425-252-1300	3006	48.755	-122.5133333			0	0	
	PACNW Response Mana	425-252-1300	3008	48.755	-122.5133333			0	0	
	PACNW Response Mana	425-252-1300	3012	48.755	-122.5133333			0	0	
	PACNW Response Mana	425-252-1300	3017	48.755	-122.5133333			0	0	
	PACNW Response Mana	425-252-1300	7568	48	-122.216667			0	0	
	PACNW Response Mana	425-252-1300	3010	48.755	-122.5133333			0	0	
	PACNW Response Mana	425-252-1300	3045	0	0			0	0	
	PACNW Response Mana	425-252-1300	24865	48.755	-122.5133333			0	0	
	PACNW Response Mana	425-252-1300	3011	48.755	-122.5133333			0	0	
	PACNW Response Mana	425-252-1300	3044	0	0			0	0	
	PACNW Response Mana	425-252-1300	3007	48.755	-122.5133333			0	0	
	PACNW Response Mana	425-252-1300	3009	48.755	-122.5133333			0	0	
	PACNW Response Mana	425-252-1300	3014	48.755	-122.5133333			0	0	
	PACNW Response Mana	425-252-1300	3013	48.755	-122.5133333			0	0	
	PACNW Response Mana	425-252-1300	3003	48.755	-122.5133333			0	0	
	PACNW Response Mana	425-252-1300	7488	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3069	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3005	48.755	-122.5133333			0	0	
	PACNW Response Mana	425-252-1300	7571	48	-122.216667			0	0	
	PACNW Response Mana	425-252-1300	24757	48	-122.2166667			0	0	
	PACNW Response Mana		24671	0	0			0	0	
	PACNW Response Mana	425-252-1300	3022	48.86833333	-122.7508333			0	0	
	PACNW Response Mana	425-252-1300	3024	48.86833333	-122.7508333			0	0	
	PACNW Response Mana	425-252-1300	7497	48.86833333	-122.7508333			0	0	
	PACNW Response Mana	425-252-1300	7505	48.86833333	-122.7508333			0	0	
	PACNW Response Mana	425-252-1300	3021	48.86833333	-122.7508333			0	0	
	PACNW Response Mana	425-252-1300	3023	48.86833333	-122.7508333			0	0	
7087	PACNW Response Mana	425-252-1300	24951	48.86833333	-122.7508333			0	0	
	PACNW Response Mana	425-252-1300	7562	43.366667	-124.178333			0	0	
	PACNW Response Mana	425-252-1300	7560	43.366667	-124.178333			0	0	
	PACNW Response Mana	425-252-1300	7466	43.36666667	-124.1783333			0	0	
	PACNW Response Mana	425-252-1300	7586	43.366667	-124.178333			0	0	
	PACNW Response Mana	425-252-1300	24668	43.366667	-124.178333			0	0	
	PACNW Response Mana	425-252-1300	7563	43.366667	-124.178333			0	0	
	PACNW Response Mana	425-252-1300	3026	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3028	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	7483	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	7495	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	7496	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	7504	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	24758	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	2998	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3036	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3039	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3042	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3047	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3055	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3059	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3065	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	7447	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	7502	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	7575	48	-122.216667			0	0	
	PACNW Response Mana	425-252-1300	7576	48	-122.216667			0	0	
	PACNW Response Mana	425-252-1300	7577	48	-122.216667			0	0	
	PACNW Response Mana	425-252-1300	7578	48	-122.216667			0	0	
	PACNW Response Mana	425-252-1300	7579	48	-122.216667			0	0	
	PACNW Response Mana	425-252-1300	7580	48	-122.216667			0	0	
	PACNW Response Mana	425-252-1300	7581	48	-122.216667			0	0	
	PACNW Response Mana	425-252-1300	7582	48	-122.216667			0	0	
	PACNW Response Mana	425-252-1300	2997	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3020	48	-122.2166667			0	0	

MSRC	Pump	TP-3	Poscon, Pump, 4" Yanma	238 gpm-55' Lift	0	0	0	0	Everett	WA	Warehouse
MSRC	Pump	TP-4	Slickbar Slurp, Pump, Pe	110 gpm-29' Lift	0	0	0	0	Everett	WA	Trailer 2
MSRC	Pump	TP-4	Aquaguard #1, Pump, Die	50 gpm diaphram	0	0	0	0	Everett	WA	Trailer 2
MSRC	Pump	TP-4	Aquaguard #2, Pump, Die	50 gpm diaphram	0	0	0	0	Everett	WA	Trailer 2
MSRC	Pump	TP-3	Desmi DOP-250 Pump	440 gpm pump	0	0	0	0	Everett	WA	Warehouse
MSRC	Pump	TP-4	Peristaltic Pump	110 gpm29' Lift	0	0	0	0	Everett	WA	Warehouse
MSRC	Skimmer P	SCH1	Lori Brush Skimmer Unit	LBC-3	3662	0	0	0	Everett	WA	Pallet
MSRC	Skimmer P	SCH	Rope Mop #1, Skimmer, I	Rope Mop	48	0	0	0	Everett	WA	Warehouse
MSRC	Skimmer P	SCH	Rope Mop #2, Skimmer, I	Rope Mop	48	0	0	0	Everett	WA	Warehouse
MSRC	Skimmer P	SCH1	Lori Brush Skimmer Unit	LBC-3	3662	0	0	0	Everett	WA	Warehouse
MSRC	Skimmer P	SCH2	Morris MI-30 #1, Skimme	Disk Skimmer	987	0	0	0	Everett	WA	Tote
MSRC	Skimmer P	SCH2	Poscon, Skimmer	weir	754	0	0	0	Everett	WA	Warehouse
MSRC	Skimmer P	SCH3	Aquaguard #1, Skimmer,	brush/disk/drum	360	0	0	0	Everett	WA	Trailer 2
MSRC	Skimmer P	SCH3	Aquaguard #2, Skimmer,	brush/disk/drum	360	0	0	0	Everett	WA	Trailer 2
MSRC	Skimmer P	R PS	Aardvac 800 Skimmer	Vacuum System	3840	0	0	0	Everett	WA	Flatrack
MSRC	Skimmer P	R PS	Desmi Ocean Skimmer	Moderate Viscosity Oils	3017	0	0	0	Everett	WA	Flatrack
MSRC	Skimmer P	R PS	Seawoolf Skimmer	Viscous and Debris laden	3017	0	0	0	Everett	WA	Flatrack
MSRC	Skimmer P	R PS	DOP 250 Skimmer	Weir Skimmer	3017	0	0	0	Everett	WA	Basket
MSRC	Skimmer P	R PS	DOP 250 Skimmer	Weir Skimmer	3017	0	0	0	Everett	WA	Pallet
MSRC	Skimmer P	R PS	DOP 250 Skimmer	Weir Skimmer	3017	0	0	0	Everett	WA	Basket
MSRC	Skimmer P	R PS	Vikoma 3 Weir Skimmer	Weir Boom	5657	0	1216	0	Everett	WA	Flatrack
MSRC	Skimmer P	R PS	Walosep W4 Skimmer	Moderate Viscosity Oils	3017	0	0	0	Everett	WA	Flatrack
MSRC	Skimmer P	R PS	WP-1 Skimmer	Viscous Oils	3017	0	0	0	Everett	WA	Flatrack
MSRC	Skimmer V	RV	PERIGRINE	Marco Skimmer	3588	28	0	2	Everett	WA	Trailer
MSRC	Skimmer V	RV	Merlin	Marco Skimmer	3588	28	0	2	Everett	WA	Trailer
MSRC	Storage P	PS-4	Tank, Portable	Liqultote Tank	0	7	0	0	Everett	WA	
MSRC	Storage P	PS-4	Tank, Portable	Liqultote Tank	0	7	0	0	Everett	WA	
MSRC	Storage P	PS-4	Rope Mop #1, Tank, Port	Plastic Fish Box	0	4	0	0	Everett	WA	Warehouse
MSRC	Storage P	PS4	Rope Mop #2, Tank, Port	Plastic Fish Box	0	4	0	0	Everett	WA	Warehouse
MSRC	Storage P	PS-4	Morris MI-30 #1, Tank, Po	Buoywall Tank	0	14	0	0	Everett	WA	Tote
MSRC	Storage P	PS-4	Poscon, Tank, Portable	Liqultote Tank	0	7	0	0	Everett	WA	Warehouse
MSRC	Storage P	PS-4	Slickbar Slurp, Tank, Port	Buoywall Tank	0	14	0	0	Everett	WA	Trailer 2
MSRC	Storage P	PS-4	Aquaguard #1, Tank, Port	Buoywall Tank	0	24	0	0	Everett	WA	Trailer 2
MSRC	Storage P	PS-4	Aquaguard #2, Tank, Por	Buoywall tank	0	24	0	0	Everett	WA	Trailer 2
MSRC	Storage P	S-PT	Debris Bin	#2 - 57 cu yd Debris Bin	0	0	0	0	Everett	WA	
MSRC	Storage P	S-PT	Debris Bin	#4 - 57 cu yd Debris Bin	0	0	0	0	Everett	WA	
MSRC	Storage P	S-PT	Debris Bin	#6 - 57 cu yd Debris Bin	0	0	0	0	Everett	WA	
MSRC	Storage P	S-PT	Debris Bin	#8 - 57 cu yd Debris Bin	0	0	0	0	Everett	WA	
MSRC	Storage P	S BT	Towable Storage Bladder	500BBL system	0	500	0	0	Everett	WA	Flatrack
MSRC	Storage P	S BT	Towable Storage Bladder	500BBL system	0	500	0	0	Everett	WA	Flatrack
MSRC	Storage P	S BT	Towable Storage Bladder	500BBL system	0	500	0	0	Everett	WA	Flatrack
MSRC	T COM Sup	T COMM	Hand Held Radio Packag	Radios	0	0	0	0	Everett	WA	Trailer
MSRC	T COM Sup	T COMM	Mobile Comms Suite	48ft trailer lic# 9552KU	0	0	0	0	Everett	WA	Trailer
MSRC	T COM Sup	T COMM	Mobile Comms Suite Sat	Sat system	0	0	0	0	Everett	WA	Trailer
MSRC	T COM Sup	T COMM	Portable Base Station & F	Repeaters	0	0	0	0	Everett	WA	Trailer
MSRC	T COM Sup	T COMM	Portable Internet Access	Internet access	0	0	0	0	Everett	WA	Trailer
MSRC	T XX Pshop		Shop Van	Portable Repair Shop	0	0	0	0	Everett	WA	20' ISO Box
MSRC	T XX Rigging		Rigging Van	Rigging Equipment Cache	0	0	0	0	Everett	WA	20' ISO Box
MSRC	T XX Sp Prt		Spare Parts Van	Parts Cache	0	0	0	0	Everett	WA	20' ISO Box
MSRC	Trailer	VHO	Boom Roller, Trailer 49	Boomroller Trailer	0	0	0	0	Everett	WA	Trailer
MSRC	Trailer	B-2	Trailer 79	26ft	0	0	800	0	Everett	WA	Everett
MSRC	Trailer	VHO	JAEGER, Trailer 56	SB Jaeger Trailer	0	0	0	0	Everett	WA	Warehouse
MSRC	Trailer	VHO	Trailer 2	Flatbed, #10,000	0	0	0	0	Everett	WA	Warehouse
MSRC	Trailer	VHO	Trailer 12	for Tern Module	0	0	0	0	Everett	WA	Warehouse
MSRC	Trailer	VHO	Trailer 15	SB #4 Trailer	0	0	0	0	Everett	WA	Warehouse
MSRC	Trailer	VHO	Trailer 20	Absorbent Material	0	0	0	0	Everett	WA	Warehouse
MSRC	Trailer	VHO	Trailer 21	Crew Support	0	0	0	0	Everett	WA	Warehouse
MSRC	Trailer	T FO	Command Post	20 ft Van	0	0	0	0	Everett	WA	Trailer
MSRC	Trailer	0FO	Shoreline Support Trailer	Equipment Cache	0	0	0	0	Everett	WA	Trailer
MSRC	Trailer	0FO	Staging Site Trailer	21ft trailer lic# 0129LX	0	0	0	0	Everett	WA	Trailer
MSRC	Trailer	0FO	Staging Site Trailer	21ft trailer licl#.	0	0	0	0	Everett	WA	Trailer
MSRC	Trailer	B -	Trailer, Boom	21ft trailer lic# 0130LX	0	0	0	0	Everett	WA	Trailer
MSRC	Trailer	VHO	Peregrine, Trailer	RV Peregrine Trailer	0	0	0	0	Everett	WA	Warehouse
MSRC	Trailer	VHO	Merlin, Trailer	RV Merlin Trailer	0	0	0	0	Everett	WA	Warehouse
MSRC	Vehicle	VHO	Mobile 9	Dodge 3/4 T P/U	0	0	0	1	Everett	WA	

	PACNW Response Mana	425-252-1300	3048	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3052	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3056	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3060	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3063	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3064	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3018	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3034	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3037	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3040	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3041	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3046	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3054	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3058	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	7449	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	7463	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	7543	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	7545	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	7561	48	-122.216667			0	0	
	PACNW Response Mana	425-252-1300	7569	48	-122.216667			0	0	
	PACNW Response Mana	425-252-1300	7597	48	-122.216667			0	0	
	PACNW Response Mana	425-252-1300	7599	48	-122.216667			0	0	
	PACNW Response Mana	425-252-1300	7600	48	-122.216667			0	0	
	PACNW Response Mana	425-252-1300	3030	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	24952	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	2991	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3015	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3035	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3038	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3043	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3049	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3053	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3057	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3061	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	7455	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	7457	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	7459	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	7461	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	7588	48	-122.216667			0	0	
	PACNW Response Mana	425-252-1300	7589	48	-122.216667			0	0	
	PACNW Response Mana	425-252-1300	7590	48	-122.216667			0	0	
	PACNW Response Mana	425-252-1300	7481	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	7500	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	7501	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	7535	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	7536	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	7572	48	-122.216667			0	0	
	PACNW Response Mana	425-252-1300	7542	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	7574	48	-122.216667			0	0	
	PACNW Response Mana	425-252-1300	2999	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3027	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3033	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3071	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3073	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3074	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3075	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3076	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	7452	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	7573	48	-122.216667			0	0	
	PACNW Response Mana	425-252-1300	7583	48	-122.216667			0	0	
	PACNW Response Mana	425-252-1300	7584	48	-122.216667			0	0	
	PACNW Response Mana	425-252-1300	7594	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	24953	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	24954	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3019	48	-122.2166667			0	0	

MSRC	Vehicle	VHO	Mobile 5	Dodge 1T P/U	0	0	0	1	Everett	WA	Everett Office
MSRC	Vehicle	VHO	Mobile 10	Dodge Caravan	0	0	0	1	Everett	WA	Everett Office
MSRC	Vehicle	VHO	Mobile 11	Nissan 1-1/2 Ton	0	0	0	1	Everett	WA	Warehouse
MSRC	Vehicle	VHO	Mobile 1	Buick SUV	0	0	0	0	Everett	WA	Everett Office
MSRC	Vehicle	VHO	Mobile 6	Chevrolet Van	0	0	0	1	Everett	WA	Squalicum
MSRC	Vehicle	B -	All Terrain vehicle	#1 - Jon Deere Gator	0	0	0	0	Everett	WA	Trailer
MSRC	Vehicle	B -	All Terrain vehicle	#2 - Jon Deere Gator	0	0	0	0	Everett	WA	Trailer
MSRC	Vehicle	T COMM	Communication Van	Lic# 33723X - WA	0	0	0	0	Everett	WA	Vehicle
MSRC	Vehicle	B -	Mechanics Truck	#59	0	0	0	0	Everett	WA	Vehicle
MSRC	Vehicle	T PU	Flatbed, Ford 4x4	#56	0	0	0	0	Everett	WA	Vehicle
MSRC	Vehicle	T Semi Cr	Tractor w/ Crane	#58	0	0	0	0	Everett	WA	Vehicle
MSRC	Vehicle	VHO	Mobile 15	Dodge Durango SUV	0	0	0	0	Everett	WA	Everett Office
MSRC	Workboat	SB-3	JAEGER	18ft. Seine Skiff	0	0	0	2	Everett	WA	Warehouse
MSRC	Workboat	V WB	Jon Boat #1	14ft / 15hp - Everett	0	0	0	0	Everett	WA	Shoreline Trailer
MSRC	Workboat	V WB	Jon Boat #2	15ft / 15hp	0	0	0	0	Everett	WA	Trailer
MSRC	Workboat	V CB	Response 5	28' Crew boat	0	0	0	0	Everett	WA	Trailer
MSRC	Workboat	V WB	Utility Boat / Small Suppo	Utility Boat<29'	0	0	0	0	Everett	WA	Trailer
MSRC	Boom	B-2	Trailer 77, Boom, Acme	12"x18"	0	0	4000	0	Ferndale	WA	Trailer 77
MSRC	Boom	B-2	Trailer 61, Boom, Acme	12"x18"	0	0	2000	0	Ferndale	WA	Trailer 61
MSRC	Equipment	DD	Trailer 48, Dispersant trar	Pump,Hose	0	0	0	0	Ferndale	WA	Trailer 48
MSRC	Trailer	VHO	Trailer 77	50' Boom Van	0	0	0	0	Ferndale	WA	ConocoPhillips
MSRC	Trailer	VHO	Trailer 61	28' Boom Van	0	0	0	0	Ferndale	WA	ConocoPhillips
MSRC	Trailer	VHO	Trailer 48	40' Box Van	0	0	0	0	Ferndale	WA	ConocoPhillips
MSRC	Trailer	DD	Trailer 48, Dispersant, Co	9 totes = 3046 gals	0	0	0	0	Ferndale	WA	Trailer 48
MSRC	Trailer	VHO	Trailer 67	40' Box Van	0	0	0	0	Ferndale	WA	ConocoPhillips
MSRC	Trailer	DD	Trailer 67, Dispersant, Co	10 totes = 3384	0	0	0	0	Ferndale	WA	Trailer 67
MSRC	Boom	B 18	18" to 20" Boom	Qualtech, Fenceboom	0	0	2000	0	Neah Bay	WA	Sled
MSRC	Boom	B 18	18" to 20" Boom	Qualtech, Fenceboom	0	0	1000	0	Neah Bay	WA	Trailer
MSRC	Boom	B 18	18" to 20" Boom	Qualtech, Fenceboom	0	0	1000	0	Neah Bay	WA	Trailer
MSRC	Boom	B 67	Off Shore Boom	EFC 67" Boom	0	0	3960	0	Neah Bay	WA	Trailer
MSRC	Trailer	B -	Trailer, Boom	18ft trailer lic#	0	0	0	0	Neah Bay	WA	Trailer
MSRC	Workboat	V WB	Cascade, Munson	36' Support Vessel	0	0	0	0	Neah Bay	WA	Dock
MSRC	Barge	TV-2	OSRB, KITTIWAKE	Tank Barge	0	23400	0	2	Port Angeles	WA	In Water
MSRC	Barge	V TV	OSRB, 380	Tank Barge	0	38000	0	0	Port Angeles	WA	Barge
MSRC	Barge	R SWB	Shallow Water Barge 21	Shallow Water Barge	0	400	0	0	Port Angeles	WA	
MSRC	Boom	B-2	Trailer 73, Boom, Acme	12"x18"	0	0	3200	0	Port Angeles	WA	Trailer 73
MSRC	Boom	B-1	Trailer 74, Boom, Kepner	12"x30"	0	0	2000	0	Port Angeles	WA	Trailer 74
MSRC	Boom	B-2	Trailer 42, Boom, Kepner	8"x12"	0	0	1000	0	Port Angeles	WA	Trailer 42
MSRC	Boom	B-1	Trailer 69, Boom, 3-M Fir	18"x18"	0	0	500	0	Port Angeles	WA	Trailer 69
MSRC	Boom	B-2	PUFFIN, Boom, Kepner	8"x12"	0	0	800	0	Port Angeles	WA	WB PUFFIN
MSRC	Boom	B-2	MALLARD, Boom, Kepne	8"x12"	0	0	1500	0	Port Angeles	WA	WB MALLARD
MSRC	Boom	B-2	LOON, Boom, Kepner	8"x12"	0	0	1500	0	Port Angeles	WA	WB LOON
MSRC	Boom	B-2	PINTAIL, Boom, Versatec	12"x18"	0	0	200	0	Port Angeles	WA	RV PINTAIL
MSRC	Boom	B-2	SHEARWATER, Boom, A	12"x18"	0	0	800	0	Port Angeles	WA	RV SHEARWATER
MSRC	Boom	B-2	KITTIWAKE, Boom, Vers	12"x18"	0	0	2700	0	Port Angeles	WA	TV KITTIWAKE
MSRC	Boom	B Fire 36	Fire Boom	Oil Stop 36" Fire Boom	0	0	900	0	Port Angeles	WA	Trailer
MSRC	Boom	B 26	Intertidal Boom	Texaboom 26"	0	0	2000	0	Port Angeles	WA	20' ISO Box
MSRC	Boom	B 24	Medium Fenceboom	24" Slickbar	0	0	2000	0	Port Angeles	WA	Trailer
MSRC	Boom	B 67	Off Shore Boom	EFC 67" Boom	0	0	1320	0	Port Angeles	WA	Trailer
MSRC	Boom	B 67	Oil Spill Response Barge	EFC 67" Boom	0	0	1320	0	Port Angeles	WA	Barge
MSRC	Boom	B 67	OSRV, Park Responder	Off Shore 67" Boom	0	0	2640	0	Port Angeles	WA	Ship
MSRC	Boom	B Trawl	NOFI Oil Trawl	Oil Trawl, NOFI	0	0	675	0	Port Angeles	WA	Flatrack
MSRC	Boom	B 18	Shallow Water Barge 21	18"-20" Boom	0	0	60	0	Port Angeles	WA	
MSRC	E DD 605gals	0FO	OSRV Park Responder, D	605 gallons Corexit 9527	0	0	0	0	Port Angeles	WA	Ship
MSRC	Personnel	PS	Field Supervisor		0	0	0	1	Port Angeles	WA	
MSRC	Personnel	B -	Field Supervisor		0	0	0	1	Port Angeles	WA	
MSRC	Personnel	B -	Field Supervisor		0	0	0	1	Port Angeles	WA	
MSRC	Personnel	P M	Response Supervisor		0	0	0	1	Port Angeles	WA	
MSRC	Pump	E TP	Oil Spill Response Barge	DOP 250 Pump	0	0	0	0	Port Angeles	WA	Barge
MSRC	Pump	E TP	OSRV, Park Responder	CCN 150 Pump	0	0	0	0	Port Angeles	WA	Barge
MSRC	Pump	TP	KITTIWAKE, MPC Syster	CCN-150 Off-loading syst	0	0	0	0	Port Angeles	WA	TV Kittiwake
MSRC	R OSRV 1	R OSRV	OSRV, Park Responder	Storage, Crew	0	4000	0	6	Port Angeles	WA	Ship
MSRC	Skimmer P	SCH3	Morris #1, Skimmer, MI-1	disk	206	0	0	0	Port Angeles	WA	Pallet
MSRC	Skimmer P	SOL2	Destroil 250, Skimmer	weir	2914	0	0	0	Port Angeles	WA	BARGE KITTIWAKE
MSRC	Skimmer P	R PS	OSRV, Park Responder	STRESS Weir Skimmer	15840	0	0	0	Port Angeles	WA	Ship

	PACNW Response Mana	425-252-1300	3066	48	-122.2166667			0		0	
	PACNW Response Mana	425-252-1300	3067	48	-122.2166667			0		0	
	PACNW Response Mana	425-252-1300	3068	48	-122.2166667			0		0	
	PACNW Response Mana	425-252-1300	3070	48	-122.2166667			0		0	
	PACNW Response Mana	425-252-1300	3135	47.68333333	-122.4083333			0		0	
	PACNW Response Mana	425-252-1300	7450	48	-122.2166667			0		0	
	PACNW Response Mana	425-252-1300	7451	48	-122.2166667			0		0	
	PACNW Response Mana	425-252-1300	7453	48	-122.2166667			0		0	
	PACNW Response Mana	425-252-1300	7493	48	-122.2166667			0		0	
	PACNW Response Mana	425-252-1300	7532	48	-122.2166667			0		0	
	PACNW Response Mana	425-252-1300	7592	48	-122.216667			0		0	
	PACNW Response Mana	425-252-1300	24868	48	-122.2166667			0		0	
	PACNW Response Mana	425-252-1300	3032	48	-122.2166667			0		0	
	PACNW Response Mana	425-252-1300	7486	48	-122.2166667			0		0	
	PACNW Response Mana	425-252-1300	7489	48	-122.2166667			0		0	
	PACNW Response Mana	425-252-1300	7490	48	-122.2166667			0		0	
	PACNW Response Mana	425-252-1300	7595	48	-122.216667			0		0	
	PACNW Response Mana	425-252-1300	3079	48.82666667	-122.7083333			0		0	
	PACNW Response Mana	425-252-1300	3081	48.82666667	-122.7083333			0		0	
	PACNW Response Mana	425-252-1300	3084	48.82666667	-122.7083333			0		0	
	PACNW Response Mana	425-252-1300	3078	48.82666667	-122.7083333			0		0	
	PACNW Response Mana	425-252-1300	3080	48.82666667	-122.7083333			0		0	
	PACNW Response Mana	425-252-1300	3082	48.82666667	-122.7083333			0		0	
	PACNW Response Mana	425-252-1300	3083	48.82666667	-122.7083333			0		0	
	PACNW Response Mana	425-252-1300	3085	48.82666667	-122.7083333			0		0	
	PACNW Response Mana	425-252-1300	3086	48.82666667	-122.7083333			0		0	
	PACNW Response Mana	425-252-1300	7444	48.36666667	-124.6125			0		0	
	PACNW Response Mana	425-252-1300	7445	48.36666667	-124.6125			0		0	
	PACNW Response Mana	425-252-1300	7446	48.36666667	-124.6125			0		0	
	PACNW Response Mana	425-252-1300	7506	48.36666667	-124.6125			0		0	
	PACNW Response Mana	425-252-1300	7593	48.366667	-124.6125			0		0	
	PACNW Response Mana	425-252-1300	7491	48.36666667	-124.6125			0		0	
	PACNW Response Mana	425-252-1300	3112	48.12666667	-123.4533333			0		0	
	PACNW Response Mana	425-252-1300	7510	48.125	-123.4408333			0		0	
	PACNW Response Mana	425-252-1300	7558	48.125	-123.440833			0		0	
	PACNW Response Mana	425-252-1300	3088	48.12666667	-123.4533333			0		0	
	PACNW Response Mana	425-252-1300	3090	48.12666667	-123.4533333			0		0	
	PACNW Response Mana	425-252-1300	3092	48.12666667	-123.4533333			0		0	
	PACNW Response Mana	425-252-1300	3094	48.12666667	-123.4533333			0		0	
	PACNW Response Mana	425-252-1300	3096	48.12666667	-123.4533333			0		0	
	PACNW Response Mana	425-252-1300	3098	48.12666667	-123.4533333			0		0	
	PACNW Response Mana	425-252-1300	3100	48.12666667	-123.4533333			0		0	
	PACNW Response Mana	425-252-1300	3103	48.12666667	-123.4533333			0		0	
	PACNW Response Mana	425-252-1300	3105	48.12666667	-123.4533333			0		0	
	PACNW Response Mana	425-252-1300	3113	48.12666667	-123.4533333			0		0	
	PACNW Response Mana	425-252-1300	7479	48.125	-123.4408333			0		0	
	PACNW Response Mana	425-252-1300	7484	48.125	-123.4408333			0		0	
	PACNW Response Mana	425-252-1300	7498	48.36666667	-124.6125			0		0	
	PACNW Response Mana	425-252-1300	7507	48.125	-123.4408333			0		0	
	PACNW Response Mana	425-252-1300	7508	48.125	-123.4408333			0		0	
	PACNW Response Mana	425-252-1300	7523	48.125	-123.4408333			0		0	
	PACNW Response Mana	425-252-1300	7524	48.125	-123.4408333			0		0	
	PACNW Response Mana	425-252-1300	7556	48.125	-123.440833			0		0	
	PACNW Response Mana	425-252-1300	7465	48.125	-123.4408333			0		0	
	PACNW Response Mana	425-252-1300	7471	48.125	-123.4408333			0		0	
	PACNW Response Mana	425-252-1300	7472	48.125	-123.4408333			0		0	
	PACNW Response Mana	425-252-1300	7476	48.125	-123.4408333			0		0	
	PACNW Response Mana	425-252-1300	7540	48.125	-123.4408333			0		0	
	PACNW Response Mana	425-252-1300	7509	48.125	-123.4408333			0		0	
	PACNW Response Mana	425-252-1300	7525	48.125	-123.4408333			0		0	
	PACNW Response Mana	425-252-1300	24866	48.125	122.216667			0		0	
	PACNW Response Mana	425-252-1300	7526	48.125	-123.4408333			0		0	
	PACNW Response Mana	425-252-1300	2996	48.125	-123.440833			0		0	
	PACNW Response Mana	425-252-1300	3062	0	0			0		0	
	PACNW Response Mana	425-252-1300	7528	48.125	-123.4408333			0		0	

MSRC	Skimmer P	R PS	Shallow Water Barge 21	Gt-185 Skimmer	1371	0	0	0	Port Angeles	WA	
MSRC	Skimmer V	RV	PINTAIL	W/ Lori Brush	2592	0	0	2	Port Angeles	WA	In Water
MSRC	Skimmer V	RV-1	SHEARWATER	JBF Skimmer	12000	1362	0	4	Port Angeles	WA	In Water
MSRC	Skimmer V	RV-2	ARCTIC TERN	JBF Skimmer	6000	276	0	3	Port Angeles	WA	In Water
MSRC	Skimmer V	R PS	OSRV, Park Responder	Transrec Skimmer	10567	0	0	0	Port Angeles	WA	Ship
MSRC	Skimmer V	RV	AUKLET	Marco Skimmer	3588	3	0	2	Port Angeles	WA	Trailer 55
MSRC	Stoarge P	PS-4	PINTAIL, Tank, Portable	Liqultote Tank	0	8	0	0	Port Angeles	WA	RV PINTAIL
MSRC	Storage P	PS-4	KITTIWAKE, Portable Sto	Liqultote Tank	0	7	0	0	Port Angeles	WA	TV KITTIWAKE
MSRC	Storage P	PS-4	KITTIWAKE, Portable Sto	Liqultote Tank	0	7	0	0	Port Angeles	WA	TV KITTIWAKE
MSRC	Storage P	S BT	Towable Storage Bladder	500BBL system	0	500	0	0	Port Angeles	WA	Barge
MSRC	Trailer	VHO	Trailer 6	for SH2O Module	0	0	0	0	Port Angeles	WA	Warehouse
MSRC	Trailer	VHO	Trailer 73	42' Boom Van	0	0	0	0	Port Angeles	WA	Tesoro
MSRC	Trailer	VHO	Trailer 74	50' Boom Van	0	0	0	0	Port Angeles	WA	Atlas Trucking
MSRC	Trailer	VHO	Trailer 42	16' Boom Trailer	0	0	0	0	Port Angeles	WA	Atlas Trucking
MSRC	Trailer	VHO	Trailer 69	28' Boom Van	0	0	0	0	Port Angeles	WA	Atlas Trucking
MSRC	Trailer	VHO	Trailer 14	SB #1 Trailer	0	0	0	0	Port Angeles	WA	Ediz Hook Whse
MSRC	Trailer	VHO	Trailer 33	SB Willet Trailer	0	0	0	0	Port Angeles	WA	Ediz Hook Whse
MSRC	Trailer	0FO	Maint/PPE	18ft trailer lic# Maint/PPE	0	0	0	0	Port Angeles	WA	Trailer
MSRC	Trailer	VHO	AUKLET, Trailer 55	RV Auklet Trailer	0	0	0	0	Port Angeles	WA	Warehouse
MSRC	Vehicle	VHO	Mobile 8	Chevrolet Van	0	0	0	1	Port Angeles	WA	Pt. Angeles Dock
MSRC	Vehicle	VHO	Mobile 14	Dodge 3/4 T P/U	0	0	0	1	Port Angeles	WA	Pt. Angeles Dock
MSRC	Vehicle	T PU	Pickup, F-350	#54	0	0	0	0	Port Angeles	WA	Vehicle
MSRC	Vehicle	VHO	Mobile 16	Dodge Durango SUV	0	0	0	0	Port Angeles	WA	Port Angeles Office
MSRC	Workboat	WB-3	PUFFIN	33' Work Boat	0	0	0	2	Port Angeles	WA	In Water
MSRC	Workboat	WB-3	MALLARD	38' Work Boat	0	0	0	2	Port Angeles	WA	In Water
MSRC	Workboat	WB-3	LOON	38' Work Boat	0	0	0	2	Port Angeles	WA	In Water
MSRC	Workboat	SB-2	SHEARWATER, DUNLIN	RIB	0	0	0	2	Port Angeles	WA	RV SHEARWATER
MSRC	Workboat	SB-3	SHEARWATER, SB #1	John Boat	0	0	0	2	Port Angeles	WA	RV SHEARWATER
MSRC	Workboat	SB-3	WILLET	18ft. Seine Skiff	0	0	0	2	Port Angeles	WA	Ondeck KITTIWAKE
MSRC	Workboat	V CB	OSRV, Park Responder	6m Rigid Hull Boat	0	0	0	0	Port Angeles	WA	Ship
MSRC	Workboat	V CB	OSRV, Park Responder	6m Rigid Hull Boat	0	0	0	0	Port Angeles	WA	Ship
MSRC	Workboat	V WB	OSRV, Park Responder	Large Support Boat	0	0	0	0	Port Angeles	WA	Ship
MSRC	Workboat	V WB	Shallow Water Barge 21	17-2 Utility Boat <29'	0	0	0	0	Port Angeles	WA	Trailer
MSRC	Barge	R SWB	Shallow Water Barge 25	Shallow Water Barge, non	0	400	0	0	Portland	OR	Trailer
MSRC	Boom	B 24	Medium Fenceboom	24" Slickbar	0	0	2000	0	Portland	OR	20' ISO Box
MSRC	Boom	B 18	Shallow Water Barge 25	18"-20" Boom	0	0	60	0	Portland	OR	Trailer
MSRC	Skimmer P	R PS	Shallow Water Barge 25	DOP 250 Skimmer	3017	0	0	0	Portland	OR	Trailer
MSRC	Skimmer V	RV	CURLEW	Marco Skimmer	3588	3	0	2	Portland	OR	Trailer
MSRC	Workboat	V WB	Shallow Water Barge 25	4-1 Utility Boat<29'	0	0	0	0	Portland	OR	Trailer
MSRC	Boom	B-1	Trailer 58, Boom, Cape C	15"x27"	0	0	1500	0	Richmond Beach	WA	Trailer 58
MSRC	Boom	B-1	Trailer 59, Boom, Cape C	15"x27"	0	0	1500	0	Richmond Beach	WA	Trailer 59
MSRC	Boom	B-1	Trailer 63, Boom, Cape C	15"X27"	0	0	1000	0	Richmond Beach	WA	Trailer 63
MSRC	Boom	B-2	Trailer 68, Boom, Acme	12"x18"	0	0	2000	0	Richmond Beach	WA	Trailer 68
MSRC	Trailer	VHO	Trailer 58	32' Boom Van	0	0	0	0	Richmond Beach	WA	Paramount Petroleum
MSRC	Trailer	VHO	Trailer 59	32' Boom Van	0	0	0	0	Richmond Beach	WA	Paramount Petroleum
MSRC	Trailer	VHO	Trailer 63	28' Boom Van	0	0	0	0	Richmond Beach	WA	Paramount Petroleum
MSRC	Trailer	VHO	Trailer 68	28' Boom Van	0	0	0	0	Richmond Beach	WA	Paramount Petroleum
MSRC	Trailer	VHO	Trailer 62	Tandem Dolly	0	0	0	0	Richmond Beach	WA	Paramount Petroleum
MSRC	Barge	R SWB	Shallow Water Barge 123	Shallow Water Barge, non	0	400	0	0	Seattle	WA	Trailer
MSRC	Boom	B-2	Trailer 45, Boom, Versate	12"x18"	0	0	5200	0	Seattle	WA	Trailer 45
MSRC	Boom	B-2	AVOCET, Boom, Kepner	8"x12"	0	0	1500	0	Seattle	WA	WB AVOCET
MSRC	Boom	B-2	WIDGEON, Boom, Kepne	8"x12"	0	0	600	0	Seattle	WA	WB WIDGEON
MSRC	Boom	B 18	Shallow Water Barge 123	18"-20" Boom	0	0	60	0	Seattle	WA	Trailer
MSRC	Skimmer P	R PS	Shallow Water Barge 123	QME Tri-Skimmer	905	0	0	0	Seattle	WA	Trailer
MSRC	Skimmer V	RV	WIDGEON	Marco Skimmer	3588	30	0	2	Seattle	WA	In Water
MSRC	Skimmer V	RV-2	CORMORANT	Marco Skimmer	21540	90	0	2	Seattle	WA	In Water
MSRC	Trailer	VHO	Trailer 45	40' Boom Van	0	0	0	0	Seattle	WA	BP Harbor Island
MSRC	Vehicle	T PU	Pickup, F-350	#53	0	0	0	0	Seattle	WA	Shilshole
MSRC	Workboat	WB-3	AVOCET	36' Work Boat	0	0	0	2	Seattle	WA	In Water
MSRC	Workboat	SB-3	SB #4	John Boat	0	0	0	2	Seattle	WA	RV CORMORANT
MSRC	Workboat	V WB	Shallow Water Barge 123	12-3 Utility Boat <29'	0	0	0	0	Seattle	WA	Trailer
MSRC	Skimmer P	SCH	Slickbar Slurp, Skimmer #	weir	55	0	0	0	Spokane	WA	Big Sky Industrial
MSRC	Skimmer P	SCH	Slickbar Slurp, Skimmer #	weir	55	0	0	0	Spokane	WA	Big Sky Industrial
MSRC	Barge	PS-4	PS #3	Mini Barge	0	100	0	0	Tacoma	WA	In Water
MSRC	Barge	TV-2	OSRB, IBIS	Tank Barge	0	21403	0	2	Tacoma	WA	In Water

	PACNW Response Mana	425-252-1300	7557	48.125	-123.440833			0	0		
	PACNW Response Mana	425-252-1300	3101	48.12666667	-122.4533333			0	0		
	PACNW Response Mana	425-252-1300	3104	48.12666667	-123.4533333			0	0		
	PACNW Response Mana	425-252-1300	3108	48.12666667	-123.4533333			0	0		
	PACNW Response Mana	425-252-1300	7527	48.125	-123.4408333			0	0		
	PACNW Response Mana	425-252-1300	24669	48.126	-123.453			0	0		
	PACNW Response Mana	425-252-1300	3102	48.12666667	-122.4533333			0	0		
	PACNW Response Mana	425-252-1300	3114	48.12666667	-123.4533333			0	0		
	PACNW Response Mana	425-252-1300	3115	48.12666667	-123.4533333			0	0		
	PACNW Response Mana	425-252-1300	7591	48.125	-122.216667			0	0		
	PACNW Response Mana	425-252-1300	3072	48	-122.2166667			0	0		
	PACNW Response Mana	425-252-1300	3087	48.12666667	-123.4533333			0	0		
	PACNW Response Mana	425-252-1300	3089	48.12666667	-123.4533333			0	0		
	PACNW Response Mana	425-252-1300	3091	48.12666667	-123.4533333			0	0		
	PACNW Response Mana	425-252-1300	3093	48.12666667	-123.4533333			0	0		
	PACNW Response Mana	425-252-1300	3109	48.12666667	-123.4533333			0	0		
	PACNW Response Mana	425-252-1300	3111	48.12666667	-123.4533333			0	0		
	PACNW Response Mana	425-252-1300	7492	48.125	-123.4408333			0	0		
	PACNW Response Mana	425-252-1300	24670	48.126	-123.453			0	0		
	PACNW Response Mana	425-252-1300	3116	48.12666667	-123.4533333			0	0		
	PACNW Response Mana	425-252-1300	3117	48.12666667	-123.4533333			0	0		
	PACNW Response Mana	425-252-1300	7534	48.125	-123.4408333			0	0		
	PACNW Response Mana	425-252-1300	24869	0	0			0	0		
	PACNW Response Mana	425-252-1300	3095	48.12666667	-123.4533333			0	0		
	PACNW Response Mana	425-252-1300	3097	48.12666667	-123.4533333			0	0		
	PACNW Response Mana	425-252-1300	3099	48.12666667	-123.4533333			0	0		
	PACNW Response Mana	425-252-1300	3106	48.12666667	-123.4533333			0	0		
	PACNW Response Mana	425-252-1300	3107	48.12666667	-123.4533333			0	0		
	PACNW Response Mana	425-252-1300	3110	48.12666667	-123.4533333			0	0		
	PACNW Response Mana	425-252-1300	7529	48.125	-123.4408333			0	0		
	PACNW Response Mana	425-252-1300	7530	48.125	-123.4408333			0	0		
	PACNW Response Mana	425-252-1300	7531	48.125	-123.4408333			0	0		
	PACNW Response Mana	425-252-1300	7559	48.125	-123.440833			0	0		
	PACNW Response Mana	425-252-1300	7566	45.606667	-122.688333			0	0		
	PACNW Response Mana	425-252-1300	7499	45.60666667	-122.6883333			0	0		
	PACNW Response Mana	425-252-1300	7564	45.606667	-122.688333			0	0		
	PACNW Response Mana	425-252-1300	7565	45.606667	-122.688333			0	0		
	PACNW Response Mana	425-252-1300	3148	45.606667	-122.688333			0	0		
	PACNW Response Mana	425-252-1300	7567	45.606667	-122.688333			0	0		
	PACNW Response Mana	425-252-1300	3119	47.78	-122.395			0	0		
	PACNW Response Mana	425-252-1300	3121	47.78	-122.395			0	0		
	PACNW Response Mana	425-252-1300	3123	47.78	-122.395			0	0		
	PACNW Response Mana	425-252-1300	3125	47.78	-122.395			0	0		
	PACNW Response Mana	425-252-1300	3118	47.78	-122.395			0	0		
	PACNW Response Mana	425-252-1300	3120	47.78	-122.395			0	0		
	PACNW Response Mana	425-252-1300	3122	47.78	-122.395			0	0		
	PACNW Response Mana	425-252-1300	3124	47.78	-122.395			0	0		
	PACNW Response Mana	425-252-1300	3126	47.78	-122.395			0	0		
	PACNW Response Mana	425-252-1300	7546	47.58333333	-122.3466667			0	0		
	PACNW Response Mana	425-252-1300	3128	47.57	-122.3466667			0	0		
	PACNW Response Mana	425-252-1300	3130	47.68333333	-122.4083333			0	0		
	PACNW Response Mana	425-252-1300	3132	47.68333333	-122.4083333			0	0		
	PACNW Response Mana	425-252-1300	7544	47.58333333	-122.3466667			0	0		
	PACNW Response Mana	425-252-1300	24672	48.51166667	-122.6055			0	0		
	PACNW Response Mana	425-252-1300	3131	47.68333333	-122.4083333			0	0		
	PACNW Response Mana	425-252-1300	3133	47.68333333	-122.4083333			0	0		
	PACNW Response Mana	425-252-1300	3127	47.57	-122.3466667			0	0		
	PACNW Response Mana	425-252-1300	7533	48	-122.2166667			0	0		
	PACNW Response Mana	425-252-1300	3129	47.68333333	-122.4083333			0	0		
	PACNW Response Mana	425-252-1300	3134	47.68333333	-122.4083333			0	0		
	PACNW Response Mana	425-252-1300	7547	47.58333333	-122.3466667			0	0		
	PACNW Response Mana	425-252-1300	3050	48	-122.2166667			0	0		
	PACNW Response Mana	425-252-1300	3051	48	-122.2166667			0	0		
	PACNW Response Mana	425-252-1300	3147	47.275	-122.4083333			0	0		
	PACNW Response Mana	425-252-1300	3154	47.275	-122.4083333			0	0		

MSRC	Boom	B-2	Trailer 60, Boom, Versatc	12"x18"	0	0	3800	0	Tacoma	WA	Trailer 60
MSRC	Boom	B-2	Trailer 70, Boom, Acme	12"x18"	0	0	4000	0	Tacoma	WA	Trailer 70
MSRC	Boom	B-2	COOT, Boom, Kepner	8"x12"	0	0	1500	0	Tacoma	WA	WB COOT
MSRC	Boom	B-2	SCOTER, Boom, Kepner	8"x12"	0	0	1000	0	Tacoma	WA	WB SCOTER
MSRC	Boom	B-2	BRANT, Boom, Versatecl	12"x18"	0	0	200	0	Tacoma	WA	RV BRANT
MSRC	Boom	B-2	IBIS, Boom, Versatech	12"x18"	0	0	1400	0	Tacoma	WA	TV IBIS
MSRC	Skimmer V	RV	SANDPIPER	Marco Skimmer	10764	3.5	0	2	Tacoma	WA	Water
MSRC	Skimmer V	RV	BRANT	W/ Lori Brush	4896	0	0	2	Tacoma	WA	In Water
MSRC	Skimmer V	RV	PLOVER	Marco Skimmer	10764	67	0	2	Tacoma	WA	In Water
MSRC	Storage P	PS-4	BRANT, Tank, Portable	Liqultote Tank	0	8	0	0	Tacoma	WA	RV BRANT
MSRC	Storage P	PS-4	IBIS, Portable Storage tar	Liqultote Tank	0	7	0	0	Tacoma	WA	TV IBIS
MSRC	Storage P	PS-4	Portable Storage tank	Liqultote Tank	0	7	0	0	Tacoma	WA	Office Trailer
MSRC	Trailer	VHO	Trailer 60	28' Boom Van	0	0	0	0	Tacoma	WA	U.S. Oil
MSRC	Trailer	VHO	Trailer 70	48' Boom Van	0	0	0	0	Tacoma	WA	U.S. Oil
MSRC	Trailer	VHO	SB #3, Trailer 16	SB #3 Trailer	0	0	0	0	Tacoma	WA	U.S. Oil
MSRC	Trailer	VHO	Trailer 34	SB Snipe Trailer	0	0	0	0	Tacoma	WA	U.S. Oil
MSRC	Trailer	VHO	Trailer 32	Shop Trailer	0	0	0	0	Tacoma	WA	U.S. Oil
MSRC	Vehicle	VHO	Mobile 7	Dodge 3/4 T P/U	0	0	0	1	Tacoma	WA	U.S. Oil
MSRC	Vehicle	VHO	Mobile 13	Chevrolet Van	0	0	0	1	Tacoma	WA	U.S. Oil
MSRC	Workboat	WB-3	COOT	36' Work Boat	0	0	0	2	Tacoma	WA	In Water
MSRC	Workboat	WB-3	SCOTER	32' Work Boat	0	0	0	2	Tacoma	WA	In Water
MSRC	Workboat	SB-3	SB #3	John Boat	0	0	0	2	Tacoma	WA	Trailer 16
MSRC	Workboat	SB-3	SNIPE	18ft. Seine Skiff	0	0	0	2	Tacoma	WA	In Water

	PACNW Response Mana	425-252-1300	3137	47.275	-122.4083333			0	0	
	PACNW Response Mana	425-252-1300	3139	47.275	-122.4083333			0	0	
	PACNW Response Mana	425-252-1300	3141	47.275	-122.4083333			0	0	
	PACNW Response Mana	425-252-1300	3143	47.275	-122.4083333			0	0	
	PACNW Response Mana	425-252-1300	3146	47.275	-122.4083333			0	0	
	PACNW Response Mana	425-252-1300	3155	47.275	-122.4083333			0	0	
	PACNW Response Mana	425-252-1300	3029	48	-122.2166667			0	0	
	PACNW Response Mana	425-252-1300	3144	47.275	-122.4083333			0	0	
	PACNW Response Mana	425-252-1300	3149	47.275	-122.4083333			0	0	
	PACNW Response Mana	425-252-1300	3145	47.275	-122.4083333			0	0	
	PACNW Response Mana	425-252-1300	3156	47.275	-122.4083333			0	0	
	PACNW Response Mana	425-252-1300	3161	47.275	-122.4083333			0	0	
	PACNW Response Mana	425-252-1300	3136	47.275	-122.4083333			0	0	
	PACNW Response Mana	425-252-1300	3138	47.275	-122.4083333			0	0	
	PACNW Response Mana	425-252-1300	3151	47.27666667	-122.4083333			0	0	
	PACNW Response Mana	425-252-1300	3153	47.275	-122.4083333			0	0	
	PACNW Response Mana	425-252-1300	3160	47.275	-122.4083333			0	0	
	PACNW Response Mana	425-252-1300	3158	47.275	-122.4083333			0	0	
	PACNW Response Mana	425-252-1300	3159	47.275	-122.4083333			0	0	
	PACNW Response Mana	425-252-1300	3140	47.275	-122.4083333			0	0	
	PACNW Response Mana	425-252-1300	3142	47.275	-122.4083333			0	0	
	PACNW Response Mana	425-252-1300	3150	47.275	-122.4083333			0	0	
	PACNW Response Mana	425-252-1300	3152	47.275	-122.4083333			0	0	

APPENDIX F

Guardian Industrial Services Inc. Response Capabilities

Section F-2

Guardian Industrial Services Inc.

(253) 536-0455 • 1813 99th Street East • Tacoma, Washington 98445

May 9, 2005

U.S.Oil & Refining Co.
3001 Marshall Avenue
Tacoma WA 98421

RE: Letter of Intent to respond to spills

Dear Ty Gaub,

This letter is to advise you that Guardian Industrial will provide vacuum trucks, laborers and other equipment as necessary in the event of a spill.

In the event of an incident requiring an emergency response from Guardian Industrial you may call at (253) 536-0455 or on my cell phone (253) 405-7255 both phones are manned twenty-four hours a day.

Thank you again for the opportunity to assist you with your spill response needs. Please feel free to call if you require any additional information.

Sincerely,

John H. Hernan II
Vice President of Operations

PRIMARY SPILL RESPONSE APPLICATION

WAC 173-181-092 ITEM 1

GUARDIAN INDUSTRIAL SERVICES INC.

1813 99 TH ST E
TACOMA, WA 98445

PHONE (253) 536-0455
FAX (253) 536-3072

UBI NUMBER 601 360 468

WAC 173-181-092 ITEM 2

Guardian Industrial Services, Inc. was formed thirteen years ago to provide industrial cleaning and vacuum truck services to industrial companies in the state of Washington.

Guardian Industrial Services, Inc. personnel are able to respond to a spill by leaving the terminal within one hour or less from the time of the initial call out.

While taking these measures of efficient response time to the terminal, Guardian Industrial Services, Inc. can respond to any spill in Western Washington in a timely manner.

Our main objective is to become a Department of Ecology approved primary spill response contractor in the Western Washington region. Guardian Industrial Services, Inc. is a small contractor and is growing.

Although our primary focus is to serve our customer's needs in Western Washington we would welcome the opportunity to respond to spills in the Eastern Washington region in the future.

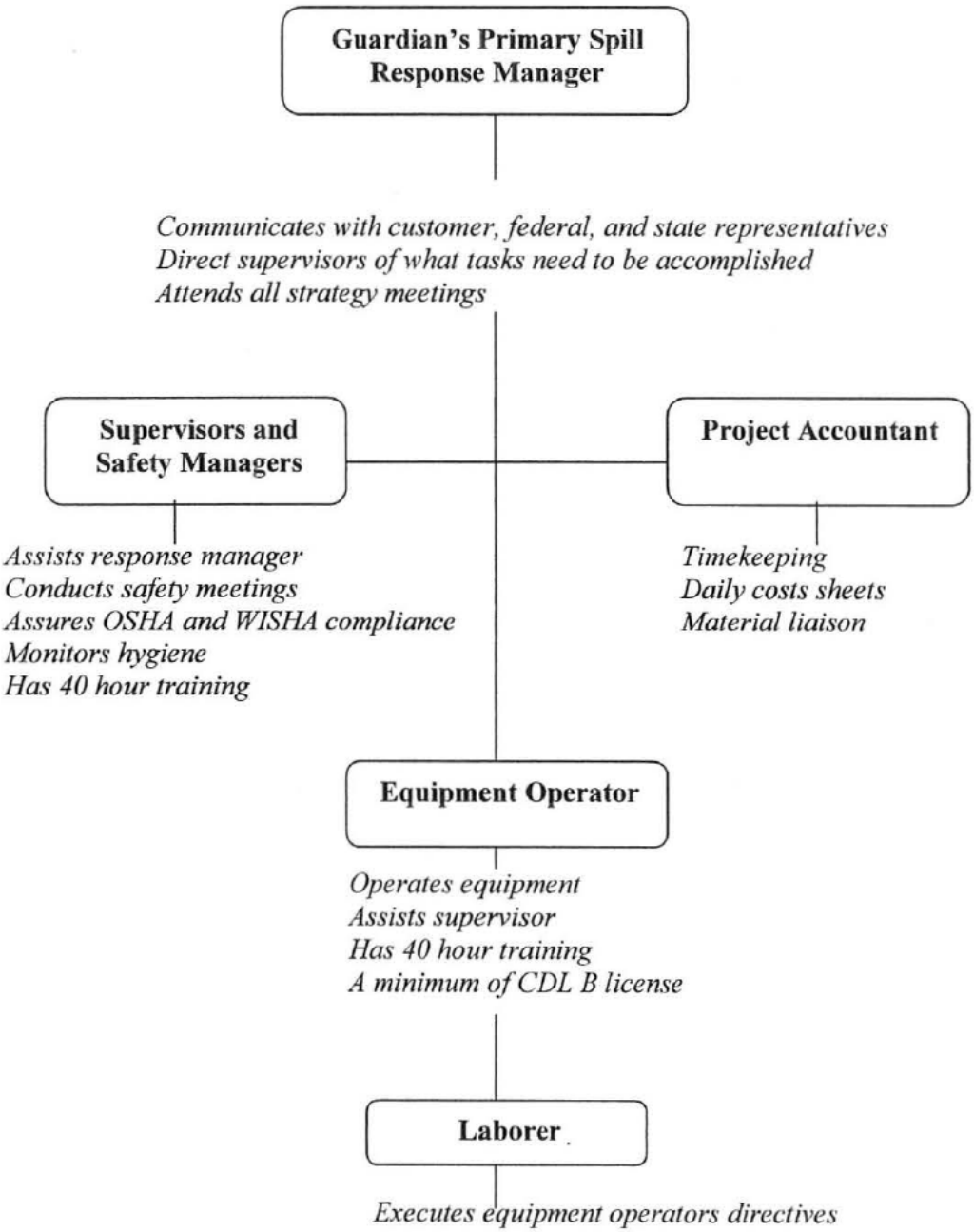
We are unable to perform off shore duties.

WAC 173-092-181 ITEM 3

Guardian Industrial Services, Inc. has the skills and the equipment required to respond to a petroleum spills (i.e. gasoline, diesel, crude oil and other various petroleum products) in the State of Washington. We are also capable of recovery on fresh water bodies, such as rivers, streams, and lakes from the shoreline. We can also respond to storm sewers, catch basins, drainage ditches, and other terrestrial sites.

WAC 173-181-092 ITEM 4

Following is a diagram of Guardian Industrial Services, Inc. chain of command:



WAC 173-181-092 ITEM 5

Guardian Industrial Services, Inc. can be called upon 24 hours a day, everyday of the year. Our telephone number for a point of contact is as follows:

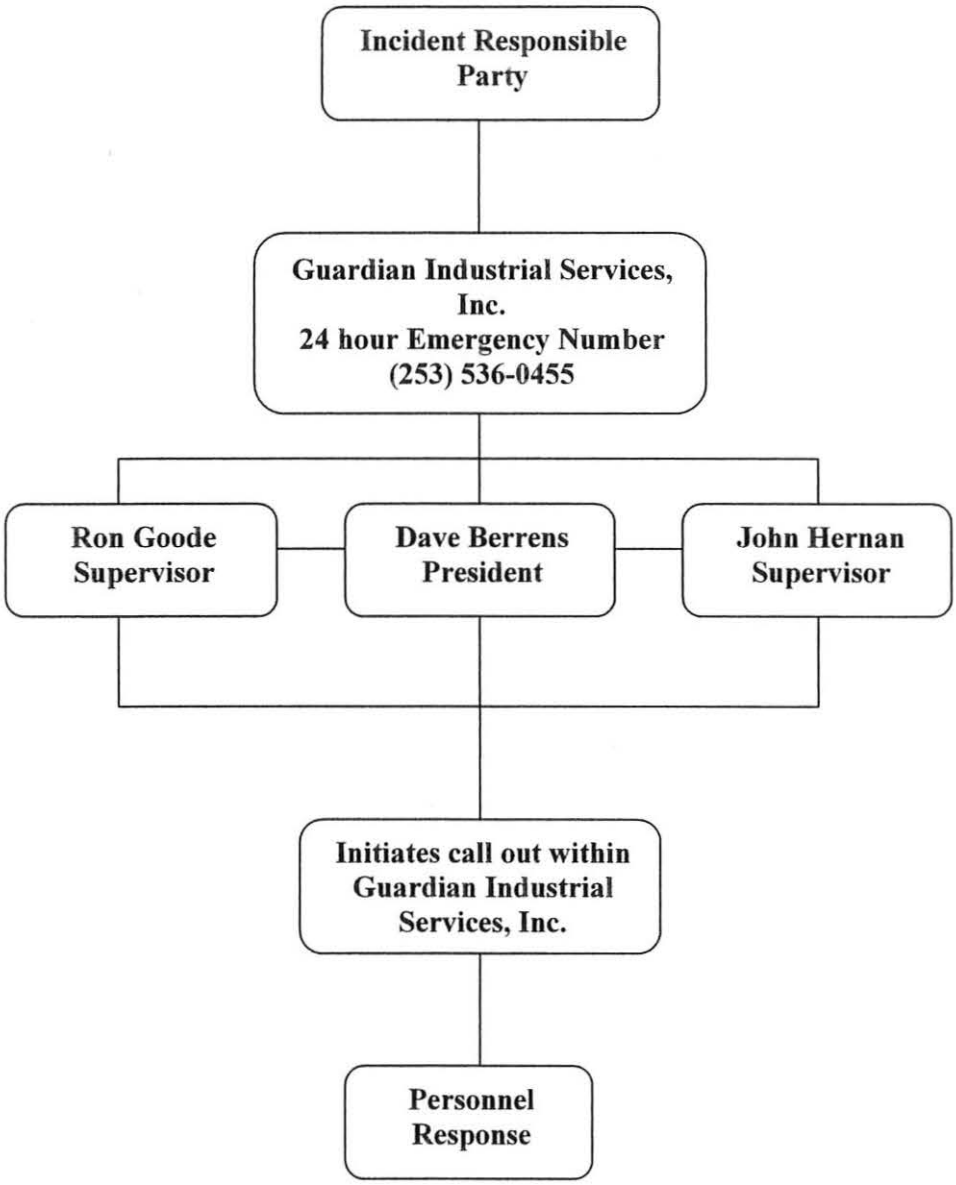
FOR SPILL RESPONSE CALL:

(253)536-0455

This number will go directly to our office or to an answering service which will then call the person on call.

Upon receipt of request for spill response, the sequence of call out within our company will be initiated by one of the following people:

Dave Berrens	President	Home (b) (6) [redacted] Cell (253) 405-7254
John Hernan	Supervisor	Home ((b) (6) [redacted] Cell (253) 405-7255
Ron Goode	Supervisor	Home ((b) (6) [redacted] Cell (253) 405-7257
Chris Johnson	Supervisor	Cell (253) 405-7256


Incident Responsible Party
Guardian Industrial Services, Inc.
24 hour Emergency Number
(253) 536-0455
Ron Goode
Supervisor
Dave Berrens
President
John Hernan
Supervisor
Initiates call out within Guardian Industrial Services, Inc.
Personnel Response

WAC 173-181-092 ITEM 6 to address WAC 173-181-050 12a

Spill Response Job Descriptions:

Spill Response Manager:

1. Directs all phases of the cleanup operation for Guardian Industrial Services, Inc..
2. Mobilizes Guardian Industrial Services, Inc. equipment and personnel. Authorizes the use of specialized sub-contractors to assist Guardian Industrial Services, Inc.
3. Interfaces with the State and Federal on scene coordinators to ensure that their directives are met. Represents Guardian to any other involved state, federal agencies, industry representatives and representatives of the responsible party.
4. Attends agency and contractor strategy meetings to advise on the direction of the cleanup operation.
5. Assists responsible party in developing the final disposal plan for all liquid and solid waste from the cleanup.
6. Assures compliance with State and Federal regulations regarding spill remediation.
7. Fills material requisition, responsible for shipment of materials to job site.

Safety Manager:

1. Issues site safety plan for Guardian Industrial Services, Inc..
2. Develops an exclusion zone around the cleanup operation that restricts access to authorized personnel only.
3. Assures that all Guardian Industrial Services, Inc. personnel are working under conditions that comply the standards developed by the Washington Department of Labor and Industries and the federal Occupational Safety and Health Administration.
4. Monitors worker hygiene with special emphasis placed on safeguarding air quality and preventing personal contamination through dermal exposure.
5. Conducts special safety training at job site.

Project Accountant:

1. Develops daily report of labor charges, equipment usage and materials consumed.
2. Maintains payroll records.
3. Administration of contracts with responsible party and sub-contractors.
4. This is a non operational position.

Supervisor:

1. Arranges for the placement of additional equipment and personnel authorized by the Primary Spill Response Manager.
2. Establishes a communications network between the job site and any concerned parties.
3. Advises the Primary Spill Response Manager of developments potentially affecting the clean up operation.
4. Maintains project documentation.

Equipment Operator:

1. Operates all equipment and vehicles.
2. Follows all directives issued by supervisor.

Laborer:

1. Provides manual labor as directed by supervisors and equipment operator.
2. Follows all directives issued by supervisor and equipment operator.

Many of these positions will be done by one or more of Guardian Industrial Services, Inc. employees.

WAC 173-181-092 Item 6 to address WAC-173-181-050 12 b

Guardian Industrial Services, Inc. has several available employees who are capable of filling specific positions of spill response listed in 12a.

Dave Berrens	**SPILL RESPONSE MANGER SAFETY MANAGER SUPERVISOR**
John Hernan	**SPILL RESPONSE MANGER SAFETY MANAGER SUPERVISOR**
Ron Goode Chris Johnson	**SUPERVISOR EQUIPMENT OPERATOR LABORER**
Chris Johnson	**EQUIPMENT OPERATOR LABORER SUPERVISOR**
Scott Diener	**EQUIPMENT OPERATOR LABORER**
Jeremiah Wild	**SUPERVISOR LABORER**
Todd Thomas Don Nisbett	**LABORER**
Samantha Reinoehl	**PROJECT ACCOUNTANT**

WAC 173-181-092 item 6 to address WAC 173-181-050 12d

Level of Qualifications

Although we are a small company, Guardian Industrial Services, Inc. has responded to numerous large and small scale spills and has successfully recovered oil and assisted in remediation of contaminated soil.

We have been in business for ten years. Our knowledge and experience has increased rapidly due to the responses that we have answered.

Spill Response Manager

This is the most senior position within Guardian Industrial Services, Inc. organization. Designated Spill Response Manager should posses over ten years of spill response experience. It is understood that continuing education in spill remediation strategy and safe clean up practices will be necessary to fulfill the requirements of this position. Since the Spill Response Manager assumes overall responsibility for the mobilization of personnel and equipment, this individual must be fully cognizant of the safety issues associated with spill response. OSHA 40 hour Hazwoper certificate, and CPR/First Aid certifications are necessary in this role.

Safety Manager

Must have knowledge of OSHA and WISHA regulations, must have knowledge of operating air monitoring instruments, and have had at least five years in the spill response business. Must also posses an OSHA 40 hour Hazwoper certification and CPR/First Aid certification to attain this position.

Project Accountant

Must have three years of office managerial and accounting skills.

Supervisor

Must have five years experience in the spill response industry. OSHA40 hour Hazwoper certification, and CPR/First Aid certification are necessary in this role.

Equipment Operator

Must have two years experience in operating equipment, OSHA 40 hour Hazwoper certification and CPR/First Aid certification CDL endorsement Class B, hazardous material, tanker endorsement are necessary in this role.

Laborer

This is strictly a manual labor position requiring an OSHA 40 hour endorsement.
This position does not require a valid CPR/first Aid Card.

WAC 173-181-092 Item 6 to address WAC173-181-050 13 a

Guardian Industrial Services, Inc. prides itself in meeting or exceeding quality maintenance standards and knows the value of having well maintained equipment, Guardian Industrial Services, Inc. meets or exceeds Department of Transportation regulations for maintaining equipment.

The equipment listed below is used as part of our everyday work practices, therefore we consider this as meeting our training requirements.

Through the following equipment and supplies, Guardian Industrial Services, Inc. has the capabilities of recovering oil. The equipment and supplies list is as follows:

Vacuum Trucks

(1) 1992 Peterbilt — 70 barrel vacuum truck, 2,964 Gallons
LIC.# 98194U
VIN# 1XPFL59X1ND314950

(1) 1984 International — 70 barrel vacuum truck, 2,964 Gallons
LIC# 75825T
VIN# 1HS2EHUR9EHA64391

(1) 2000 Freightliner — 70 barrel vacuum truck, 2,964 Gallons
LIC# A96601E
VIN# 1FVXJJV7YHV63098

Support Vehicles

(1) 1985 Dodge Crew Cab, lift gate, dump bed, carries 2 yds.
LIC# 27570Z
VIN# 1B6WD36WXFS632713

(1) 1990 Dodge Flatbed
LIC# 49568R
VIN# 1BME3687LS670501

(1) 1997 Dodge Flatbed
LIC# A29928D
VIN# 1B6MC36D9VJ552624

(1) 1997 Dodge Pick-up
LIC# A42166B
VIN# 1B7KC26DZVJ577040

(1) 2004 Ford F250 Crew Truck
LIC# A82690T
VIN# 1FTNW21P34E291295

Hydroblaster and Pressure Washer

(1) 1995 NLB Hydroblaster — 10,000 PSI AT 25 GPM
LIC# 0066-LI
Serial# 5931202

(1)	2001 Jet Stream Hydroblaster LIC# 0034-NW Serial# 00378	20,000 PSI AT 18 GPM
(1)	1997 Pressure Washer Mi-T-M Serial# 18955	3,000 PSI AT 5.2 GPM Has 180° F Water
(1)	2000 Pressure Washer Mi-T-M Serial# 23757	3,000 PSI AT 5.2 GPM Has 180° F Water
(1)	1999 Pressure Washer Mi-T-M Serial# 12515	3,000 PSI AT 5.2 GPM Has 180° F Water
(1)	1980 FMC Pressure Washer	1,200 PSI AT 25 GPM

The hydroblaster and all the pressure washers have the capabilities to hydro-jet pipes and lines above and below ground.

All the equipment is generally stored at Guardian Industrial Services, Inc. premises and sometimes is stored strategically at 3001 Marshal Ave. Tacoma, WA

Guardian Industrial Services, Inc. supply list:

Miscellaneous Supplies and PPE

(5) Bales of absorbent pads
(4) Flat nose shovels
(4) Round point shovels
(2) Brooms
(4) Squeegees
(2) Bags of Floor Dry
(2) Tool Boxes with Miscellaneous Hand Tools
(1) Sawzall with Miscellaneous Saw Blades
(1) Electric Drill with Miscellaneous Drill Bits
(2) Decon Tubs
(2) Boxes of Poly-Coated Tyvek
(2) Dozen Rubber Gloves
(6) Half Masks Respirator with Organic Vapor Cartridges
(2) Rolls of Visqueen
(2) Rolls of Plastic Bags
(5) MSA Supplied Air with 5Minute Escape Bottle
(2) Breathing Air Bottles
(1) MSA SCBA 30 Minute
(1) Drum Dolly
(5) 17H Open Top Drums

All the supplies that are listed above are stored at Guardian Industrial Services, Inc. premises and are inventoried.

WAC 173-181-092 Item 7

Guardian Industrial Services, Inc. through its training and safety meetings has established a safe work place environment that meets or exceeds OSHA/WISHA standards. Guardian Industrial Services, Inc. has not received any citations or reports.

Guardian Industrial Services, Inc. has only had one lost time injury in the ten years we have been in operation.

WAC 173-181-090 Item 3

Guardian Industrial Services, Inc. does not have any offshore equipment or vessels, therefore we feel that there will not be any duplications of WAC173-181-090 Item 2a through 2c.

If there are any questions regarding this application please feel free to contact John Hernan at Guardian Industrial Services, Inc.(253) 536-0455.

ADDENDUMS UPON D.O.E. REVIEW

Here is the addendums that you have requested:

COMMUNICATIONS

1.) We at Guardian Industrial Services, Inc. feel that it is necessary to have excellent communications for spill response and as a part of our normal operating day, so we have implemented Nextel© communications.

   A.) The Nextel© phones which we have can be used as a cellular phone.
   B.) The Nextel© phones also have the capabilities of being used as a two way radio which is excellent for reaching an employee with in seconds.

TRAINING

Guardian Industrial Services, Inc. prides itself on training and knowledge for spill response and as part of our normal operating day.

1.) Hazwoper training is done an annual basis, here is a few topics that we are refreshed on.

   A. Confined Space
   B. Hazard Communications
   C. Personal Protective Clothing
   D. Hearing Protection
   E. Proper Respiratory Protection

2.) Hazwoper training is done by a certified industrial hygienist.

3.) We at Guardian Industrial Services, Inc. feel that our equipment training is fulfilled on a daily basis, because we use our equipment on a daily basis.

MINIMUM MANNING REQUIREMENTS FOR OUR EQUIPMENT

Vacuum Trucks

We have three vacuum trucks and we have six vacuum truck operators, therefore we can have coverage for all the vacuum trucks night and day each man working a twelve hour shift.

Pressure Washers

We have three pressure washers and seven employees that can operate. this equipment, although some of these employees can also operate the vacuum trucks at the same time.

Ratio of Equipment to Employee's

The ratio of employee to equipment is one to one which we feel is adequate to safely operate our equipment for a twenty-four hour time frame.

EQUIPMENT MAINTENANCE SCHEDULE

All of Guardian Industrial Services, Inc. equipment is inspected for defects on an "as use basis" since the equipment is used on a daily basis. If there any defects in the equipment it is repaired immediately. Preventative Maintenance is documented on a monthly basis.

RELIEF TO OUR THE PRIMARY SPILL RESPONSE EMPLOYEE

Guardian Industrial Services, Inc. will provide all of its relief in house.

Respectfully submitted,

John H. Hernan II

APPENDIX G

USOR OWNED RESPONSE EQUIPMENT

Section G-1

For Oil Spills &
Refinery Emergencies

U.S. Oil & Refining Co.
McChord Pipeline Co.

Item #1

Equipment:	16' Boston Whaler workboats each equipped with one 90 HP outboard motor
Quantity:	2
Age:	The 1st work boat is a 1971 vintage whereas the 2nd work boat is a 1998 vintage.
Location:	Marine Terminal Dock #2
Availability:	One boat is used continuously in day to day operations at the dock while the other work boat is kept on a 2009 Easy Load boat trailer at Dock #2 for use as a spare work boat. The spare work boat can be deployed by using one of U.S. Oil's boom trucks to lift it on/off of the boat trailer. U.S. Oil alternates between which boat is kept in the water and which boat is kept on the trailer, typically on an annual basis.
Maintenance:	The following preventative maintenance activities are performed by Maintenance Department personnel: Monthly - (PM 1794) Each work boat is given a general inspection to ensure everything is operational. Yearly - (PM 0130) Check the hull for any damage and repair as necessary.
Other:	Each workboat is powered by a single 90 HP outboard motor. These outboard motors are maintained as follows: Outboard motor on the workboat Before Using - Check oil/gas level in outboard motot. Quarterly - (PM 0129) Change oil on outboard motor. As Required - Send to a boatshop for repairs.

Item #2

Equipment:	Slickbar Mk16-16" UHW Heavy Duty Oil Containment Boom
Quantity:	2700'
Age:	Average Date of Manufacture - 2006
Boom Height:	The overall boom height is 16". This includes a draft of 11" and a freeboard of 5".
Connectors:	End connectors are made of corrosion coated metal. Boom sections are coupled together with a sliding bar mechanism and perpendicular locking pins.
Location:	Marine Terminal Dock
Availability:	Used continuously in day to day operations at the dock.
Maintenance:	The following preventative maintenance activities are performed by Maintenance Department personnel:

Biannual - (PM 0216) Inspect for overall condition (i.e. tears) and clean as required. Anomalies in the containment boom will be repaired as required.

Item #3
FIRE EQUIPMENT

H.2 QUICK ATTACK TRUCK - INVENTORY

Quick Attack Truck contains:

Foam	
95 Gallons	Thunderstorm ATC, AR/AFFF, 1%-3%
Hose	
300 Feet	5-inch Storz fire hose
300 Feet	1½" NST hose
1	3" Flex Suction Hose, 15 Feet Long
3	2" Flex Suction Hose, 15 Feet Long with 2" Pickup Tube
Nozzles	
2	1½" Fog Nozzle
2	2½" Fog Nozzle
1	1½" Air Aspirating Handline Foam Nozzle, Ansul, 120 gpm
1	Foam Eductor w/Pick-Up Hose, 120 gpm
1	Williams Around the Pump Proportioner, WATP-1500
1	Williams Pressure Reducing Valve, WPRV-4P
Fittings / Valves	
4	2½" NST Double Male Adapter
4	2½" NST Double Female Adapter
2	1½" NST Double Male Adapter, Brass
2	1½" NST Double Female Adapter, Brass
6	2½" Female x 1½" male NST Adapter
2	2½"x1½" Siamese ¼-Turn Plug Hose Valve
1	3-Way Ball Valve, 5" Storz x (3)2½" MNST
1	2-Way Ball Valve, 2½" NST
4	2½" NST Hydrant Gate Valve
1	1½" MNST x 1" FNPT Adapter, Brass
3	4" NST x 5" Storz Adapter
1	5" Storz x 2½" FNST Adapter
1	5" Storz Blind Cap
1	Siamese, (2)5" Storz x 5" Storz, Clappered
1	2-Way Ball Valve, 1-2½" Female NST x 2-1½" male NST
1	2½" NST Plug
Tools / Misc.	
1	Hydrant Wrench Set (Back of Truck)
1	Tire Chains
1	Manual, Hose Configuration Schematics

Maintenance: See PM 2050

FIRE EQUIPMENT

H.4 FOAM TRAILERS- INVENTORY

Foam Trailer #1 and Foam Trailer #2 each contain:

Foam	
500 Gallons	Thunderstorm ATC, AR/AFFF, 1%-3%
Hose	
100 Feet	2½" NST Hose
100 Feet	1½" NST Hose
1	2" Flex Suction Hose, 15 Feet Long with 2" Pickup Tube
Nozzles	
1	2½" Ranger Lightening Nozzle, 350/500/750 gpm
Valves / Fittings	
1	2½" NST Hydrant Gate Valve
1	2½"x1½" Siamese ¼-Turn Plug Type Hose Valve
1	1½" MNST x1 FNPT Adapter, brass
Tools / Misc.	
2	Foam Pick-Up Tube (For Foam Totes)
1 Pair	Channel Locks
2	Hydrant Wrenches
1	Drum Plug Wrench
2 Pair	Leather Work Gloves
2	10 lb. Dry Chemical Fire Extinguisher
1	Trailer Hitch Insert w/2" Ball
1	Manual, Hose Configuration Schematics

Maintenance: See PM 0086

FIRE EQUIPMENT

H.5 FIRE HOUSE AND J-601 PUMP HOUSE INVENTORY

FIRE HOUSE:

- Quick Attack Truck with Ranger 3 (see Section H.3 for inventory)
- Ranger 3 Trailer Mounted Monitor (see Section H.9 for inventory)
- 500 GPM Portable Monitor
- Portable Bin
    - 2000 gpm Portable Williams Ranger2 Foam Nozzle
    - 2" Flex Suction Hose, 15 Feet Long
    - Daspit Tool and Ground Mount Plate for Ranger2 Nozzle
    - Manual, Hose Configuration Schematics
- Loose
    - National Foam Subsurface Foam Maker, 300 GPM, Model PHB-30A
    - Inline Foam Eductor (1.5" Inlet/2.5" Outlet) for PHB-30A Foam Maker, equipped with 10 foot flex hose and drum siphon tube.
    - 2.5" Foam Playpipes
    - Hard Suction Hose, 4" couplings, 20 feet long
    - 1000 feet- 2.5" Fire Hose
    - 1000 feet- 1.5" Fire Hose
    - 6 - SCBA's with 30 minute bottles
    - 6 - Spare bottles for SCBA's

J-601 PUMP HOUSE:

- USOR Foam Trailer #1 (see Section H.4 for inventory)
- USOR Foam Trailer #2 (see Section H.4 for inventory)

Note: Refer to Section H.6 for foam inventory

FIRE EQUIPMENT

H.6 FOAM INVENTORY

Quantity (gallons)	Type	Container Size (gallons)	Location	Remarks
500	Thunderstorm ATC, AR/AFF, 1%-3%	500	J-601 Pump House	Foam Trailer #1
500	Thunderstorm ATC, AR/AFF, 1%-3%	500	J-601 Pump House	Foam Trailer #2
95	Thunderstorm ATC, AR/AFF, 1%-3%	95	Fire House	Quick Attack Truck
3500	National Foam Universal 3x6% AFFF	330	J-601 Pump House	Totes (Surplus foam)
2120	Thunderstorm ATC, AR/AFF, 1%-3%	265	Foam Shed	Totes
1590	Thunderstorm ATC, AR/AFF, 1%-3%	265	Outside Foam Shed	6 Tote Foam Trailer
500	Universal Gold AR/AFFF, 1x3%	550	Light Products Loading Rack Foam Monitor	North Tank
500	Universal Gold AR/AFFF, 1x3%	550	Light Products Loading Rack Foam Monitor	South Tank

FIRE EQUIPMENT

H.9 RANGER 3 TRAILER MOUNTED MONITOR INVENTORY

Hose	
1	3" Flexible Foam Suction Hose, 15 ft Long, FNPT Swivel Ends
3	2" Flex Suction Hose, 15 Feet Long, FNPT Swivel Ends
Nozzles / Proportioning Equipment	
3	Jet Ratio Proportioner, 1½", Model 1.5JP30
2	Metering Valve, 1½", For 1% Proportioning
Valves / Fittings	
3	Pick-Up Tube, 2" MNPT Connection, PVC
1	Wye, 3-Way, Clappered, 2½" MNST x (3) 2½" FNST
1	2½" MNST Plug
1	2-Way Ball Valve, 1-2½" FNST x 2-1½" MNST
Tools / Misc.	
1	Manual, Hose Configuration Schematics

H.10 SIX TOTE FOAM TRAILER WITH DASPIT TOOL MOUNT INVENTORY

Hose	
6	2" Flex Suction Hose, Male Camlock x 2" NST
2	2" Flex Suction Hose, 15 Feet Long, 2" FNST x 2" FNST
Valves / Fittings	
1	Williams Around The Pump Proportioner, WATP-1500
1	Williams Pressure Reducing Valve, WPRV-4P
1	Ranger 2 Nozzle with Daspit Tool
1	Daspit Tool Ground Mounting Kit
Foam	
6	265 gal Thunderstorm ACT AR/AFF 1x3%

Item #4

Equipment: Environmental Trailer (License Plate #5422SU) equipped with a 2" trailer ball insert (located in trailer).

Quantity: 1

Age: 2006

Towing Vehicles: This trailer can be towed behind the pipeline inspection truck, safety truck, operations superintendent's truck, maintenance superintendent's truck and the Shift Supervisor's truck.

Location: South Side of Receiving Warehouse #3

Maintenance: USOR Maintenance Department personnel will perform the following maintenance activities on the environmental trailer:

Once Every 3 Years (PM 1023):

- Pack the wheel bearings and check the brakes.

Annual (PM 0956):

- Inspect the trailer for tire wear and inflation pressure, operation of brakes and lights, hitch condition, peeled paint, reflectors and current license tag.
- Evaluate the integrity of the equipment stored in this trailer as well as ensure that there are no items missing from the inventory. Missing or damaged inventory will be replaced as necessary.
- Any materials consumed during testing, training or during an actual response will also be replaced as necessary.
- The environmental trailer will be hitched to one of the company trucks and towed around the refinery to evaluate performance and check for potential maintenance requirements.

Monthly - USOR Maintenance Department personnel will perform the following maintenance activities on the environmental trailer:

- (PM 0957) Check tire pressure.
- (PM 1520) Check the fire extinguisher
- (PM 1519) Check the air packs

Contents: The following Work Order Details Report (WO #309550) provides an example of the types of response equipment that is maintained within this trailer and inspected on an annual basis per PM0956.

Work Order Details Report

WO #: 309550

Status:	COMP	Parent:		Sequence:	
PM Master:	PM0956				
Report Date:	9/25/2007	Target Start Date:	10/5/2007	Target Comp Date:	10/5/2007
Reported By:	USDJB	Work Phone:		Work Type:	PM
Priority	3	Lead Craft:		Work Type 2:	
Taxable?:		Supervisor:	USLLF	GL Account:	50020MNT60MCPIPE_
		Contractor:		Project Name:	
Unit:					
Location:	MCPIPE	McChord Pipeline			

Material Req.: REF ATTACHED JOB PLANS FOR TRAILER INVENTORY.ROUTE COMPLETED JOB PLAN: JPW

Description:
1-YR ENVIROMNENTAL TRAILER INVENTORY/INSPECTION
ROUTING OF COMPLETED
JOB PLAN:
HEH__TJG__

MAKE COPY OF THIS COMPLETED PM AND ROUTE COPY TO JPW _____

Task WO	Task Description	GL Account	Cont	Status
309551	1-YR ENVIROMNENTAL TRAILER INVENTORY/INSPECTION	50020MNT60MCPIPE____		COMP

Job Plan

JPM0956 1-YR ENVIROMNENTAL TRAILER INVENTORY/INSPECTION

Description:

```
Job Plan #:        JPM0956  Desc: MCHORD SYS INVENTORY/INSPECTION (REF PM956)
 1) EQUIPMENT:      Environmental Trailer (Lic. Plate 5422-SU) equipped with
 2)                 a 2" ball insert (located in trailer).
 3) QUANTITY:       1
 4) AGE:            2006
 5) TOW VECHICLES: This trailer can be towed behind the pipeline
 6)                 inspection truck, safety truck, operations supervisors
 7)                 truck, maintenance supervisors truck or SS truck.
 8) LOCATION:       East of Receiving Warehouse 4.
 9) MAINTENANCE:    3-Yr cycle USOR personnel will ensure wheel bearings
10)                 are packed and brakes checked.(PM1023)
11)                 Annual - USOR personnel will inspect this trailer
12)                 and its contents once per year. In general this insp
13)                 will consist of the following:(PM956)
14) + Inspect the trailer for tire wear and inflation pressure, operation
15)   of brakes and lights, hitch condition, peeled paint, reflectors, and
16)   current license tag.
17) + Evaluate the integrity of the equipment stored in this trailer as
18)   well as ensure that there are no items missing from the inventory.
19)   Missing or damaged inventory will be replaced as necessary.
 1) + Any materials consumed during testing,training or during an actual
 2)   response will also be replaced as necessary.
 3)                Annual - USOR personnel will ensure that the
 4)                environmental trailer is hitched to one of the company
 5)                trucks and towed around the refinery to evaluate
 6)                performance and check for potential maintenance
 7)                requirements.(PM958)
 8) Contents:      Containment Boom
 9)                6"x6"x25' - 2 sections _____
10)                 6"x6"x50' - 2 sections _____
11)                 2"x4"x50' - 2 sections _____
```

Date Completed	Completed By	Supervisor

Work Order Details Report

WO #: 309550

Absorbants
Sausage boom (SPC 8"x10' 4 each) 5 bales _____
Blankets (SPC150 36"x3/8"x144') 2 rolls _____
Diapers (SPC200 17"x19"x3/8") 6 bales _____
Diapers(SPC 50 36"x36"x3/16") 6 bales _____
Fire Extinguishers
Badger, dry chemical,class 60 BC,20 pounds 1 each _____
Ansul, dry checmical,class 2A,10BC, 5 pounds 2 each_____

Safety Equipment
First Aid Kit 1 each _____ MSA Air Paks 2 each _____
Organic Vapor Respirators 6 each _____
Rain Slickers (size L and XL) 4 each _____
Tyvex Disposable Coveralls 1 box _____ Rubber Gloves 8 pair _____
Retrieval Harness 1 each _____ Coast Gaurd Life Vest 2 each ____
Life Rings 2 each _____ Valve Wrench w/Allen Wrench_____

Hand Tools
Flat Shovels 2 each _____ Pitch Fork 1 each _____
Round Point Shovel 2 each _____ Posthole Digger 1 each _____
Pick 1 each _____ Squeegee 1 each _____
Hatchet 1 each _____ Bow Saw 1 each _____
Explosion Proof Flashlight 2 each _____
Extra Flashlight Batteries 2 packages _____
2" Full Port Valve 1 each _____ Burlap Bags 70 each _____
Plastic Bags (38x65) 50 each____ Roll Plastic 1 each _____
Pier Blocks (for anchors) 2 each_____
Chicken Wire 1 roll _____ 15 gal Plastic Drum 2 each _____
50 gal Plastic Drum 1 each _____ 50 gal Steel Drum O/T 1 each ____

Hand Tools (continued)
Rubber Maid Trays 2 each _____ Steel Fence Posts 8 each _____
12"x96"x1/2" Ext Grade Plywood 4ea _____ Nyl Rope 1/4"x100' 1 ea__
Manila Rope 1/4"x50' 1 roll _____ Traffic Cones 18" 6 each _____
Safety Ribbon 2 rolls _____ Reflective Tape 2 rolls _____
Bolt Cutters 1 set _____ Galvanized Tub 1 each _____
Scrub Brushes 3 each _____ Alcanox Tablets _____

Repair Equipment
TD Williams tapping machine with high pressure full port valve
Speed Wrench for Clamp Nuts, 1/2" drive 1 each _____
1 7/16" Socket 1 each _____ 1 1/4" Socket 1 each _____
1/2" Drive x 3/4" Drive Adaptor 1 each _____

EQUIPMENT: Pipeline Inspection Truck
Chevrolet, License Plate A73486K.
QUANTITY: 1
AGE: 2001

SWAN CREEK STORAGE BUILDING continued

CONTENTS: Containment Boom
6"x6"x25' 2 sections ____ 2"x4"x50' 1 section _____
Absorbant
Sausage Boom (8"x10'4 each) 2 bales _____
Diapers (SPC200 17"x19") 1 bale _____
Diapers (SPC50 36"x26"x3/16") 2 bales _____
Other
Burlap bags with ties 100 each _____
Rope (1/4"x50') 2 rolls _____
Shovel (pointed) 2 each _____
Pier Blocks (for anchors) 2 each _____

Date Completed _____ Completed By _____ Supervisor _____

 Thursday, July 10, 2008

Work Order Details Report

WO #: 309550

Steel posts 6 each _____
Roll Plastic 1 each _____

LOCATION: Northwest corner of main office building.

MAINTENANCE: Vehicle maintenance will be performed as follows:
+ Oil change and lube once every 3000 miles.
+ Other non-routine maintenance will be as per manufacturer's recommendations.

CONTENTS: Miscellaneous: Block Valve Wrench 1 each _____
Manhole Cover Star Wrench 1 each _____
T Post Driver 1 each _____ Locator 1 each _____
Numerous Small Wrenches _____
_____
First Aid Kit 1 each _____ Bolt Cutter 1 set _____
Cellular Telephone # 253 973-5819 _____
Facility Oil Spill Response Plan _____

EQUIPMENT: SWAN CREEK STORAGE BUILDING (5'x7'x5')

QUANITY: 1

AGE: Erected in 1995

LOCATION: Intersection of Swan Creek and 80th St.E.(This location is proximal to the intersection of 28th Ave.E. and 80th St. E.)

MAINTENANCE: Annual - USOR will renew the lease agreement with land onwer where this storage shed is located.
Quarterly - USOR personnel will inspect the storage bldg and its contents four times per year. In general this inspection will consist of the following:
+Inspect the storage shed walls, roof and floor for integrity.
+Inspect storage shed padlock.
+Evaluate the integrity of the equipment stored in this shed as well as ensure that there are no items missing from the inventory. Missing or damaged inventory will be replaced as necessary.
+Any materials consumed during testing, training or during an actual response will also be replaced as necessary.

Inventory of miscellaneous response equipment and supplies:
USOR has established contacts and developed vendor lists to provide emergency services, safety equipment, response equipment and construction materials. These vendors, who provide services and equipment on a routine basis, are able to provide services and equipment in the even

Date Completed	Completed By	Supervisor

Thursday, July 10, 2008

Item #5

Equipment: Pipeline Inspection Truck (3/4 Ton, 8 cylinder, Chevrolet, License Plate #A33077W)

Quantity: 1

Age: 2005

Location: Northwest corner of main office building

Maintenance: The following vehicle maintenance will be performed as directed by USOR's Engineering Department:

- (PM 0993) Oil changes and lubrication is once every 3 months
- Other non-routine maintenance will be as per manufacturer's recommendations

Contents: Miscellaneous -

Block Valve Wrench 1 each
Manhole Cover Star Wrench 1 each
T Post Driver 1 each
Locator 1 each
Numerous small wrenches
First Aid Kit 1 each
Bolt Cutter 1 set
Cellular Telephone #(253) 377-0933
Facility Oil Spill Response Plan

Item #6

Equipment: Swan Creek Storage Building (5' x 7' x 5')

Quantity: 1

Age: Erected in 1995

Location: Intersection of Swan Creek and 80th Street E. (This location is proximal to the intersection of 28th Avenue East and 80th Street E.)

Maintenance: Annual – (PM 0956) USOR will renew the lease agreement with landowner where this storage shed is located.

Annual – (PM 0956) USOR personnel will inspect the storage building and its contents four times per year. In general this inspection will consist of the following:

- Inspect the storage shed walls, roof and floor for integrity.
- Inspect storage shed padlock.
- Evaluate the integrity of the equipment stored in this shed as well as ensure that there are no items missing from the inventory. Missing or damaged inventory will be replaced as necessary.
- Any materials consumed during testing, training or during an actual response will also be replaced as necessary.

Contents:

- 2 sections – 6" x 6" x 25' containment boom
- 1 section – 2" x 4" x 50' containment boom
- 2 bales – 8" x 10' (4 per each bale) sausage boom
- 1 bale – 17" x 19" (SPC200) absorbant pads
- 2 bales – 36" x 26" x 3/16" (SPC50) absorbant pads
- 100 each – burlap bags with ties
- 2 rolls – ¼" x 50' rope
- 2 each – pointed shovels
- 2 each – pier blocks for use as anchors
- 6 each – steel posts
- 1 each – roll of plastic

Item #7

Equipment: Spill Response Equipment Storage Shed

Quantity: 1

Location: Marine Terminal between docks #1 and #2.

Maintenance: Monthly – (PM 2024) USOR personnel will inspect the contents of this storage building on a monthly basis

Contents:

- 1 each - fire blanket roll
- 4 bags - Magic Sock for containing small ground spills
- 6 rolls - Sorbent blanket (48" x 100')
- 2 bags – absorbent sweeps (19" x 100')
- 4 bags – Sorbent boom (8" x 10' sections)
- 2 each – plastic shovels
- 6 each – plastic buckets
- 4 bundles – sorbent pads
- 4 each – lighted marker buoys

Item #8

Inventory of miscellaneous response equipment and supplies:

USOR has established contacts and developed vendor lists to provide emergency services, safety equipment, response equipment and construction materials. These vendors, who provide services and equipment on a routine basis, are able to provide services and equipment in the event of a refinery emergency, fire or oil spill. Appendix C contains a list of vendors who can be contacted in the event of an emergency to provide response services and/or safety equipment.

USOR utilizes a computerized equipment/parts inventory tracking and reordering system for maintaining several thousand items in inventory. This inventory, which includes response equipment/supplies, hand tools, PPE and safety equipment, is located on-site in the Receiving Dept. warehouses. Examples of safety/response resources maintained in inventory include personal protective equipment, spill booms and cleanup materials, construction materials, first aid supplies, decontamination materials and exposure monitoring instruments. This plan does not provide specifics on inventoried items due to the large number of items in inventory. Specifics regarding this inventory can be obtained through USOR's computerized parts inventory database. Reordering of inventoried items is automatic and is based on minimum and maximum inventories established for each part and piece of equipment.

Safety and/or response equipment items that are seldom used are either rented or purchased on an as-needed basis. USOR maintains a large inventory of safety related equipment as well as response, cleanup and construction materials on-hand due to usage requirements necessary to support daily operations.

(PM 0956) Special repair equipment specific to the McChord Pipeline is as follows:

- Weld + end coupling; 6" x 9" long 2 each
- Plidco split sleeve; 6" x 9" 1 each & 6" x 18" 2 each (equipped with socket & speed wrench) Note: Sockets and speed wrench are located in the environmental trailer.
- Leak clamps; 6" 2 each
- Full encirclement saddles; 6" x 29" 2 each; 6" x 60" 1 each; 6" x 72" 1 each

APPENDIX H

FACILITY PLOT PLANS

U.S. OIL & REFINING CO.

Section H-1

VICINITY MAP

U.S. OIL & REFINING CO.

USOR's Marine Terminal

USOR's Refinery

(b) (7)(F)

(b) (7)(F)

[redacted]

(b) (7)(F)

(b) (7)(F)

[redacted]

(b) (7)(F)

(b) (7)(F)

(b) (7)(F)

(b) (7)(F)

(b)(7)(E)

(b) (7)(F)

(b) (7)(F)

(b) (7)(F)

APPENDIX H

FACILITY PLOT PLANS

MCCHORD PIPELINE CO.

Section H-2

McChord Pipeline Co.

Mag 14.00
Tue Oct 31 09:19 2000
Scale 1:43,750 (at center)
5000 Feet
1000 Meters

- Local Road
- Primary State Route
- Walkway/Stairway
- Trail
- Interstate/Limited Access
- Major Connector
- State Route
- Exit
- Railroad
- Point of Interest
- Small Town
- Geographic Feature
- Hospital
- Park/Reservation
- Mega City
- Locale
- Military Airport
- Private Airport
- Cemetery
- Water

U.S. OIL & REFINING CO.

Rev. K

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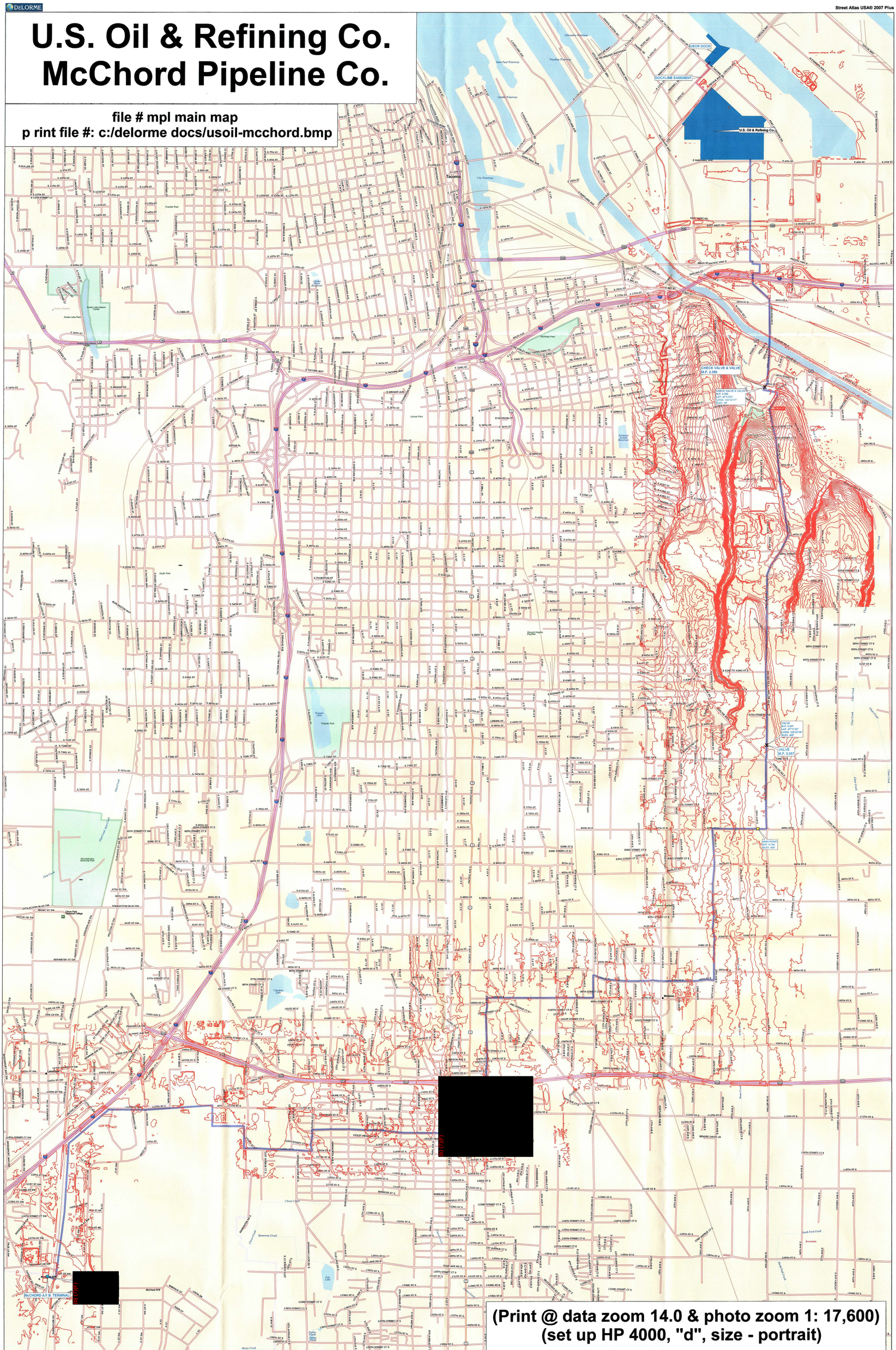
U.S. Oil & Refining Co.
McChord Pipeline Co.

file # mpl main map
p rint file #: c:/delorme docs/usoil-mcchord.bmp



(Print @ data zoom 14.0 & photo zoom 1: 17,600)
(set up HP 4000, "d", size - portrait)

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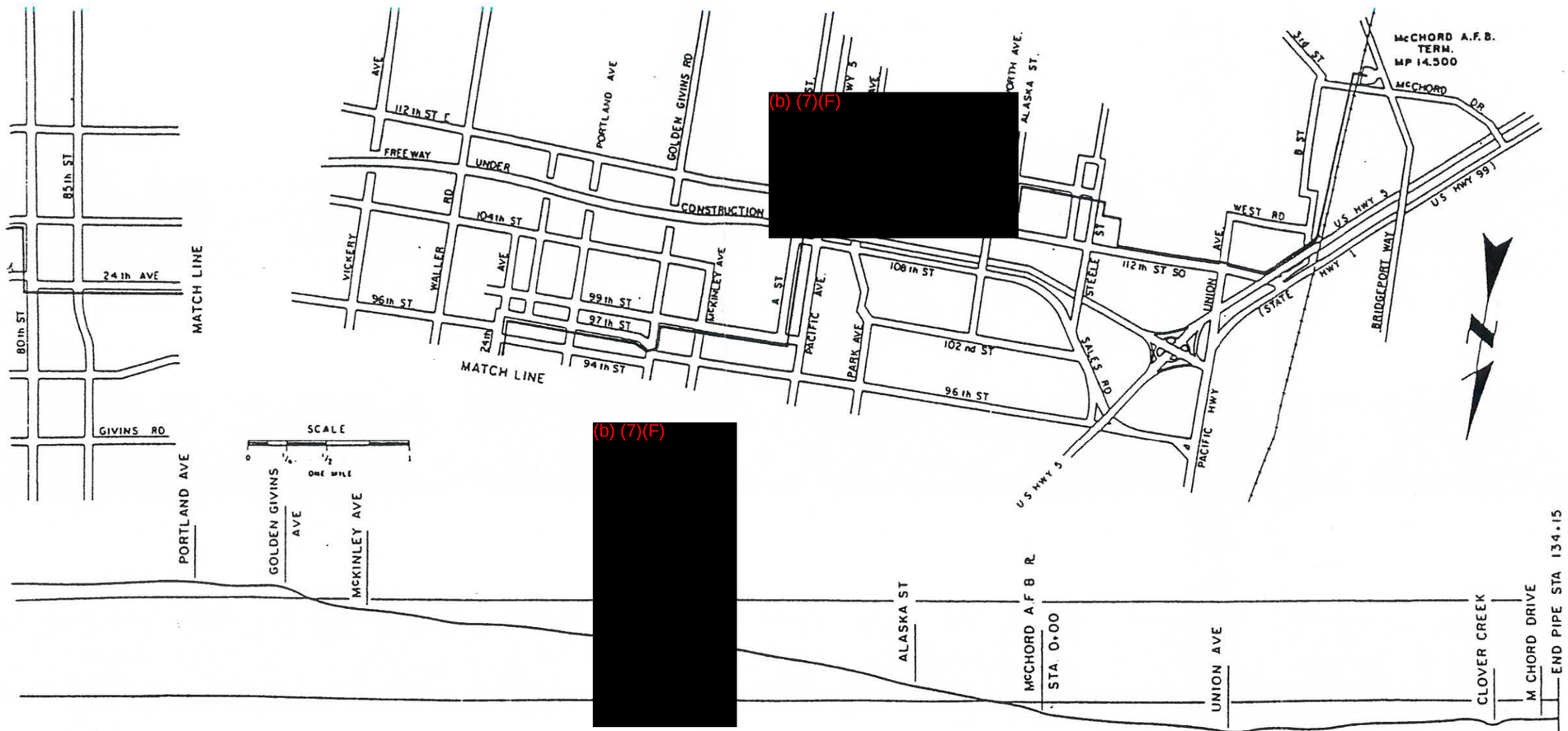
www.delorme.com

Scale 1 : 17,600
1" = 1,466.7 ft
Data Zoom 14-0

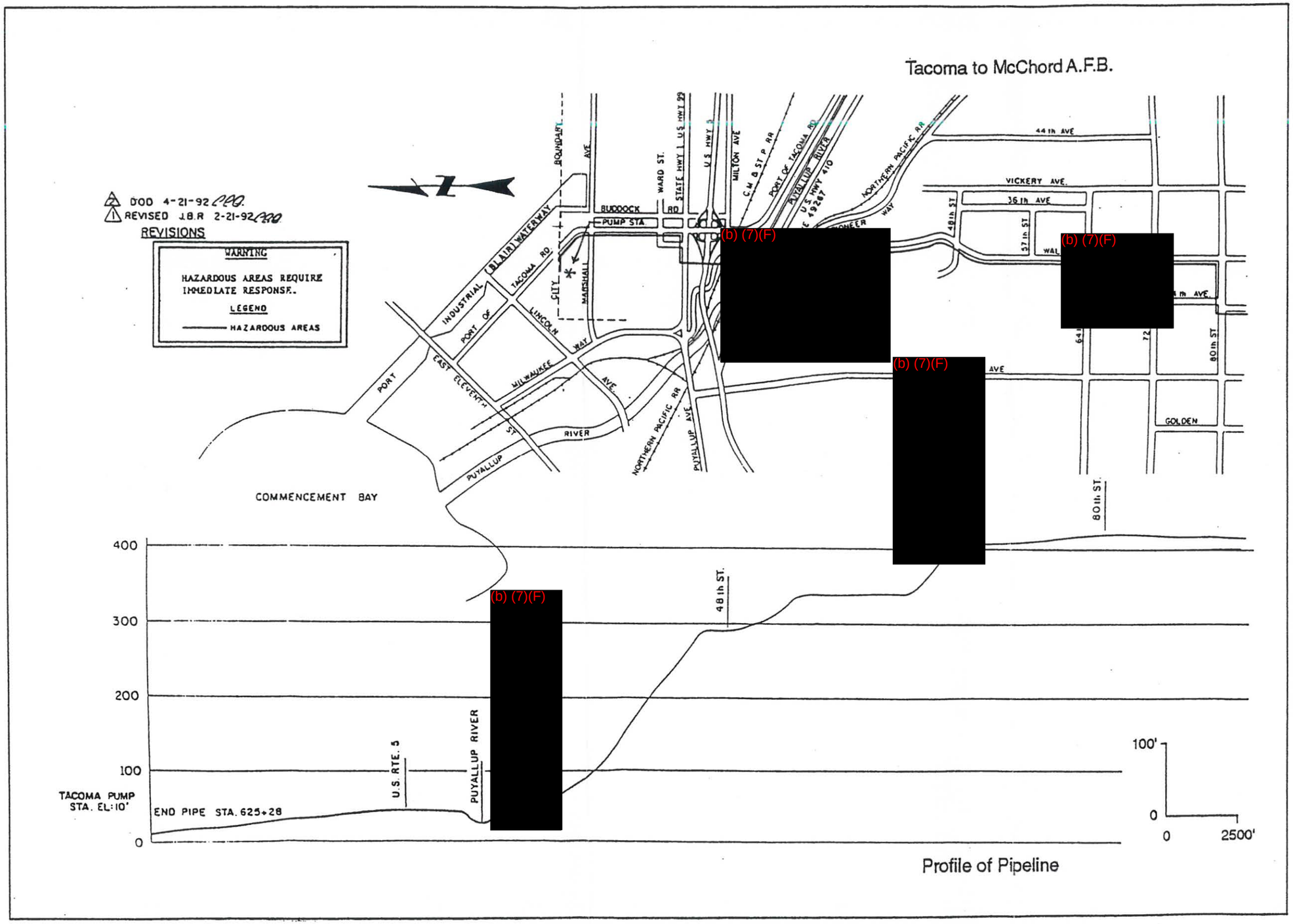
PHMSA 00002025

Tacoma to McChord A.F.B.



Profile of Pipeline

Rev. E



Profile of Pipeline

Rev. E

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(b) (7)(F)

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APPENDIX I

CENTRAL PUGET SOUND GEOGRAPHIC RESPONSE PLAN

Section I-1

U.S. Oil & Refining Co.
McChord Pipeline Co.

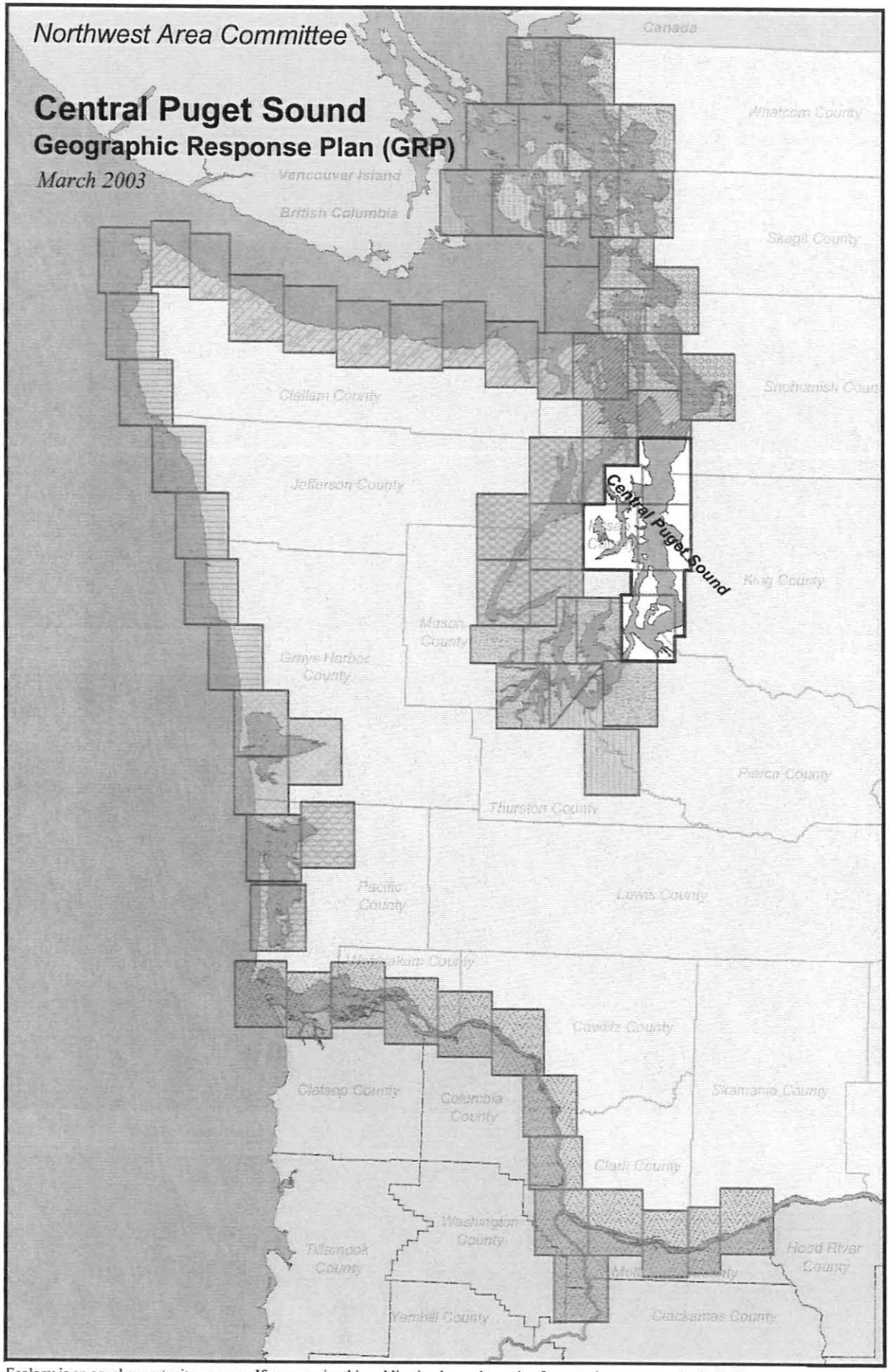
IMPORTANT NOTE:

Please see the following Washington Department of Ecology website to obtain the most current GRP information for the Central Puget Sound as the GRP included in this appendix is only as current as the most recent update to this Facility Oil Spill Response Plan:

http://www.ecy.wa.gov/programs/spills/preparedness/GRP/central_puget_sound.htm

A copy of the Central Puget Sound GRP has been placed in this Appendix to assist spill response personnel who need to start implementing spill response strategies but may not have readily available access to Ecology's website.

Washington State Department of Ecology Publication No. 94-205 (Rev. 3/03)



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SPILL RESPONSE CONTACT SHEET

Required Notifications For Hazardous Substance or Oil Spills

USCG National Response Center ..... **(800) 424-8802**
In Oregon:
Department of Emergency Management ..... **(800) 452-0311**
In Washington:
Emergency Management Division ..... **(800) 258-5990**
Department of Ecology Northwest Regional Office ..... **(425) 649-7000**
Department of Ecology Southwest Regional Office ..... **(360) 407-6300**

U.S. Coast Guard

National Response Center	**(800) 424-8802**
Marine Safety Office Puget Sound:	
Watchstander	**(206) 217-6232**
Safety Office	(206) 217-6232
Marine Safety Office Portland:	
Watchstander	**(503) 240-9301**
Safety Office	(503) 240-9379
Pacific Strike Team	**(415) 883-3311**
District 13:	
MEP/drat	(206) 220-7210
Command Center	(206) 220-7001
Public Affairs	(206) 220-7237
Vessel Traffic Service (VTS)	**(206) 217-6050**

Environmental Protection Agency (EPA)

Region 10 Spill Response	**(206) 553-1263**
Washington Ops Office	(360) 753-9083
Oregon Ops Office	(503) 326-3250
Idaho Ops Office	(208) 334-1450
RCRA/ CERCLA Hotline	(800) 424-9346
Public Affairs	**(206) 553-1203**

National Oceanic Atmosphere Administration

Scientific Support Coordination	(206) 526-6829
Weather	(206) 526-6087

Canadian

Marine Emergency Ops/Vessel Traffic	(604) 666-6011
Environmental Protection	(604) 666-6100
B.C. Environment	(604) 356-7721

Department of Interior

Environmental Affairs	(503) 231-6157
	(503) 621-3682

U.S. Navy

Naval Shipyard	**(360) 476-3466**
Naval Base Seattle	(360) 315-5440
Supervisor of Salvage	**(202) 695-0231**

Army Corps of Engineers

Hazards to Navigation	(206) 764-3400

Muckleshoot Tribe

Tribal Office	(253) 939-3311
Tribal Police	(253) 833-7616

Nisqually Tribe

Tribal Office	(360) 456-5221
After Hours Emergencies	(360) 459-9603

Puyallup Tribe

Tribal Office	(253) 573-7800
After Hours Emergencies	**(253) 573-7911**

Suquamish Tribe

Tribal Office	(360) 598-3311
After Hours Emergencies	(360) 340-4508

Federal O.S.R.O./ State Approved Response Contractors

All Out Indust. & Env. Services	(360) 414-8655
Certified Cleaning Services, Inc.	(253) 536-5500
Clean Sound Cooperative, Inc.	**(425) 783-0908**
Cowlitz Clean Sweep, Inc.	(360) 423-6316
FOSS Environmental	**(800) 337-7455**
Global Diving and Salvage	(206) 623-0621
Guardian Industrial Services, Inc.	(253) 536-0455
Matrix Service, Inc.	(360) 676-4905
MSRC	(425) 252-1300
National Response Corporation	(206) 340-2772

Washington State

Department of Ecology Headquarters	(360) 407-6900
Southwest Region	**(360) 407-6300**
Northwest Region	**(425) 649-7000**
Central Region	**(509) 575-2490**
Eastern Region	**(509) 456-2926**
Department of Fish and Wildlife	**(360) 534-8233**
Emergency Management Division	(360) 438-8639
	(800) 258-5990

State Patrol

Bellevue	(425) 455-7700
Tacoma	(253) 536-6210
Bremerton	(360) 478-4646

Oregon State

Department of Environmental Quality	(503) 229-5733
Emergency Management	**(503) 378-6377**
	(800) 452-0311

*** Boldface type are 24 hour numbers**

HOW TO USE THIS GEOGRAPHIC RESPONSE PLAN

Purpose of Geographic Response Plan (GRP)

This plan prioritizes resources to be protected and allows for immediate and proper action. By using this plan, the first responders to a spill can avoid the initial confusion that generally accompanies any spill.

Geographic Response Plans are used during the emergent phase of a spill which lasts from the time a spill occurs until the Unified Command is operating and/or the spill has been contained and cleaned up. Generally this lasts no more than 24 hours. The GRPs constitute the federal on-scene coordinators' and state on-scene coordinators' (Incident Commanders) "orders" during the emergent phase of the spill. During the project phase, the GRP will continue to be used, and the planned operation for the day will be found in the Incident Action Plan's Assignment List (ICS Form 204). The Assignment List is prepared in the Planning Section with input from natural resource trustees, the Incident Objectives (ICS Form 202), Operations Planning Worksheet (ICS Form 215), and Operations Section Chief.

Strategy Selection

Chapter 4 contains complete strategy descriptions in matrix form, response priorities, and strategy maps. The strategies depicted in Chapter 4 should be implemented as soon as possible, following the priority table in Section 2 with the "Potential Spill Origin" closest to the actual spill origin. These strategy deployment priorities may be modified by the Incident Commander(s) after reviewing on scene information, including: tides, currents, weather conditions, oil type, initial trajectories, etc.

It is assumed that control and containment at the source is the number one priority of any response. If, in the responder's best judgment, this type of response is infeasible then the priorities laid out in Chapter 4, Section 2 take precedence over containment and control.

It is important to note that strategies rely on the spill trajectory. A booming strategy listed as a high priority would not necessarily be implemented if the spill trajectory and booming location did not warrant action in that area. However, the priority tables should be followed until spill trajectory information becomes available, and modifications to the priority tables must be approved by the Incident Commander(s).

The strategies discussed in this GRP have been designed for use with persistent oils and may not be suitable for other petroleum or hazardous substance products. For hazardous substance spills, refer to the Northwest Area Contingency Plan, Chapter 7000.

Standardized Response Language

In order to avoid confusion in response terminology, this GRP uses standard National Interagency Incident Management System, Incident Command System (NIIMS, ICS) terminology and strategy names, which are defined in Appendix A, Table A-1 (e.g. diversion, containment, exclusion).

CENTRAL PUGET SOUND
Geographic Response Plan

Record of Changes

Date	Change Number	Summary of Changes	Initials of person making change
July 1, 1993	Original Release	N/A	N/A
Nov 30, 1994	1st Change	Replacement of document - includes new chapters and revised Chapter 4 based on field verification	
July 1, 1997	2nd Change	Revision to Chapter 4 strategies; update of several text pages	
October 15, 1997	3rd Change	Area code changes to contact sheet, Chapter 7	
March 2000	4th Change	General update of Chapter 4; conversion of GRP to pdf for internet distribution	D Davis
December 2000	5th Change	Finalized changes from March 2000 updates	D Davis
March 2003	6th Change	Update of Chapter 4 using GIS based maps, and new priority tables based on trajectory modeling.	D Davis

PHMSA 000023037

Central Puget Sound Geographic Response Plan
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PHMSA 000023038

Central Puget Sound, WA

GEOGRAPHIC RESPONSE PLAN

1. INTRODUCTION: SCOPE OF THIS PROJECT

Geographic Response Plans are intended to help the first responders to a spill avoid the initial confusion that generally accompanies any spill. This document serves as the federal and state on-scene-coordinators "orders" during a spill in the area covered by this GRP (see Chapter 3 for area covered). As such, it has been approved by the U.S. Coast Guard Marine Safety Office and the Washington State Department of Ecology Spills Program. Changes to this document are expected as more testing is conducted through drills, site visits, and actual use in spill situations. To submit comments, corrections, or suggestions please refer to Appendix C.

GRPs have been developed for the marine and inland waters of Washington, Oregon, and Idaho. They are prepared through the efforts and cooperation of the Washington Department of Ecology, Washington Department of Fish and Wildlife, Oregon Department of Environmental Quality, Idaho State Emergency Response Commission, the U.S. Coast Guard, the Environmental Protection Agency, tribes, other state and federal agencies, response organizations, and local emergency responders.

GRPs were developed through workshops involving federal, state, and local oil spill emergency response experts, response contractors, and representatives from tribes, industry, ports, environmental organizations, and pilots. Workshop participants identified resources which require protection, developed operational strategies, and pinpointed logistical support. A similar process has been used for major updates.

Following the workshops, the data gathered was processed and reproduced in the form of maps and matrices which appear in Chapters 4 through 6. The maps in Chapters 5 and 6 were generated using Canvas. Maps for Chapter 4 were generated using ArcView GIS. The matrices were created using MS Excel, and the balance of each GRP was produced using MS Word.

The first goal of a GRP was to identify, with the assistance of the Washington State Natural Resource Damage Assessment Team, resources needing protection; response resources (boom, boat ramps, vessels, etc.) needed, site access and staging, tribal and local response community contacts, and local conditions (e.g. physical features, hydrology, currents and tides, winds and climate) that may affect response strategies. Note that GRPs only address protection of sensitive **public** resources. It is the responsibility of private resource owners and/or potentially liable parties to address protection of private resources (such as commercial marinas, private water intakes, and non-release aquaculture facilities).

Secondly, response strategies were developed based on the sensitive resources noted, hydrology, and climatic considerations. Individual response strategies identify the amount of boom necessary for implementation. The response strategies are then applied to Potential Spill Origins and trajectory modeling, and prioritized, taking into account factors such as resource sensitivity, feasibility, wind, and tidal conditions.

Draft strategy maps and matrices were sent out for review and consideration of strategy viability. Field verification was conducted for some strategies, and changes proposed by the participants were included in a semi-final draft, which was offered for final review to all interested parties and the participants of the field verification.

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Finally, the general text of the GRP was compiled along with the site description, reference maps, and logistical support.

Items included in Logistical Support:

- Location of operations center for the central response organization;
- Local equipment and trained personnel;
- Local facilities and services and appropriate contacts for each;
- Site access & contacts;
- Staging areas;
- Helicopter and air support;
- Local experts;
- Volunteer organizations;
- Potential wildlife rehabilitation centers;
- Marinas, docks, piers, and boat ramps;
- Potential interim storage locations, permitting process;
- Damaged vessel safe-havens;
- Vessel repairs & cleaning;
- Response times for bringing equipment in from other areas.

2. SITE DESCRIPTION

Central Puget Sound is bounded by Edmonds to the north and Commencement Bay to the south. This also includes Liberty Bay, Port Orchard, Sinclair Inlet and Dyes Inlet.

Although abundant wildlife and natural resources exist throughout the region, it is heavily dominated by human population and important ports including Edmonds, Everett, Seattle, Tacoma, Bremerton, and Port Madison. Naval bases are also located at Keyport and Bremerton.

Several species of aquatic birds, clams, and beach spawning fish reside in Central Puget Sound. In the early fall, salmon return to many of the rivers and streams that flow into the Sound. In addition, kelp and eelgrass are common throughout the near-shore zone.[1]

Refer to Chapter 6 for detailed resource information.

2.1. Physical Features

The bays that comprise Central Puget Sound are generally characterized by sand and gravel beaches, sand and cobble beaches, and some areas of exposed tidal flats. Inlets that are adequately sheltered from Puget Sound itself have protected tidal flats and marshes. Central Puget Sound includes the following shoreline habitats:[2]

Pocket Beaches along rocky shores
Sand and cobble beaches
Sand and gravel beaches
Exposed tidal flats
Sheltered tidal flats

Commercial and ferry traffic dominate the area surrounding Edmonds, Bainbridge Island, Seattle, Vashon Island and Tacoma. Manmade features, including docks, wharves, fuel piers, waterways and marinas, also occupy much of the shoreline.

2.2. Hydrology

Net surface currents generally flow seaward and exit through Admiralty Inlet. A distinctive clockwise pattern exists around Vashon Island in East and Colvos Passages, extending from the surface to the bottom. There are also several eddies located off Alki Point.

Studies of contaminant transport in Elliott Bay show that contaminants introduced through the Duwamish River and the Seattle waterfront accumulate in a thin surface layer approximately five meters deep along the eastern side of the Bay. The along-shore current continues to West Point where tidal mixing destroys this distinct layer.[3]

2.3. Currents and Tides

[1] National Oceanic and Atmospheric Administration, Environmental Sensitivity Index, Central & Southern Puget Sound (Seattle: 1984).
[2] Ibid.
[3] Evans Hamilton, Inc. and D.R. Systems, Inc., Puget Sound Environmental Atlas, vol. 1. (1987) 122-125.

The mean tidal range (MHW - MLW) for the Central Puget Sound area is 9.4 to 10.48 feet. The diurnal tidal range (MHHW - MLLW) is 13.1 to 15.0 feet. Tidal ranges increase further south.[4]

The average currents in the Central Puget Sound area do not exceed much more than a knot. Exceptions are areas in and around narrow passages including Agate Passage, Rich Passage, Port Washington Narrows, and Tacoma Narrows. Weak currents are experienced along the east side of Central Puget Sound from the 20-fathom curve inland and in Port Orchard, East Passage, Colvos Passage (on the flood), and Carr Inlet.[5]

Tides and currents vary with seasonal runoff and lunar cycles in localized areas. Spill responders should consult tide and current tables for their particular location.

2.4. Winds

The winds in this area are a result of diverse topography including the Cascade and Olympic Mountains. The westerly winds from the Pacific appear to flow to the north and south around the Olympics, causing what is commonly known as the "Puget Sound Convergence" on the eastern side.

From October though March and April through May, winds are generally from a southwesterly direction at 10 to 20 mph. The summer months, June through September, usually have winds from the north at 0 to 9 mph.[6] Local wind conditions may vary.

2.5. Climate

The area has a maritime climate with cool summers and mild winters. Annual precipitation rate is between 18 and 50 inches. Fog may cause visibility problems on about 25 to 40 days per year, usually in autumn and again in January and February.[7]

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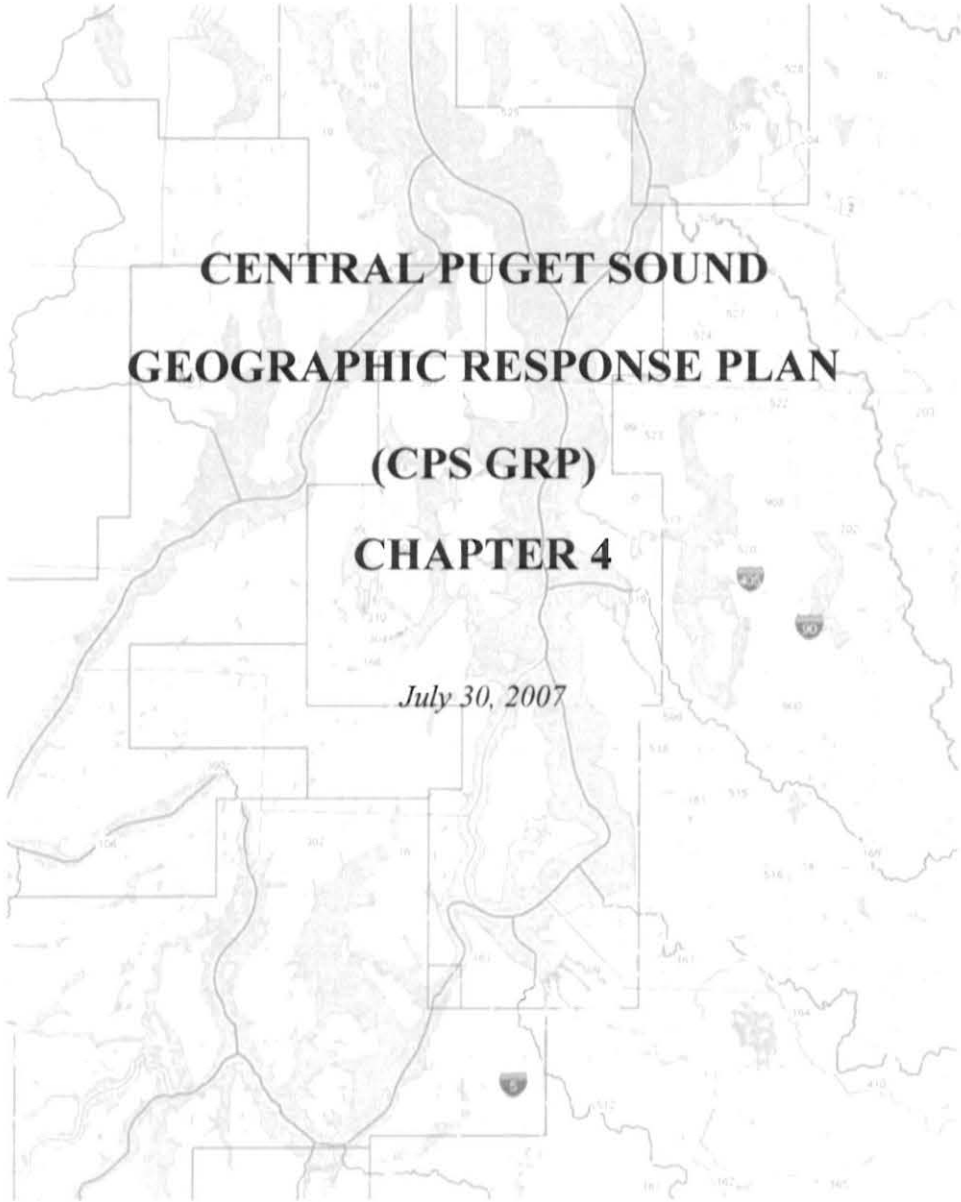
[4] National Oceanic and Atmospheric Administration, Tide Tables West Coast of North and South America. (1994).
[5] National Oceanic and Atmospheric Administration, Tidal Current Tables Pacific Coast of North America and Asia (1994).
[6] State of Washington Department of Natural Resources, Washington Marine Atlas, South Inland Waters, vol. 2 (1972).
[7] National Oceanic and Atmospheric Administration , U.S. Coast Pilot (1993) 312-313.

Washington State Department of Ecology, Version 2.01

NORTHWEST AREA COMMITTEE



CENTRAL PUGET SOUND GEOGRAPHIC RESPONSE PLAN (CPS GRP)

CHAPTER 4

July 30, 2007

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4.0 GENERAL PROTECTION/COLLECTION STRATEGIES

4.1 Chapter Overview

Geographic Response Plans (GRPs) are:

- Triggered in the first hours (usually 6-24) following an oil spill.
- Targeted at shielding sensitive resources that lie close to the reported spill source.
- Just one method to minimize spill impacts, they can occur concurrently with other efforts, including skimming.

On-site Considerations

Before deploying a GRP strategy, responders should ask:

- Are conditions safe?
- Has initial control and containment been sufficiently achieved?
- Underflow dams and culvert blocks require Emergency Hydraulic Project Approval (HPA) prior to implementation. These response tactics will reduce, interrupt, or divert the water flow of streams that can be damaging to sensitive fish life and habitat. Responders must receive Emergency HPA from the Washington State Department of Fish and Wildlife **before** using culvert blocks and underflow dams. The Hydraulic Code (RCW 75-20.11-160) provides for immediate verbal approval in emergency situations. For emergency HPA contact 360-534-8233 (24 hour pager).

During the initial GRP-response phase, responders should be aware that:

- Challenging field conditions may require them to modify strategies, and later notify the command center.
- Certain strategies may call for access points or staging areas that are not easily reached at all times of the year or in all conditions.
- All strategies were designed for use with persistent, heavy oils and may not be suitable for other petroleum products or hazardous materials.
- Boom deployment may require around-the-clock tending and/or precise anchoring techniques.

- The sequence of deployments is pre-determined in a booming priority table. The appropriate table is found by finding which "Potential Spill Origin" point (orange boxes on the maps) lies closest to the actual (or reported) spill site.

After considerably more is known about the spill and surrounding area:

- Other techniques for recovery or containment (skimming, in situ burning, or dispersants) may be applied.
- GRP strategies are likely to be refined as a result of lessons learned.

Marine booming strategy sites are numbered from North to South.

4.2 Strategy and Access Locations Overview

Marine booming strategy sites are numbered from North to South

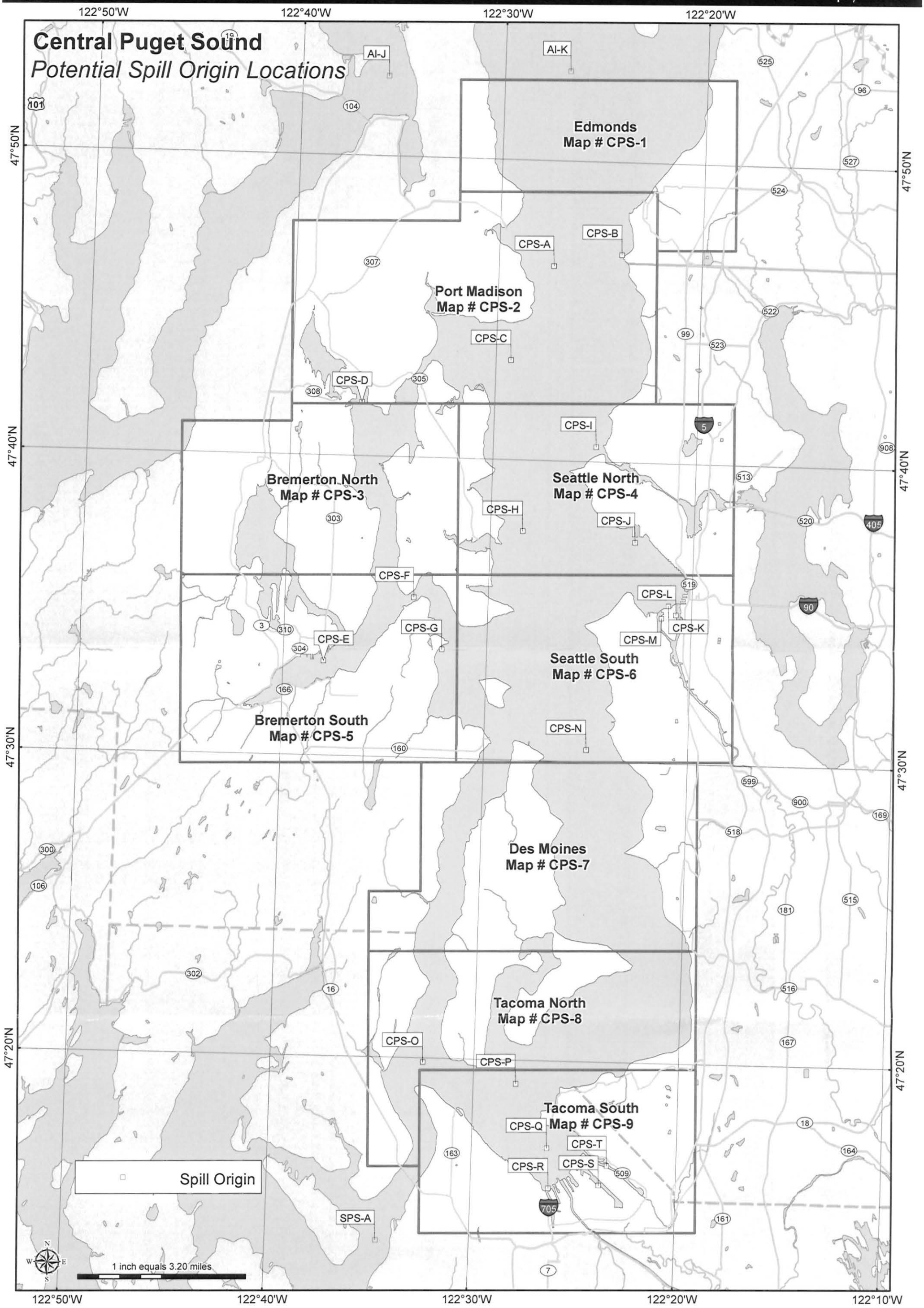

Central Puget Sound
Potential Spill Origin Locations
122°50'W
122°40'W
122°30'W
122°20'W
122°10'W
47°50'N
47°40'N
47°30'N
47°20'N
AI-J
AI-K
Edmonds
Map # CPS-1
CPS-A
CPS-B
Port Madison
Map # CPS-2
CPS-C
CPS-D
CPS-I
Bremerton North
Map # CPS-3
Seattle North
Map # CPS-4
CPS-H
CPS-J
CPS-F
CPS-L
CPS-K
CPS-M
CPS-E
CPS-G
Seattle South
Map # CPS-6
Bremerton South
Map # CPS-5
CPS-N
Des Moines
Map # CPS-7
Tacoma North
Map # CPS-8
CPS-O
CPS-P
Tacoma South
Map # CPS-9
CPS-Q
CPS-T
CPS-R
CPS-S
SPS-A
Spill Origin
1 inch equals 3.20 miles

Table 4-1: CPS-A, Apple Tree Cove, Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE			
1	CPS-2	4- 23	4- 33
2	CPS-4	4- 23	4- 34
3	CPS-7	4- 23	4- 35
4	CPS-1	4- 23	4- 33
5	CPS-6	4- 23	4- 35

Table 4-2: CPS-B, Chevron - Point Wells, Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE			
1	CPS-4	4- 23	4- 34
2	CPS-7	4- 23	4- 35
3	CPS-1	4- 23	4- 33
4	CPS-6	4- 23	4- 35
5	AI-29	See Admiralty Inlet GRP	See Admiralty Inlet GRP

Table 4-3: CPS-C, Port Madison, Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE			
1	CPS-11	4- 23	4- 37
2	CPS-6	4- 23	4- 35
3	CPS-5	4- 23	4- 35
4	CPS-9	4- 23	4- 36
5	CPS-2	4- 23	4- 33
6	CPS-4	4- 23	4- 34

Table 4-4: CPS-D, Keyport, Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE			
1	CPS-13	4- 23	4- 38
2	CPS-12	4- 23	4- 38
3	CPS-8	4- 23	4- 36
4	CPS-10	4- 23	4- 37
5	CPS-15	4- 24	4- 39
6	CPS-14	4- 24	4- 39
7	CPS-19	4- 24	4- 40

Table 4-5: CPS-E, Puget Sound Naval Shipyard, Mouth of Dyes Inlet, Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE			
1	CPS-44	4- 26	4- 48
2	CPS-41	4- 26	4- 47
3	CPS-50	4- 26	4- 50
4	CPS-47	4- 26	4- 49
5	CPS-49	4- 26	4- 50
6	CPS-46	4- 26	4- 49
7	CPS-26	4- 24	4- 42
8	CPS-30	4- 26	4- 43
9	CPS-35	4- 26	4- 45
10	CPS-29	4- 26	4- 43
11	CPS-37	4- 26	4- 46
12	CPS-38	4- 26	4- 46

Table 4-6: CPS-F, Rich Passage, Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE			
1	CPS-35	4- 26	4- 45
2	CPS-37	4- 26	4- 46
3	CPS-38	4- 26	4- 46
4	CPS-29	4- 26	4- 43
5	CPS-26	4- 24	4- 42
6	CPS-30	4- 26	4- 43
7	CPS-50	4- 26	4- 50
8	CPS-47	4- 26	4- 49
9	CPS-41	4- 26	4- 47
10	CPS-46	4- 26	4- 49
11	CPS-44	4- 26	4- 48
12	CPS-49	4- 26	4- 50

Table 4-7: CPS-G, Manchester Fuel Depot, Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE			
1	CPS-35	4- 26	4- 45
2	CPS-37	4- 26	4- 46
3	CPS-38	4- 26	4- 46
4	CPS-51	4- 26	4- 51
5	CPS-52	4- 27	4- 51
6	CPS-29	4- 26	4- 43
7	CPS-26	4- 24	4- 42
8	CPS-30	4- 26	4- 43
9	CPS-47	4- 26	4- 49
10	CPS-48	4- 27	4- 50
11	CPS-23	4- 24	4- 41

Table 4-8: CPS-H, E shore Bainbridge Island N of Eagle Harbor, Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE			
1	CPS-24	4- 25	4- 41
2	CPS-6	4- 23	4- 35
3	CPS-9	4- 23	4- 36
4	CPS-11	4- 23	4- 37
5	CPS-31	4- 27	4- 43
6	CPS-5	4- 23	4- 35

Table 4-9: CPS-I, Lake Washington Ship Canal Entrance, Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE			
1	CPS-7	4- 23	4- 35
2	CPS-4	4- 23	4- 34
3	CPS-1	4- 23	4- 33
4	CPS-6	4- 23	4- 35

Table 4-10: CPS-J, Pier 91, Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE			
1	CPS-32	4- 27	4- 44

Table 4-11: CPS-K, Duwamish River, Rainier Petroleum/Shell, Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE			
1	CPS-34	4- 27	4- 44
2	CPS-36	4- 27	4- 45
3	CPS-40	4- 27	4- 47
4	CPS-42	4- 27	4- 48
5	CPS-43	4- 27	4- 48
6	CPS-45	4- 27	4- 49
7	CPS-32	4- 27	4- 44

Table 4-12: CPS-L, Duwamish River, E waterway, Kinder Morgan Facility, Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE			
1	CPS-36	4- 27	4- 45
2	CPS-40	4- 27	4- 47
3	CPS-42	4- 27	4- 48
4	CPS-43	4- 27	4- 48
5	CPS-45	4- 27	4- 49
6	CPS-32	4- 27	4- 44
7	CPS-34	4- 27	4- 44

Table 4-13: CPS-M, Duwamish River, W Waterway, ARCO/BP facility, Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE			
1	CPS-32	4- 27	4- 44
2	CPS-34	4- 27	4- 44
3	CPS-36	4- 27	4- 45
4	CPS-40	4- 27	4- 47
5	CPS-42	4- 27	4- 48
6	CPS-43	4- 27	4- 48

Table 4-14: CPS-N, E Passage/Blake Island/Three Tree Point, Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE			
1	CPS-55-High Flow	4- 28	4- 53
1	CPS-55-Low Flow	4- 28	4- 53
2	CPS-57	4- 28	4- 54
3	CPS-48	4- 27	4- 50
4	CPS-31	4- 27	4- 43
5	CPS-24	4- 25	4- 41

Table 4-15: CPS-O, Dalco Passage/Narrows/Gig Harbor, Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE			
1	CPS-64	4- 30	4- 57
2	CPS-63	4- 29	4- 57
3	CPS-62	4- 29	4- 56
4	CPS-61	4- 29	4- 56
5	CPS-59	4- 29	4- 55
6	CPS-58	4- 28	4- 55
7	CPS-60	4- 29	4- 56
10	CPS-56	4- 28	4- 54
11	CPS-54	4- 28	4- 52
12	SPS-34	See South Puget Sound GRP	See South Puget Sound GRP
13	SPS-30	See South Puget Sound GRP	See South Puget Sound GRP
14	SPS-29	See South Puget Sound GRP	See South Puget Sound GRP
15	SPS-27	See South Puget Sound GRP	See South Puget Sound GRP
16	SPS-44	See South Puget Sound GRP	See South Puget Sound GRP
17	SPS-47	See South Puget Sound GRP	See South Puget Sound GRP
18	SPS-57	See South Puget Sound GRP	See South Puget Sound GRP

Table 4-16: CPS-P, Commencement Bay, E Passage, Des Moines, Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE			
1	CPS-64	4- 30	4- 57
2	CPS-70-High Tide	4- 30	4- 60
3	CPS-72-High Tide	4- 30	4- 62
4	CPS-61	4- 29	4- 56
5	CPS-59	4- 29	4- 55
6	CPS-58	4- 28	4- 55
7	CPS-60	4- 29	4- 56
8	CPS-63	4- 29	4- 57
9	CPS-62	4- 29	4- 56

Table 4-17: CPS-Q, Commencement Bay, Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE			
1	CPS-65	4- 30	4- 58
2	CPS-66	4- 30	4- 58
3	CPS-75	4- 30	4- 63
4	CPS-69	4- 30	4- 60
5	CPS-74	4- 30	4- 63
6	CPS-64	4- 30	4- 57
7	CPS-70-High Tide	4- 30	4- 60
8	CPS-72-High Tide	4- 30	4- 62
9	CPS-61	4- 29	4- 56
10	CPS-59	4- 29	4- 55

Table 4-18: CPS-R, Commencement Bay/Thea Foss Watrwy/Simpson Facil., Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE			
1	CPS-85	4- 30	4- 67
2	CPS-84	4- 30	4- 66
3	CPS-86	4- 30	4- 67
4	CPS-83	4- 30	4- 66
5	CPS-66	4- 30	4- 58
6	CPS-65	4- 30	4- 58
7	CPS-72-High Tide	4- 30	4- 62
8	CPS-70-High Tide	4- 30	4- 60
9	CPS-74	4- 30	4- 63
10	CPS-69	4- 30	4- 60

Table 4-19: CPS-S, Commencement Bay, U.S. Oil Fac., Blair Waterway, Potential Spill Origin Booming Priority

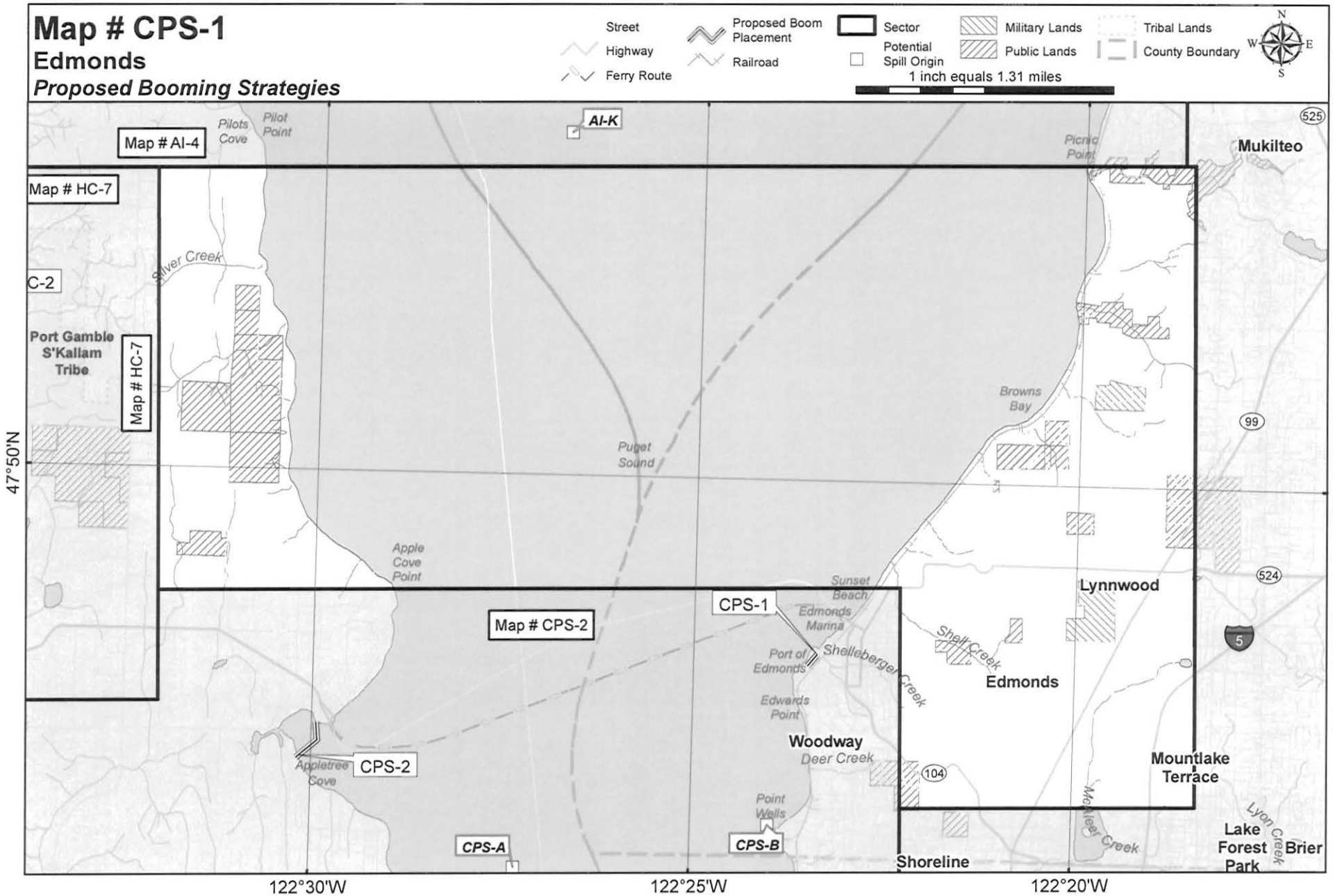
Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE			
1	CPS-75	4- 30	4- 63
2	CPS-69	4- 30	4- 60
3	CPS-81	4- 30	4- 65
4	CPS-66	4- 30	4- 58
5	CPS-65	4- 30	4- 58
6	CPS-79	4- 30	4- 65
7	CPS-76	4- 30	4- 64
8	CPS-77	4- 30	4- 64

Table 4-20: CPS-T, Commencement Bay, Hylebos Wtrwy, Potential Spill Origin Booming Priority

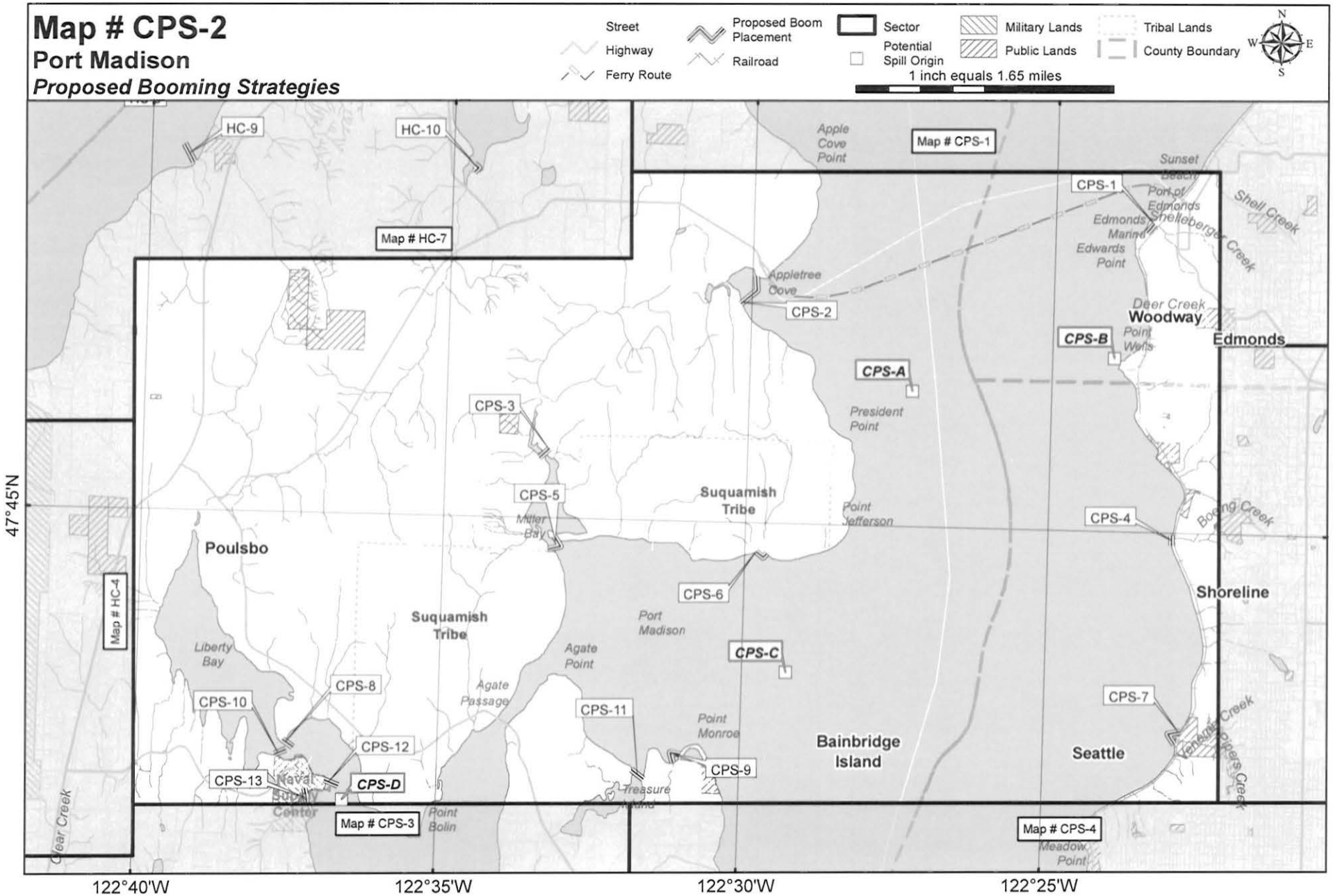
Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE			
1	CPS-71	4- 30	4- 61
2	CPS-68	4- 30	4- 59
3	CPS-67	4- 30	4- 59
4	CPS-66	4- 30	4- 58
5	CPS-65	4- 30	4- 58
6	CPS-73	4- 30	4- 63
7	CPS-69	4- 30	4- 60

4.4 Proposed Booming and Collection Strategies - Maps

Map # CPS-1
Edmonds
Proposed Booming Strategies



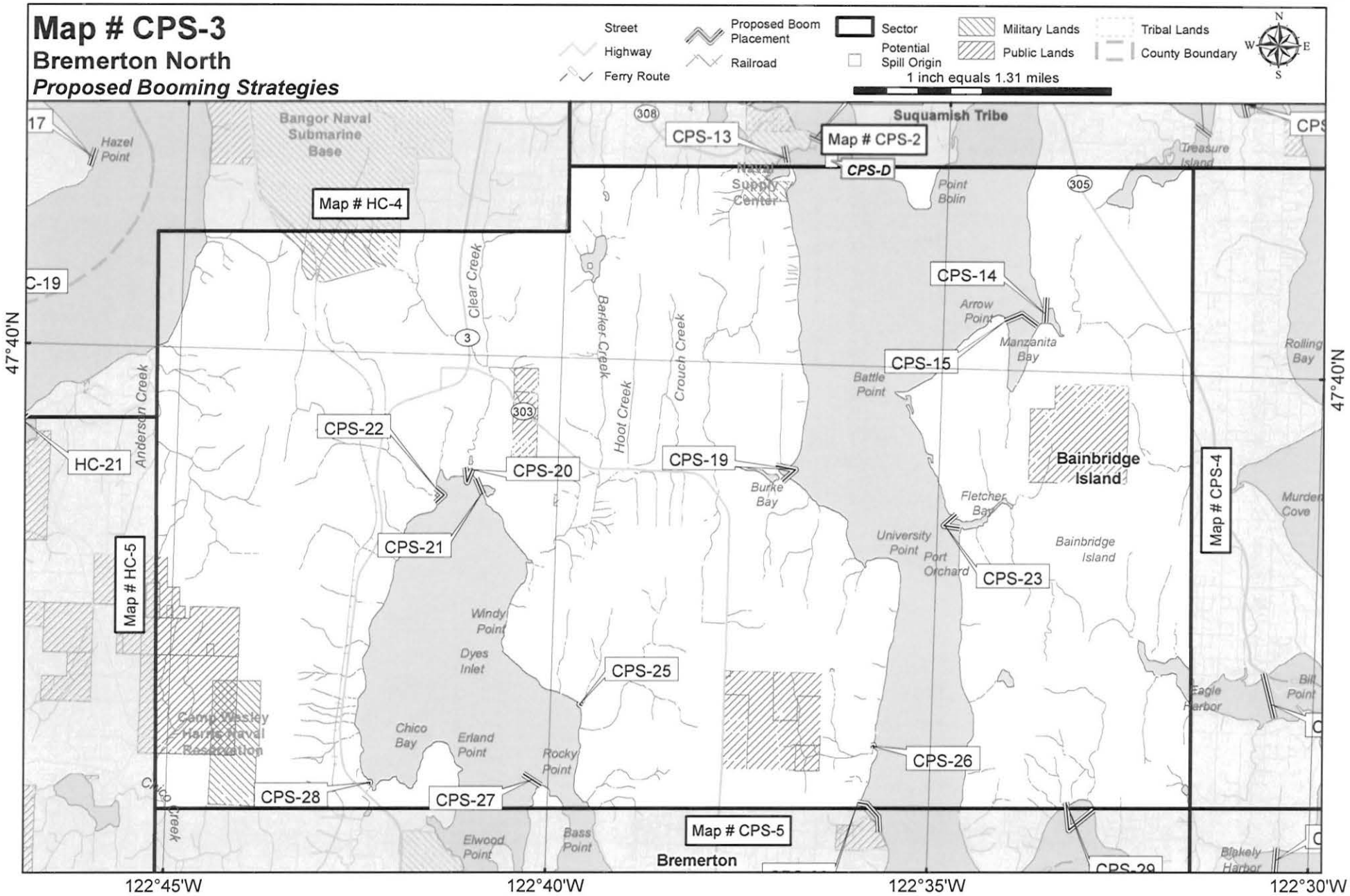
Map # CPS-2
Port Madison
Proposed Booming Strategies



Map # CPS-3

Bremerton North

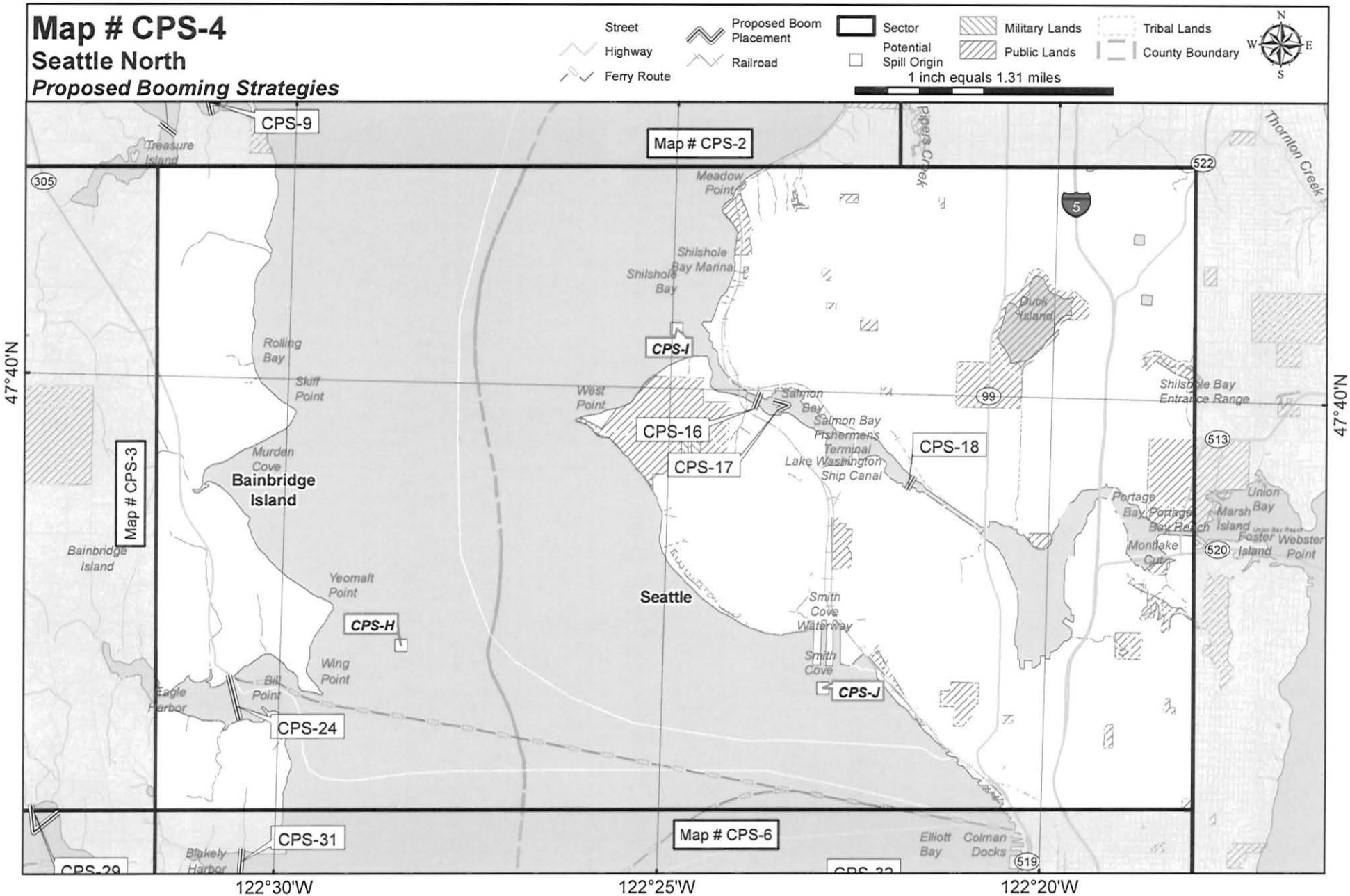
Proposed Booming Strategies



Map # CPS-4

Seattle North

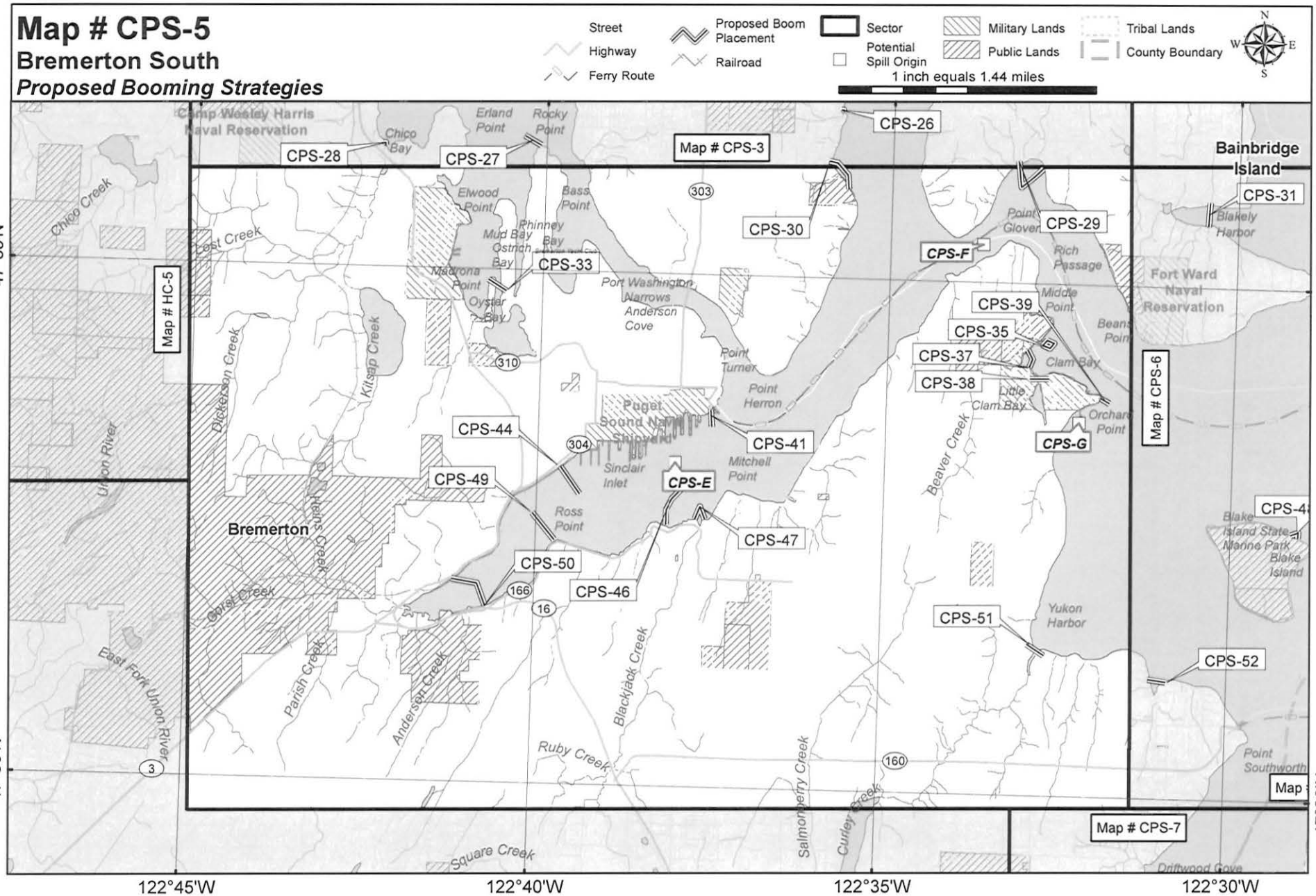
Proposed Booming Strategies



Map # CPS-5

Bremerton South

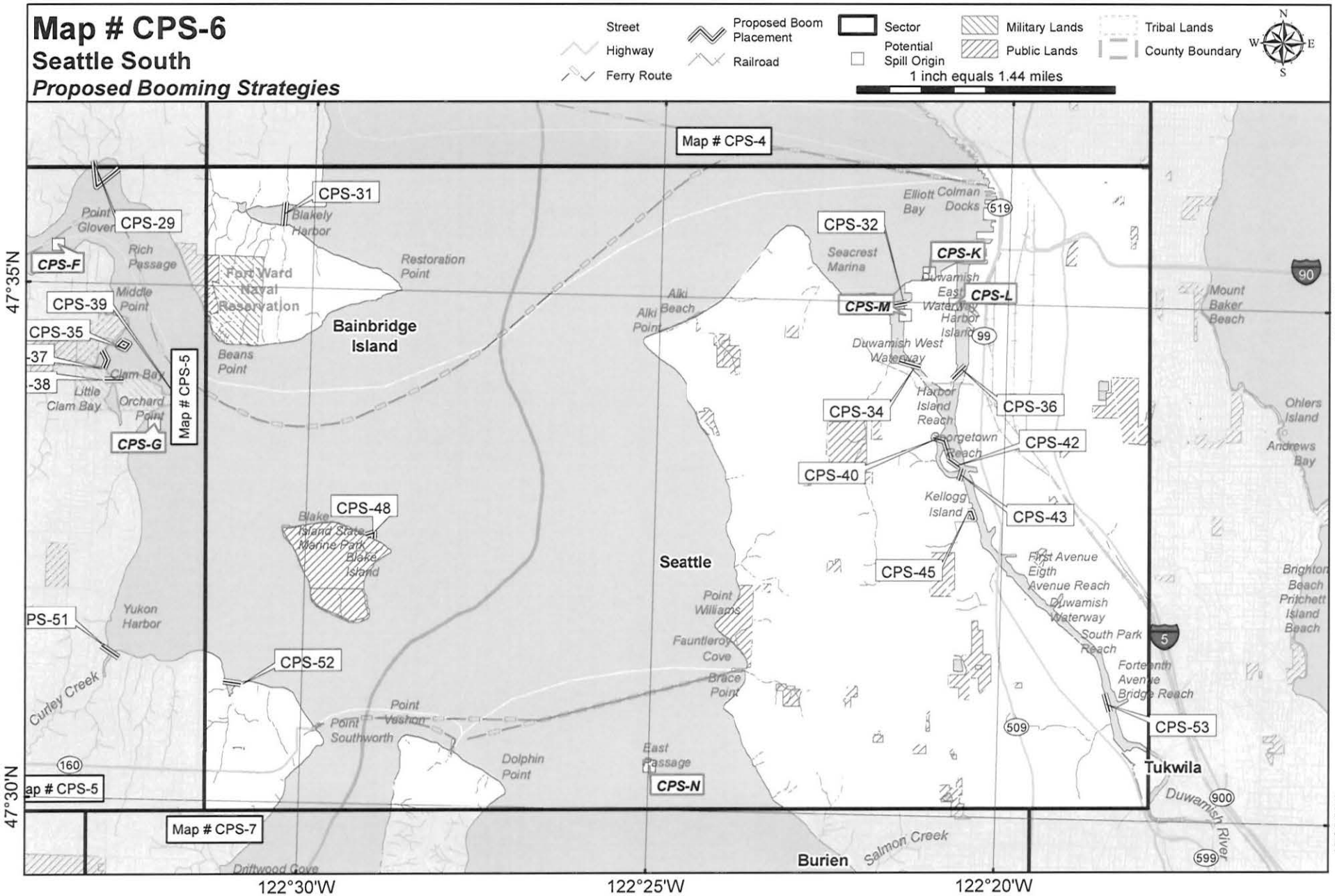
Proposed Booming Strategies



Map # CPS-6

Seattle South

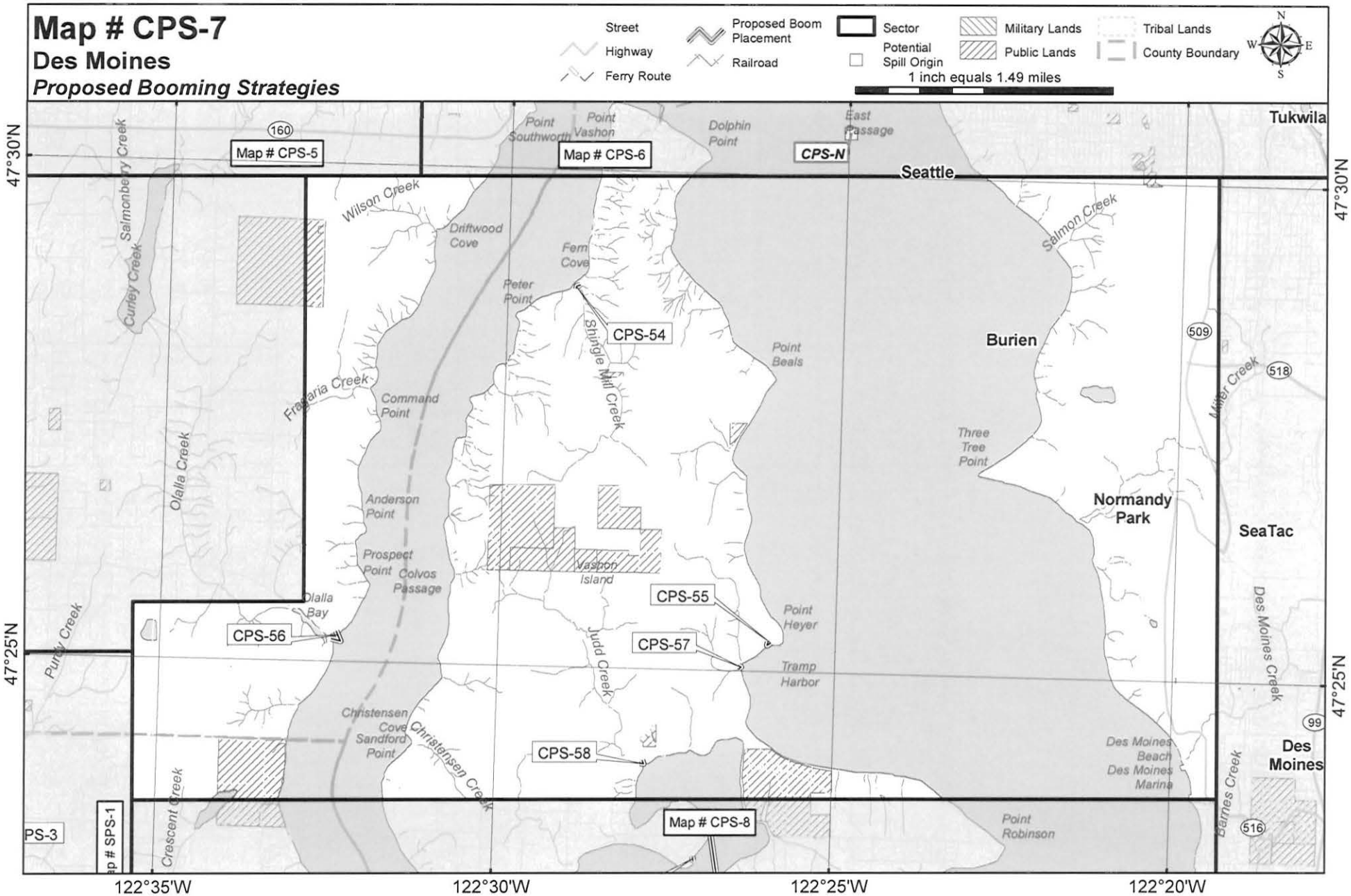
Proposed Booming Strategies



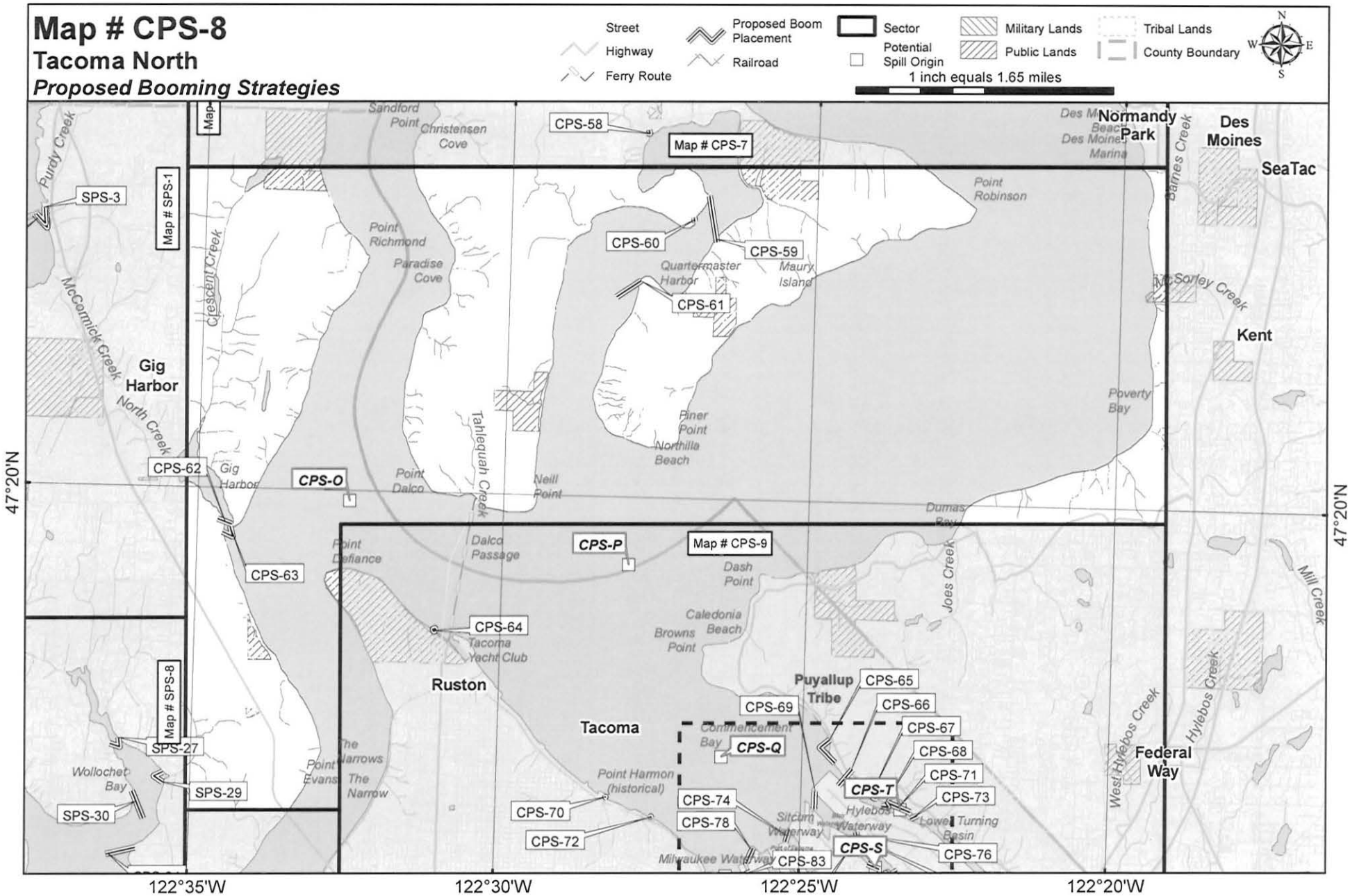
Map # CPS-7

Des Moines

Proposed Booming Strategies



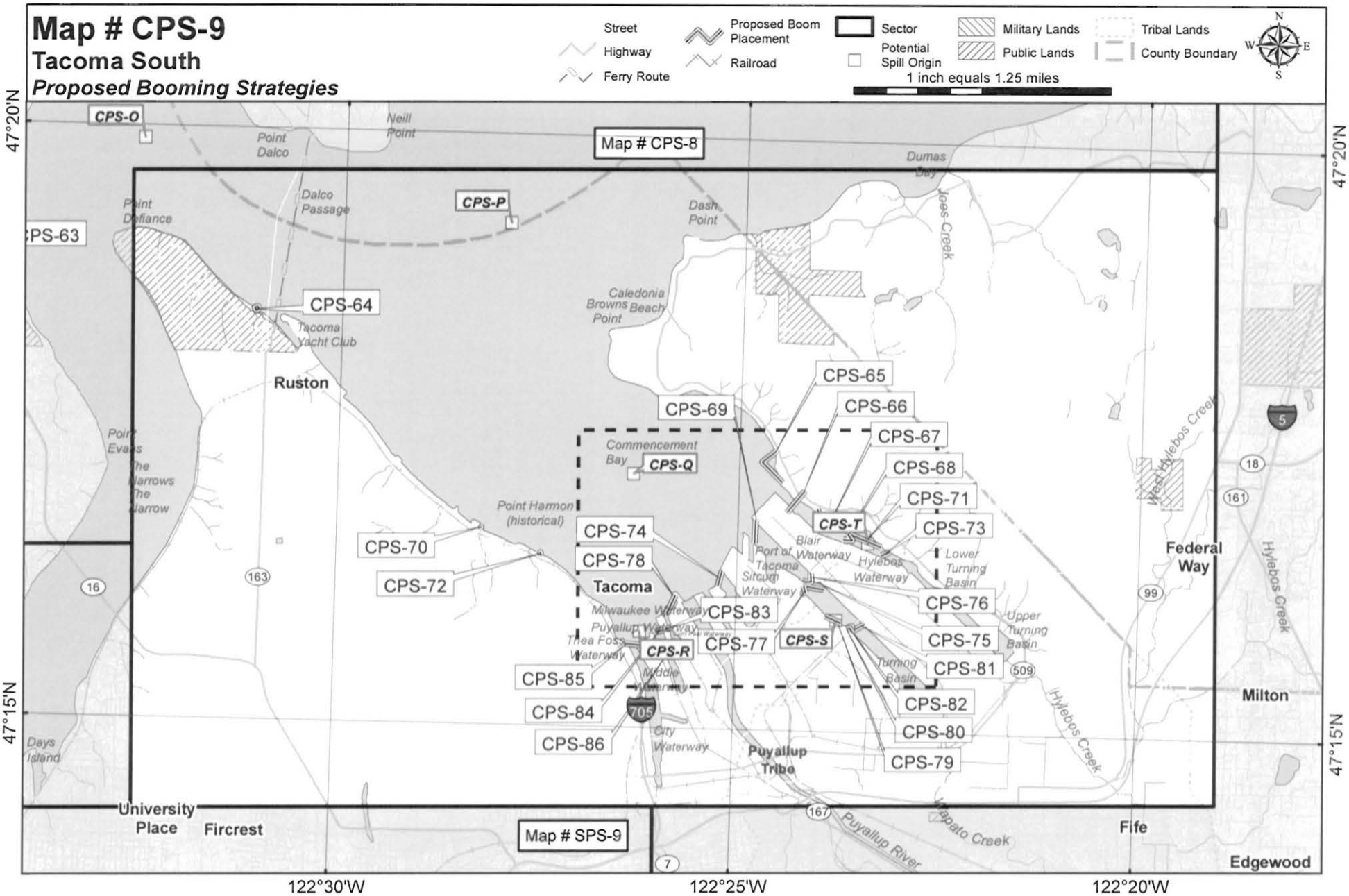
Map # CPS-8
Tacoma North
Proposed Booming Strategies



Map # CPS-9

Tacoma South

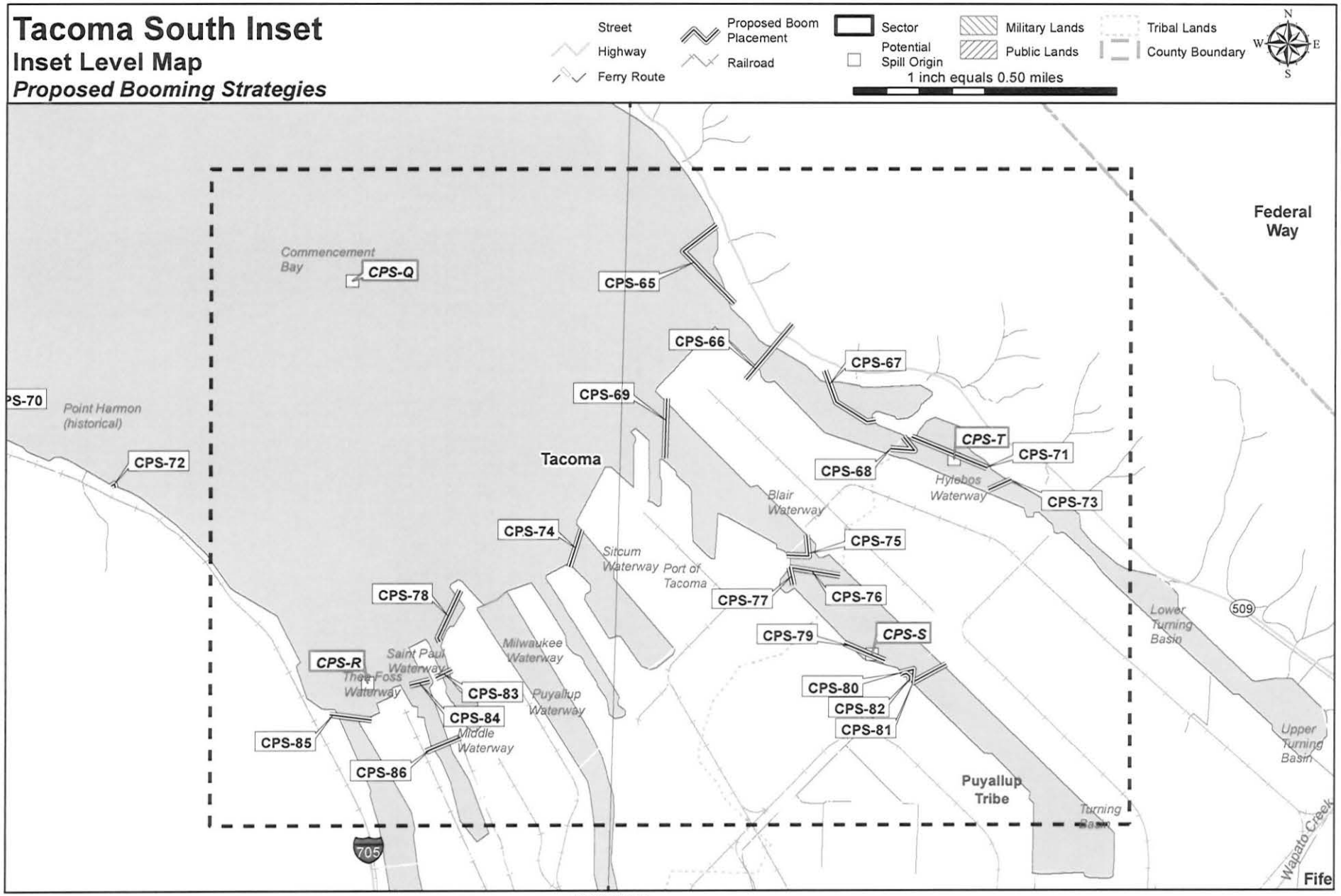
Proposed Booming Strategies



Tacoma South Inset

Inset Level Map

Proposed Booming Strategies



4.5 Proposed Booming and Collection Strategies - Matrices

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-1	Visited and Not Tested 05/01/2006	**Edmonds Wildlife Sanctuary** (b) (7)(F) [redacted]	Exclusion - Keep oil out of wildlife sanctuary	NA	Shut tide gates if the threat of oiling exists. Tide gate is 0.3 mile south of Dayton St., off gravel road along RR tracks. Contact immediately or before entering: Edmonds Public Works, (W) 425-771-0235, Contact for key to tide gate chain/lock, can also be cut.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=SNO0268	special protection area - Edmonds Wildlife Sanctuary, sensitive habitat, waterfowl, shore birds, herons & other wading birds
CPS-2	Visited and Tested 03/01/1997	**Appletree Cove** (b) (7)(F) [redacted]	Collection, exclusion - Prevent oil from entering Appletree Cove mud flats and intertidal area.	200ft Contractor Boom, 1300ft Harbor Boom	Attach 200 feet of intertidal boom to south end of cove at treeline east of retaining wall. Connect with 1300 feet of harbor boom which should be attached to the south end of the breakwater. (variation, attach to piling first and then to breakwater). 3 anchors should be placed in and 3 outside of boom. Collection can take place in cusps that form between anchors.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0339	sensitive habitat, shellfish

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-3	Visited and Tested 09/01/1996	**Inner Miller Bay** (b) (7)(F) [redacted]	Exclusion - prevent oil from entering creek mouth	300ft Contractor Boom	Close off creek mouth.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0306	sensitive habitat, salmonids (anadromous), waterfowl, herons & other wading birds
CPS-4	Visited and Tested 03/01/1997	**Boeing Creek** (b) (7)(F) [redacted]	Exclusion - Prevent oil from entering creek mouth.	100ft Contractor Boom	High tide only - no threat otherwise. Place weir dam or other partial dam at culverts to prevent oil/tidal water from entering but allowing creek flow out. Will need sandbags, cement, plywood, etc. Boom as last resort. Contact immediately or before entering: WDFW Emergency Hydraulic Project Approval, (M) 360-534-8233, 24-hour pager number. Responders must receive Emergency HPA from the WDFW prior to using culvert blocks and underflow dams.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIN0009	special management area, salmonids (anadromous)

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-5	Visited and Tested 09/01/1996	**Outer Miller Bay** (b) (7)(F) [redacted]	Exclusion - prevent oil from entering bay	800ft Contractor Boom	Anchor boom at south end of south shore to close off entrance.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0300	baitfish, salmonids (anadromous), shellfish, waterfowl, herons & other wading birds, tribal lands/resources - Port Madison Suquamish Indian Reservation
CPS-6	Visited and Not Tested 12/01/2004	**Doe-Kag-Wats Marsh** (b) (7)(F) [redacted]	Exclusion - Keep oil out of marsh.	1000ft Contractor Boom	Deploy boom in a chevron configuration in front of the entrance to the marsh. Current is very strong in entrance channel during tidal changes. Oil could be collected with a vactruck from the west side of the boom.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0323	sensitive habitat, tribal lands/resources - Port Madison Suquamish Indian Reservation
CPS-7	Visited and Not Tested 05/01/2006	**Piper Creek - Inner Strategy** (b) (7)(F) [redacted]	Exclusion - Keep oil out of Piper Creek estuary	200ft Contractor Boom	Boom off both culverts where RR crosses creek.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIN0020	special management area, salmonids (anadromous), public lands/facilities - Carkeek Park

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-8	Visited and Not Tested 05/01/2006	**Liberty Bay** (b) (7)(F) [redacted]	Collection, diversion - Divert and collect oil before it can reach Liberty Bay.	500ft Contractor Boom	Angle north leg toward the east to collect oil in North of bay. Deploy in conjunction with CPS -10. Contact immediately or before entering: Navy Regional Operations Center, (W) 360-315-5123, Alt Business Phone 360-315-5122	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0275	baitfish, marine birds, waterfowl
CPS-9	Visited and Not Tested 05/01/2006	**Point Monroe Lagoon** (b) (7)(F) [redacted]	Collection, diversion - Keep oil out of the lagoon.	1000ft Contractor Boom	Deploy boom in a chevron configuration from the Pt. Monroe sand spit to the shoreline to the south to close off the entrance to the lagoon.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0666	salmonids (anadromous)

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-10	Visited and Not Tested 05/01/2006	**Liberty Bay** (b) (7)(F) [redacted]	Collection, diversion - Divert and collect oil before it can reach Liberty Bay.	500ft Contractor Boom	Locate south leg just West of power lines and East of the house w/ flagpole flying several state flags - Collect oil at small private ramp (caution pipeline area). Deploy in conjunction with CPS-8. Contact immediately or before entering: Navy Regional Operations Center, (W) 360-315-5123, Alt Business Phone 360-315-5122	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0236	baitfish, marine birds, waterfowl
CPS-11	Visited and Not Tested 05/01/2006	**Port Madison** (b) (7)(F) [redacted]	Collection - Exclude oil from entering Port Madison	1200ft Contractor Boom	Deploy boom at an angle across the entrance of Port Madison to divert oil to the east shore near the road for collection.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0673	baitfish, salmonids (anadromous), waterfowl

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-12	Visited and Not Tested 05/01/2006	**Entrance to Liberty Bay** (b) (7)(F) [redacted]	Collection, diversion - Prevent oil from entering Liberty Bay	1000ft Contractor Boom	Attach to fenceline, divert to Navy shoreline. Contact immediately or before entering: Navy Regional Operations Center, (W) 360-315-5123, Alt Business Phone 360-315-5122	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0233	baitfish, marine birds, waterfowl
CPS-13	Visited and Not Tested 05/01/2006	**Keyport Lagoon** (b) (7)(F) [redacted]	Exclusion, collection - Keep oil from entering lagoon, collect oil if it is trapped by chevron.	100ft Contractor Boom	This area would only be at risk during high tides. Deploy boom inside of the entrance of the lagoon so that oil is prevented from entering the rest of lagoon and so that oil could be collected with vac truck. Contact immediately or before entering: Navy Regional Operations Center, (W) 360-315-5123, Alt Business Phone 360-315-5122	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0232	marine birds, waterfowl

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-14	Visited and Not Tested 05/01/2006	**Manzanita Bay - E Inlet** (b) (7)(F) [redacted]	Exclusion - Prevent oil from entering bay	900ft Contractor Boom	Place boom across East inlet.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0557	baitfish, shellfish, waterfowl
CPS-15	Visited and Not Tested 05/01/2006	**Manzanita Bay** (b) (7)(F) [redacted]	Exclusion - Prevent oil from entering bay	2000ft Contractor Boom	Place booms in chevron configuration across mouth of bay; anchor to pilings. Large anchor at apex.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0558	sensitive habitat, baitfish, waterfowl
CPS-16	Visited and Not Tested 05/01/2006	**Chittenden Locks - Salmon Bay** (b) (7)(F) [redacted]	Exclusion - Keep oil in lakes	NA	Contact immediately or before entering: Chittenden Locks, (W) 206-783-7000, Notify Lock master to close the locks, fish ladder, and spillway gates and await further guidance from Unified Command.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIN0037	general fish & wildlife resources

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-17	Visited and Not Tested 05/01/2006	**Time Oil Co.** (b) (7)(F) [redacted]	Collection - Prevent oil from reaching Locks	1200ft Contractor Boom	Boom across canal from Time Oil Co. boom to solid shoreline beyond the wooden pier on north shoreline.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIN0037	public lands/facilities, general fish & wildlife resources
CPS-18	Visited and Not Tested 05/01/2006	**Lake Washington Ship Canal** (b) (7)(F) [redacted]	Collection, exclusion - Keep oil out of Puget Sound	300ft Contractor Boom	Boom across canal; use skimmer along boom; anywhere along canal that is appropriate/ accessible.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIN0037	public lands/facilities, general fish & wildlife resources
CPS-19	Visited and Not Tested 05/01/2006	**Burke Bay** (b) (7)(F) [redacted]	Exclusion - Prevent oil from entering Burke Bay	400ft Contractor Boom	Deploy boom in a chevron configuration on the east side of the bridge.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0223	sensitive habitat, salmonids (anadromous), herons & other wading birds
CPS-20	Visited and Tested 06/01/2000	**Clear Creek** (b) (7)(F) [redacted]	Exclusion - Prevent oil from entering creek estuary	200ft Contractor Boom	Close off flat in front of creek (two culverts where road crosses creek). High water, deploy from boat; low tide, deploy from road.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0174	sensitive habitat, salmonids (anadromous)

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-21	Visited and Not Tested 05/01/2006	**Lagoon near Clear Creek** (b) (7)(F) [redacted]	Exclusion - Prevent oil from entering lagoon.	100ft Contractor Boom	Close off small lagoon to SE of Clear Creek.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0175	sensitive habitat, waterfowl
CPS-22	Visited and Not Tested 05/01/2006	**Strawberry Creek** (b) (7)(F) [redacted]	Exclusion - Prevent oil from entering creek estuary	200ft Contractor Boom	Close off flat in front of creek; High water deploy from boat, Low water from road.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0173	salmonids (anadromous)
CPS-23	Visited and Not Tested 05/01/2006	**Fletcher Bay** (b) (7)(F) [redacted]	Exclusion - Keep oil out of Fletcher Bay	600ft Contractor Boom	Deploy boom in a chevron configuration across the entrance to the bay.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0578	sensitive habitat, salmonids (anadromous)
CPS-24	Visited and Not Tested 05/01/2006	**Eagle Harbor** (b) (7)(F) [redacted]	Exclusion - Keep oil out of harbor.	3000ft Contractor Boom	Close off harbor at ferry dock; deploy boom from west side of ferry dock to pilings just west of old creosote plant.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0635	sensitive habitat, baitfish, marine birds, waterfowl

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-25	Visited and Not Tested 05/01/2006	**Barker Creek Dyes Inlet** (b) (7)(F) [redacted]	Exclusion - Keep oil out of creek.	100ft Contractor Boom	Recommend chevron be put at mouth of creek. Requires about 100 ft of boom, deployed from road (5999Tracyton Blvd NW).	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0177	salmonids (anadromous)
CPS-26	Visited and Not Tested 05/01/2006	**Illahee** (b) (7)(F) [redacted]	Exclusion - Keep oil out of creek	200ft Contractor Boom	Deploy boom in a chevron configuration across mouth of the creek.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0206	sensitive habitat, salmonids (anadromous), public lands/facilities - Illahee State Park
CPS-27	Visited and Not Tested 05/01/2006	**Rocky Point** (b) (7)(F) [redacted]	Deflection - Keep oil out of bay	800ft Contractor Boom	Start at Rocky Point using 800' of boom for a westerly deflection, anchored outward at angle depending on tides and currents.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0128	sensitive habitat
CPS-28	Visited and Not Tested 05/01/2006	**Chico Creek** (b) (7)(F) [redacted]	Exclusion - Prevent oil from entering creek	200ft Contractor Boom	Form chevron across the mouth of Chico Creek. Attach point on SE side of creek.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0162	salmonids (anadromous)

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-29	Visited and Not Tested 05/01/2006	**Lynnwood Center / Rich Passage** (b) (7)(F) [redacted]	Collection - Exclude from restoration project, and enhance natural collection site.	1000ft Contractor Boom	Deploy boom in a chevron configuration across the front of the tide flats east of the mouth of culvert which feeds restoration site, collect oil from beach.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0704	general fish & wildlife resources, special management area
CPS-30	Visited and Tested 06/01/2000	**Illahee State Park** (b) (7)(F) [redacted]	Exclusion - Keep oil off shoreline	2800ft Contractor Boom	Anchor boom from SE shore at State Park property boundary sign to mooring buoys, then to dock and anchor to bulkhead on the NE side of the small creek.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0206	public lands/facilities - Illahee State Park
CPS-31	Visited and Not Tested 05/01/2006	**Blakely Harbor** (b) (7)(F) [redacted]	Exclusion - Keep oil out of the back of Blakely Harbor	1500ft Contractor Boom	Close at mid-harbor - Need large land anchors. If unable to deploy boom at mid-harbor, boom across narrow opening at head of bay (200' chevron).	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0613	sensitive habitat, baitfish, marine birds, waterfowl

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-32	Visited and Tested 09/01/1995	**Harbor Island - W Waterway, N End** (b) (7)(F) [redacted]	Collection, exclusion - Prevent oil in the waterway from entering Elliott Bay.	1200ft Contractor Boom	Deploy boom from the north end of the BP/Arco pier to the old fire station pier on the west shore using a rolling bridle. For spills in Elliott Bay, allow oil to enter the waterway and then deploy the boom to prevent oil from moving back into Elliott Bay. Collect with skimmers/vac trucks.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIN0103	general fish & wildlife resources
CPS-33	Visited and Not Tested 05/01/2006	**Oyster Bay** (b) (7)(F) [redacted]	Exclusion - Keep oil out of bays	500ft Contractor Boom	Close off mouth to Oyster Bay w/ 250' sections anchored to boulders, trees & pilings.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0145	waterfowl
CPS-34	Visited and Not Tested 05/01/2006	**Harbor Island - W Waterway, S End** (b) (7)(F) [redacted]	Collection, exclusion - Prevent oil from moving into the Duwamish Waterway.	1000ft Contractor Boom	Deploy boom across the south end of the West Waterway at a site suitable for collection from shore with a vac truck.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIN0097	special management area, salmonids (anadromous), waterfowl

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-35	Visited and Not Tested 05/01/2006	**Clam Bay / NMFS Fish Net Pens** (b) (7)(F) [redacted]	Exclusion - Prevent oil from reaching NMFS Fish Net Pens and water intake	1100ft Contractor Boom	Navy has predeployed boom at NMFS pier. Surround the net pens at the end of the NMFS pier. Note - does not address adjacent net pens anchored in the mouth of the bay that are privately owned. Contact immediately or before entering: Navy Regional Operations Center, (W) 360-315-5123, Alt Business Phone 360-315-5122 Manchester Fuel Department Security, (W) 360-476-2158, Call for interface with NMFS	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0050	salmonids (anadromous) - net pens for rearing endangered salmon species
CPS-36	Visited and Tested 08/03/2007	**Harbor Island - E Waterway, S End** (b) (7)(F) [redacted]	Collection, exclusion - Prevent oil from moving into the Duwamish Waterway.	800ft Contractor Boom	Deploy boom across the south end of the East Waterway at a site suitable for collection from shore with a vac truck.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIN0108	herons & other wading birds, salmonids (anadromous), waterfowl, special management area

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-37	Visited and Tested 08/01/2006	**Clam Bay Tide Flats/ Beaver Creek** (b) (7)(F) [redacted]	Exclusion - Keep oil out of the tide flats and Beaver Creek.	1200ft Contractor Boom	Deploy boom in a chevron configuration across the front of the tide flats east of the mouth of Beaver Creek and the NMFS buildings. Navy has set attachment points. Contact immediately or before entering: Navy Regional Operations Center, (W) 360-315-5123, Alt Business Phone 360-315-5122	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0049	sensitive habitat, salmonids (anadromous), waterfowl, herons & other wading birds
CPS-38	Visited and Tested 06/01/1994	**Little Clam Bay** (b) (7)(F) [redacted]	Exclusion - Keep oil out of Little Clam Bay.	600ft Contractor Boom	Deploy boom in a chevron configuration across the front of the tide flats east of the mouth of creek which feed Little Clam Bay. Contact immediately or before entering: Navy Regional Operations Center, (W) 360-315-5123, Alt Business Phone 360-315-5122	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0048	salmonids (anadromous)

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-39	Visited and Tested 05/01/2006	**Orchard Point** (b) (7)(F) [redacted]	Collection - Collect oil to shore.	1000ft Contractor Boom	Place off beach at angle. Contact immediately or before entering: Navy Regional Operations Center, (W) 360-315-5123, Alt Business Phone 360-315-5122	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0046	sensitive habitat
CPS-40	Visited and Not Tested 05/01/2006	**Kellogg Island** (b) (7)(F) [redacted]	Collection, exclusion - Protect backwaters west of Kellogg Island	1600ft Contractor Boom	1600' on North entrance, anchor to pilings, boom around small island, can also connect to barges.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIN0094	herons & other wading birds, salmonids (anadromous), waterfowl, special management area
CPS-41	Visited and Not Tested 05/01/2006	**Puget Sound Naval Shipyard** (b) (7)(F) [redacted]	Collection - Prevent oil from going up Dyes Inlet	1000ft Contractor Boom	Attach to fenceline of Puget Sound Naval Shipyard boundary; run boom out at a SW angle. Deflect oil and collect with vac truck. Contact immediately or before entering: Navy Regional Operations Center, (W) 360-315-5123, Alt Business Phone 360-315-5122	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0096	general fish & wildlife resources

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-42	Visited and Tested 06/01/2002	**Kellogg Island** (b) (7)(E) [redacted]	Collection, exclusion - Protect backwaters west of Kellogg Island	800ft Sorbent Boom	Boom gaps in barges to protect East side of island.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIN0093	herons & other wading birds, salmonids (anadromous), waterfowl, special management area
CPS-43	Visited and Not Tested 05/01/2006	**Kellogg Island** (b) (7)(F) [redacted]	Collection, exclusion - Protect backwaters west of Kellogg Island	1000ft Contractor Boom	From the SE corner angle 1000' section of boom off end of Ideal Cement dock to the south tip of Kellogg Island to exclude oil from back channel of island.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIN0092	herons & other wading birds, salmonids (anadromous), waterfowl, special management area
CPS-44	Visited and Tested 06/01/2005	**Puget Sound Naval Shipyard** (b) (7)(F) [redacted]	Deflection - Deflect oil from entering the head of Sinclair Inlet	1000ft Contractor Boom	Anchor boom from west end of PSNS (edge of rockery); extend out by anchoring or tend with boat.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0090	sensitive habitat, baitfish, marine birds, waterfowl, shore birds

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-45	Visited and Not Tested 05/01/2006	**Lone Star Cement Dock** (b) (7)(F) [redacted]	Exclusion - Keep oil out of marsh area	1000ft Contractor Boom	Place boom outside of the cement piled dock to protect the marsh area west of the dock.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIN0091	sensitive habitat
CPS-46	Visited and Tested 11/01/2000	**Port Orchard Marina** (b) (7)(F) [redacted]	Collection, deflection - Prevent oil from reaching shoreline of Sinclair Inlet	2500ft Contractor Boom	Anchor boom along the east edge of marina dock and extend out at angle toward reflector markers. Collect at dock with vac trucks.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0072	sensitive habitat, baitfish, marine birds, waterfowl, shore birds
CPS-47	Visited and Tested 06/01/2000	**Blackjack Creek** (b) (7)(F) [redacted]	Exclusion - Keep oil out of creek	250ft Contractor Boom	Close off mouth of creek; stake boom to the flat, tide condition dependent. If shallow, deploy from road.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0070	salmonids (anadromous)

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-48	Visited and Not Tested 05/01/2006	**Blake Island marina** (b) (7)(F) [redacted]	Exclusion - Keep oil out of marina	500ft Contractor Boom	Place boom across mouth of marina anchor to break water.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0696	public lands/facilities - Blake Island State Park
CPS-49	Visited and Tested 06/01/1997	**Ross Point** (b) (7)(F) [redacted]	Exclusion - Protect shoreline from oil	2200ft Contractor Boom	Depending on direction of tidal flow, secure one end of boom to beach on east or west side of point; extend out to deflect away from point. Boom must be tended by boat.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0076	baitfish, waterfowl, shore birds
CPS-50	Visited and Tested 08/01/1996	**Sinclair Inlet head** (b) (7)(F) [redacted]	Exclusion, deflection - Prevent oil from entering inlet	3000ft Contractor Boom	Apex at outermost log buoy, adjust leg angle to make chevron.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0079 http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=kit0085	sensitive habitat, marine birds, waterfowl, shore birds

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-51	Visited and Not Tested 05/01/2006	**Yukon Harbor / Curley Creek** (b) (7)(F) [redacted]	Exclusion - Prevent oil from entering marsh @ high tide	300ft Contractor Boom	Place boom across creek at bridge, deploy from road.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0038	sensitive habitat, salmonids (anadromous)
CPS-52	Visited and Not Tested 05/01/2006	**County Park N of Southworth** (b) (7)(F) [redacted]	Exclusion - Keep oil out of inlet	750ft Contractor Boom	Close off mouth of inlet, anchor to pilings on East shore and road guard-rail on West shore.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0033	sensitive habitat, public lands/facilities, salmonids (anadromous)
CPS-53	Visited and Tested 06/02/2007	**NW Cooperage (barrel factory)** (b) (7)(F) [redacted]	Exclusion - Keep oil out of small inlet	200ft Contractor Boom	Place boom at mouth of inlet behind barrel factory.	NA	sensitive habitat

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-54	Visited and Not Tested 05/01/2006	**Vashon Island - Fern Cove** (b) (7)(F) [redacted]	Exclusion -	800ft Contractor Boom	Stream mouth could be readily protected using multiple strands of sorbent boom. The high exposure of the "marsh" fringe would make effective protection difficult under many circumstances due to wind exposure the SW, W, NW or N. Under favorable wind conditions it would be possible to string sorbent boom across the face of the marsh berm to protect the outer fringe of grasses at high tide, though the amount of habitat protected under these circumstances would be minimal and perhaps not warranted unless dealing with a smaller, localized spill event. Boat access difficult under low tide.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIN0366	sensitive habitat, special management area, salmonids (anadromous)

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-55-High Flow	Visited and Not Tested 05/01/2006	**Vashon Island - KVI beach and marsh** (b) (7)(F) [redacted]	Exclusion - Keep oil out of marsh.	100ft Contractor Boom	Small tidal marsh behind tower, channel which feeds the marsh is relatively narrow and can be accessed via road. Unsure of volume and speed of flow during high tidal action. To limit impact on this marsh area during high flow: use a chevron boom configuration further out to prevent material from coming up the channel.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIN0327	sensitive habitat, salmonids (anadromous), waterfowl, shore birds
CPS-55-Low Flow	Visited and Not Tested 05/01/2006	**Vashon Island - KVI beach and marsh** (b) (7)(F) [redacted]	Exclusion - Keep oil out of marsh.	100ft Contractor Boom	Small tidal marsh behind tower, channel which feeds the marsh is relatively narrow and can be accessed via road. Unsure of volume and speed of flow during high tidal action. To limit impact on this marsh area during low flow: Put a diversion boom across channel near the abandoned bridge, which would collect spilled material on the beach for vacuum truck removal.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIN0327	sensitive habitat, salmonids (anadromous), waterfowl, shore birds

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-56	Visited and Not Tested 05/01/2006	**Olalla Bay** (b) (7)(F) [redacted]	Exclusion - Keep oil out of Olalla Bay	600ft Contractor Boom	Deploy boom in chevron configuration at mouth of bay.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIT0010	sensitive habitat, salmonids (anadromous), waterfowl
CPS-57	Visited and Not Tested 05/01/2006	**Vashon Island - Site #12 Ellis Marsh** (b) (7)(F) [redacted]	Exclusion - Keep oil out of creek.	200ft Contractor Boom	Creek with saltwater influence extending upstream of large "culvert" (approx. 10 foot wide cement 'box' provides flow to Puget Sound) under road. Small saltmarsh area upstream of road crossing Recomend small (about 200 ft of boom) chevron of contractor boom on the seaward side of the culvert to exclude oil from the creek mouth. Fallback strategy (or emergency primary strategy) would be to place multiple layers of sorbent boom in the creek mouth.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIN0327	sensitive habitat

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-58	Visited and Tested 08/01/2005	**Vashon Island - Site #10: Judd Creek mouth** (b) (7)(F) [redacted]	Exclusion - Keep oil out of creek.	800ft Contractor Boom	If existing GRPs unable to keep oil out of Quartermaster Harbor, recommend placing ~800 feet of exclusion boom in chevron configuration at the mouth of the creek, using pilings for boom attachment. Test deployment of this proposed strategy has been conducted. Resources protected: estuarine creek mouth. In addition to documented coho salmon spawning, there has been documented presence of fall chum, fall chinook and winter steelhead.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIN0256	salmonids (anadromous)
CPS-59	Visited and Tested 04/01/1997	**Quartermaster Harbor, boat ramp @ Burton** (b) (7)(F) [redacted]	Collection, deflection, exclusion - Prevent oil from reaching the north end of the harbor.	3000ft Contractor Boom	Deploy boom from the point adjacent to the boat ramp at an angle to the southeast to the opposite shore. Collect with vac trucks at the boat ramp.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIN0246	baitfish, salmonids (anadromous), marine birds - Audubon "Important Bird Area", waterfowl, herons & other wading birds

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-60	Visited and Not Tested 05/01/2006	**Burton Marsh** (b) (7)(F) [redacted]	Exclusion - Keep oil out of pocket marsh.	300ft Contractor Boom	Booming off the inlet stream. Access for any boom deployment would need to be by water at high tide. Note: Protection only needed if oil threatens northern Quartermaster Harbor	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIN0244	sensitive habitat
CPS-61	Visited and Not Tested 05/01/2006	**Quartermaster Point - Point N. of Dockton** (b) (7)(F) [redacted]	Collection, diversion - Keep oil out of the North end of Quartermaster Harbor	2000ft Contractor Boom	Anchor at the large dock w/ yellow building; angle out to the SW to trap oil at flood tide; collect w/ portable skimmers & vac trucks.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=KIN0278	baitfish, salmonids (anadromous), shellfish, marine birds - Audubon "Important Bird Area", waterfowl
CPS-62	Visited and Not Tested 05/01/2006	**Gig Harbor** (b) (7)(F) [redacted]	Collection, deflection, exclusion - Keep oil out of harbor	500ft Contractor Boom	Angle boom behind chevron (placed across mouth) from lighthouse NW to sand beach by private ramp next to flagpole.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=PIE0502	sensitive habitat, baitfish, salmonids (anadromous)

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-63	Visited and Not Tested 05/01/2006	**Gig Harbor** (b) (7)(F) [redacted]	Collection, deflection, exclusion - Keep oil out of harbor	1000ft Contractor Boom	Place chevron across mouth, anchor to dock w/ davit on West side & to East spit w/ land anchor (may be able to use bridle on small lighthouse).	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=PIE0502	sensitive habitat, baitfish, salmonids (anadromous)
CPS-64	Visited and Not Tested 05/01/2006	**Point Defiance Park** (b) (7)(F) [redacted]	Notification - Provide notice to Aquarium so they can take appropriate steps.	NA	Provide notice to Point Defiance Zoo and Aquarium. Contact immediately or before entering: John Rupp, Point Defiance Park, (W) 253-404-3675, (M) 253-677-3386, (H) (b) (6) [redacted] Office: M-F 8:00-5:00, Home: 5:00-8:00 Stan Chapin, Point Defiance Park, (W) 253-404-3802, (M) 253-677-1543, (H) (b) (6) [redacted] Office: M-F 8:00-5:00 Scott Clark, Point Defiance Park, (W) 253-404-3660, (M) 253-677-7104, (H) (b) (6) [redacted] Robin Thompson, Point Defiance Park, (W) 253-404-3631	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=PIE0105	public lands/facilities

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-65	Visited and Not Tested 05/01/2006	(b) (7)(F) [redacted]	Exclusion - Protect mudflats	3000ft Contractor Boom	Deploy boom from the north shore at the west end of Olie & Charlie's Marina ((b) (7) [redacted] (F) [redacted]) near buoy "1", then back to shore just east of the log boom (at (b) [redacted] (7)	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=PIE0015	sensitive habitat, waterfowl
CPS-66	Visited and Tested 11/01/2001	**Hylebos Waterway** (b) (7)(F) [redacted]	Exclusion - Keep oil in or out of waterway	1000ft Contractor Boom	Deploy 600' of boom from the rip-rap or old dock on the south shore ((b) (7)(F) [redacted] to the end of the finger pier at the west end of the Chinook Marina if oil is coming from the east. If oil is coming from the west, deploy an additional 400' of boom from the finger pier to the north shore.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=PIE0016	special protection area, sensitive habitat, salmonids (anadromous)

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-67	Visited and Tested 11/01/2001	**Hylebos Waterway** (b) (7)(F) [redacted]	Exclusion - Keep oil away from mudflats.	1800ft Contractor Boom	Deploy boom from an anchor point just west of the former 11th St. bridge on the north side, to the north end of the dock at the Chinook Marina to the west of the bridge (at (b) (7)(F) [redacted]). An additional 500' of boom can be deployed from the Chinook dock to the SE to collect oil coming from the east. An additional 800' boom required to exclude oil from marina.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=PIE0017	sensitive habitat, waterfowl
CPS-68	Visited and Not Tested 05/01/2006	**Former 11th Street Bridge** (b) (7)(F) [redacted]	Exclusion - Keep oil in or out of waterway depending on spill origin point.	1000ft Contractor Boom	Keep oil in or out of waterway depending on spill orgin point. Strategy would consist of ~1000 feet of boom deployed in a chevron formation at the location of the former 11th Street Bridge. Attach ends of boom to remaining bridge pilings and place an anchor at the apex of the chevron to maintain the "V" configuration of the boom. Orientation of the chevron will depend on spill orgin point.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=PIE0034	sensitive habitat, waterfowl

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-69	Visited and Not Tested 05/01/2006	**Mouth of Blair Waterway** (b) (7)(F) [redacted]	Exclusion - Keep oil in or out of waterway	1300ft Contractor Boom	Angle from tip of Pier 2 to the opposite shore at mouth of waterway.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=PIE0056	special protection area, sensitive habitat, salmonids (anadromous)
CPS-70-High Tide	Visited and Not Tested 05/01/2006	**Dickman Mill Pocket Marsh** (b) (7)(F) [redacted]	Exclusion - Keep oil out of marsh.	100ft Contractor Boom	Dickman Mill Pocket Marsh - Perched pocket marsh. Only threatened on high tides. Based on observation of the site from land, there would appear to be minimal current flow into the marsh on an incoming tide. An estimated 50 feet of boom placed on the seaward side of the channel entrance at the concrete walkway would be sufficient to block the entrance to the marsh.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=PIE0095	sensitive habitat, special management area

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-71	Visited and Not Tested 05/01/2006	**Hylebos Waterway** (b) (7)(F) [redacted]	Exclusion - Protect mudflat.	2000ft Contractor Boom	Anchor just east of former 11th St. bridge on the north side ([redacted] b) east to the east end of the Sound Refining Dock.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=PIE0019	special protection area, salmonids (anadromous), waterfowl, herons & other wading birds

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-72-High Tide	Visited and Not Tested 05/01/2006	**Tahoma Salt Marsh** (b) (7)(F) [redacted]	Exclusion - Keep oil out of marsh.	100ft Contractor Boom	City of Tacoma Saltwater Marsh (ref. #A.4) Perched pocket marsh with single entrance, adjacent to the berthed Navy ships. Only threatened on high tides. An estimated 100 ft of boom placed in chevron formation on the seaward side of the channel entrance would be sufficient to block marsh entrance. Possible to connect the apex of the chevron to pilings supporting the short loading dock near the marsh entrance. It's also possible that the boom could be configured to collect oil on the shore at the Navy facility, where there is access for a vac truck. Contact immediately or before entering: Navy Regional Operations Center, (W) 360-315-5123, Alt Business Phone 360-315-5122	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=PIE0093	sensitive habitat, special management area

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-73	Visited and Not Tested 05/01/2006	**Tacoma Hylebos Waterway** (b) (7)(F) [redacted]	Exclusion, collection - Try to keep oil from moving waterway.	700ft Contractor Boom	Collection/exclusion boom angled to prevent spill from moving up waterway and impacting several habitat restoration sites. Requires about 700 Ft boom.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=PIE0021	sensitive habitat, special management area, tribal lands/resources, salmonids (anadromous), herons & other wading birds, waterfowl
CPS-74	Visited and Not Tested 05/01/2006	**Sitcum Waterway** (b) (7)(F) [redacted]	Exclusion - Keep oil in or out of waterway	1500ft Contractor Boom	Angle SW from end of concrete abuttment on East shore to pilings on West shore.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=PIE0058	sensitive habitat, salmonids (anadromous), general fish & wildlife resources
CPS-75	Visited and Tested 07/01/1999	**Inner Blair Waterway** (b) (7)(F) [redacted]	Exclusion - Keep oil in or out of waterway	1000ft Contractor Boom	Place chevron just SE of where former 11th St. bridge was & just NW of Lincoln Ave.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=PIE0041	general fish & wildlife resources

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-76	Visited and Tested 07/01/1999	**Inner Blair Waterway** (b) (7)(F) [redacted]	Collection - Keep oil in waterway.	1000ft Contractor Boom	For large spills in waterway, use boom to deflect oil into the wetland mitigation area for collection.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=PIE0053	general fish & wildlife resources
CPS-77	Visited and Tested 07/01/1999	**Inner Blair Waterway** (b) (7)(F) [redacted]	Exclusion - Protect mitigated wetland area SE of 11 St. bridge.	500ft Contractor Boom	For small spill in waterway, place boom across mouth of mitigation area.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=PIE0053	sensitive habitat
CPS-78	Visited and Not Tested 05/01/2006	**St. Paul Waterway** (b) (7)(F) [redacted]	Exclusion - Keep oil out of waterway	1200ft Contractor Boom	Waterway spill: place exclusion boom off North point to protect mudflats.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=PIE0073	special management area, special protection area, sensitive habitat, salmonids (anadromous)

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-79	Visited and Tested 07/01/1999	**Inner Blair Waterway** (b) (7)(F) [redacted]	Exclusion - Protect mitigated wetland area between US Oil dock and Linconln Outfall	500ft Contractor Boom	Place boom across mouth of wetland area.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=PIE0052	sensitive habitat
CPS-80	Visited and Tested 09/01/1995	**Inner Blair Waterway** (b) (7)(F) [redacted]	Exclusion - Keep oil out of waterway	1000ft Contractor Boom	Surround boom (placed around Lincoln Ave ditch outfall) with a chevron.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=PIE0051	general fish & wildlife resources
CPS-81	Visited and Tested 09/01/1995	**Inner Blair Waterway** (b) (7)(F) [redacted]	Exclusion - Keep oil in or out of waterway	1000ft Contractor Boom	Place boom from just SE of Lincoln Ave. ditch outfall to steel pole in parking lot NW of casino.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=PIE0044	general fish & wildlife resources

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-82	Visited and Tested 09/01/1995	**Inner Blair Waterway** (b) (7)(F) [redacted]	Exclusion - Keep oil out of waterway	300ft Contractor Boom	Place boom around Lincoln Ave. ditch outfall.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=PIE0051	general fish & wildlife resources
CPS-83	Visited and Not Tested 05/01/2006	**St. Paul Waterway** (b) (7)(F) [redacted]	Exclusion - Keep oil in or out of waterway	400ft Contractor Boom	Angle Boom from the west to east side of channel. If the spill has occurred inside the channel the angle should be so that the oil is kept in the channel. If the spill has occurred outside the channel the angle should be so that oil is kept out of the channel.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=PIE0074	special management area, sensitive habitat, special protection area, salmonids (anadromous)
CPS-84	Visited and Tested 12/01/2002	**Middle Waterway** (b) (7)(F) [redacted]	Exclusion - Keep oil in or out of waterway	500ft Contractor Boom	Boom straight across waterway from Foss dock on West shore to end of gravel beach on East shore.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=PIE0075	special protection area, sensitive habitat, salmonids (anadromous)

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-21: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION NOTIFY COMMAND							
CPS-85	Visited and Not Tested 05/01/2006	**Thea Foss Waterway** (b) (7)(F) [redacted]	Collection, containment, deflection - Keep oil in or out of waterway	1000ft Contractor Boom	Deploy boom from the rip-rap shoreline at the north end of the Valero Pier on the east shore across the waterway to a suitable anchor point on the west shore.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=PIE0089	special protection area, sensitive habitat, salmonids (anadromous)
CPS-86	Visited and Tested 12/01/2002	**Middle Waterway** (b) (7)(F) [redacted]	Exclusion - Keep oil in or out of waterway.	400ft Contractor Boom	Angle Boom from the west to east side of channel in a N-NE direction. Angle to be determined at time of deployment based on current conditions	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=PIE0076	special protection area, sensitive habitat, salmonids (anadromous)

APPENDIX A - BOAT LAUNCH LOCATIONS SUMMARY

Appendix A: Boat Launch Locations Summary

Reference Number	Site Name	Location	Facility Description
Motorboat Launch Inventory			
BL-347	Eglon Boat Launch	Sector Map CPS-1 (b) (7)(F) [redacted] Puget Sound	Car Parking, Gravel - 10 Fencing, Perimeter fence - 1 Launches, Ramp - concrete, solid - 1 Restrooms, Portable sani-cans - 1 Trailer Parking, Gravel - 8
BL-374	Edmonds Marina (Port of)	Sector Map CPS-2 (b) (7)(F) [redacted] Puget Sound	Car Parking, Paved and striped - 35 Launches, Hoist - fixed - 2 Restrooms, Restrooms w/ showers - 1 Trailer Parking, Paved and striped - 30 Waste Disposal, Pumpout - 1 Waste Disposal, Trash receptacle - 3
BL-377	Kingston Cove Marina	Sector Map CPS-2 (b) (7)(F) [redacted] Appletree Cove	Car Parking, Paved and striped - 20 Fencing, Perimeter fence - 1 Launches, Hoist - fixed - 1 Launches, Loading float - 1 Launches, Ramp - concrete, solid - 2 Trailer Parking, Paved and striped - 50 Waste Disposal, Dump station - 1 Waste Disposal, Pumpout - 1 Waste Disposal, Trash receptacle - 2
BL-383	Miller Bay Ramp	Sector Map CPS-2 (b) (7)(F) [redacted] Miller Bay	Launches, Loading float - 1 Launches, Ramp - concrete, solid - 1 Trailer Parking, Gravel - 3
BL-387	Port of Poulsbo Marina	Sector Map CPS-2 (b) (7)(F) [redacted] Liberty Bay	Car Parking, Paved and striped - 20 Launches, Ramp - concrete, solid - 1 Waste Disposal, Pumpout - 1

Appendix A: Boat Launch Locations Summary

Reference Number	Site Name	Location	Facility Description
Motorboat Launch Inventory			
BL-388	Charles Lawrence Memorial Boat Ramp	Sector Map CPS-2 (b) (7)(F) [redacted] Port Madison	Launches, Ramp - concrete, solid - 1 Trailer Parking, Paved no striping - 12
BL-390	Keyport Boat Ramp	Sector Map CPS-2 (b) (7)(F) [redacted] Liberty Bay	Fencing, Perimeter fence - 2 Launches, Loading float - 1 Launches, Ramp - concrete, solid - 1 Trailer Parking, Paved and striped - 3
BL-393	Eddie Vine Boat Ramp	Sector Map CPS-4 (b) (7)(F) [redacted] Shilshole Bay	Fencing, Perimeter fence - 3 Launches, Loading float - 3 Launches, Ramp - asphalt - 4 Restrooms, Flush - 1 Trailer Parking, Paved and striped - 50 Waste Disposal, Pumpout - Waste Disposal, Trash receptacle - 3
BL-400	14th Avenue NW Boat Ramp	Sector Map CPS-4 (b) (7)(F) [redacted] Salmon Bay	Car Parking, Gravel - 10 Car Parking, Paved and striped - 1 Launches, Loading float - 2 Launches, Ramp - concrete, plank - 2 Restrooms, Portable sani-cans - 1 Trailer Parking, Gravel - 10 Trailer Parking, Paved and striped - 1 Waste Disposal, Trash receptacle - 2
BL-401	Port of Brownsville Marina	Sector Map CPS-3 (b) (7)(F) [redacted] Burke Bay	Car Parking, Paved and striped - 100 Launches, Loading float - 1 Launches, Ramp - concrete, solid - 2 Restrooms, Restrooms w/ showers - 1 Trailer Parking, Paved and striped - 50 Waste Disposal, Pumpout - 1 Waste Disposal, Trash receptacle - 2

Appendix A: Boat Launch Locations Summary

Reference Number	Site Name	Location	Facility Description
Motorboat Launch Inventory			
BL-404	Waterfront Park (Silverdale)	Sector Map CPS-3 (b) (7)(F) [redacted] Dyes Inlet	Launches, Loading float - 1 Launches, Ramp - concrete, solid - 2 Trailer Parking, Gravel - 20 Trailer Parking, Paved and striped - 26 Waste Disposal, Trash receptacle - 2
BL-405	Sunnyside Avenue North Boat Ramp	Sector Map CPS-4 (b) (7)(F) [redacted] Lake Union	Car Parking, Gravel - 5 Fencing, Perimeter fence - 1 Launches, Loading float - 1 Launches, Ramp - concrete, plank - 2 Trailer Parking, Gravel - 3 Waste Disposal, Trash receptacle - 3
BL-410	Eagle Harbor Dock	Sector Map CPS-4 (b) (7)(F) [redacted] Eagle Harbor	Launches, Loading float - 1 Launches, Ramp - concrete, solid - 1 Trailer Parking, Paved and striped - 5 Waste Disposal, Dump station - 1 Waste Disposal, Pumpout - 1 Waste Disposal, Trash receptacle - 1
BL-414	Chico Boat Ramp	Sector Map CPS-3 (b) (7)(F) [redacted] Chico Bay	Car Parking, Gravel - 4 Launches, Ramp - concrete, solid - 1 Trailer Parking, Gravel - 4 Waste Disposal, Trash receptacle - 1
BL-415	Tracyton Boat Ramp	Sector Map CPS-3 (b) (7)(F) [redacted] Dyes Inlet	Car Parking, Gravel - 5 Launches, Ramp - concrete, solid - 1 Trailer Parking, Gravel - 5

Appendix A: Boat Launch Locations Summary

Reference Number	Site Name	Location	Facility Description
Motorboat Launch Inventory			
BL-418	Illahee State Park	Sector Map CPS-5 (b) (7)(F) [redacted] Port Orchard	Car Parking, Paved and striped - 30 Launches, Loading float - 1 Launches, Ramp - concrete, solid - 1 Restrooms, Flush - 1 Trailer Parking, Paved and striped - 5 Waste Disposal, Pumpout - 1
BL-419	Don Armeni Boat Ramp	Sector Map CPS-6 (b) (7)(F) [redacted] Elliot Bay	Car Parking, Paved and striped - 15 Launches, Loading float - 2 Launches, Ramp - concrete, solid - 4 Restrooms, Flush - 1 Trailer Parking, Paved and striped - 85 Waste Disposal, Trash receptacle - 8
BL-421	Lions Park (Bremerton)	Sector Map CPS-5 (b) (7)(F) [redacted] Port Washington Narrows	Car Parking, Paved and striped - 27 Fencing, Perimeter fence - 1 Launches, Loading float - 1 Launches, Ramp - asphalt - 3 Trailer Parking, Paved and striped - 7 Waste Disposal, Trash receptacle - 1
BL-424	Fort Ward State Park	Sector Map CPS-5 (b) (7)(F) [redacted] Rich Passage	Car Parking, Gravel - 5 Fencing, Gates - 1 Launches, Ramp - concrete, solid - 2 Restrooms, Vault - 2 Trailer Parking, Gravel - 11
BL-430	Evergreen Park - Bremerton	Sector Map CPS-5 (b) (7)(F) [redacted] Port Washington Narrows	Car Parking, Paved and striped - 10 Launches, Loading float - 1 Launches, Ramp - concrete, solid - 2 Trailer Parking, Paved and striped - 10 Waste Disposal, Trash receptacle - 1

Appendix A: Boat Launch Locations Summary

Reference Number	Site Name	Location	Facility Description
Motorboat Launch Inventory			
BL-434	Kitsap Lake (WDFW)	Sector Map CPS-5 (b) (7)(F) [redacted] Kitsap Lake	Car Parking, Paved no striping - 5 Fencing, Gates - 1 Fencing, Perimeter fence - 2 Launches, Ramp - concrete, plank - 1 Restrooms, Vault - 2 Trailer Parking, Paved no striping - 10
BL-442	Pomeroy Park	Sector Map CPS-5 (b) (7)(F) [redacted] Puget Sound	Car Parking, Paved and striped - 10 Fencing, Perimeter fence - 2 Launches, Loading float - 1 Launches, Ramp - concrete, solid - 2 Trailer Parking, Paved and striped - 11
BL-446	Retsil (WDFW) - Puget Sound	Sector Map CPS-5 (b) (7)(F) [redacted] Sinclair Inlet	Car Parking, Paved no striping - 5 Launches, Ramp - concrete, solid - 1 Trailer Parking, Paved no striping - 15
BL-447	Water Street Boat Launch	Sector Map CPS-5 (b) (7)(F) [redacted] Sinclair Inlet	Launches, Loading float - 1 Launches, Ramp - concrete, solid - 2 Trailer Parking, Paved and striped - 10
BL-449	Duwamish River Boat Ramp	Sector Map CPS-6 (b) (7)(F) [redacted] Duwamish River	Launches, Ramp - concrete, solid - 2
BL-461	Yukon Harbor/ Harper Boat Access	Sector Map CPS-6 (b) (7)(F) [redacted] Yukon Harbor	Launches, Ramp - natural - 1 Trailer Parking, Gravel - 5
BL-466	Long Lake Park (Kitsap)	Sector Map CPS-5 (b) (7)(F) [redacted] Long Lake (Kitsap Co.)	Car Parking, Gravel - 10 Launches, Ramp - natural - 1

Appendix A: Boat Launch Locations Summary

Reference Number	Site Name	Location	Facility Description
Motorboat Launch Inventory			
BL-470	Long Lake - Kitsap (WDFW)	Sector Map CPS-7 (b) (7)(F) [redacted] Long Lake (Kitsap Co.)	Car Parking, Gravel - 10 Fencing, Perimeter fence - 2 Launches, Ramp - concrete, plank - 1 Restrooms, Vault - 2 Trailer Parking, Gravel - 40
BL-492	Des Moines Marina	Sector Map CPS-7 (b) (7)(F) [redacted] Puget Sound	Car Parking, Paved and striped - 20 Launches, Hoist - fixed - 2 Restrooms, Flush - 1 Trailer Parking, Paved and striped - 80 Waste Disposal, Pumpout - 1 Waste Disposal, Trash receptacle - 8
BL-493	Crescent Lake (WDFW)	Sector Map CPS-7 (b) (7)(F) [redacted] Crescent Lake (Pierce Co.)	Car Parking, Gravel - 10 Launches, Ramp - gravel - 1 Restrooms, Vault - 1 Trailer Parking, Gravel - 10
BL-495	Burton Acres Park	Sector Map CPS-8 (b) (7)(F) [redacted] Quartermaster Harbor	Launches, Ramp - concrete, solid - 1 Restrooms, Flush - 1 Trailer Parking, Paved and striped - 18 Waste Disposal, Trash receptacle - 1
BL-501	Dockton Park	Sector Map CPS-8 (b) (7)(F) [redacted] Quartermaster Harbor	Car Parking, Paved and striped - 8 Launches, Loading float - 1 Launches, Ramp - concrete, plank - 2 Restrooms, Restrooms w/ showers - 1 Trailer Parking, Paved and striped - 12 Waste Disposal, Pumpout -

Appendix A: Boat Launch Locations Summary

Reference Number	Site Name	Location	Facility Description
Motorboat Launch Inventory			
BL-515	Redondo Boat Launch	Sector Map CPS-8 (b) (7)(F) [redacted] Poverty Bay	Car Parking, Paved and striped - 30 Launches, Loading float - 1 Launches, Ramp - concrete, solid - 2 Restrooms, Flush - 1 Trailer Parking, Paved and striped - 25 Waste Disposal, Trash receptacle - 3
BL-518	Gig Harbor Boat Ramp	Sector Map CPS-8 (b) (7)(F) [redacted] Gig Harbor	Fencing, Perimeter fence - 2 Launches, Ramp - concrete, solid - 1 Trailer Parking, Paved and striped - 4
BL-526	Point Defiance Waterfront	Sector Map CPS-9 (b) (7)(F) [redacted] Commencement Bay	Car Parking, Paved and striped - 100 Fencing, Perimeter fence - 1 Launches, Loading float - 2 Launches, Ramp - concrete, solid - 3 Trailer Parking, Gravel - 120 Trailer Parking, Paved and striped - 16 Waste Disposal, Trash receptacle - 2
BL-536	Ole & Charlie's Marina	Sector Map CPS-9 (b) (7)(F) [redacted] Commencement Bay	Car Parking, Paved and striped - 10 Fencing, Gates - 1 Fencing, Perimeter fence - 2 Launches, Hoist - fixed - 1 Trailer Parking, Paved and striped - 15 Waste Disposal, Trash receptacle - 2
BL-550	Totem Marina Moorage Assoc.	Sector Map CPS-9 (b) (7)(F) [redacted] Commencement Bay	Car Parking, Paved and striped - 40 Launches, Hoist - fixed - 2 Launches, Loading float - 2 Waste Disposal, Pumpout - Waste Disposal, Trash receptacle - 5

Appendix A: Boat Launch Locations Summary

Reference Number	Site Name	Location	Facility Description
Motorboat Launch Inventory			
BL-555	Narrows Marina	Sector Map CPS-8 (b) (7)(F) [redacted] The Narrows	Car Parking, Gravel - 10 Fencing, Gates - 1 Launches, Loading float - 1 Launches, Ramp - concrete, solid - 1 Trailer Parking, Gravel - 50

5. Shoreline Information

5.1. Shoreline Types and Sensitivity

The type of shoreline, degree of exposure to waves and currents, and biological sensitivity are the main criteria for selecting appropriate treatment techniques. Each shoreline type has particular properties (including vegetation types) which facilitate or resist the penetration and persistence of oil. Areas of comparatively uniform sediment type and grain size experience a deeper penetration of oil. Grain size definitions are:

Mud	<0.0625 mm
Fine Sand	0.0625 - 2 mm
Medium to Coarse Sand	2 - 4 mm
Pebble/Cobble	4 - 256 mm

Persistence of oil in a particular area is directly related to the intensity of wave action, tides, and currents. Based on numerous oil spill studies of shoreline characteristics, treatment, and oil impact, the matrices in Chapter 5 were formulated following the basic prototype of the Environmental Sensitivity Index Atlas.

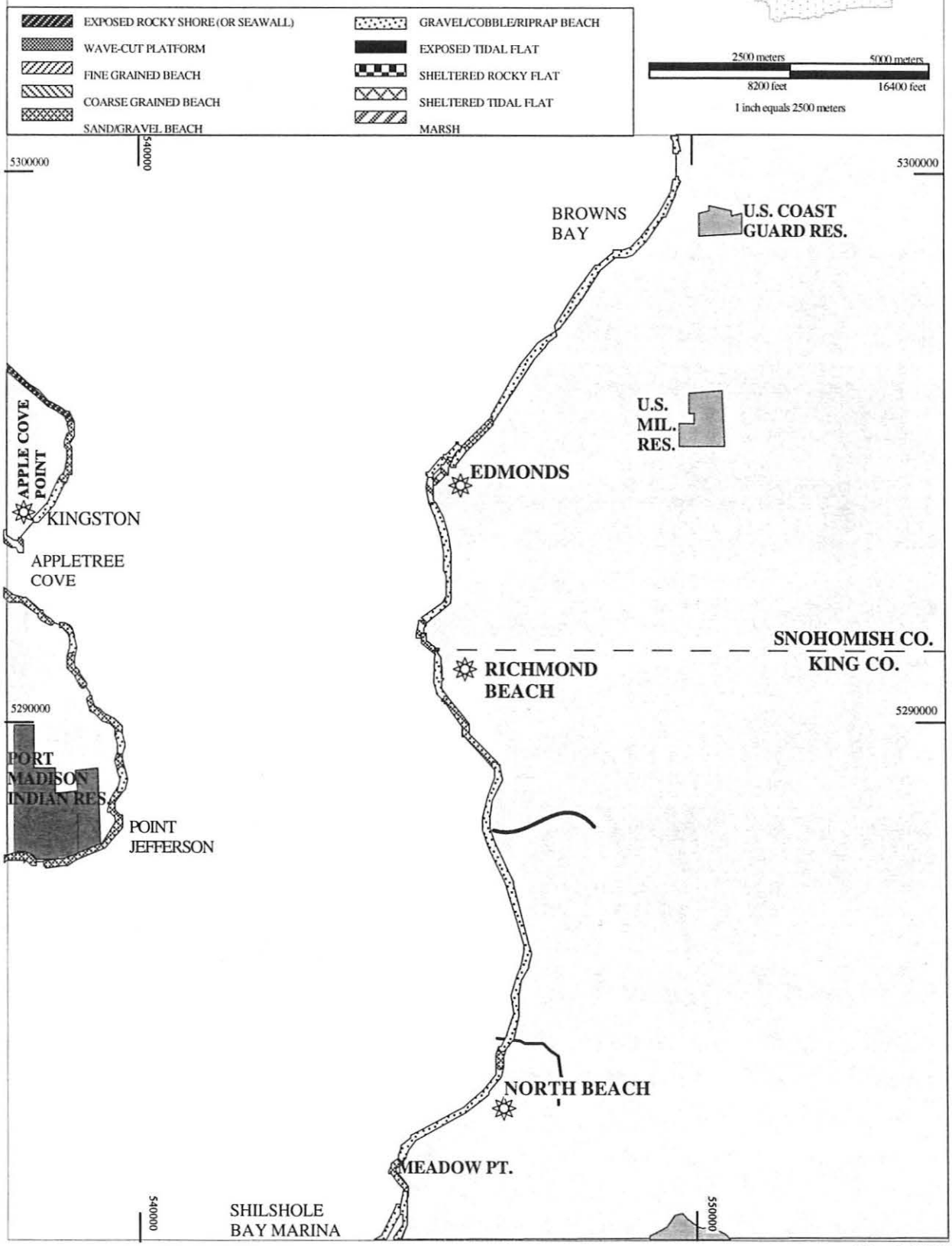
The environmental sensitivity index (ESI) system ranks coastal environments on a scale of 1-10 or 11 (less sensitive to more sensitive) with respect to oil spill sensitivity and potential biological injury. ESI is being used for mapping extensive areas of the coastline of the U.S. Generally speaking, areas exposed to high levels of physical energy, such as wave action and tidal currents, rank low on the scale while sheltered areas have the highest ranking. The shoreline types used in this manual are a combination of the two similar systems used for the Delaware/Pennsylvania/New Jersey ESI Atlas, and the Maryland and Virginia atlases. The numbering system for the Countermeasure Manual Shoreline Types does not correspond exactly to either atlas; however, the corresponding shoreline types can be identified easily from the ESI maps and reassigned the appropriate number (after field verification.) The shoreline ranking system provides a useful first step in the design of contingency plans because it identifies the priority areas that require maximum effort for protection and cleanup. Strike teams and contractors with this document can focus their activities on environmental priorities, particularly during the first few hours and days of the spill.[8]

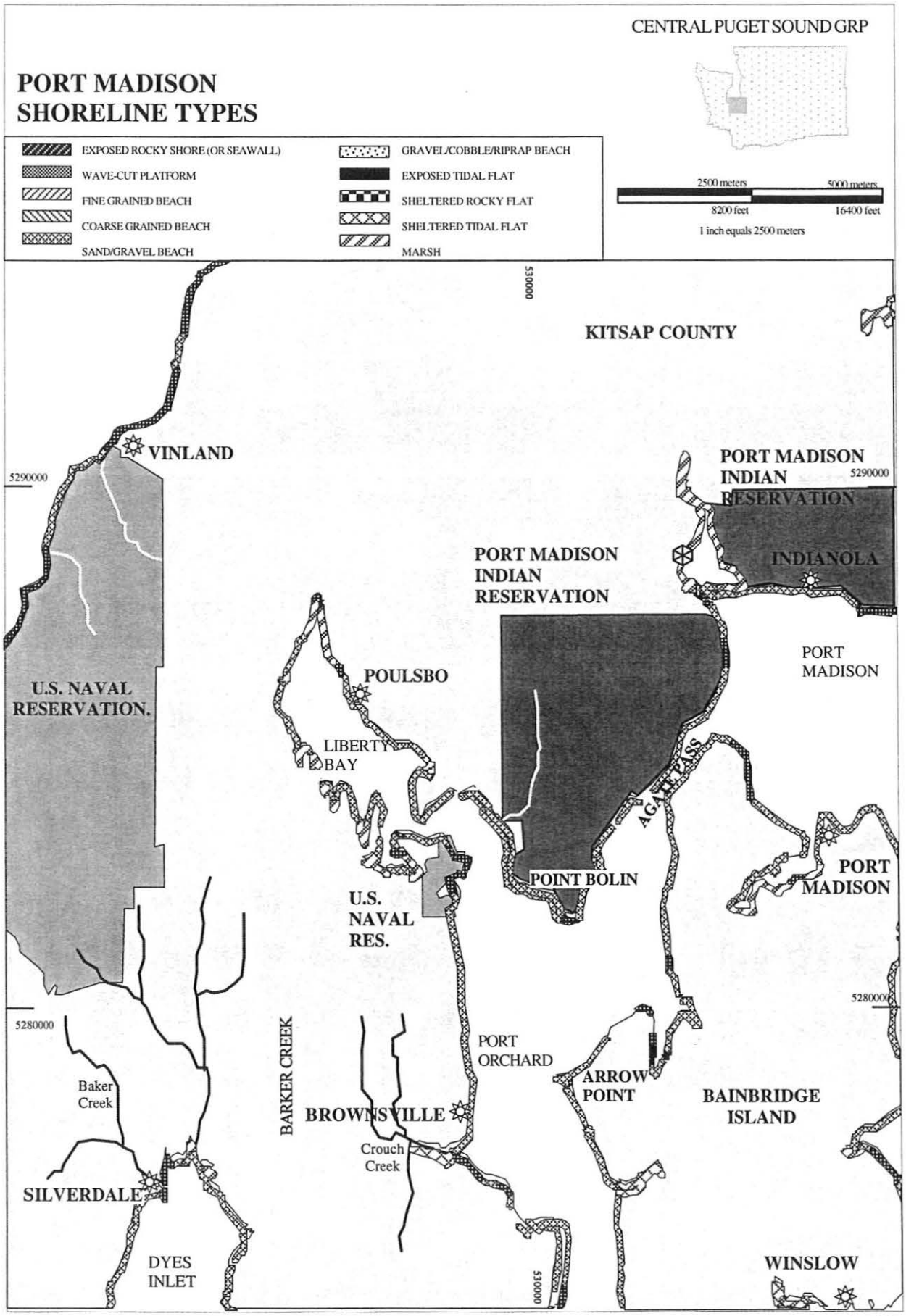
[8]Regional Response Team III. Draft, *Shoreline Countermeasures Manual*. (Department of the Interior, March 22,1991).

CENTRAL PUGET SOUND GRP

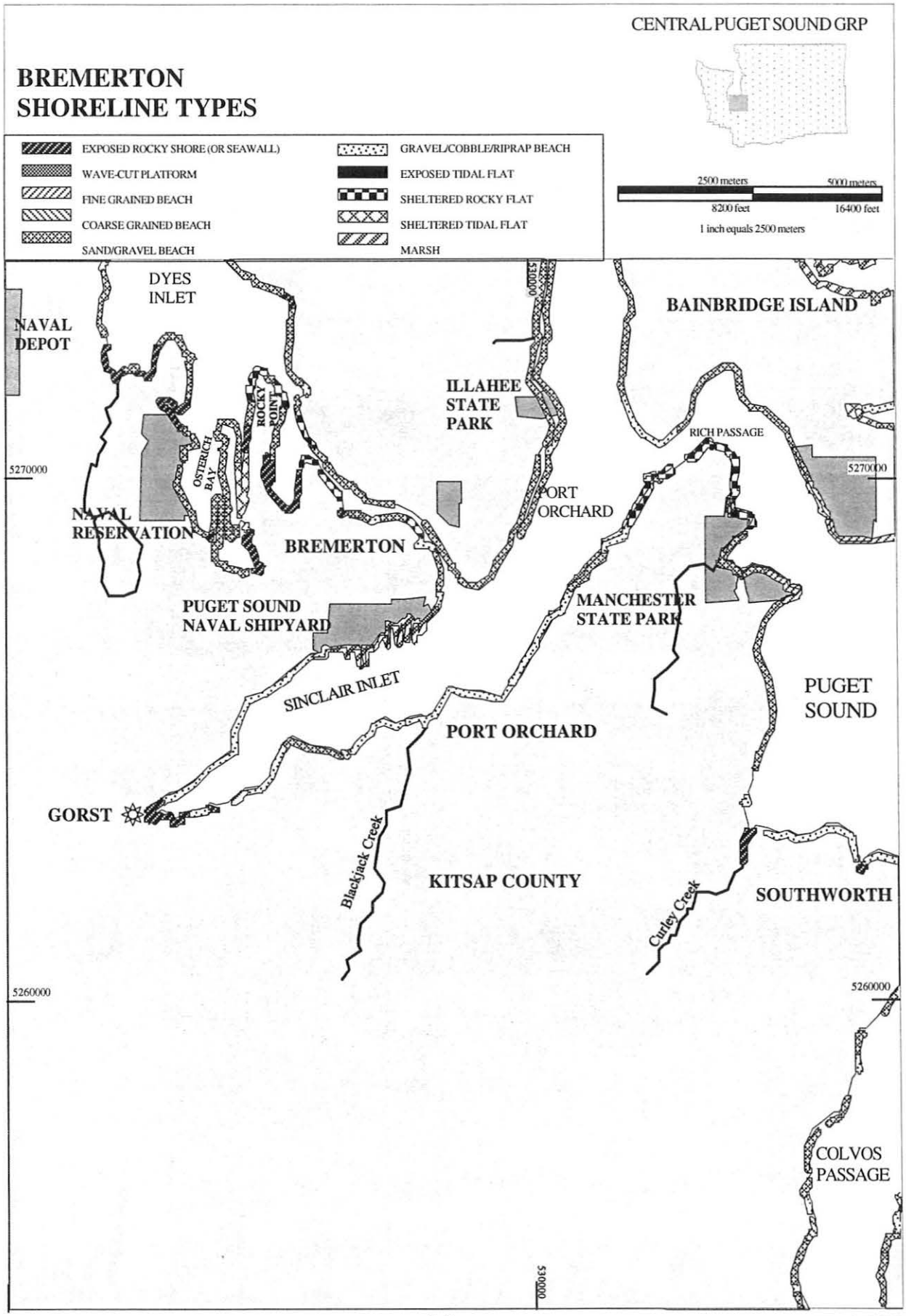
5.2. Shoreline Type Maps

EDMONDS SHORELINE TYPES




CENTRAL PUGET SOUND GRP
PORT MADISON
SHORELINE TYPES
EXPOSED ROCKY SHORE (OR SEAWALL)
WAVE-CUT PLATFORM
FINE GRAINED BEACH
COARSE GRAINED BEACH
SAND/GRAVEL BEACH
GRAVEL/COBBLE/RIPRAP BEACH
EXPOSED TIDAL FLAT
SHELTERED ROCKY FLAT
SHELTERED TIDAL FLAT
MARSH
2500 meters
5000 meters
8200 feet
16400 feet
1 inch equals 2500 meters
530000
KITSAP COUNTY
VINLAND
5290000
PORT MADISON INDIAN RESERVATION
INDIANOLA
PORT MADISON INDIAN RESERVATION
PORT MADISON
U.S. NAVAL RESERVATION.
POULSBO
LIBERTY BAY
AGATE PASS
POINT BOLIN
PORT MADISON
U.S. NAVAL RES.
5280000
BARKER CREEK
PORT ORCHARD
ARROW POINT
BAINBRIDGE ISLAND
Baker Creek
BROWNSVILLE
Crouch Creek
SILVERDALE
DYES INLET
WINSLOW

TOC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BREMERTON
SHORELINE TYPES
EXPOSED ROCKY SHORE (OR SEAWALL)
WAVE-CUT PLATFORM
FINE GRAINED BEACH
COARSE GRAINED BEACH
SAND/GRAVEL BEACH
GRAVEL/COBBLE/RIPRAP BEACH
EXPOSED TIDAL FLAT
SHELTERED ROCKY FLAT
SHELTERED TIDAL FLAT
MARSH
2500 meters
5000 meters
8200 feet
16400 feet
1 inch equals 2500 meters
DYES INLET
NAVAL DEPOT
BAINBRIDGE ISLAND
ILLAHEE STATE PARK
ROCKY POINT
OSTERICH BAY
RICH PASSAGE
5270000
NAVAL RESERVATION
PORT ORCHARD
BREMERTON
PUGET SOUND NAVAL SHIPYARD
MANCHESTER STATE PARK
SINCLAIR INLET
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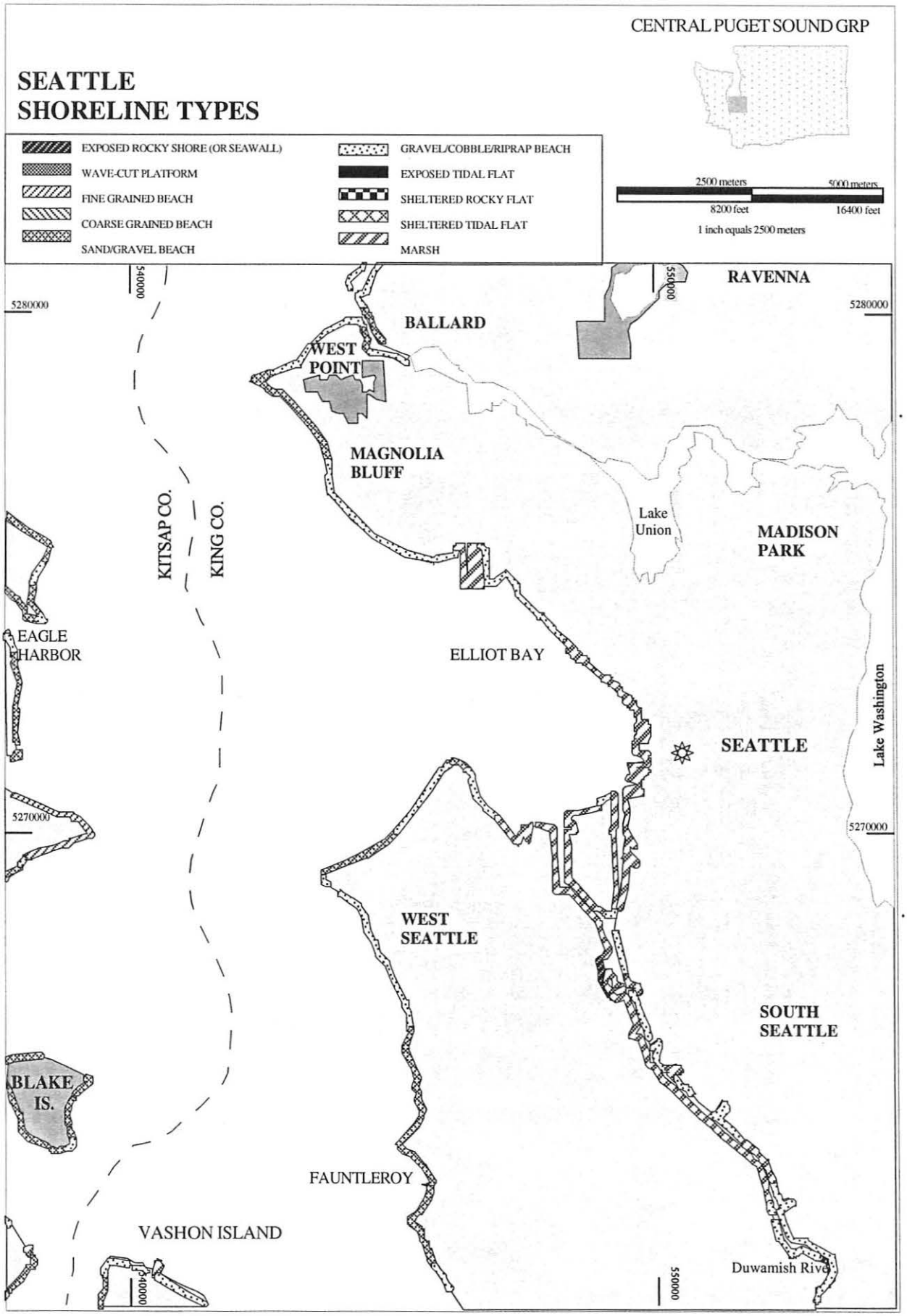
PORT ORCHARD
GORST
Blackjack Creek
KITSAP COUNTY
Curley Creek
SOUTHWORTH
5260000
COLVOS PASSAGE
530000


CENTRAL PUGET SOUND GRP
SEATTLE
SHORELINE TYPES
EXPOSED ROCKY SHORE (OR SEAWALL)
WAVE-CUT PLATFORM
FINE GRAINED BEACH
COARSE GRAINED BEACH
SAND/GRAVEL BEACH
GRAVEL/COBBLE/RIPRAP BEACH
EXPOSED TIDAL FLAT
SHELTERED ROCKY FLAT
SHELTERED TIDAL FLAT
MARSH
2500 meters
5000 meters
8200 feet
16400 feet
1 inch equals 2500 meters
RAVENNA
BALLARD
WEST POINT
MAGNOLIA BLUFF
Lake Union
MADISON PARK
KITSAP CO.
KING CO.
EAGLE HARBOR
ELLIOT BAY
SEATTLE
Lake Washington
WEST SEATTLE
SOUTH SEATTLE
BLAKE IS.
FAUNTLEROY
VASHON ISLAND
Duwamish River
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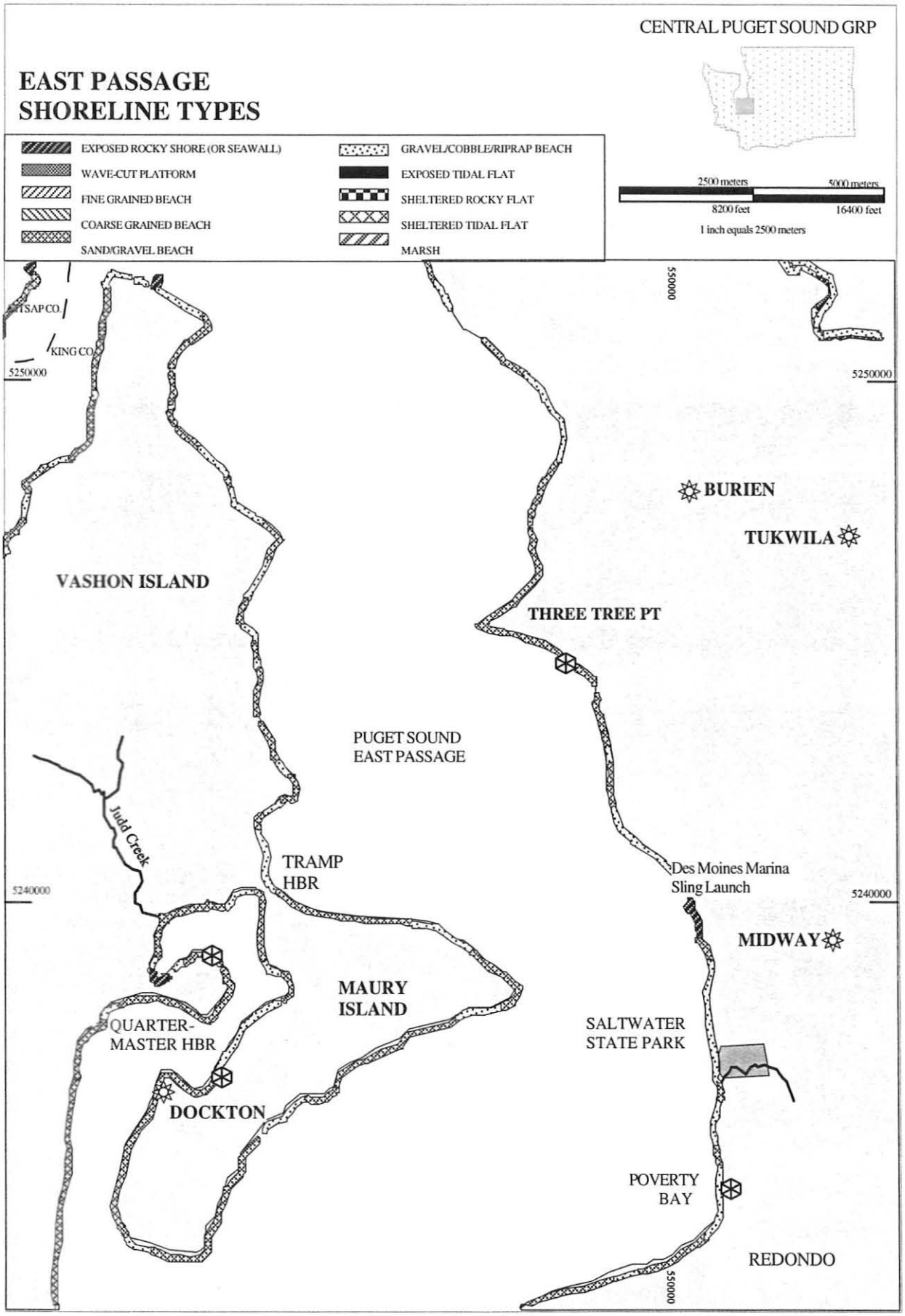
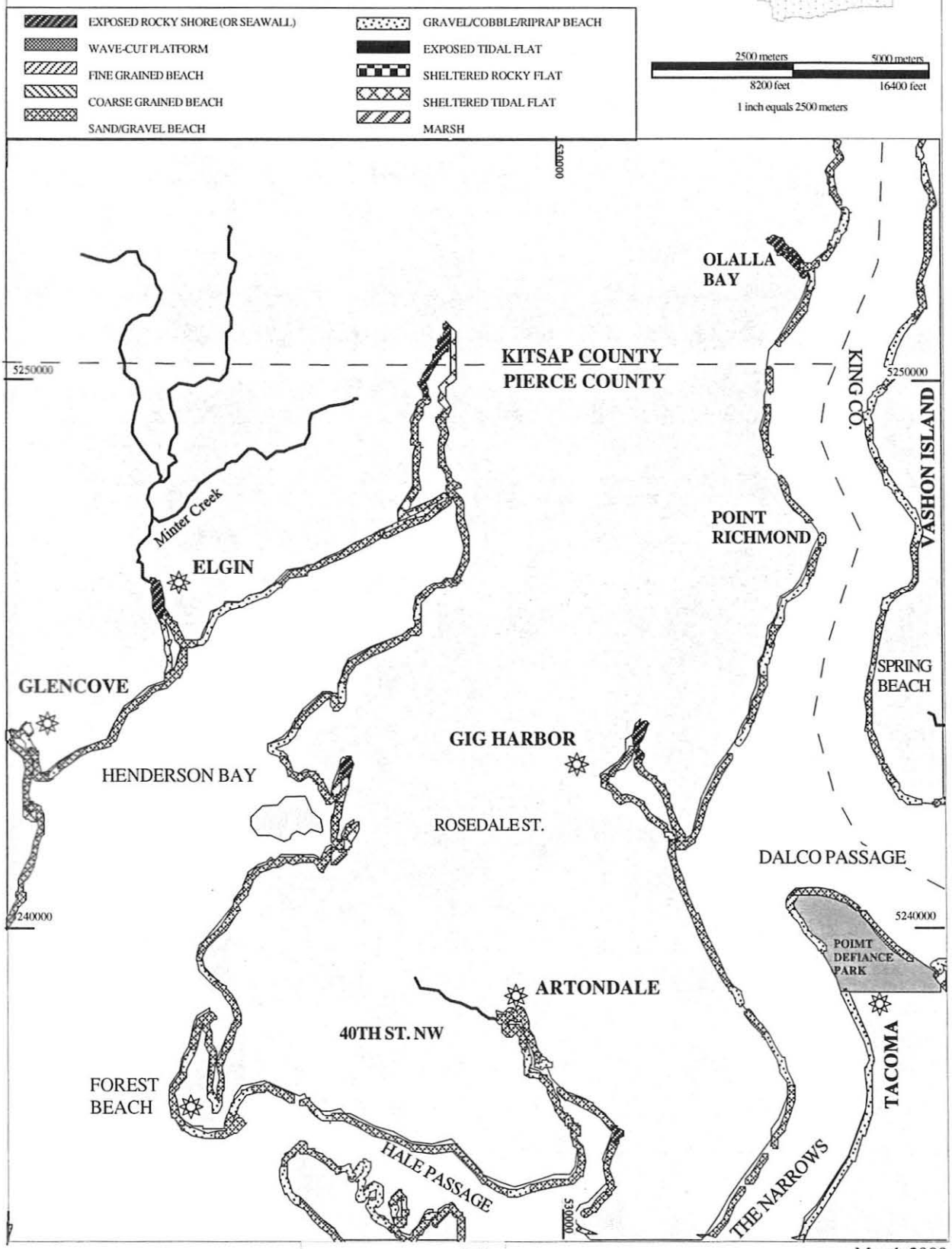

CENTRAL PUGET SOUND GRP
EAST PASSAGE
SHORELINE TYPES
EXPOSED ROCKY SHORE (OR SEAWALL)
WAVE-CUT PLATFORM
FINE GRAINED BEACH
COARSE GRAINED BEACH
SAND/GRAVEL BEACH
GRAVEL/COBBLE/RIPRAP BEACH
EXPOSED TIDAL FLAT
SHELTERED ROCKY FLAT
SHELTERED TIDAL FLAT
MARSH
2500 meters
5000 meters
8200 feet
16400 feet
1 inch equals 2500 meters
KITSAP CO.
KING CO.
5250000
550000
BURIEN
TUKWILA
VASHON ISLAND
THREE TREE PT
PUGET SOUND
EAST PASSAGE
Judd Creek
TRAMP
HBR
Des Moines Marina
Sling Launch
5240000
MIDWAY
MAURY
ISLAND
QUARTER-
MASTER HBR
SALTWATER
STATE PARK
DOCKTON
POVERTY
BAY
REDONDO

CENTRAL PUGET SOUND GRP

GIG HARBOR SHORELINE TYPES



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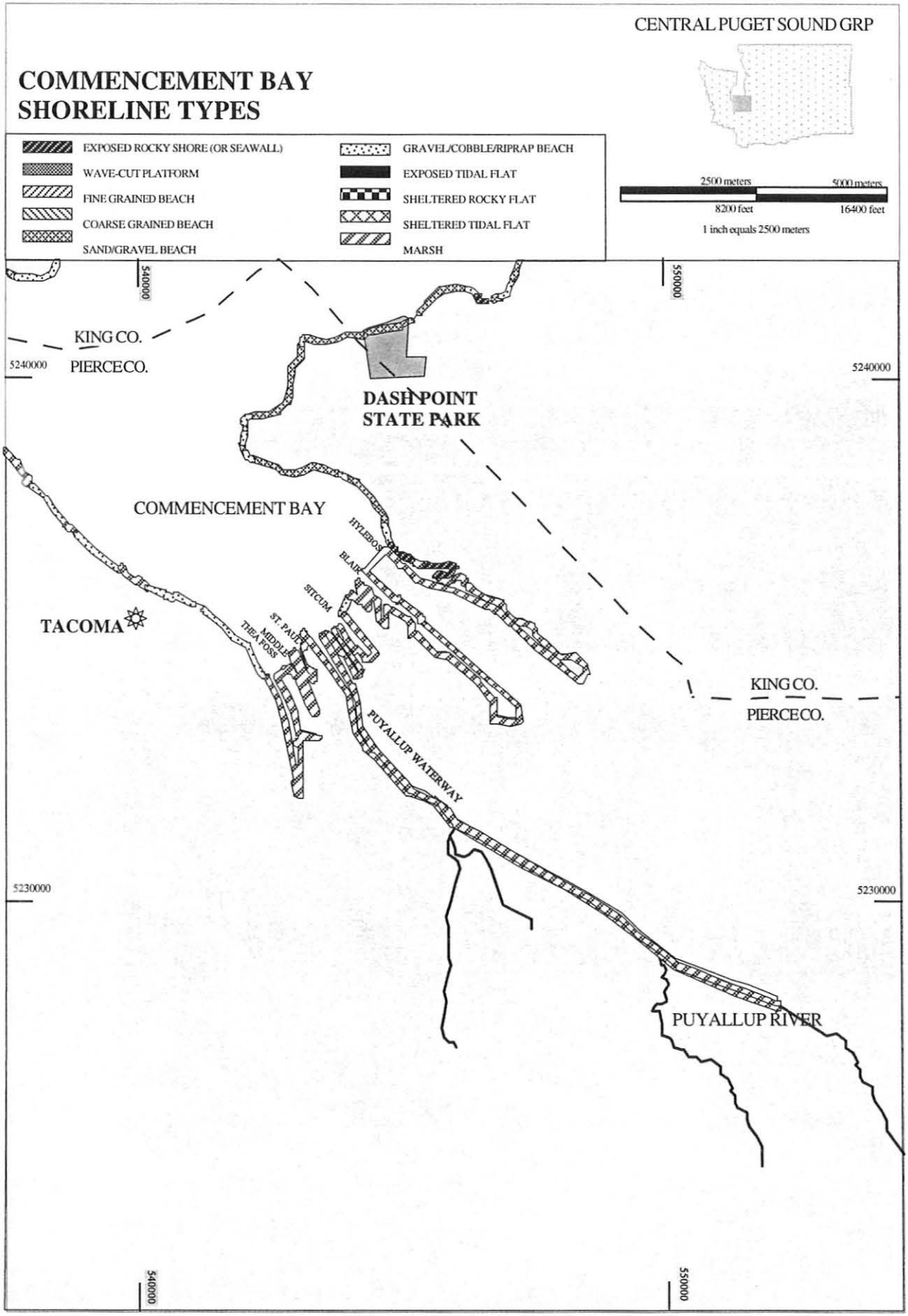
CENTRAL PUGET SOUND GRP
COMMENCEMENT BAY
SHORELINE TYPES
EXPOSED ROCKY SHORE (OR SEAWALL)
WAVE-CUT PLATFORM
FINE GRAINED BEACH
COARSE GRAINED BEACH
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2500 meters
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1 inch equals 2500 meters
540000
550000
KING CO.
PIERCE CO.
5240000
DASH POINT
STATE PARK
COMMENCEMENT BAY
HYLEBOS
BLAIR
SITCUM
ST. PAUL
MIDDLE
THEA FOSS
TACOMA
PUYALLUP WATERWAY
KING CO.
PIERCE CO.
5230000
PUYALLUP RIVER

5.3 Shoreline Countermeasure Matrices

The matrices included here show which shoreline countermeasure techniques have been considered for the fourteen shoreline types described in Chapter 2 of the "Shoreline Countermeasures Manual & Matrices", Northwest Area Plan, Chapter 9650, Page 9-37. Four matrices have been constructed for the major categories of oil (heavy, medium, light, very light).

Countermeasure methods are described in Chapters 3 and 4 of the manual. Countermeasures in Chapter 3 are traditional or conventional techniques that the OSC can use without any additional concurrence. However, the cutting of vegetation countermeasure should be used only during specific seasonal windows under specific conditions and with landowner approval. Countermeasures in Chapter 4 are described under a separate section called "Shoreline Countermeasure Methods Using Alternative Technology" may be useful in certain situations. These methods are considered more experimental and controversial in their application and potential impacts and require more formal review and consultation before implementing. The exact requirements are spelled out in the National Contingency Plan and the Northwest Area Plan. The Shoreline Countermeasures Matrices are a particularly dynamic component of the manual and should continue to be revised as the existing techniques are used and evaluated, and as both old and new techniques are refined.

Each matrix has a written explanation of how it is to be used as a countermeasure advisability matrix. The matrices are only a general guide for removing oil from shoreline substrates. They must be used in conjunction with the entire "Shoreline Countermeasures Manual" plus field observations and scientific advice. The countermeasures listed are not necessarily the best under all circumstances, and any listed technique may need to be used in conjunction with other techniques (including ones not listed herein). The Federal On-Scene Coordinator (FOSC) or the State OSC operating with the FOSC's authorization has the responsibility for and authority to determine which countermeasure(s) are appropriate for the various situations encountered.

Selection of countermeasure techniques to be used in each spill is based upon the degree of oil contamination, shoreline types, and the presence of sensitive resources. Extremely sensitive areas are generally limited to manual cleanup methods. It is important to note that the primary goal of countermeasure implementation is the removal of oil from the shoreline with no further injury or destruction to the environment. The three categories of guidance used in the matrices are defined as follows:

R	Recommended	May be the preferred method that best achieves the goal of minimizing destruction or injury to the environment
C	Conditional	Viable and possibly useful but may result in limited adverse effects to the environment
	Shaded	Not applicable or not generally recommended.

SHORELINE COUNTERMEASURES MATRIX

Heavy Oil (Heavy Crude Oils, Intermediate Fuel Oils, Bunker C & Heavily Weathered Medium Crudes)

- Heavy oils with little or no evaporation or dissolution
- Water-soluble fraction likely to be <10ppm
- Heavy contamination of intertidal areas likely
- Severe impacts to waterfowl and fur-bearing mammals (coating and ingestion)
- Long-term contamination to sediments possible
- Weathers very slowly
- Dispersion seldom effective
- Shoreline cleanup difficult under all conditions

SHORELINE TYPES CODES

1- Exposed rock shores and vertical, hard man-made structure (e.g. seawalls)
2 - Exposed wave-cut platforms
3 - Fine to medium grained sand beaches & steep unvegetated river banks
4 - Course grained sand beaches
5 - Mixed sand and gravel beaches, including artificial fill containing a range of grain size and material
6A - Gravel beaches - pebbles to cobble
6B - Gravel beaches - cobbles to boulders
6C - Exposed rip rap
7 - Exposed tidal flat
8A- Sheltered vertical rock shores and vertical, hard man-made structures (e.g. seawalls, docks, bulkheads)
8B - Sheltered rubble slope
9A - Sheltered sand and mud flats
9B - Sheltered vegetated low bank
10 - Marshes

SHORELINE TYPES

COUNTERMEASURES	1	2	3	4	5	6A	6B	6C	7	8A	8B	9A	9B	10
CONVENTIONAL METHODS														
No action	C	C	C	C	C	C	C	C	R	C	C	R	C	R
Manual removal of oil	C	R	R	R	R	C	C	C		R	R		C	C
Passive collection of oil	R	R	R	R	R	R	R	R	C	R	R	C	R	R
Oiled debris removal	C	R	R	R	R	R	R	R	C	R	R	C	R	C
Trenching/recovery wells			C	C	C									
Oiled sediment removal			C	C	C	C		C					C	
Ambient water flooding (Deluge)			C	C	C	R	R	R		R	R		C	C
Amb water flush <50 psi	C	C			C	R	C	R		C	C		C	C
Amb water flush <100 psi	C	C					C	C		C	C			
Warm water flush <90°F	C						C	C		C				
Hot water flush >90°F	C									C				
Vacuum removal of oil	C	C	C	C	C	C	C	C		C	C		C	C
Sediment reworking			C	C	C	C								
Sediment Removal-cleaning-replacement			C	C	C	C		C						
Cutting oiled vegetation							C	C		C	C		C	C
ALTERNATIVE METHODS*														
In-situ burning on shore														
Chemical stabilization, protection, cleaning														
Nutrient enhancement			C	C	C	C	C	C						C
Microbial addition														

R Recommend - May be Preferred Alternative
C Conditional (Refer to NW Shoreline Countermeasures Manual)
Shaded areas are Not Applicable or Not Generally Recommened
* Follow approved process defined in NCP and NW Area Plan

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SHORELINE COUNTERMEASURES MATRIX

Medium Oil (Most Crude Oils & Some Heavily Weathered Light Crudes)

- About 1/3 will evaporate within 24 hours
- Maximum water-soluble fraction is 10-100ppm
- Oil contamination of intertidal areas can be severe and long-term
- Impact to waterfowl and fur-bearing mammals can be severe
- Chemical dispersion is an option within 1-2 days
- Cleanup most effective if conducted quickly

SHORELINE TYPES CODES

1- Exposed rock shores and vertical, hard man-made structure (e.g. seawalls)
2 - Exposed wave-cut platforms
3 - Fine to medium grained sand beaches & steep unvegetated river banks
4 - Course grained sand beaches
5 - Mixed sand and gravel beaches, including artificial fill containing a range of grain size and material
6A - Gravel beaches - pebbles to cobble
6B - Gravel beaches - cobbles to boulders
6C - Exposed rip rap
7 - Exposed tidal flat
8A- Sheltered vertical rock shores and vertical, hard man-made structures (e.g. seawalls, docks, bulkheads)
8B - Sheltered rubble slope
9A - Sheltered sand and mud flats
9B - Sheltered vegetated low bank
10 - Marshes

COUNTERMEASURES	SHORELINE TYPES													
	1	2	3	4	5	6A	6B	6C	7	8A	8B	9A	9B	10
CONVENTIONAL METHODS														
No action	C	C	C	C	C	C	C	C	R	C	C	R	C	R
Manual removal of oil	C	R	R	R	R	C	C	C		R	R		C	C
Passive collection of oil	R	R	R	R	R	R	R	R	C	R	R	R	R	R
Oiled debris removal	C	R	R	R	R	R	R	R	C	R	R	C	R	C
Trenching/recovery wells			C	C	C									
Oiled sediment removal			C	C	C	C							C	
Ambient water flooding (Deluge)			C	C	C	R	R	R		R	R		C	C
Amb water flush <50 psi	C	C			C	R	C	R		R	R		C	C
Amb water flush <100 psi	C	C					C	C		C				
Warm water flush <90°F	C						C	C		C				
Hot water flush >90°F	C									C				
Vacuum removal of oil	C	C	R	R		C	R	R		C	C		C	C
Sediment reworking			C	C	C	C								
Sediment Removal-cleaning-replacement			C	C	C	C		C			C			
Cutting oiled vegetation							C	C		C	C		C	C
ALTERNATIVE METHODS*														
In-situ burning on shore														
Chemical stabilization, protection, cleaning														
Nutrient enhancement			C	C	C	C	C	C			C			C
Microbial addition														

R Recommend - May be Preferred Alternative
C Conditional (Refer to NW Shoreline Countermeasures Manual)
Shaded areas are Not Applicable or Not Generally Recommened
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SHORELINE COUNTERMEASURES MATRIX

Light Oil (Diesel, No 2 Fuel Oils, Light Crudes)

- Moderately volatile; will leave residue (up to 1/3 of spilled amount)
- Moderate concentrations of toxic (soluble) compounds
- Long-term contamination of intertidal resources possible
- Potential for subtidal impacts (dissolution, mixing, sorption onto suspended sediments)
- No dispersion necessary
- Cleanup can be very effective

SHORELINE TYPES CODES

1- Exposed rock shores and vertical, hard man-made structure (e.g. seawalls)
2 - Exposed wave-cut platforms
3 - Fine to medium grained sand beaches & steep unvegetated river banks
4 - Course grained sand beaches
5 - Mixed sand and gravel beaches, including artificial fill containing a range of grain size and material
6A - Gravel beaches - pebbles to cobble
6B - Gravel beaches - cobbles to boulders
6C - Exposed rip rap
7 - Exposed tidal flat
8A- Sheltered vertical rock shores and vertical, hard man-made structures (e.g. seawalls, docks, bulkheads)
8B - Sheltered rubble slope
9A - Sheltered sand and mud flats
9B - Sheltered vegetated low bank
10 - Marshes

SHORELINE TYPES

COUNTERMEASURES	1	2	3	4	5	6A	6B	6C	7	8A	8B	9A	9B	10
CONVENTIONAL METHODS														
No action	R	R	C	C	C	C	C	C	R	C	C	R	C	R
Manual removal of oil			C	C	C	C	C	C		R	R		C	
Passive collection of oil	C	R	R	R	R	R	R	R	C	R	R	C	R	R
Oiled debris removal	C	C	R	R	R	R	R	R	C	R	R	C	C	C
Trenching/recovery wells			C	C	C									
Oiled sediment removal			C	C	C	C								
Ambient water flooding (Deluge)			C	C	C	R	R	R			C			C
Amb water flush <50 psi		C			C	C	C	C		R	C			C
Amb water flush <100 psi														
Warm water flush <90°F														
Hot water flush >90°F														
Vacuum removal of oil							C	C						C
Sediment reworking			C	C	C	C								
Sediment Removal-cleaning-replacement			C	C	C									
Cutting oiled vegetation							C	C		C	C		C	C
ALTERNATIVE METHODS*														
In-situ burning of shore														
Chemical stabilization, protection, cleaning														
Nutrient enhancement			C	C	C	C	C	C						C
Microbial addition														

R Recommend - May be Preferred Alternative
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Shaded areas are Not Applicable or Not Generally Recommened
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SHORELINE COUNTERMEASURES MATRIX

Very Light Oil (Jet fuels, Gasoline)

- Highly volatile (should all evaporate within 1-2 days)
- High concentration of toxic (soluble) compounds
- Result: Localized, severe impacts to water column and intertidal resources
- Duration of impact is a function of the resource recovery rate
- No dispersion necessary

SHORELINE TYPES CODES

1- Exposed rock shores and vertical, hard man-made structure (e.g. seawalls)	6B - Gravel beaches - cobbles to boulders
2 - Exposed wave-cut platforms	6C - Exposed rip rap
3 - Fine to medium grained sand beaches & steep unvegetated river banks	7 - Exposed tidal flat
4 - Course grained sand beaches	8A- Sheltered vertical rock shores and vertical, hard man-made structures (e.g. seawalls, docks,
5 - Mixed sand and gravel beaches, including artificial fill containing a range of grain size and material	8B - Sheltered rubble slope
6A - Gravel beaches - pebbles to cobble	9A - Sheltered sand and mud flats
	9B - Sheltered vegetated low bank
	10 - Marshes

COUNTERMEASURES	SHORELINE TYPES													
	1	2	3	4	5	6A	6B	6C	7	8A	8B	9A	9B	10
CONVENTIONAL METHODS														
No action	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Manual removal of oil														
Passive collection of oil			C	C	C	C	C	C						
Oiled debris removal	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Trenching/recovery wells			C	C	C									
Oiled sediment removal														
Ambient water flooding (Deluge)														C
Amb water flush <50 psi														
Amb water flush <100 psi														
Warm water flush <90°F														
Hot water flush >90°F														
Vacuum removal of oil														
Sediment reworking			C	C	C	C								
Sediment Removal-cleaning-replacement														
Cutting oiled vegetation														
ALTERNATIVE METHODS*														
In-situ burning on shore														
Chemical stabilization, protection, cleaning														
Nutrient enhancement														
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R Recommend - May be Preferred Alternative
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6. Sensitive Resource Description*

6.1. Marine Mammals

While marine mammals can be expected anywhere in the Central Puget Sound, their numbers are lower here than in any other GRP area. Although harbor seals can be found throughout, there are very few regular haulout locations. California and Steller (Northern) sea lions may be found within this region from late fall through mid-spring, especially in the vicinity of river mouths or on navigation buoys. Although relatively few Steller sea lions are found in this area, this species is of special concern because it is listed as a Threatened species. Other marine mammals occasionally found in Central Puget Sound include Dall's porpoise, harbor porpoise, orcas (killer whales), and gray whales. Only the harbor seal and harbor porpoise are considered year around residents.

6.2. Birds

Although many species of birds nest and rear their young throughout the summer in this GRP area, the numbers and diversity of species increases dramatically during the migration and winter seasons. Breeding birds include great blue heron, osprey, bald eagle, glaucous-winged gull, pigeon guillemot and marbled murrelet. Species that pass through on spring and fall migration or winter here in large numbers include common, Pacific, and red-throated loons, horned red-necked and western grebes, double-crested, pelagic and Brandt's cormorants, Canada geese, brant, more than twenty species of ducks, over twenty species of shorebirds, Bonaparte's, mew, ring-billed, herring and Thayer's gulls, common murres and rhinoceros auklets.

Birds can be found in all parts of this GRP area but certain locations can be counted on to support large bird concentrations during the appropriate time of year. Shallow intertidal bays such as Quartermaster Harbor, Sinclair Inlet, and Miller Bay host large numbers of waterfowl, shorebirds and herons.

Areas where tides converge to create tide rips tend to concentrate baitfish such as herring and sandlance. Fish eating birds including loons, grebes, cormorants, gulls and alcids also congregate at these locations. Some of the major seabird concentration areas include Colvos Passage and the waters off of Point Defiance.

The three Endangered or Threatened species that breed in this GRP area are bald eagle, peregrine falcon and marbled murrelet.

6.3. Flight Restriction Zones

Flight restriction zones have been designated in the GRP to minimize disturbance to certain wildlife species. An identified location could represent a marine mammal haulout site, a seabird or heron colony, or the individual nest of a sensitive species such as bald eagle. While some zones may be restricted year around, others will be in effect only during the months listed in the matrix.

The no-fly bubble is the area within a 1,500 foot radius and below 1,000 feet in altitude around the location.

All aircraft, including those from the government, contractors or media, are expected to avoid these zones when restrictions are in effect. In the event that one of these zones must be entered during a spill response, clearance must be obtained from the Washington Department of Fish and Wildlife (WDF&W) and the United States Fish and Wildlife Service (USFWS), or when marine mammals other than sea otters are concerned, the National Marine Fisheries Service (NMFS). Sea otters are managed by the United States Fish and Wildlife Service.

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* Generated for the GRP by the Spill Response and Resource Protection Team of the Washington Department of Fish and Wildlife

During oil spills, pilots are also asked to avoid disturbing any large concentrations of birds and other wildlife. By keeping a safe distance or altitude, pilots can prevent the accidental hazing of unaffected wildlife into oiled areas and minimize the risk of aircraft/ bird collisions.

6.4. Hazing

Hazing or directed harassment, is a method used to drive or herd wildlife out of an area where they are at risk of becoming oiled. Hazing techniques include the use of visual and audio devices, personnel for herding, vessels and aircraft. In the right circumstances it can be an effective tool for protecting some wildlife species. In other cases it can be disastrous as unaffected wildlife can be driven into oiled areas, or forced to abandon nests or young.

National Marine Fisheries Service staff or their designees will perform all hazing of marine mammals other than sea otters. Before hazing can begin for all other species of wildlife, clearance must be obtained from the Washington Department of Fisheries and Wildlife and the United States Fish and Wildlife Service. All hazing efforts during a spill will be directed by these agencies. The deliberate harassment of wildlife without first securing permission from these agencies is a violation of Federal and State laws.

The following information must be provided for a determination on whether hazing might be authorized in a given situation.

1. Description of the situation where hazing authorization is being sought
2. Location to be hazed
3. Species of wildlife to be hazed and number of animals
4. Methods and equipment used
5. Date and time of hazing
6. Name, phone number, radio frequency, pager number and the amount of hazing experience of the individual requesting permission

The responsible agencies will evaluate each request on a case by case basis. All hazing of marine mammals, threatened and endangered species, and all hazing by aircraft will be performed only under authority and general supervision of WDF&W, USFWS, NMFS or persons designated by these agencies. Representatives of these agencies can be contacted through the planning section of the Unified Command System during the spill event.

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EDMONDS FLIGHT RESTRICTION ZONES / SENSITIVE WILDLIFE

NOAA Chart 18474

Code	Location	Seabird Colony	Seabird Conc.	Waterfowl Conc.	Marine Mammal Haulout	Sensitive Nesting Species	Shorebird Conc.	Flight Exclusion	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
WC-2	Apple Cove Point					Yes		Yes												
WC-3	Deer Creek					Yes		Yes												
WC-4	South Appletree Cove					Yes		Yes												
WC-5	President Point					Yes		Yes												
WC-6	Point Jefferson					Yes		Yes												
WC-12	Shilshole Bay					Yes		Yes												

* FLIGHT AND GROUND ENTRY RESTRICTIONS

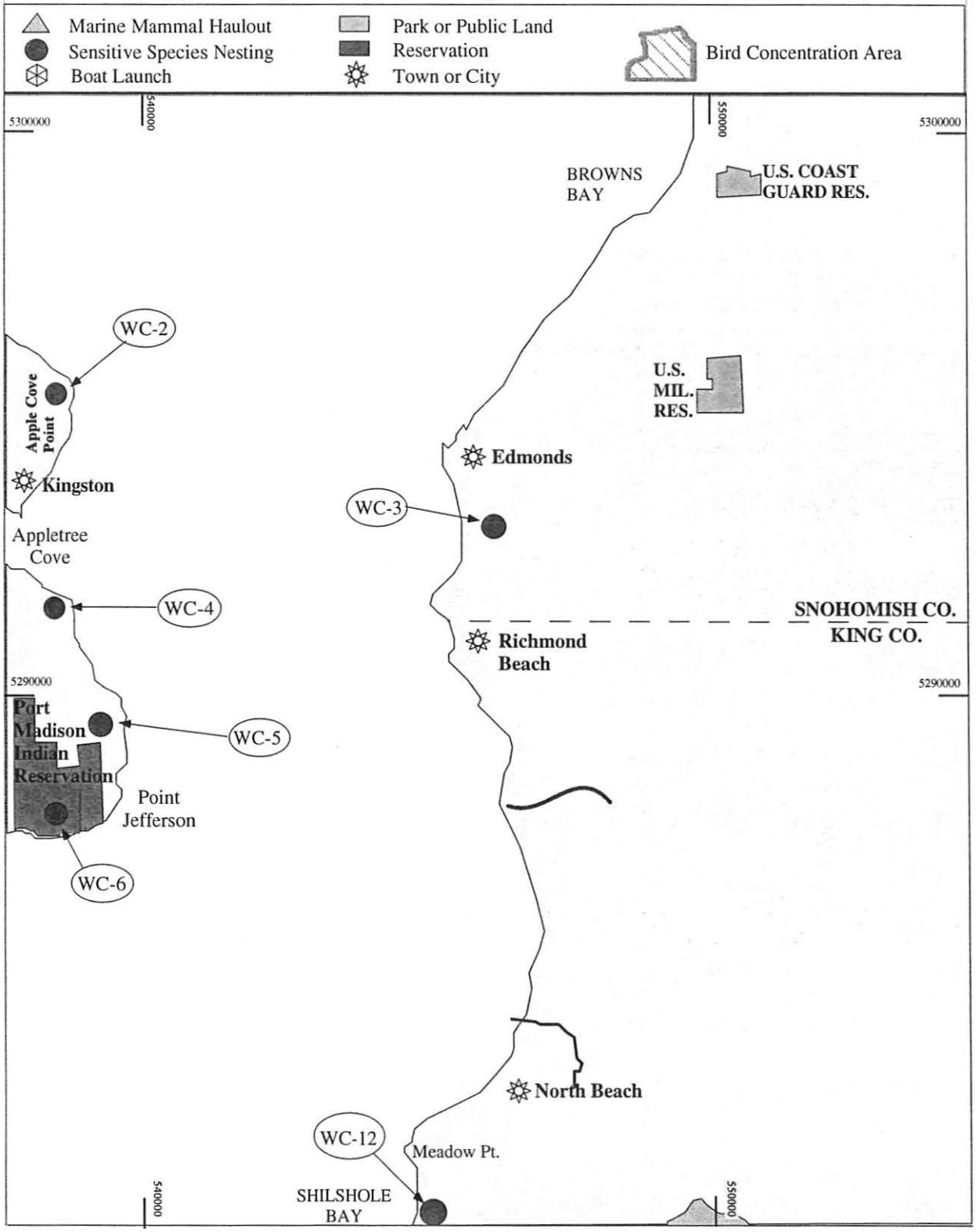
Flights below 1000 feet require clearance: See appendix on Flight Restriction Zones

Sensitive season - Minimize overflight disturbance

CENTRAL PUGET SOUND GRP

EDMONDS
FLIGHT RESTRICTION ZONES FOR SENSITIVE WILDLIFE SPECIES

1. Pilots refer to the chapter on Flight Restriction Zones.
2. All ground entry within 100 yards of sensitive nesting species is restricted.
3. All boaters are requested to approach no closer than 100 yards to seal and waterfowl concentrations.



PORT MADISON FLIGHT RESTRICTION ZONES / SENSITIVE WILDLIFE

1/2 Includes half of the month

NOAA Chart 18474

Code	Location	Seabird Colony	Seabird Conc.	Waterfowl Conc.	Marine Mammal Haulout	Sensitive Nesting Species	Shorebird Conc.	Flight Exclusion	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
WC-7	Miller Bay			**Yes**		**Yes**		No												
WC-8	Keyport Dock	**Yes**						No												
WC-9	Keyport					**Yes**		**Yes**												
WC-10	Port Madison					**Yes**		**Yes**												
WC-16	Dyes Inlet/ Clear Creek			**Yes**				**Yes**					1/2			1/2				

* FLIGHT AND GROUND ENTRY RESTRICTIONS

Flights below 1000 feet require clearance: See appendix on Flight Restriction Zones

Sensitive season - Minimize overflight disturbance

CENTRAL PUGET SOUND GRP

PORT MADISON
FLIGHT RESTRICTION ZONES FOR SENSITIVE WILDLIFE SPECIES

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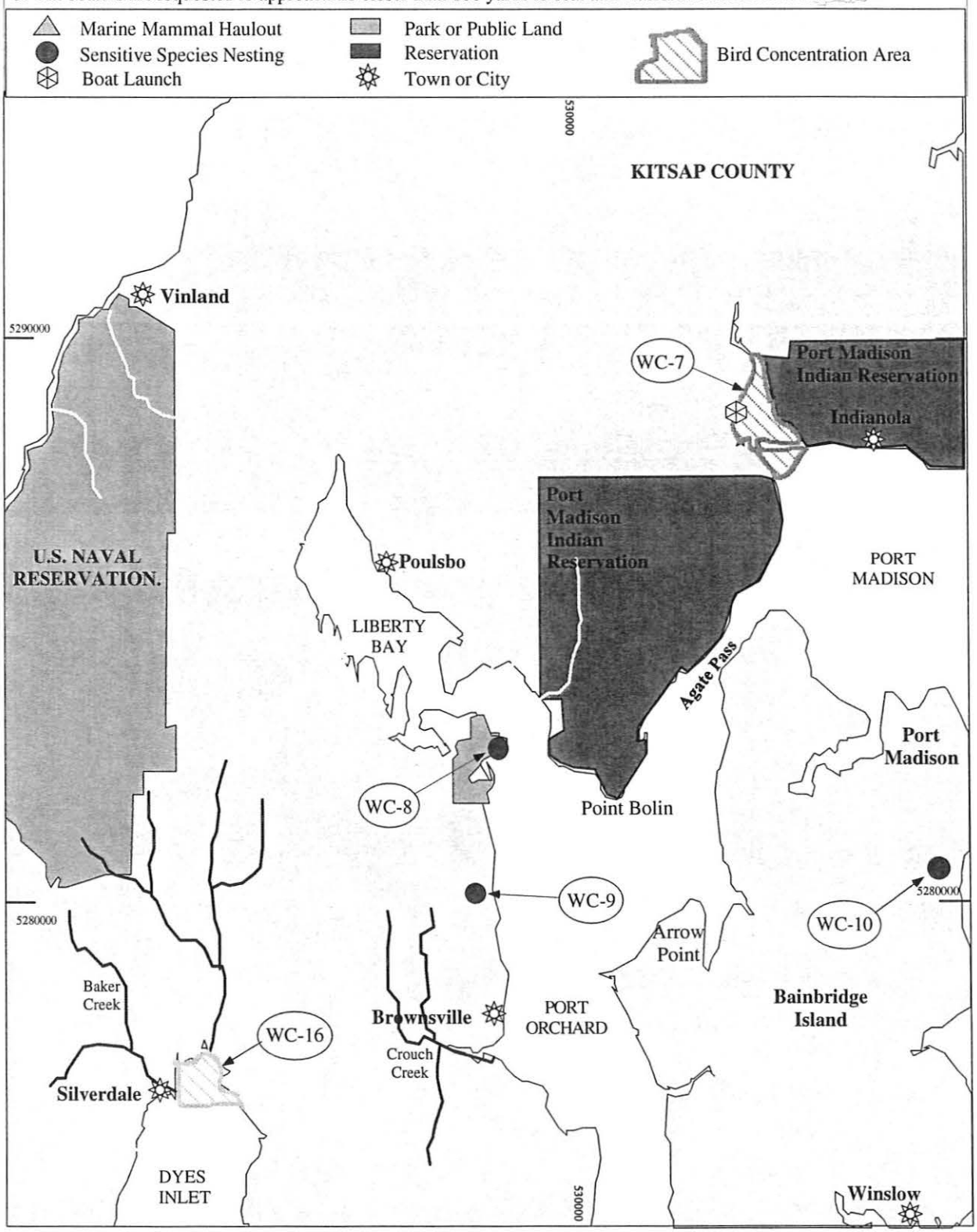
2. All ground entry within 100 yards of sensitive nesting species is restricted.
3. All boaters are requested to approach no closer than 100 yards to seal and waterfowl concentrations.



1/2	Includes half of the month

BREMERTON FLIGHT RESTRICTION ZONES / SENSITIVE WILDLIFE

NOAA Chart 18474

Code	Location	Seabird Colony	Seabird Conc.	Waterfowl Conc.	Marine Mammal Haulout	Sensitive Nesting Species	Shorebird Conc.	Flight Exclusion	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
WC-17	Ostrich Bay					Yes		Yes												
WC-18	Rocky Point			Yes				Yes												
WC-19	Sulpher Springs			Yes				Yes					1/2			1/2				
WC-20	South Port Washington Narrows			Yes				Yes												
WC-21	Gorst		Yes	Yes			Yes	Yes												
WC-22	East Port Orchard			Yes				Yes								1/2				
WC-23	Orchard Point			Yes				Yes					1/2							
WC-28	Sinclair Inlet					Yes		Yes												
WC-30	View Park					Yes		Yes												
WC-33	Command Point					Yes		Yes												
WC-35	Colvos Passage		Yes					No												
WC-45	Illahee					Yes		Yes												
WC-46	South tip of Bainbridge Island			Yes				No												

* FLIGHT AND GROUND ENTRY RESTRICTIONS

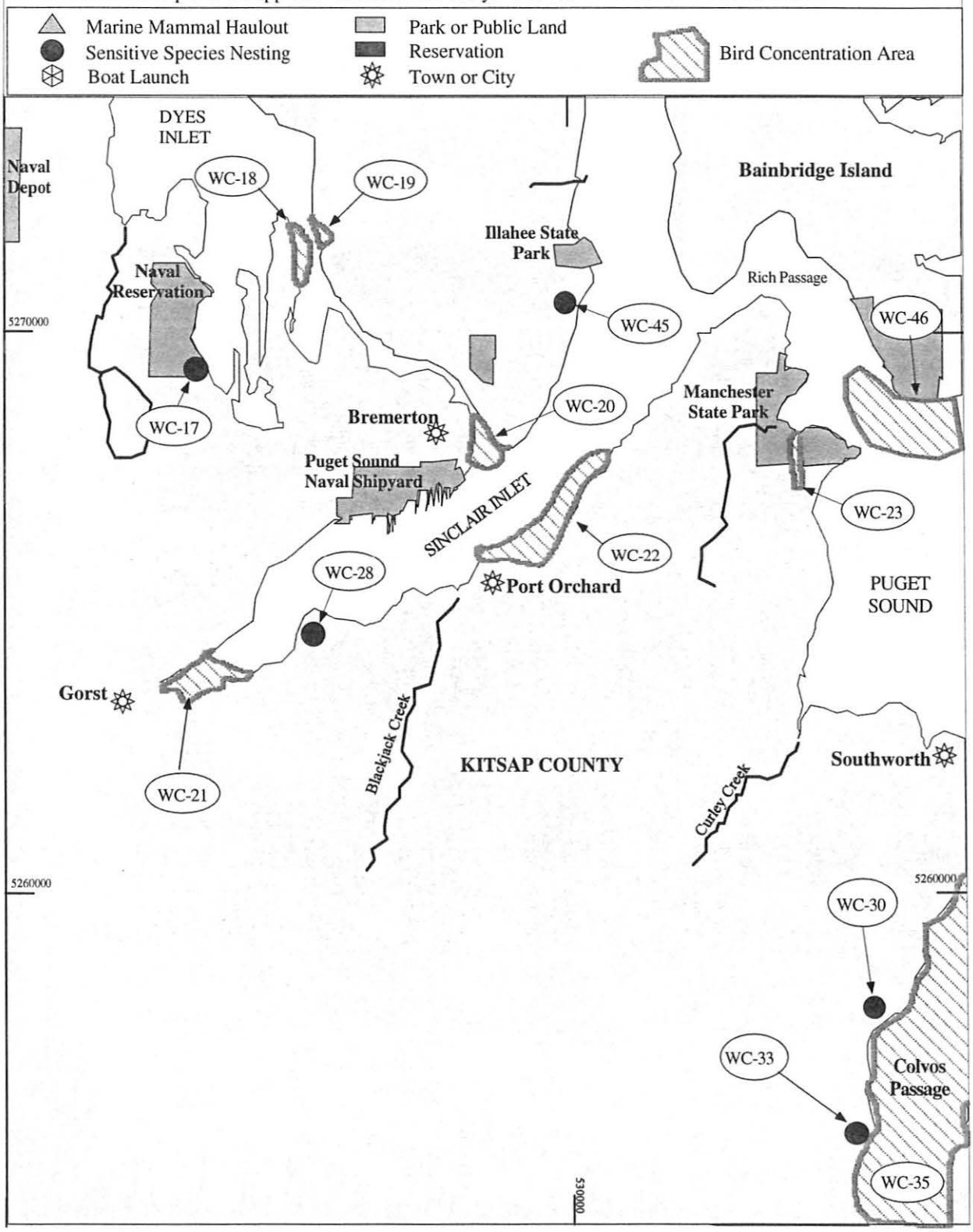
Flights below 1000 feet require clearance: See appendix on Flight Restriction Zones

Sensitive season - Minimize overflight disturbance

CENTRAL PUGET SOUND GRP

BREMERTON
FLIGHT RESTRICTION ZONES FOR SENSITIVE WILDLIFE SPECIES

1. Pilots refer to the chapter on Flight Restriction Zones.
2. All ground entry within 100 yards of sensitive nesting species is restricted.
3. All boaters are requested to approach no closer than 100 yards to seal and waterfowl concentrations.



1/2 Includes half of the month

SEATTLE FLIGHT RESTRICTION ZONES / SENSITIVE WILDLIFE

NOAA Chart 18474

Code	Location	Seabird Colony	Seabird Conc.	Waterfowl Conc.	Marine Mammal Haulout	Sensitive Nesting Species	Shorebird Conc.	Flight Exclusion	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
WC-13	Shilshole Bay				**Yes**			**Yes**												
WC-14	Yeomalt Point					**Yes**		**Yes**												
WC-24	Restoration Point					**Yes**		**Yes**												
WC-29	Blake Island					**Yes**		**Yes**												
WC-35	Colvos Passage		**Yes**					No												
WC-46	South tip of Bainbridge Island			**Yes**				No					1/2							
WC-47	Alki Point south to Point Williams			**Yes**				No												

* FLIGHT AND GROUND ENTRY RESTRICTIONS

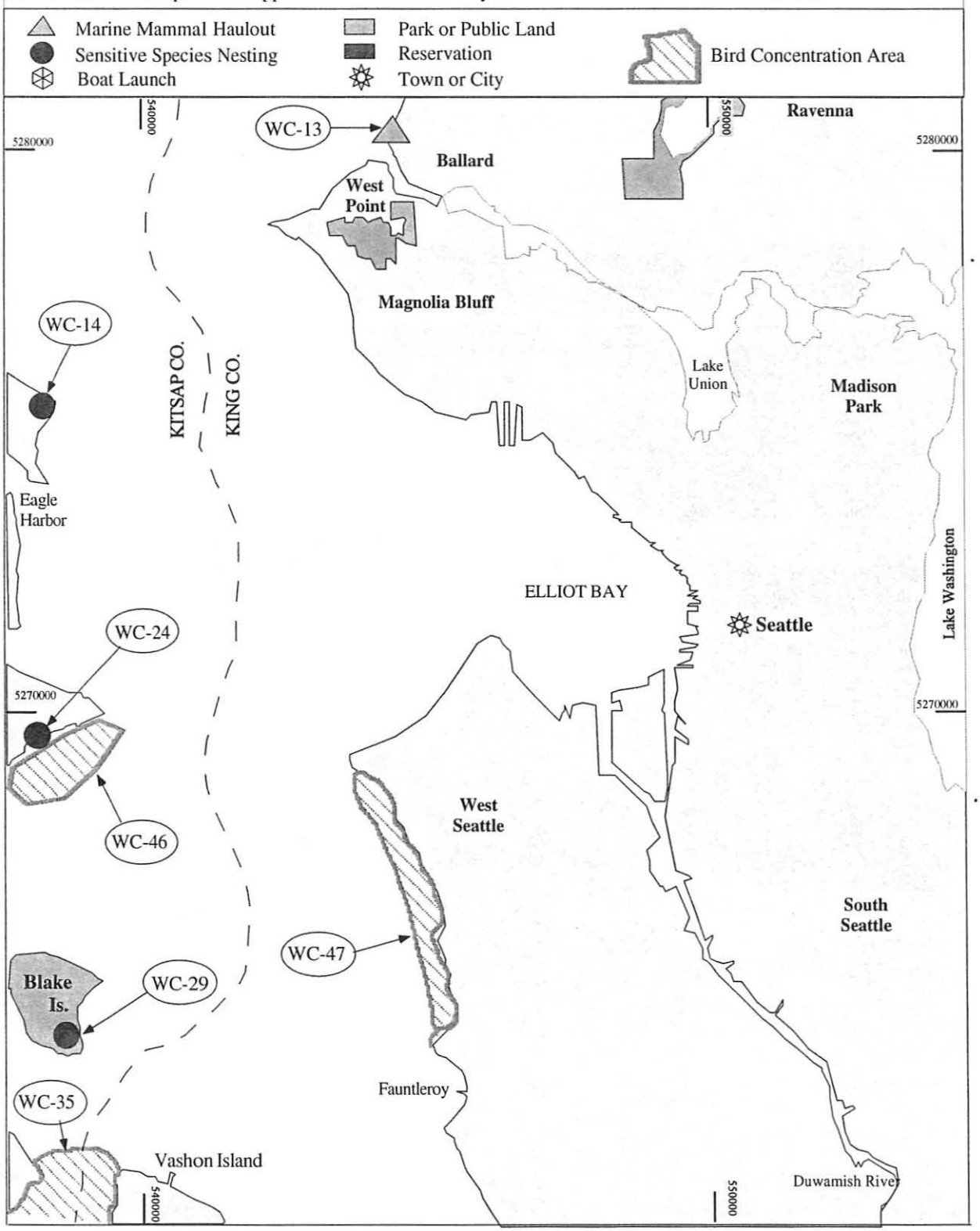
Flights below 1000 feet require clearance: See appendix on Flight Restriction Zones

Sensitive season - Minimize overflight disturbance

CENTRAL PUGET SOUND GRP

SEATTLE
FLIGHT RESTRICTION ZONES FOR SENSITIVE WILDLIFE SPECIES

1. Pilots refer to the chapter on Flight Restriction Zones.
2. All ground entry within 100 yards of sensitive nesting species is restricted.
3. All boaters are requested to approach no closer than 100 yards to seal and waterfowl concentrations.



1/2 Includes half of the month

EAST PASSAGE FLIGHT RESTRICTION ZONES / SENSITIVE WILDLIFE

NOAA Chart 18474

Code	Location	Seabird Colony	Seabird Conc.	Waterfowl Conc.	Marine Mammal Haulout	Sensitive Nesting Species	Shorebird Conc.	Flight Exclusion	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
WC-31	Sylvan Beach					**Yes**		**Yes**												
WC-32	Seahurst					**Yes**		**Yes**												
WC-34	Point Beals					**Yes**		**Yes**												
WC-35	Colvos Passage		**Yes**					No												
WC-36	Quartermaster Harbor					**Yes**		**Yes**												
WC-38	Neill Point					**Yes**		**Yes**												
WC-40	Redondo					**Yes**		**Yes**												
WC-42	Dumas Bay					**Yes**		**Yes**												
WC-48	Quartermaster Harbor		**Yes**	**Yes**				No					1/2							

* FLIGHT AND GROUND ENTRY RESTRICTIONS

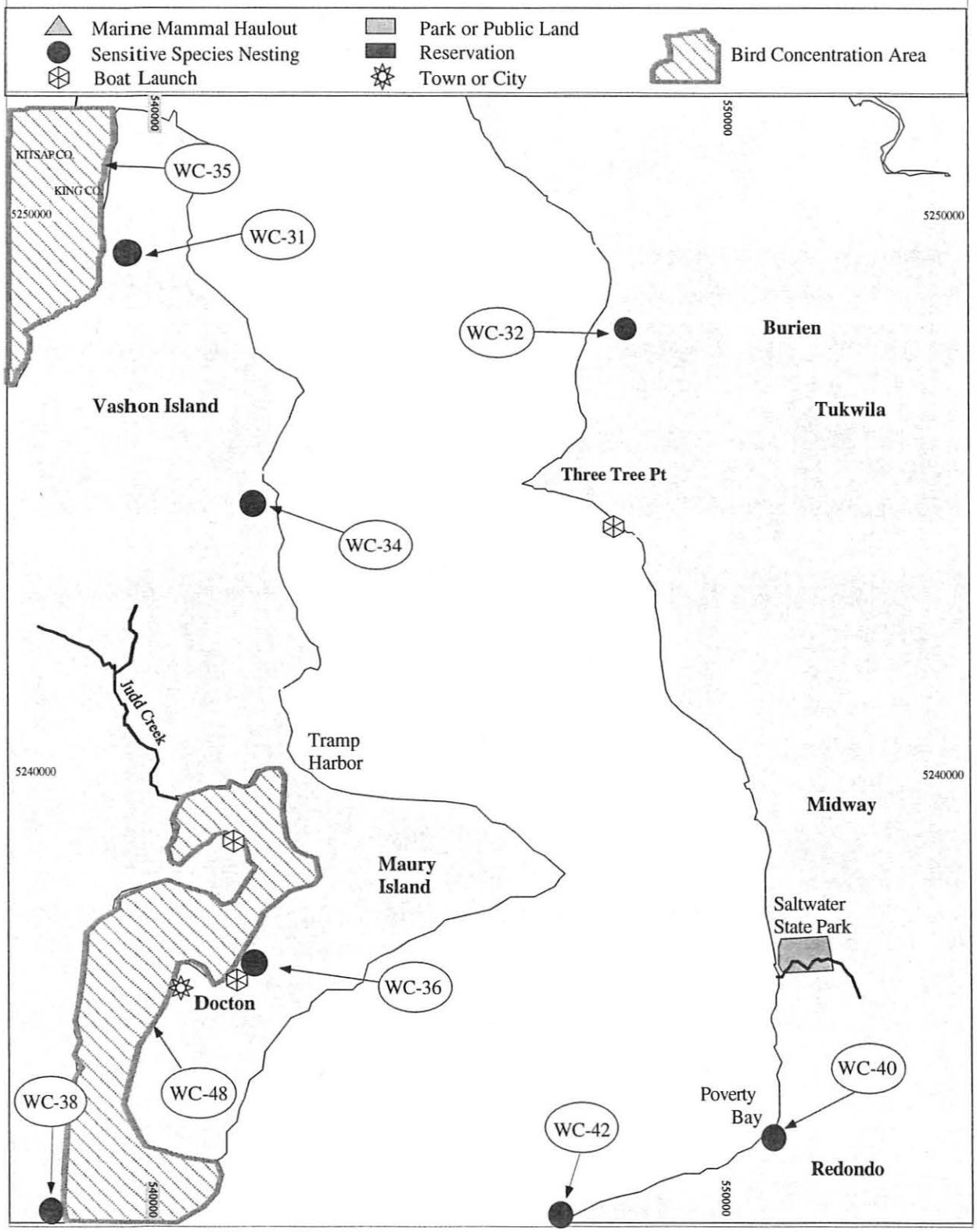
Flights below 1000 feet require clearance: See appendix on Flight Restriction Zones

Sensitive season - Minimize overflight disturbance

CENTRAL PUGET SOUND GRP

EAST PASSAGE
FLIGHT RESTRICTION ZONES FOR SENSITIVE WILDLIFE

1. Pilots refer to the chapter on Flight Restriction Zones.
2. All ground entry within 100 yards of sensitive nesting species is restricted.
3. All boaters are requested to approach no closer than 100 yards to seal and waterfowl concentrations.



1/2 Includes half of the month

GIG HARBOR FLIGHT RESTRICTION ZONES / SENSITIVE WILDLIFE

NOAA Chart 18474

Code	Location	Seabird Colony	Seabird Conc.	Waterfowl Conc.	Marine Mammal Haulout	Sensitive Nesting Species	Shorebird Conc.	Flight Exclusion	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
WSP-1	Tacoma Narrows		**Yes**	**Yes**				No				1/2								
WSP-2	Carr Inlet		**Yes**	**Yes**				No										1/2		
WSP-3	Burley Lagoon			**Yes**				No												
WSP-4	Rosedale Beach				**Yes**			**Yes**												
WSP-5	Cutts Island				**Yes**			**Yes**												
WSP-25	Horsehead Bay				**Yes**			**Yes**												
WC-35	Colvos Passage		**Yes**					No												
WC-37	Point Dalco					**Yes**		**Yes**												
WC-41	Point Defiance					**Yes**		**Yes**												

* FLIGHT AND GROUND ENTRY RESTRICTIONS

Flights below 1000 feet require clearance: See appendix on Flight Restriction Zones

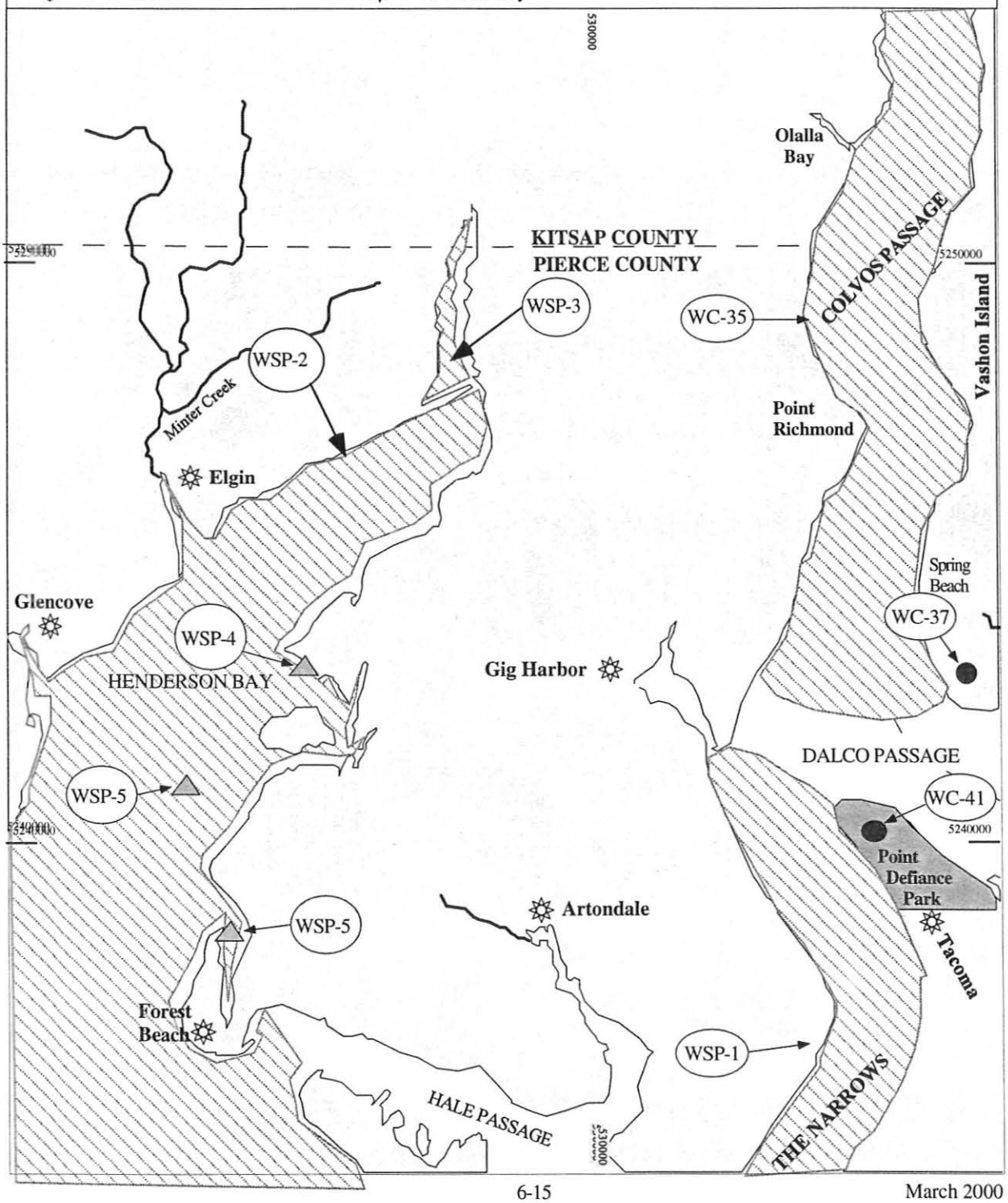
Sensitive season - Minimize overflight disturbance

CENTRAL PUGET SOUND GRP

GIG HARBOR
FLIGHT RESTRICTION ZONES FOR SENSITIVE WILDLIFE SPECIES

1. Pilots refer to the chapter on Flight Restriction Zones.
2. All ground entry within 100 yards of sensitive nesting species is restricted.
3. All boaters are requested to approach no closer than 100 yards to seal and waterfowl concentrations.

Marine Mammal Haulout
Sensitive Species Nesting
Boat Launch
Park or Public Land
Reservation
Town or City
Bird Concentration Area



COMMENCEMENT BAY FLIGHT RESTRICTION ZONES / SENSITIVE WILDLIFE

NOAA Chart 18474

Code	Location	Seabird Colony	Seabird Conc.	Waterfowl Conc.	Marine Mammal Haulout	Sensitive Nesting Species	Shorebird Conc.	Flight Exclusion	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
WC-38	Neill Point					**Yes**		**Yes**												
WC-42	Dumas Bay					**Yes**		**Yes**												
WC-44	Commencement Bay			**Yes**				**Yes**												

* FLIGHT AND GROUND ENTRY RESTRICTIONS

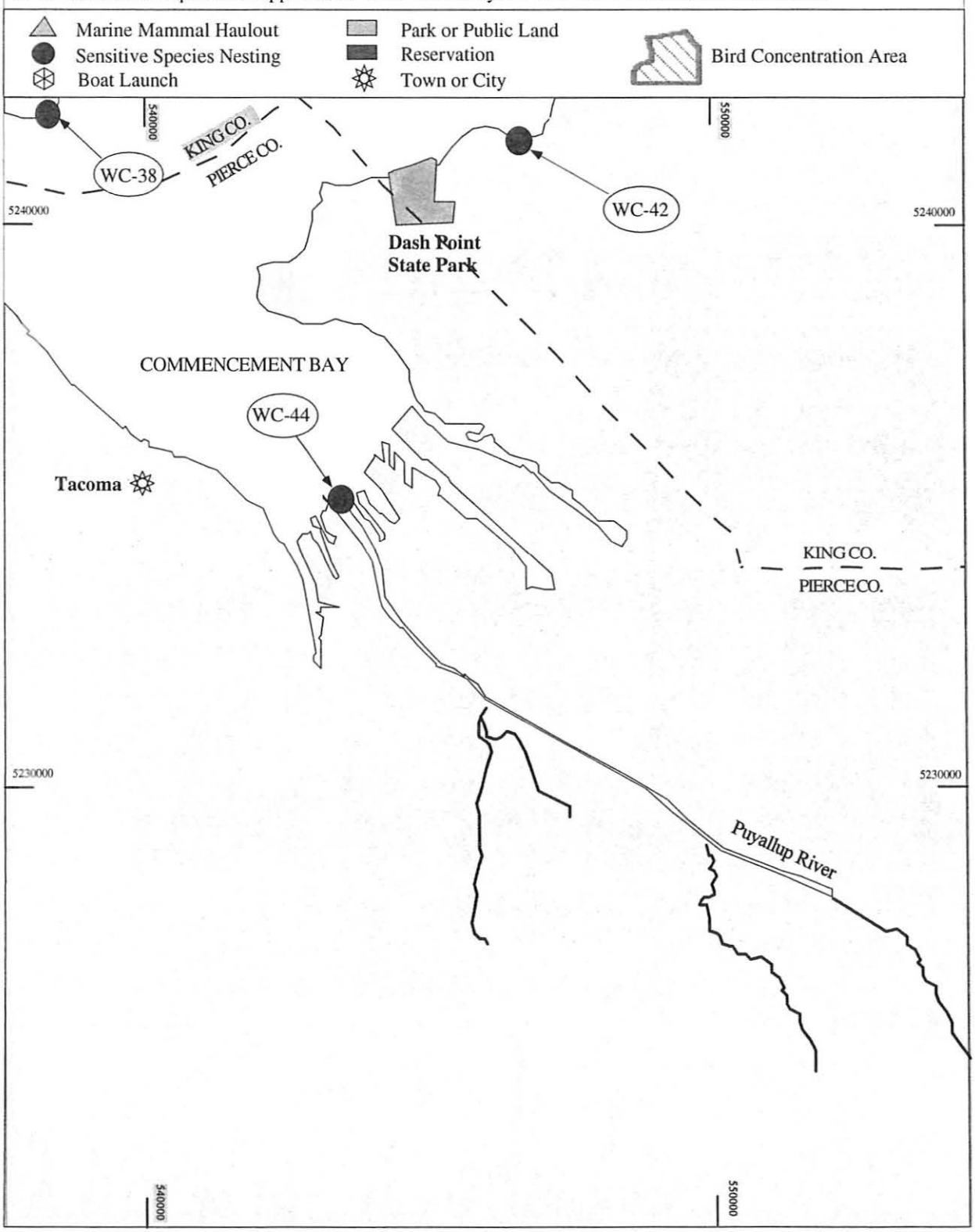
Flights below 1000 feet require clearance: See appendix on Flight Restriction Zones

Sensitive season - Minimize overflight disturbance

CENTRAL PUGET SOUND GRP

COMMENCEMENT BAY
FLIGHT RESTRICTION ZONES FOR SENSITIVE WILDLIFE SPECIES

1. Pilots refer to the chapter on Flight Restriction Zones.
2. All ground entry within 100 yards of sensitive nesting species is restricted.
3. All boaters are requested to approach no closer than 100 yards to seal and waterfowl concentrations.



FLIGHT RESTRICTION ZONES / SENSITIVE WILDLIFE SUMMARY

Code	Location	Seabird Colony	Seabird Conc.	Waterfowl Conc.	Marine Mammal Haulout	Sensitive Nesting Species	Shorebird Conc.	Flight Exclusion	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
WC-2	Apple Cove Point					Yes		Yes		■	■	■	■	■	■					
WC-3	Deer Cove					Yes		Yes		■	■	■	■	■	■					
WC-4	South Appletree Cove					Yes		Yes		■	■	■	■	■	■					
WC-5	President Point					Yes		Yes		■	■	■	■	■	■					
WC-6	Point Jefferson					Yes		Yes		■	■	■	■	■	■					
WC-7	Miller Bay			Yes				No	■	■	■	■	■	■	■	■	■	■	■	■
WC-8	Keyport Dock	Yes						No				■	■	■	■	■	■			
WC-9	Keyport					Yes		Yes		■	■	■	■	■	■					
WC-10	Port Madison					Yes		Yes		■	■	■	■	■	■					
WC-12	Shilshole Bay					Yes		Yes		■	■	■	■	■	■					
WC-13	Shilshole Bay				Yes			Yes	■	■	■	■	■	■			■	■	■	■
WC-14	Yeomalt Point					Yes		Yes		■	■	■	■	■	■	■	■			
WC-16	Dyes Inlet / Clear Creek			Yes				Yes	■	■	■	■	■			■	■	■	■	■
WC-17	Ostrich Bay					Yes		Yes		■	■	■	■	■	■					
WC-18	Rocky Point			Yes				Yes	■	■	■	■	■			■	■	■	■	■
WC-19	Sulphur Springs			Yes				Yes	■	■	■	■	■			■	■	■	■	■
WC-20	South Port Washington Narrows			Yes				Yes	■	■	■	■	■			■	■	■	■	■
WC-21	Gorst		Yes	Yes			Yes	Yes	■	■	■	■	■	■	■	■	■	■	■	■
WC-22	East Port Orchard			Yes				Yes	■	■	■	■	■			■	■	■	■	■
WC-23	Orchard Point			Yes				Yes	■	■	■	■	■			■	■	■	■	■
WC-24	Restoration Point					Yes		Yes		■	■	■	■	■	■					
WC-28	Sinclair Inlet					Yes		Yes		■	■	■	■	■	■					
WC-29	Blake Island					Yes		Yes		■	■	■	■	■	■					
WC-30	View Park					Yes		Yes		■	■	■	■	■	■					

FLIGHT RESTRICTION ZONES / SENSITIVE WILDLIFE SUMMARY (continued)

Code	Location	Seabird Colony	Seabird Conc.	Waterfowl Conc.	Marine Mammal Haulout	Sensitive Nesting Species	Shorebird Conc.	Flight Exclusion	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
WC-31	Sylvan Beach					Yes		Yes		■	■	■	■	■	■					
WC-32	Seahurst					Yes		Yes		■	■	■	■	■	■					
WC-33	Command Point					Yes		Yes		■	■	■	■	■	■					
WC-34	Point Beals					Yes		Yes		■	■	■	■	■	■					
WC-35	Colvos Passage		Yes					No	■	■	■								■	■
WC-36	Quartermaster Harbor					Yes		Yes		■	■	■	■	■	■					
WC-37	Point Dalco					Yes		Yes		■	■	■	■	■	■					
WC-38	Neill Point					Yes		Yes		■	■	■	■	■	■					
WC-40	Redondo					Yes		Yes		■	■	■	■	■	■					
WC-41	Point Defiance					Yes		Yes		■	■	■	■	■	■					
WC-42	Dumas Bay					Yes		Yes	■	■	■	■	■	■	■		■	■	■	■
WC-44	Commencement Bay											■	■	■	■	■	■			
WC-45	Illahee					Yes		Yes		■	■	■	■	■	■					
WC-46	South tip of Bainbridge Island			Yes					■	■	■	■					■	■	■	■
WC-47	Alki Point south to Point Williams			Yes					■	■	■	■					■	■	■	■
WC-48	Quartermaster Harbor		Yes	Yes					■	■	■	■	■				■	■	■	■

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7. Logistical Information

The following is not a complete list of logistical resources - for more information please refer to the Northwest Area Contingency Plan (NWACP), Chapter 5000, Logistics.

To submit data for this section, please use Comments/ Corrections/ Suggestions (Appendix C).

7.1. Central Puget Sound Logistical Support

Subject	Name	Characteristics	Contact	Phone #
Command Posts				
See Page 5-22 NWACP				
Communications				
See Pages 5-11 to 5-21				
Summary of Area Resource Equipment				
See Pages 5-102 to 5-132				
Helicopter Support/ Air Support	Auburn Municipal Airport	King County	400 23rd Avenue / Auburn, WA 98002	(253) 931-3026
	Boeing Field / King County International Airport	King County	PO Box 80245 / Seattle, WA 98108	(206) 296-7392 or (206) 296-7380
	Renton Municipal Airport	King County	616 Perimeter Road / Renton, WA 98055	(425) 430-7471
	Tacoma Narrows Airport	Pierce County	1022 26th Avenue NW / Gig Harbor, WA 98335	(253) 853-5844
	Bremerton National Airport	Kitsap County	8850 SW , State Highway 3 / Port Orchard, WA	(360) 674-2381
	Sea-Tac International Airport	King County	Sea-Tac	(206) 433-4645
	Crest Airport	King County	29300 179th Place S / Kent, WA 98042	(253) 631-7100
Tribal Resources	Muckleshoot Indian Tribal Council	King County	39015 172nd SE / Auburn, WA 98002	(253) 939-3311
	Puyallup Tribal Council	Pierce County	2002 E. 28th Street / Tacoma, WA 98404	(253) 597-6200
	Suquamish Tribal Council	Kitsap County	PO Box 498 / Suquamish, WA 98392	(360) 426-4441
	Point No Point Treaty Council	Kitsap County	7999 NE Salish Lane / Kingston, WA 98346	
	Port Gamble Community Council	Kitsap County	PO Box 280 / Kingston, WA 98346	(360) 297-2646

Subject	Name	Characteristics	Contact	Phone #
Fire Department				
	Bellevue Fire Dept.	King County	766 Bellevue Way SE / Bellevue, WA 98004	(425) 452-6892
	Bremerton Fire Dept.	Kitsap County	817 Pacific Ave. / Bremerton, WA 98310	(360) 478-5380
	Chief Tacoma Fire Dept. Hdqtrs.	Pierce County	901 Fawcett / Tacoma, WA 98402	(253)591-5737
	Dupont Fire Dept.	Pierce County	302 Louviers Ave. / Dupont, WA 98327	(253) 964-8414
	Edmonds Fire Dept.	Snohomish County	250 5th Ave. N / Edmonds, WA 98020	(425) 771-0215
	Seattle Fire Dept.	King County	301-2nd Avenue South / Seattle, WA 98104	(206) 386-1400
	King County Fire Dist. # 11	King County	1234 SW 112th / White Center	(206) 243-0330
	King County Fire Dist. #13	King County	10019 SW Bank Rd. / Vashon Island	(206)463-2405
	King County Fire Dist. #16	King County	18030 73rd Ave. NE / Bothell	(425) 486-2784
	King County Fire Dist. #2	King County	151100-8th Ave. SW / Burien	(206) 242-2040
	King County Fire Dist. #20	King County	12617-76th Ave. S / Skyway	(206)772-1430
	King County Fire Dist. #26	King County	2238 S 223rd / Des Moines	(206)878-2210
	King County Fire Federal Way	King County	31617-1st Ave. S / Federal Way	(253)839-6234
	King County Fire Dist. #4	King County	1016 N 175th / Shoreline	(206) 546-5716
	Kirkland Fire Dept.	King County	123-5th Ave. / Kirkland	(425) 828-1143
	Kitsap County Fire & Rescue, Dist. #1	Kitsap County	10955 Silverdale Way NW / Silverdale	(360) 692-2551
	North Kitsap Fire & Rescue	Kitsap County	11171 NE Highway 104 / Kingston	(360) 297-3619
	Kitsap County Fire Dist. #12	Kitsap County	4071 Chico Way NW / Bremerton	(360) 377-4744
	Kitsap County Fire Dist. #14	Kitsap County	7549 NE Twin Spits Road / Hansville	(360) 638-2263
	Central Kitsap Fire & Rescue	Kitsap County	7600 Military Road NE / Bremerton	(360) 692-0880
	Kitsap County Fire Dist. #18	Kitsap County	911 Liberty Lane / Poulsbo	(360) 779-3997
	Kitsap County Fire Dist. #2	Kitsap County	8895 Madison Ave N / Bainbridge Island	(206) 842-7686
	North Kitsap Fire & Rescue	Kitsap County	P.O. Box 41 / Kingston	(360) 297-3619
	Kitsap County Fire Dist. #7	Kitsap County	1974 Fircrest Dr. SE / Port Orchard	(360) 871-2411
	Lynnwood Fire Dept.	Snohomish County	19100 44th Ave. W / Lynnwood	(425) 775-3471
	Tacoma Fire Dept.	Pierce County	2015 54th Ave. E / Tacoma	(253) 922-8424

Subject	Name	Characteristics	Contact	Phone #
Local Support Personnel	Bremerton City Hall (Mayor's Office)	Kitsap County	239 Fourth St / Bremerton	(360) 478-5266
	City of Sea-Tac City Hall	King County	19215-28th Ave. S / Sea-Tac	(206) 241-9100
	Kirkland DEM	King County	123 Fifth Ave.	(425) 828-1283
	Seattle Office of Emergency Services	King County	301 Second Avenue S / Seattle	(206) 296-3830
	Tacoma Director of Emergency Management	Pierce County	420 Fawcett St / Tacoma	(253) 798-7470
	Seattle Police Dept.	King County	610 Third Avenue / Seattle	(206) 583-2111
	Tacoma Police Dept.	Pierce County	930 Tacoma Ave. S / Tacoma	(253) 593-4721
	King County DEM	King County	516 Third Ave. / Seattle	(206) 296-3830
	Kitsap County DEM	Kitsap County	1720 Warren / Bremerton	(360) 337-7119
	Pierce County DEM	Pierce County	930 Tacoma Ave. S / Tacoma	(253) 798-7470
	Pierce County Sheriff	Pierce County	Tacoma	(253) 798-4722
	Snohomish County Sheriff	Snohomish County	3000 Rockefeller / Everett	(425) 388-3414
	Kitsap County Sheriff	Kitsap County	614 Division St. / Port Orchard	(360) 337-7145
Marinas/Port Docks	Point Defiance Ramp	Pierce County	Point Defiance Park / next to Vashon ferry landing / Tacoma	
	Totem Marina	Pierce County	821 Dock St. / Tacoma	
	Olic & Charlie's Marina	Pierce County	Marine View Drive / Tacoma	
	Des Moines Marina	King County	Downtown Des Moines	
	East Gig Harbor access	Pierce County	South end of Randall Dr NW / Gig Harbor	
	Ollala Ramp	Kitsap County	Off Ollala Way/ Port Orchard	
	Armeni Ramp	King County	Next to Seacrest Boat House, off Harbor Ave./ Seattle	
	Sunnyside Ramp	King County	Sunnyside Ave. and N. Northlake Way/ Seattle	
	Meadowdale Marina	Snohomish County	162nd Ave. SW/ Meadowdale	
	Shilshole Ramp	King County	Seaview Ave. /Seattle	
	14th Street Ramp	King County	End of 14th St./ Ballard	
	Port of Edmonds Marina	Snohomish County	South end of Admiral Way/ Edmonds	
	Evergreen Park Boat Ramp	Kitsap County	Evergreen Park/ Bremerton	
	Lion's Field Park & Ramp	Kitsap County	Off Sheridan Road/ Bremerton	
	Illahee State Park Ramp	Kitsap County	Illahee State Park	
	Tracyton Ramp	Kitsap County	Town of Tracyton	
	Brownsville Marina	Kitsap County	Town of Brownsville	
	Silverdale Ramp	Kitsap County	Town of Silverdale	
	Poulsbo Ramp	Kitsap County	Town of Poulsbo	

Subject	Name	Characteristics	Contact	Phone #
Marinas/Port Docks (continued)	Port Orchard Public Ramp	Kitsap County	Town of Port Orchard	
	Eagle Harbor Waterfront Park	Kitsap County	Eagle Harbor/ Bainbridge Island	
	Miller Bay Ramp	Kitsap County	On Miller Bay, near Suquamish	
	Annapolis Public Ramp	Kitsap County	Near Port Orchard	
Housing/Feeding/Response Community Support	Airlift Northwest	King County	6987 Perimeter Road/ Seattle	1-800-426-2430
	Auburn General Hospital	Pierce County	20 Second St NE/ Auburn	(253) 833-7711
	Ballard Community Hospital	King County	NW Market and Barnes/ Seattle	(206)782-2700
	Bremerton Naval Hospital	Kitsap County	Bremerton	(360) 475-4000
	Children's Hospital and Medical Center	King County	4800 Sand Point Way NE/ Seattle	(206) 526-2000
	Evergreen Hospital	King County	12040 NE 128th Street/ Kirkland	(425) 899-1000
	Fifth Avenue Hospital	King County	10560 Fifth Avenue NE/ Seattle	(206) 364-2050
	Group Health Central Hospital	King County	201 16th Avenue E/ Seattle	(206) 326-3000
	Group Health Eastside Hospital	King County	2700 152nd NE/ Redmond	(425) 883-5151
	Harborview Medical Center	King County	325 Ninth Avenue/ Seattle	(206) 731-3000
Fishing Fleets & Affiliated Organizations	Puget Sound Gillnetters Assoc.	King County	Fisherman's Terminal/ Seattle	
Boat Cleaning Capability	Airo Services	Pierce County	4110 East 11th St./ Tacoma	(253)383-4916 24 hr. number
	Foss Environmental	King County	660 West Ewing St./ Seattle	1-800-337-7455 24 hr. number

APPENDICES

Appendix A: Summary of Protection Techniques

Protection Techniques	Description	Primary Logistical Requirements	Limitations
ONSHORE			
Beach Berms	A berm is constructed along the top of the mid-inter tidal zone from sediments ex-cavated along the downgradient side. The berm should be covered with plastic or geo-textile sheeting to minimize wave erosion.	• Bulldozer/Motor grader -1 • Personnel - equipment operator & 1 worker • Misc. - plastic or geotextile sheeting	• High wave energy • Large tidal range • Strong along shore currents
Geotextiles	A roll of geotextile, plastic sheeting, or other impermeable material is spread along the bottom of the supra-tidal zone & fastened to the underlying logs or stakes placed in the ground.	• Geotextile - 3 m wide rolls • Personnel - 5 • Misc. - stakes or tie-down cord	• Low sloped shoreline • High spring tides • Large storms
Sorbent Barriers	A barrier is constructed by installing two parallel lines of stakes across a channel, fastening wire mesh to the stakes & filling the space between with loose sorbents.	Per 30 meters of barrier • Wire mesh - 70 m x 2 m • Stakes - 20 • Sorbents - 30 m^2 • Personnel - 2 • Misc. - fasteners, support lines, additional stakes, etc.	• Waves > 25 cm • Currents > 0.5 m/s • Tidal range > 2 m
Inlet Dams	A dam is constructed across the channel using local soil or beach sediments to exclude oil from entering channel.	• Loader - 1 • Personnel - equipment operator & 1 worker or several workers w/shovels	• Waves > 25 cm • Tidal range exceeding dam height • Freshwater outflow

NEARSHORE			
Containment Booming	Boom is deployed in a "U" shape in front of the oncoming slick. The ends of the booms are anchored by work boats or drogues. The oil is contained within the "U" & prevented from reaching the shore.	For 150 meters Slick: • Boom - 280 m • Boats - 2 • Personnel - boat crews & 4 boom tenders • Misc. - tow lines, drogues, connectors, etc.	• High winds • Swells > 2 m • Breaking waves > 50 cm • Currents > 1.0 m/s
Exclusion Booming	Boom is deployed across or around sensitive areas & anchored in place. Approaching oil is deflected or contained by boom.	Per 300 meters of Boom • Boats - 1 • Personnel - boat crew & 3 boom tenders • Misc.- 6 anchors, anchor line, buoys, etc.	• Currents > 0.5 m/s • Breaking waves > 50 cm • Water depth > 20 m
Deflection Booming	Boom is deployed from the shoreline away from the approaching slick & anchored or held in place with a work boat. Oil is deflected away from shoreline.	Single Boom, 0.75 m/s knot current • Boom - 60 m • Boats - 1 • Personnel - boat crew + 3 • Misc. - 3 anchors, line, buoys, recovery unit	• Currents > 1.0 m/s • Breaking waves > 50 cm
Diversion Booming	Boom is deployed from the shoreline at an angle towards the approaching slick & anchored or held in place with a work boat. Oil is diverted towards the shoreline for recovery.	Single Boom, 0.75 m/s knot current • Boom - 60 m • boats - 1 • Personnel - boat crew + 3 • Misc. - 3 anchors, line, buoys, recovery unit	• Currents > 1.0 m/s • Breaking waves > 50 cm
Skimming	Self-propelled skimmers work back & forth along the leading edge of a windrow to recover the oil. Booms may be deployed from the front of a skimmer in a "V" configuration to increase sweep width. Portable skimmers are placed within containment booms in the area of heaviest oil concentration.	Self-propelled (None) Towed • Boom - 200 m • Boats - 2 • Personnel - boat crews & 4 boom tenders • Misc. - tow lines, bridles, connectors, etc. Portable • Hoses - 30 m discharge • Oil storage - 2000 liters	• High winds • Swells > 2 m • Breaking waves > 50 cm • Currents > 1.0 m/s

Source is R. Miller of Clean Sound Cooperative.

Appendix B: Original Geographic Response Plan Contributors

Local Representatives
Byron Haley, Metro Park District Tacoma
Ed Bruett, Kitsap Co. DEM
Richard Lawson, Tacoma Fire Dept.
John Komorita, King County
Bill Lokey, Pierce County DEM
Shad Burcham, King County DEM

Industry and Response Contractors
Ruel Harder, Seattle Steam Co.
Bob Wiechert, Clean Sound Cooperative
Mike Kelley, Clean Sound Cooperative
Mac McCarthy, Clean Sound Cooperative
John Waters, Clean Sound Cooperative
Bob Bunton, ARCO
Svenk Eklof, PWES
John Murphy, GENWEST SYS.
John Crawford, FOSS
Steve Collar, Crowley Marine
Greg Narum, Simpson Tacoma Kraft Co.
Bill Park, MSRC
Mike LaTorre, MSRC
Dru Wojtanik, Ecology and Environment
Tim Clark, Clean Sound Cooperative
Thom Davis, Global Environmental
Ron Larsen, Global Environmental
Gary Putnam, Shell Oil
Aaron Anderson, Olympus Enviro.
Edward Traina, Shell Oil Co.
Donald Johnson, Shell Oil Co.
Karen Grein-Nagle, Olympic Pipeline
Mike Mattingly, AIRO Services
Ray Burke, Sound Refining
Mike Brady, Riedel Environmental Services
Trygve Enger, Foss Environmental
Trip Ellison, Riedel Environmental Services
Jim Riedel, Riedel Environmental Services
Dick Shabro, Olympus Enviro
Harold Haskins, U.S. Oil
Harry Hutchins, Marine Exchange
Mike Vomund, Chevron
Global Diving and Salvage

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Curtis Shaw
Bill Edgar

Environmental Protection Agency
Carl Kitz

U.S. Navy
Greg Conner
Bob Cairns
Donald Dodds

NOAA
Sharon Christopherson
George Galasso

U.S. Fish and Wildlife Service
Curtis Shaw
Jeff Momot

State Representatives
Office of Archeology & Historic Preservation
Rob Whitlam

Washington State Department of Ecology
Paul O'Brien
Dick Logan
Paul Heimowitz
Jeff Bash
Dick Storey
Elin Abramson
Scott Zimmerman
Karen Rennaker
David Mora
Bridget Hoover
Shari Harris-Dunning

Washington Department of Fish and Wildlife
Brian Benson
Bill Graeber
Barry Troutman
Jeff Skriletz
Sara LaBorde

Office of Marine Safety
Roy Robertson

Washington State Maritime Commission
Bob Dorn

Washington Department of Natural Resources
Dave Jamison

Parks and Recreation Commission
Mike Ramsey

Other
Susan Berta, WSU Island Co. Beach Watchers
Richard Shafer
Shirley Flies, Puget Sound Alliance
Ken Moser, Puget Soundkeeper

Appendix C: Geographic Response Plan Comments/Corrections/Suggestions

If you have any questions regarding this document or find any errors, please notify one of the following agencies: or use tear out sheet (page C-3)

- Washington Department of Ecology, SPPR program, Natural Resources Unit
- USCG Marine Safety Office Puget Sound, Planning Department
- USCG Marine Safety Office Portland
- Oregon Department of Environmental Quality
- Idaho Emergency Response Commission
- Environmental Protection Agency Region 10

Phone Numbers:

Washington DOE	(360) 407-6972
USCG MSO Puget Sound	(206) 217-6213
USCG MSO Portland	(503) 240-9307
Oregon DEQ	(503) 229-5774
Idaho ERC	(208) 334-3263
EPA	(206) 553-6901

Bulletin Board System (BBS):

USCG MSO Puget Sound	(206) 217-6216
USCG MSO Portland	(503) 240-9308

Internet/E-mail Address:

WADOE	dald461@ecy.wa.gov
OR DEQ	WYLIE.Jack@deq.state.or.us
USCG MSO Puget Sound	jlehto@pacnorwest.uscg.mil
USCG MSO Portland	mwilcox@pacnorwest.uscg.mil
USEPA	sheldrake.beth@epamail.epa.gov

Address:

Commanding Officer
United States Coast Guard
MSO Puget Sound
Planning Department
1519 Alaskan Way South
Seattle, WA 98134-1192

Washington Department Of Ecology
SPPR Program
Natural Resources Unit
P.O. Box 47600
Olympia, WA 98504-7600

Office Of The Governor
Idaho Emergency Response Commission
1109 Main
Statehouse
Boise, ID 83720-7000

Commanding Officer
United States Coast Guard
Planning Department
MSO Portland
6767 North Basin Ave
Portland, OR 97217-3992

Oregon Department of Environmental Quality
Water Quality Division
811 SW Sixth Avenue
Portland, OR 97204

Environmental Protection Agency
Emergency Response Branch
1200 Sixth Avenue
Seattle, WA 98101

Geographic Response Plan

Comments/Corrections/Suggestions

Directions:
Fill in your name, address, agency, and phone number. Fill in the blanks regarding the location of information in the plan being commented on. Make comments in the space provided. Add extra sheets as necessary. Submit to: Dale Davis
Department of Ecology
Spills Program
300 Desmond Drive
P.O. Box 47600
Olympia, WA 98504-7600
dald461@ecy.wa.gov

Name: _____ Title: _____ Agency: _____

Address: _____

City: _____ State/Province: _____ Zip/Postal Code: _____

Phone: (____) _____ E-Mail: _____

GRP: _____ Page Number: _____

Location on page (chapter, section, paragraph) (e.g. 2.1, paragraph 3): _____

Comments: _____

APPENDIX J

USOR RESPONSE PLAN COVER SHEET

Section J-1

Response Plan Cover Sheet

(Attachment F-1 to 40 CFR 112 Appendix F)

This cover sheet will provide EPA with basic information concerning the facility. It must accompany a submitted facility response plan. Explanations and detailed instructions can be found in Appendix F. Please type or write legibly in blue or black ink. Public reporting burden for the collection of this information is estimated to vary from 1 hour to 270 hours per response in the first year, with an average of 5 hours per response. This estimate includes time for reviewing instructions, searching existing data sources, gathering the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate of this information, including suggestions for reducing this burden to: Chief, Information Policy Branch, Mail Code: PM–2822, U.S. Environmental Protection Agency, Ariel Rios Building, 1200 Pennsylvania Avenue, NW., Washington, DC 20460; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington D.C. 20503.

General Information

Owner/Operator of Facility:

D.H. Yoder

Facility Name:

U.S. Oil & Refining Co.

Facility Address (street address or route):

3001 Marshall Ave.

City, State, and U.S. Zip Code:

Tacoma, WA 98421

Facility Phone No.:

(253) 383-1651

(b) (7)(F) [redacted]

Dun & Bradstreet Number:[1]

[1] These numbers may be obtained from public library resources.

009252719

North American Industrial Classification System (NAICS) Code:[1]

32411

Largest Aboveground Oil Storage Tank Capacity (Gallons):

(b) (7)(F) [redacted]

Number of Aboveground Oil Storage Tanks:

108

Maximum Oil Storage Capacity (Gallons):

(b) (7)(F) [redacted]

Worst Case Oil Discharge Amount (Gallons):

(b) (7)(F) [redacted]

Facility Distance to Navigable Water. Mark the appropriate line.

0–1/4mile _X_ 1/4–1/2mile ____ 1/2–1 mile ____ >1 mile ____

Applicability of Substantial Harm Criteria

Does the facility transfer oil over-water[2] to or from vessels and does the facility have a total oil storage capacity greater than or equal to 42,000 gallons?

[2] Explanations of the above-referenced terms can be found in Appendix C to this part. If a comparable formula to the ones contained in Attachment C–III is used to establish the appropriate distance to fish and wildlife and sensitive environments or public drinking water intakes, documentation of the reliability and analytical soundness of the formula must be attached to this form.

Yes__X_____
No_____

Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and, within any storage area, does the facility lack secondary containment[2] that is sufficiently large to contain the capacity of the largest aboveground oil storage tank plus sufficient freeboard to allow for precipitation?

Yes_____
No__X_____

Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance[2] (as calculated using the appropriate formula in Appendix C or a comparable formula) such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments?[3]

[3] For further description of fish and wildlife and sensitive environments, see Appendices I, II, and III to DOC/NOAA's "Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments" (see Appendix E to this part, section 13, for availability) and the applicable ACP.

Yes__X_____
No_____

Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance[2] (as calculated using the appropriate formula in Appendix C or a comparable formula) such that a discharge from the facility would shut down a public drinking water intake?[2]

Yes X
No_____

Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and has the facility experienced a reportable oil spill[2] in an amount greater than or equal to 10,000 gallons within the last 5 years?

Yes X
No_____

Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining information, I believe that the submitted information is true, accurate, and complete.

Signature: David H. Yoder

Name (Please type or print): **D.H. Yoder**

Title: **Vice-President Manufacturing**

Date: 8/14/13

APPENDIX K

MCCHORD PIPELINE CO. RESPONSE ZONE APPENDIX

Section K-1

MCCHORD PIPELINE CO. RESPONSE ZONE APPENDIX

The following response zone information is provided in accordance with response zone appendix requirements identified in 49 CFR Part 194.107 and 49 CFR Part 194.113.

I. INFORMATION SUMMARY

A. Name and Address of Operator

McChord Pipeline Co. is operated by:

U.S. Oil & Refining Co.
3001 Marshall Ave.
Tacoma, WA 98421
Telephone: (253) 383-1651
Facsimile: (253) 383-9970

B. Response Zone Description

McChord Pipeline Co. owns a single 6 " diameter pipeline that is 14.25 miles long. This pipeline consists of one 14.25 mile line section that extends from USOR's refinery (mile post 0.0) to Joint Base Lewis-McChord (mile post 14.5). The entire length of this pipeline, which lies within one response zone, is located within Pierce County, WA.

C. Name and Telephone Number of the Qualified Individual on 24 hour Basis

Dan Yoder is the Qualified Individual for both USOR and McChord Pipeline Co. He can be reached at (253) 383-1651 on a 24 hour basis. Qualified Individual backup is provided by Alternate Qualified Individuals. The USOR primary supervisors listed in Appendix C, Section C-1, List #1 are authorized to serve as Alternate Qualified Individuals. The list of Alternate Qualified Individuals is as follows:

- R.J. Mori
- G.A. Hills
- H.R. Van
- R.W. Smith
- T.T. Hullinger

USOR's Alternate Qualified Individuals can be reached at (253) 383-1651 on a 24 hour basis.

D. List of Pipeline Line Sections

The 14.25 mile pipeline owned by McChord Pipeline Co. consists of a single continuous line which extends from milepost 0.0 to mile post 14.5. For worst case discharge calculation purposes, this line was split into two sections with the division point being the high point along the pipeline which is located at milepost 5.871. Therefore, the worst case discharge volume is represented by the section of pipe with the greater length rather than basing this discharge volume on the entire length of pipeline. Both line sections are noted as follows:

	Milepost Start	Milepost Finish
Section 1	0.0 @ elevation = 10 ft	5.871 @ elevation = 420 ft
Section 2	5.871 @ elevation = 420 ft	14.5 @ elevation = 280 ft

E. Basis for Operator's Determination of Significant and Substantial Harm

The pipeline owned by McChord Pipeline Co. can be expected to cause significant and substantial harm because this pipeline crosses navigable waters and is located within a one-mile radius of potentially affected environmentally sensitive areas. Environmentally sensitive areas are identified in Appendix I and Section 3.6 whereas navigable water crossings are identified in Appendix H.

F. Type of Oil and Volume of Worst Case Discharge

McChord Pipeline Co. will be shipping JP-8 jet fuel through this pipeline per contractual agreements established with the Defense Fuel Supply Center. (b) [redacted] per 49 CFR Part 194.105.

II. CORE PLANNING REQUIREMENTS FOR RESPONSE PLAN

It is important to note that many of the spill response strategies and resources that are employed by USOR to respond to product releases are also available and applicable to McChord Pipeline Co. Spill response strategies and resources specific to McChord Pipeline Co. are discussed separately throughout the Facility Oil Spill Response Plan.

A. Immediate Notification Procedures

The discussion of immediate notification procedures is contained in Sections 3.1 and 3.7 of this document. Additional information is contained in Appendices C and D.

B. Spill Detection and Mitigation Procedures

The discussion of spill detection and mitigation procedures is contained in Sections 3.1, 3.5, 3.7, 10.2, 10.3, and 10.4 of this document.

C. Name, Address and Telephone Number of Oil Spill Response Organizations

Oil spill response organizations that have agreed to respond to oil spills at USOR and McChord Pipeline Co. facilities include the following:

Marine Spill Response Corporation
1330 Industry Street, Suite 300
Everett, WA 98203-7123
Emergency Telephone: (800) 645-7745
Business Telephone: (425) 252-1300

Guardian Industrial Services, Inc.
1813 99th St. E.
Tacoma, WA 98445
Telephone: (253) 536-0455
Cellular: (253) 405-7255

Global Diving & Salvage, Inc.
3840 West Marginal Way SW
Seattle, WA 98106
Telephone: (206) 623-0621

D. Response Activities and Response Resources

The discussion of response activities and response resources related to the McChord Pipeline Co. is contained in Chapter 3.0 of this document. Additional information is contained in Appendices C, F and G.

E. Names and Telephone Numbers of Government Agencies with Pollution Control Responsibilities

National Response Center
1-800-424-8802

WA Emergency Management Division
1-800-258-5990

Environmental Protection Agency - Region 10
(206) 553-1263

U.S. Coast Guard
(206) 217-6002

Washington Department of Ecology, SW Office
(360) 407-6300

F. Training Procedures

The personnel training and exercise program used by USOR and McChord Pipeline Co. is discussed in Sections 7.1, 7.2 and 7.3 of this document. Included in these sections are copies of forms used to document response exercises and personnel training.

G. Equipment Testing

The response equipment testing program used by USOR and McChord Pipeline Co. is discussed in Sections 7.2, 7.3 and Appendices F and G of this document. The operation and maintenance of pipeline equipment is discussed in Sections 10.4 and 10.5 of this document.

H. Drill Types, Schedules and Procedures

The exercise program used by USOR and McChord Pipeline Co. is discussed in Sections 7.1, 7.2 and 7.3 of this document. Included in these sections are copies of forms used to document response exercises and personnel training.

APPENDIX L

GEOGRAPHIC RESPONSE PLAN FOR MCCHORD PIPELINE CO.

Section L-1

MCCHORD PIPELINE
GEOGRAPHIC RESPONSE PLAN (GRP)

HOW TO USE THIS GEOGRAPHIC RESPONSE PLAN

Purpose of Geographic Response Plan (GRP)

This plan prioritizes resources to be protected and allows for immediate and proper action. By using this plan, the first responders to a spill can avoid the initial confusion that generally accompanies any spill.

Geographic Response Plans are used during the emergent phase of a spill which lasts from the time a spill occurs until the Unified Command is operating and/or the spill has been contained and cleaned up. Generally this lasts no more than 24 hours. The GRPs constitute the federal on-scene coordinators' and state on-scene coordinators' "orders" during the emergent phase of the spill. During the project phase the GRP will continue to be used, but with input from natural resource trustees.

Strategy Selection

Chapter 4 contains complete strategy descriptions in matrix form and strategy maps. The strategies depicted in Chapter 4 will be implemented after reviewing on scene information including: weather conditions, oil type, initial trajectories, etc.

It is assumed that control and containment at the source is the number one priority of any response. If, in the responder's best judgment, this type of response is infeasible then the priorities laid out in Chapter 4 take precedence over containment and control.

The strategies discussed in this GRP have been designed for use with jet fuel (kerosene) and may not be suitable for other petroleum or hazardous substance products. The Northwest Area Contingency Plan will address releases of hazardous substances in the future.

On Scene

After determining which strategies will be used, assignments are made. Each responder, contractor, and/or cooperative can be provided with an individual strategy sheet and map containing the information necessary for implementation. This "tear-out" section can then be taken directly to the field by the responder.

Standardized Response Language

In order to avoid confusion in response terminology, this GRP uses standard Unified Command terminology and strategy names.

Response Equipment

A table outlining equipment availability and response times may be developed for this GRP. In the interim, strategies will be deployed in the order equipment arrives on scene and as directed/selected by the on-scene coordinator.

Relationship to other GRPs

This GRP connects directly with the Central Puget Sound GRP, which also should be consulted if the spill or any response actions will involve Commencement Bay.

McChord Pipeline
Geographic Response Plan

Record of Changes

Date	Change Number	Summary of Changes	Initials of person making change
December 30, 1999	First draft		N/A

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McChord Pipeline

GEOGRAPHIC RESPONSE PLAN

1. Introduction: Scope of this Project

Geographic Response Plans are intended to help the first responders to a spill avoid the initial confusion that generally accompanies any spill. This document serves as the federal and state on-scene-coordinators "orders" during a spill in the area covered by this GRP (see Chapter 3 for area covered). As such, it has been approved by the U.S. Coast Guard, Environmental Protection Agency and the Washington State Department of Ecology Spill Program. Changes to this document are expected as more testing is conducted through drills, site visits, and actual use in spill situations.

GRPs have been developed for the marine waters of Washington, the Snake and Columbia Rivers, and the marine waters of Oregon. They generally have been prepared through the efforts and cooperation of the Washington Department of Ecology, Washington Department of Fish and Wildlife, Oregon Department of Environmental Quality, Idaho State Emergency Response Commission, the U.S. Coast Guard, the Environmental Protection Agency, tribes, response contractors and local emergency responders. The McChord Pipeline GRP represents the first plan developed for a pipeline. U.S. Oil owns the pipeline and also played a pivotal role in the development of the GRP.

GRPs are developed through workshops involving federal, state, and local oil spill emergency response experts, response contractors, and representatives from tribes, industry, ports, environmental organizations, and pilots. Workshop participants identified resources which require protection, developed operational strategies, and pinpointed logistical support.

Following the workshops, the data gathered was processed and reproduced in the form of maps and matrices which appear in Chapter 4. The maps for this GRP were generated using Arc/Info and Arcview while the matrices were created using Excel for Windows. The balance of each GRP was produced using Word for Windows.

The first step in the development of a GRP is to identify, with the assistance of the Washington State Natural Resource Protection Team, resources needing protection; response resources (boom, boat ramps, vessels, etc.) needed, site access and staging, tribal and local response community contacts, and local conditions (e.g. physical features, hydrology, currents and tides, winds and climate) that may affect response strategies.

Secondly, response strategies are developed based on the sensitive resources noted, hydrology, and climatic considerations. Individual response strategies identify the amount and type of equipment necessary for implementation. The response strategies are then applied to likely spill scenarios for oil movement, taking into account factors such as feasibility, wind, and precipitation.

To finalize each GRP, draft strategy maps and matrices are sent out for review and consideration of strategy viability. Field verification was conducted, and changes proposed by the participants were included in a first draft which was offered for final review to all interested parties and the participants of the field verification.

Finally, the general text of the GRP was compiled along with the site description and reference maps.

2. Site Description

This plan covers the extent of the McChord Pipeline, which runs from the U.S. Oil refinery in the Port of Tacoma to the McChord Air Force Base. The GRP is divided into 4 subregions: Clear Creek – Swan Creek, Waller Road, Parkland Ditch, and Clover Creek – 116th Street Wetlands.

2.1. Physical Features

The first segment of the McChord Pipeline runs through the Port of Tacoma, which is all commercial/industrial development. This segment also runs through the west-end of Fife, which is also primarily commercial property. After the pipeline crosses the Puyallup river, the remainder of the route passes through residential areas. The segment along Waller Road from the Puyallup River to 80th Street East is low density residential, which has been developed within the drainage basins of three streams; Swan Creek, Squally Creek, and Clear Creek. The segment from 80th Street to 116th Street South runs through high density residential property, and drainage along the route is primarily through storm-drain systems that eventually flow to streams in the area. A small segment along 116th Street South runs through a large wetland that receives drainage from 116th Street. The last segment runs along the northern boarder to the McChord Airforce Base, which is adjacent to a mix of residential and commercial property and a portion of Interstate 5. This end of the pipeline crosses Clover Creek.

2.2. Hydrology

As indicated above, the McChord Pipeline crosses several water-bodies. Within the Port of Tacoma, the pipeline runs adjacent to the Erdahl Ditch, which drains that area into the end of Blair Waterway in Commencement Bay. The level of this ditch is often lower than the waterway so ditch water is pumped into the waterway. Flow through the ditch is typically slow, and during dry periods there is little or no flow.

There is little potential for direct impacts to the Puyallup River. The pipeline crosses under the river about a mile upstream from Interstate 5. Indirect impacts could occur from Swan, Squally, and Clear Creeks, which drain into the river just downstream from the pipeline crossing. Swan Creek flows parallel to the pipeline for most of the creek's length along Waller Road. However, up to about 72nd Street East, most of the drainage from the pipeline route flows into the Squally Creek basin. South of 72nd Street, drainage from the pipeline route goes directly to upper Swan Creek, or indirectly through the Roosevelt Ditch. Squally Creek flows into Clear Creek, and Clear Creek combines with Swan Creek just before flowing into the Puyallup River. Drainage from the pipeline route near the intersection of Waller Road and Pioneer Way goes to Clear Creek and Swan Creek.

Specific information on most storm-drains throughout the pipeline route is not included here. Pierce County maintains that information. The Parkland Ditch is a significant drainage for street runoff in the Parkland area, and the pipeline crosses it at "A" Street South. This ditch flows to the west from the pipeline and then north through residential property, eventually to Wapato Lake.

Drainage from the pipeline route along 116th Street South flows into a large wetland. Soil in this area consists primarily of coarse gravel and rock, and groundwater is shallow. Drainage that flows into the wetland quickly moves into the groundwater. Drainage to the south of 116th Street eventually goes into Clover Creek, which flows to the west into the south end of Lake Steilacoom. The north end of the lake drains into Puget Sound through Chambers Creek.

2.3. Currents and Tides

Tidal influence on the Puyallup River extends upstream beyond the pipeline crossing. The most significant factor related to tides is the impact on the Cog-le-hi-te wetland on the east shore of the Puyallup River just south of the Lincoln Street bridge. Water flow in and out of the wetland is dependent on tides.

2.4. Winds

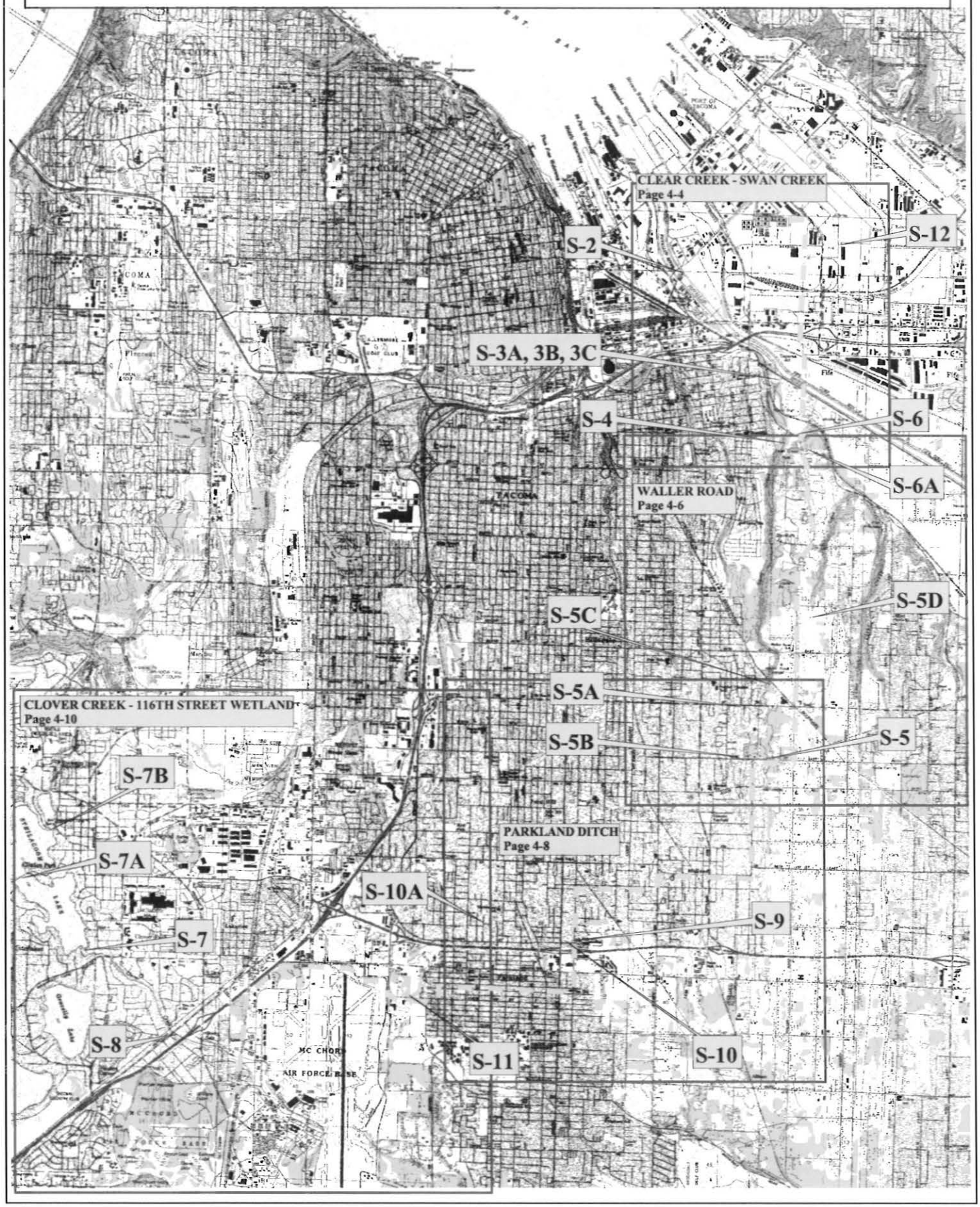
The winds in this area are a result of diverse topography including the Olympic and Cascade Mountains. Additional information may be available from the National Weather Service.

2.5. Climate

Tacoma and the lower reaches of the Puyallup River are influenced by south Puget Sound's maritime climate with cool summers and mild winters.

MCCHORD PIPELINE KEY MAP

Pipeline



4.2. Maps & Matrices

CLEAR CREEK AND SWAN CREEK PROPOSED BOOMING AND COLLECTION STRATEGIES

Strategy	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
S-1	Stormdrains	Exclusion, prevent oil from entering stormdrain systems.	N/A	Use sand bags to prevent oil from entering stormdrains in path of oil spill.	Public streets	Public streets	Downstream resources
S-2	Cog-le-hi-te wetland	Exclusion, prevent oil from entering wetland	200'	Anchor boom to either side of the entrance to the wetland. Better to deploy from a small boat, vegetation will make deployment from land difficult.	Small parking lot on south side of wetland	Enter road to wetland from Lincoln Avenue, two gates at entrance may be locked; boat	Wetland habitat
S-3A	Clear Creek upstream of River Road crossing	Containment, prevent oil from entering the Puyallup River.	50'	Anchor boom to either side of Clear Creek just upstream of the culvert under River Road	Road along the west side of the creek	Enter road along creek from River Road, gate at entrance is locked	Downstream resources
S-3B	Clear Creek upstream of River Road crossing	Exclusion, prevent oil from backing up into the enhanced wetlands.	25'	Anchor boom to either side of the entrance to the enhanced wetlands area	Road along the west side of the creek	Enter road along creek from River Road, gate at entrance is locked	Wetland habitat
S-3C	Clear Creek upstream of River Road crossing	Diversion/Collection, during high flow conditions, divert oil into the enhanced wetlands area for collection.	50'	Anchor boom diagonally across Clear Creek to direct oil movement into the enhanced wetlands area for recovery using vacuum trucks	Road along the west side of the creek	Enter road along creek from River Road, gate at entrance is locked	Downstream resources
S-4	Swan Creek holding pond	Containment/Collection, prevent oil from moving downstream past the pond.	50' - 100'	Deploy boom across pond so oil collects in the northwest corner for recovery using vacuum trucks. Boom across lower end of pond to catch oil that gets by the first boom. Place a sheet of plywood over the front of the pond overflow.	Road along the northeast side of the pond	Enter road to pond from Pioneer Way, between creek and Waller Road, gate at entrance is locked	Downstream resources
S-6	Storm retention pond north of Waller Road and Pioneer Way intersection	Observation/Containment/Collection, prevent oil from moving downstream past the pond	25'	Observe pond to determine if oil is present in stormwater runoff. Deploy boom across pond to collect oil for recovery using vacuum trucks.	Parking lot for building at site	Enter parking lot at intersection of Waller Road and Pioneer Way	Downstream resources
S-6A	Storm retention pond on 40th St E	Containment/Collection, prevent oil from moving downstream past the pond and into the stormwater collection system.	25'	Deploy boom across pond to collect oil for recovery using vacuum trucks.	40th St E	Turn east onto 40th St E from Waller Road	Downstream resources
S-12	Erdahl Ditch	Containment, prevent oil from entering the Blair Waterway.	500'	Deploy boom across mouth/culvert at head of Blair Waterway.	Port of Tacoma office	Port of Tacoma road at mouth of ditch	Puget Sound resources

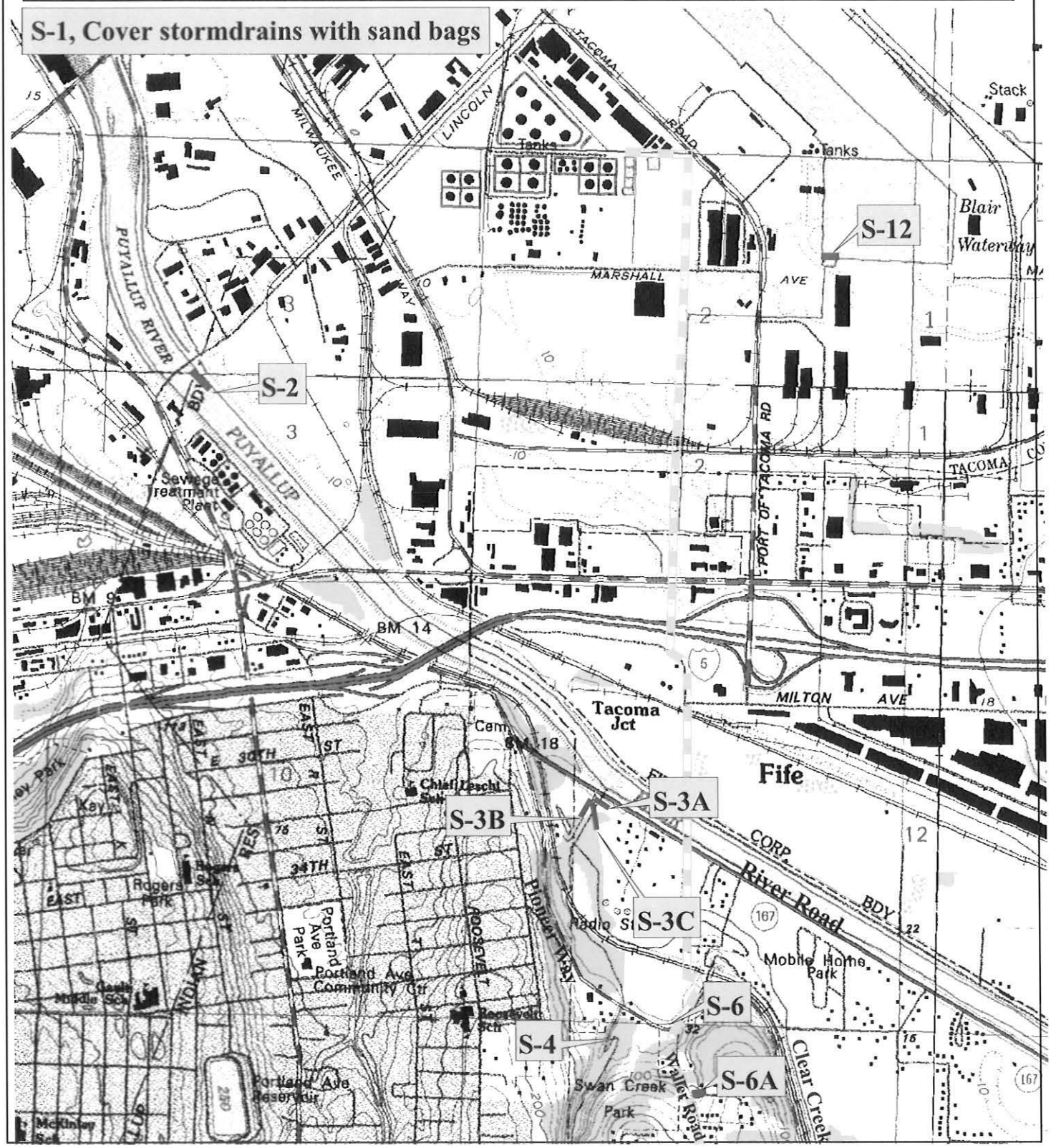
McChord Pipeline Geographic Response Plan

CLEAR CREEK - SWAN CREEK PROPOSED BOOMING AND COLLECTION STRATEGIES

N
W E
S

Boom

Pipeline



WALLER ROAD PROPOSED BOOMING AND COLLECTION STRATEGIES

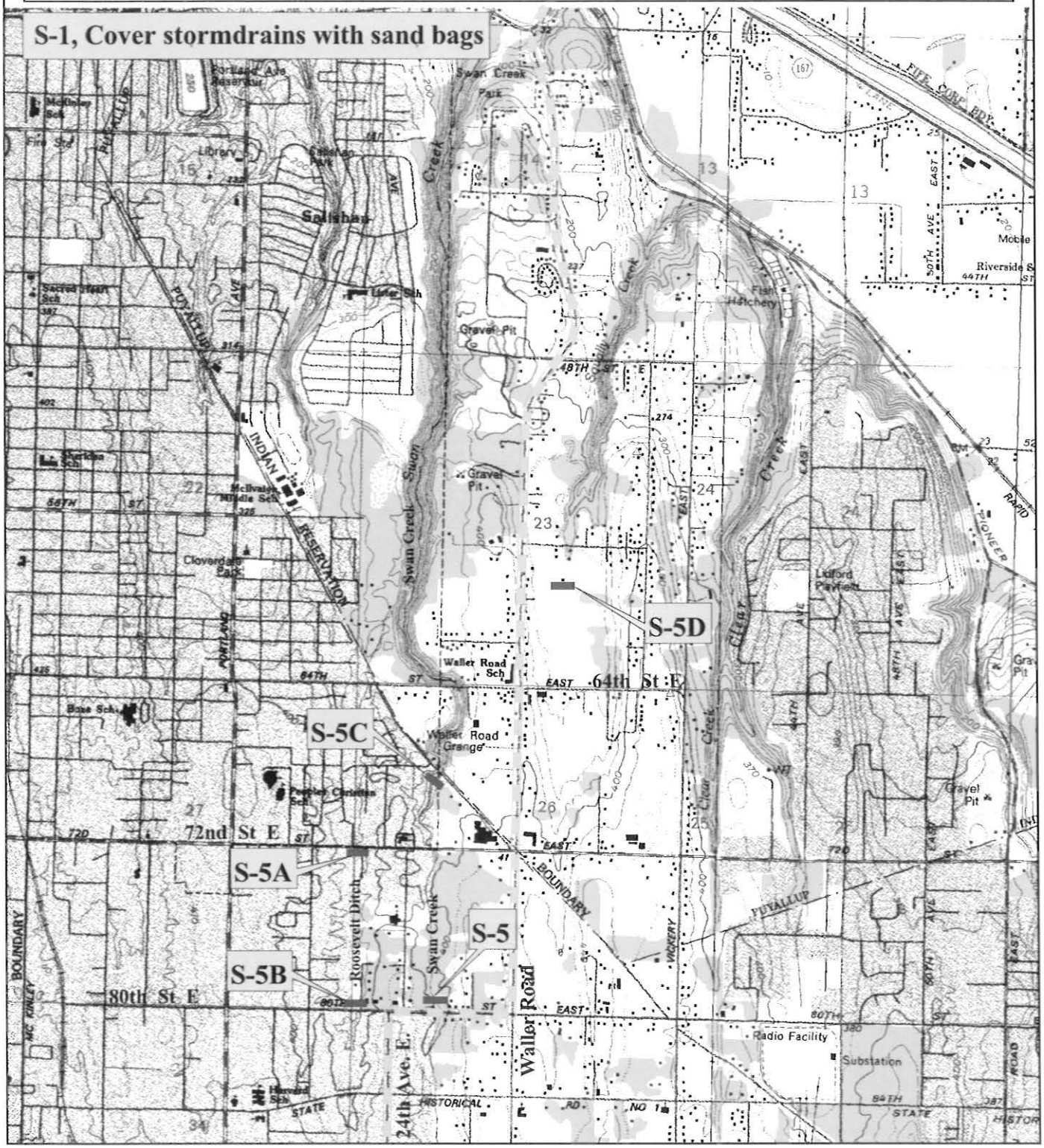
Strategy	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
S-1	Stormdrains	Exclusion, prevent oil from entering stormdrain systems.	N/A	Use sand bags to prevent oil from entering stormdrains in path of oil spill.	Public streets	Public streets	Downstream resources
S-5	Swan Creek downstream of 80th St E crossing	Containment/Collection, prevent oil from moving downstream.	25'	Anchor boom to either side of Swan Creek just downstream of the bridge under 80th St. E. Recover oil with vacuum trucks.	80th St. E., Waller Road Grange	80th St. E.	Downstream resources
S-5A	Roosevelt Ditch south of 72nd St E crossing	Containment/Collection, prevent oil from moving downstream.	25'	Anchor boom to either side of the ditch upstream of the culvert under 72nd St E. Recover oil with vacuum trucks.	Area on south side of 72nd St E at ditch crossing	Ditch on south side of 72nd St E is fenced, with a locked gate	Wetland habitat
S-5B	Roosevelt Ditch north of 80th St E crossing	Containment/Collection, prevent oil from moving downstream.	25'	Anchor boom to either side of the ditch downstream (north) of 80th St E. Recover oil with vacuum trucks.	Area on north side of 80th St E, on east side of ditch	Ditch is fenced on north side of 80th St E, no gate, will need to cut fence	Downstream resources
S-5C	Swan Creek at Tacoma waterline crossing	Containment/Collection, prevent oil from moving downstream.	25'	Deploy boom on upstream side of the waterline crossing road. Stream flows under road through two 5' diameter culverts, can block culverts with sheets of plywood during low stream flow conditions. Recover oil with vacuum trucks.	Open areas SE of creek/waterline intersection	Enter Tacoma waterline road at intersection of Waller Road and 72nd St E, drive NW ~1/4 mile to creek	Downstream resources
S-5D	Storm retention pond at 5805 Waller Road, headwaters of Squally Creek	Containment/Collection, prevent oil from moving downstream.	25'	Contact Pierce County to close flood control gate. Deploy boom across gate until county arrives. Recover oil with vacuum trucks.	Waller Road Grange	Private farm at 5805 Waller Road, locked gate at pond	Downstream resources

McChord Pipeline Geographic Response Plan

WALLER ROAD
PROPOSED BOOMING AND COLLECTION STRATEGIES

N
W E
S

Boom
Pipeline



PARKLAND DITCH PROPOSED BOOMING AND COLLECTION STRATEGIES

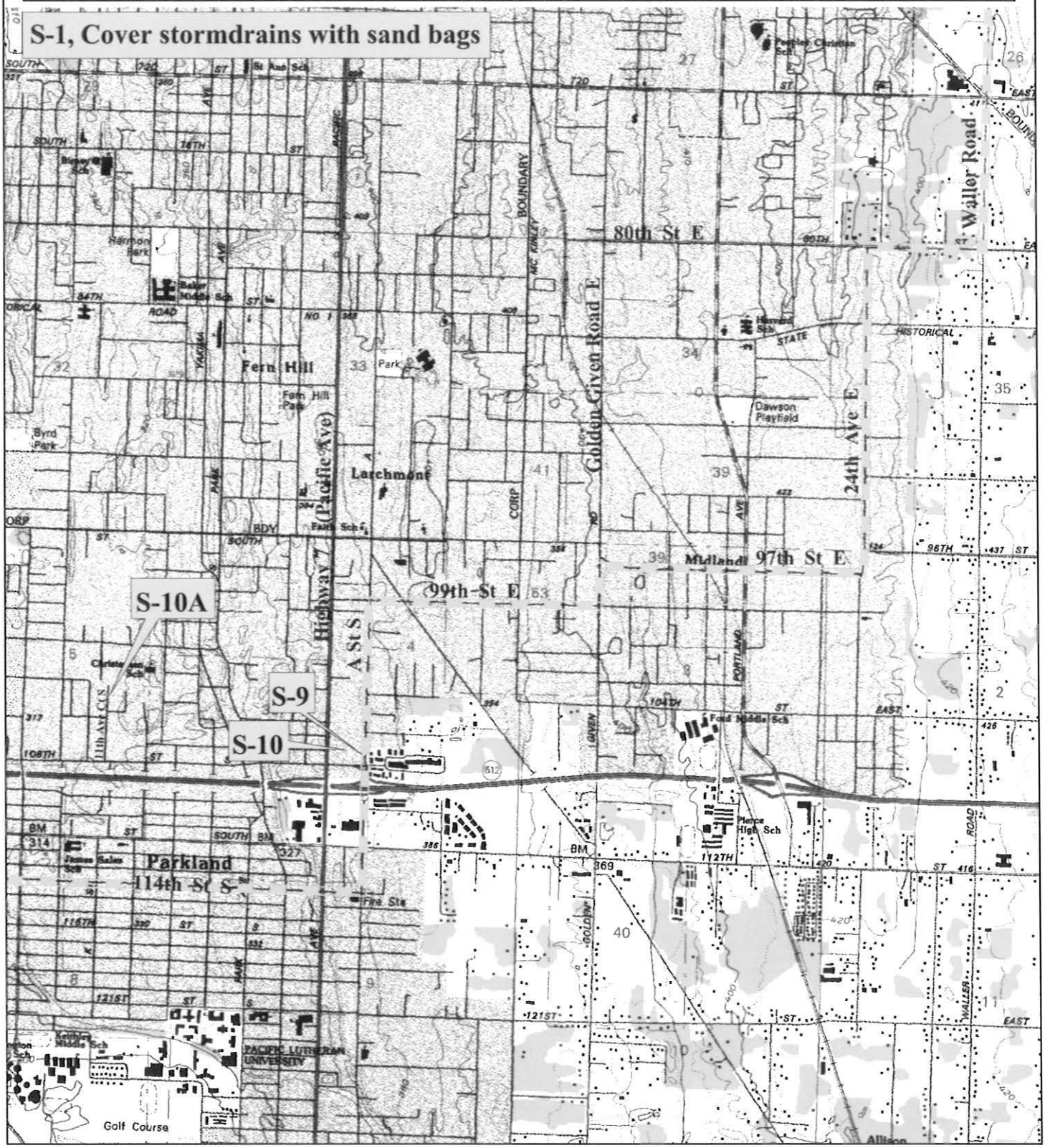
Strategy	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
S-1	Stormdrains	Exclusion, prevent oil from entering stormdrain systems.	N/A	Use sand bags to prevent oil from entering stormdrains in path of oil spill.	Public streets	Public streets	Downstream resources
S-9	Parkland Ditch at "A" St S	Containment/Collection, prevent oil from moving downstream.	15'	Place sausage and containment boom across ditch west of "A" St S. Recover oil with vacuum trucks.	Shoulder of "A" St, or parking lot east of "A" St	Ditch is ~1/2 block north of 108th St S on "A" St S	Downstream resources
S-10	Parkland Ditch manhole in golf cart storage yard	Containment/Collection, prevent oil from moving downstream.	N/A	Place a ballon plug inside 24" culvert in catch basin. Recover oil in catch basin with vacuum trucks.	Golf cart storage yard	Golf cart shop is ~1/2 block north of 108th St S, on east side of Pacific Ave	Downstream resources
S-10A	Parkland Ditch at 11th Ave Ct S	Containment/Collection, prevent oil from moving downstream.	(3) 25'	Anchor boom to either side of the ditch at 2 or 3 spots along 11th Ave Ct S. Recover oil with vacuum trucks.	Shoulder of 11th Ave Ct S, street is a dead end	Ditch runs for three blocks along the east side of 11th Ave, north of 108th St S	Downstream resources

McChord Pipeline Geographic Response Plan

PARKLAND DITCH
PROPOSED BOOMING AND COLLECTION STRATEGIES

Boom

Pipeline



CLOVER CREEK - 116TH STREET WETLANDS PROPOSED BOOMING AND COLLECTION STRATEGIES

Strategy	Location	Response Strategy	Length of Boom	Strategy Implementation	Staging Area	Site Access	Resources Protected
S-1	Stormdrains	Exclusion, prevent oil from entering stormdrain systems.	N/A	Use sand bags to prevent oil from entering stormdrains in path of oil spill.	Public streets	Public streets	Downstream resources
S-7	Mouth of Clover Creek at Lake Steilacoom	Containment/Collection, keep oil out of Lake Steilacoom.	200'	Anchor boom to each side of the mouth of Clover Creek in Lake Steilacoom. Recover oil with a shallow-water skimmer.	Lake Steilacoom boat launch	By shallow-draft boat only, launch at Lake Steilacoom boat ramp	Lake Steilacoom, downstream resources, Chambers Creek Fish Hatchery
S-7A	South of Interlaaken Drive bridge across Lake Steilacoom	Containment/Collection, keep oil in southern portion of Lake Steilacoom	1500'	Anchor boom to each side of the lake south of the Interlaaken Drive bridge. Recover oil with a shallow-water skimmer and/or vacuum trucks.	Lake Steilacoom boat launch, Clinton Park	By boat, launch at Lake Steilacoom boat ramp, possibly from bridge	Northern Lake Steilacoom, downstream resources, Chambers Creek Fish Hatchery
S-7B	Passage at Lake Steilacoom Point to mouth of Chambers Creek	Exclusion, prevent oil from entering Chambers Creek	500'	Anchor boom to each side of lake from Steilacoom Point to opposite shoreline.	Lake Steilacoom boat launch	By boat only, launch at Lake Steilacoom boat ramp	Downstream resources, Chambers Creek Fish Hatchery
S-8	Clover Creek upstream of the Pacific Hwy crossing	Containment/Collection, prevent oil from moving downstream.	100'	Anchor boom to each side of Clover Creek upstream of the Pacific highway crossing. Recover oil with vacuum trucks.	Open area south of creek	Creek crossing is ~1/2 mile SW of Pacific Hwy and Bridgeport Way intersection	Downstream resources
S-11	Wetlands on both sides of 116th St S	Exclusion, prevent oil from entering wetlands.	N/A	Use sand bags to prevent oil from entering stormdrains, one stormdrain is on the south side of the road and two are on the north side.	Shoulder of 116th St. S, or parking lot east of wetland	Public street	Wetland habitat

CLOVER CREEK - 116TH STREET WETLANDS PROPOSED BOOMING AND COLLECTION STRATEGIES

N
W E
S

Boom
Pipeline

APPENDIX M

MATERIAL SAFETY DATA SHEETS

Section M-1

Material Safety Data Sheet Inventory
(In order of sequence)

Note: The MSDS's contained in this appendix are representative of the products handled at USOR. The MSDS for jet fuel applies to the JP-8 jet fuel which is transported by McChord Pipeline Co. MSDS's for the materials noted below are kept in USOR's computerized database. This database can be accessed from computer work stations located throughout the refinery including the Marine Terminal. Product MSDS's and corresponding Specification Sheets are also located on USOR's web site at www.usor.com. The MSDS's located in USOR's computerized database are updated on a periodic basis to reflect changes to both USOR and vendor MSDS's

Product Category

Crude Oil (Bakkan)
Crude Oil (Cold Lake)
Crude Oil (Alaskan North Slope)
Gasolines
Jet Fuels
Diesel Fuels
Marine Distillate Fuel Oils
Residual Fuel Oils
Gas Oils (Intermediates)
Asphalt Cements
Asphalt Emulsions
Speciality Asphalts

PLAINS MIDSTREAM CANADA

Crude Oil, Sweet MSDS

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME:	Crude Oil, Sweet
SYNONYMS:	Sweet Crude
CHEMICAL NAME:	Petroleum
CHEMICAL FAMILY:	Petroleum Hydrocarbon
PRODUCT USE:	Refinery feedstock
SUPPLIER:	Plains Midstream Canada Suite 1400, 607 – 8th Avenue S.W. Calgary, AB, T2P 0A7
Emergency Telephone:	1-866-875-2554 Canutec (613) 996-6666 or *666 Cellular

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
DANGER!!

EXTREMELY FLAMMABLE- MAY EVOLVE TOXIC AND FLAMMABLE HYDROGEN SULPHIDE GAS - EYE, SKIN AND MUCOUS MEMBRANE IRRITANT - EFFECTS CENTRAL NERVOUS SYSTEM - HARMFUL OR FATAL IF SWALLOWED - ASPIRATION HAZARD.

High fire hazard. Keep away from heat, spark, open flame, and other ignition sources.

HYDROGEN SULPHIDE (toxic gas) may be released. High concentration may cause immediate unconsciousness - death may result unless victim is promptly and successfully resuscitated.

Avoid prolonged breathing of vapors or mists. Inhalation may cause irritation, anesthetic effects (dizziness, nausea, headache, intoxication), and respiratory system effects. Contains benzene, which can cause blood disease, including leukemia. Benzene and Toluene is readily absorbed through intact skin.

POTENTIAL HEALTH EFFECTS

ROUTE(S) OF ENTRY
Eyes: Yes Skin: Yes Inhalation: Yes Ingestion: Yes

EYES
MODERATE TO SEVERE IRRITANT. Liquids and vapors may cause irritation to the eyes, conjunctiva, and mucous membranes, causing redness and tearing. Splashing of liquid into the eyes will cause smarting and pain.

SKIN
SLIGHT TO MODERATE IRRITANT. Contact may cause irritation to the skin and mucous membranes upon prolonged and/or repeated skin contact. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are exposed. Prolonged or repeated contact to petroleum oil with skin may cause defatting of the skin leading to redness, itching, inflammation, cracking, dermatitis (rash), and possible secondary infection. High-pressure skin injections are serious medical emergencies. The appearance of injury may be delayed for a few hours, but may cause tissue to become swollen, discolored and extremely painful.

INGESTION
The major health threat of ingestion occurs from the danger of aspiration (breathing) of liquid drops into the lungs, particularly from vomiting. Aspiration may result in chemical pneumonia (fluids in the lungs), severe lung damage, respiratory failure and even death. Ingestion may cause gastrointestinal disturbances, such as irritation, nausea, vomiting and diarrhea, and central nervous system effects. Acute symptoms of ingestion are most common, including excitation, restlessness, euphoria, nausea, headache, dizziness, drowsiness, blurred vision, reduced coordination, and fatigue. In more severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur.

INHALATION
Vapors may cause nose and throat irritation, anesthetic effects and central nervous system (CNS) depression. Inhalation may result in nausea, dizziness, drowsiness, headaches, and other symptoms similar to those listed under "Ingestion". Certain ingredients may produce systemic effects to the blood, liver, kidneys, central nervous system and cardiovascular system. Inhalation of high concentrations can cause rapid CNS depression, cardiac arrhythmia, unconsciousness, coma, and possibly death resulting from respiratory failure.

WARNING: Irritating and toxic hydrogen sulphide gas may be released. At high concentrations (500 - 1000 ppm), hydrogen sulphide acts as a systemic poison, causing unconsciousness and death. In lower concentrations (50 - 500 ppm), hydrogen sulphide acts as a respiratory irritant, and may cause fluid in the lungs or bronchial pneumonia. The rotten egg odor of hydrogen sulphide is not a reliable indicator for warning of exposure, since olfactory fatigue (loss of smell) readily occurs, especially at concentrations above 50 ppm.

WARNING: The burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.

CHRONIC EFFECTS/CARCINOGENICITY
Contains carcinogens according to IARC, NTP, ACGIH and OSHA. Contains benzene; a regulated human carcinogen. Benzene is recognized as having the potential to cause anemia and other blood diseases, including leukemia, after repeated and prolonged exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
Irritation from skin exposure may aggravate existing open wounds, skin disorders, and dermatitis (rash) conditions. Chronic respiratory disease, liver or kidney dysfunction, or pre-existing central nervous system disorders may be aggravated by exposure.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient Name	%	CAS #
Crude Oil	100	8002-05-9
Benzene	0.1 to1.5	71-43-2
Toluene	0.1 to 5	108-88-3
Ethylbenzene	0.1 to 5	100-41-4
Xylene, Mixed isomers	0.1 to 5	1330-20-7
Hydrogen Sulphide	0.1 to 5	7783-06-4

Crude oil is a mixture of naturally occurring paraffins; napthenes; aromatic hydrocarbons and small amounts of sulphur and nitrogen compounds. The composition and properties will vary significantly according to the source of the crude. Crude oil with sulphur content greater than 0.5 weight percent is considered sour. This product is a commingled stream from multiple petroleum facilities and is a complex mixture consistent with the definition within WHMIS regulation CPR section 2. The listed components are provided as guidance based on the available knowledge of the commingled stream.

4. FIRST AID MEASURES

EYES
In case of contact with eyes, immediately flush with clean, low-pressure water for at least 15 min. Hold eyelids open to ensure adequate flushing. Seek medical attention.

SKIN
Remove contaminated clothing. Wash contaminated areas thoroughly with soap and water or waterless hand cleanser. Obtain medical attention if irritation or redness develops. High-pressure injections are serious medical emergencies - seek immediate medical attention.

INGESTION
DO NOT INDUCE VOMITING BECAUSE OF DANGER OF BREATHING LIQUID INTO LUNGS. Seek immediate medical attention. Rinse mouth with water. Administer 1 to 2 glasses of water or milk to drink. Never administer liquids to an unconscious person. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspiration. Seek medical attention. Monitor for breathing difficulty.

INHALATION
Remove person to fresh air. If person is not breathing, ensure an open airway and administer CPR. If necessary, provide additional air or oxygen once breathing is restored if trained to do so. Seek medical attention immediately.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FIRE AND EXPLOSION HAZARDS
EXTREMELY FLAMMABLE. This is a commingled petroleum stream from various locations and producers the actual flammable characteristics are difficult to predict but this product should be considered as an extremely flammable liquid. Vapors may be ignited rapidly when exposed to heat, spark, open flame or other source of ignition. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard. Liquids will float on water. Liquid may accumulate static charge.

EXTINGUISHING MEDIA
SMALL FIRES: Any extinguisher suitable for Class B fires - dry chemical, CO_2, water spray, fire foam, or Halon.

LARGE FIRES: Water spray, fog or fire foam. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.

FIRE FIGHTING INSTRUCTIONS
Small fires in the incipient (beginning) stage may typically be extinguished using handheld portable fire extinguishers and other fire fighting equipment.

Fire fighting activities that may result in potential exposure to high heat, smoke or toxic byproducts of combustion should require approved self-contained breathing apparatus (SCBA) with full-facepiece and full protective firefighting clothing.

Isolate area around container if involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. If leak or spill has not ignited, ventilate area and determine if water spray would assist in dispersing gas or vapor to protect personnel attempting to stop leak. Water may be useful in flushing spills away from ignition sources; however, do NOT flush petroleum products down public sewers or other drainage systems.

For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied fire fighting foam. Refer to NAERG Guide 128.

6. ACCIDENTAL RELEASE MEASURES

ACTIVATE YOUR FACILITY'S SITE SPECIFIC EMERGENCY RESPONSE PLAN if available.

Evacuate nonessential personnel and remove or secure all ignition sources for 300m (1000ft). Consider wind direction; stay upwind and uphill, if possible. Evaluate the direction of product travel, diking, sewers, etc. to confirm spill areas. Hydrogen sulphide may be evolved during a release, ensure response personnel are adequately protected - see Section 8 for personal protection.

Carefully contain and stop the source of the spill, if safe to do so. Do not flush down sewer or drainage systems. Protect bodies of water by diking, if possible. The use of fire fighting foam may be useful in certain situations to reduce vapors.

SMALL SPILLS: Take up with sand or other oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container for reclamation or disposal. Cleanup crews must be properly trained and must utilize proper protective equipment.

LARGE SPILLS: Dike far ahead of the spill. The proper use of water spray may effectively disperse product vapors or the liquid itself, preventing contact with ignition sources or areas /equipment that require protection. Consideration should be given to environmental clean-up and waste material generation when determining if the use

of large volumes of water is appropriate for non-fire emergency situations. Cleanup crews must be properly trained and must utilize proper protective equipment. Notify regulatory authorities. Refer to NAERG Guide 128.

7. HANDLING AND STORAGE

HANDLING PRECAUTIONS

Handle as a flammable liquid. Keep away from heat, sparks, and open flame. No smoking or open flame in storage, use of handling areas. Keep containers closed and clearly labeled. Ground all drums and transfer vessels when handling. Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition. Use only with adequate ventilation. Avoid breathing vapors. Wash thoroughly after handling. Electrical equipment should be approved for classified area. DO NOT siphon by mouth.

STORAGE PRECAUTIONS

Store in a well ventilated area. This storage area should comply with NFPA 30. Avoid storage near incompatible materials.

WORK/HYGIENIC PRACTICES

Emergency eye wash capability should be available in the vicinity of any potential splash exposure. Use good personal hygiene practices. Avoid repeated and/or prolonged skin exposure. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not eat, drink or smoke in areas of use or storage. Do not use gasoline or solvents (naphtha, kerosene, etc) for washing this product from exposed skin areas. Waterless hand cleansers are effective.

Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves.

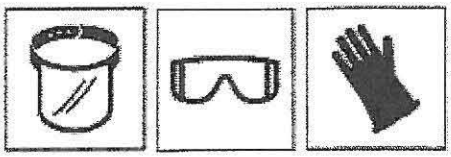
8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMITS

Ingredient Name	CAS #	Exposure Limit
Benzene	71-43-2	ACGIH TWA= 0.5 ppm (skin) ACGIH TLV-STEL= 2.5 ppm
Toluene	108-88-3	ACGIH TWA= 50 ppm (skin)
Ethylbenzene	100-41-4	ACGIH TWA= 100 ppm ACGIH STEL = 125 ppm
Xylene, mixed isomers	1330-20-7	ACGIH TWA= 100 ppm
Hydrogen Sulphide	7783-06-4	ACGIH TWA= 1 ppm ACGIH STEL= 5 ppm

ENGINEERING CONTROLS

Use adequate ventilation to keep vapor and mist concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces. Use explosion-proof equipment and lighting in classified/controlled areas.



EYE/FACE PROTECTION

Faceshield or chemical splash goggles are recommended where there is a possibility of splashing or spraying.

SKIN PROTECTION

Avoid repeated or prolonged skin contact. Gloves constructed of nitrile, neoprene, or PVC are recommended. Chemical protective clothing such as of poly-coated or equivalent recommended based on degree of exposure.

Note: The resistance of specific materials may vary from product to product as well as degree of exposure. Consult manufacturer specifications for further information.

RESPIRATORY PROTECTION
For hydrogen sulphide hazard (above H_2S permissible exposure limits): SCBA or a supplied air respirator must be used.

If exposure assessment indicates NO reduced oxygen content or hydrogen sulphide hazard (below H_2S exposure limit): NIOSH/MSHA - approved air-purifying respirator with organic vapor cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited and should not be considered especially when odor cannot be used to determine respirator effectiveness. Use a positive pressure, air-supplied respirator if there is a potential for uncontrolled release, exposure levels are not known, or any other circumstance where an air-purifying respirator may not provide adequate protection.

Refer to CSA Standard "Selection, Use and Care of Respirators" (Z94.4-02) and NIOSH Respirator Decision Logic for additional guidance on respiratory protection.

9. PHYSICAL AND CHEMICAL PROPERTIES

BASIC PHYSICAL PROPERTIES

APPEARANCE:	Generally a thick, dark yellow to brown or greenish black liquid.
ODOR:	A hydrocarbon odor. If present Hydrogen Sulphide (H_2S) has a rotten egg odor, but should not be used as warning property of toxic levels because H_2S can overwhelm and deaden the sense of smell. Therefore the smell of H_2S should not be used as an indicator of a hazardous condition - a calibrated H_2S meter can be used to determine the concentration of H_2S.
PHYSICAL STATE:	Liquid
FLASH POINT:	-20°C to 93.3 °C (Flash point are in the flammable range but are highly dependent on crude oil source. This is a commingled stream of crude oils from various producers.
BOILING POINT:	-20 to 1100 °C
VAPOR PRESSURE:	varies
VAPOR DENSITY (Air = 1):	3 to 5
SPECIFIC GRAVITY	0.70 to 0.95 (water - 1.0):
SOLUBILITY (H_2O):	Insoluble to slightly soluble
PARTITION COEFFICIENT:	2 to 6

10. STABILITY AND REACTIVITY

STABILITY: Stable

CONDITIONS TO AVOID (STABILITY)
Material is stable under normal conditions. Avoid high temperatures, open flames, sparks, welding, smoking and other ignitions sources.

INCOMPATIBLE MATERIALS
Keep away from strong oxidizers, ignition sources and heat.

HAZARDOUS DECOMPOSITION PRODUCTS
Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke). Contact with nitric and sulfuric acids will form nitrocresols that can decompose violently.

HAZARDOUS POLYMERIZATION: Will Not Occur.

11. TOXICOLOGICAL INFORMATION

ACUTE EFFECTS
Potential short-term effects of exposure are: irritation eyes, skin, nose, mucous membrane, and respiratory system.

Repeated or prolonged skin exposure to petroleum oils may cause various skin disorders, such as contact or eczematous dermatitis, folliculitis, oil acne, lipid granuloma, melanosis, and rarely precancerous warts on the

forearms, backs of hands or scrotum. Contains Benzene and Toluene, which are readily absorbed through intact skin and have Skin Notations by ACGIH.

ACUTE ORAL EFFECTS

Ingredient	CAS No	LD50	LC50
Crude Oil	8002-05-9	Rat oral >5000mg/kg Dermal Toxicity > 2000 mg/kg	Not available
Toluene	108-88-3	Rat oral 5000 mg/kg Rat oral 3500 mg/kg	400 ppm/4hr
Ethyl benzene	100-41-4	Rabbit skin 17,800 mg/kg	Not available
Xylene, mixed isomers	1330-20-7	Mouse oral 1590 mg/kg	Rat inhalation: 6,350 ppm/4 hr
Benzene	71-43-2	Rat oral 3306 mg/kg	Rat ihl 10,000 ppm/7 hr Rat inhalation 380 mg/ cu m > 960 min
Hydrogen Sulphide	7783-06-4	Not applicable	

CHRONIC EFFECTS/CARCINOGENICITY

Product contains benzene. Human health studies indicate that prolonged and/or repeated overexposure to benzene may cause damage to the blood forming system (particularly bone marrow), and serious blood disorders, such as leukemia. Benzene is listed by the National Toxicology Program (NTP), International Agency For Research on Cancer (IARC), and ACGIH as carcinogenic in humans.

Product contains polynuclear aromatic hydrocarbons (PAHs). Animal studies have shown that prolonged and/or repeated exposure to certain PAHs may cause cancer of the skin, lung and other organs.

Other potential chronic effects of exposure are: irritation eyes, skin, nose, mucous membrane, respiratory system; dizziness, anorexia, vomiting, abdominal pain; dermatitis, excitement, confusion, euphoria, drowsiness, incoordination, staggered gait; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis; lassitude (weakness, exhaustion), headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; paresthesia; liver, kidney damage, bone marrow depression; [potential occupational carcinogen], narcosis, coma.

Similar products produced skin cancer and skin tumors in laboratory animals following repeated applications. Crude oils may contain some PAH's, which have been shown to be carcinogenic after repeated or prolonged skin contact in laboratory animals. Studies by API and others have shown that some crude oils produced skin cancer or skin tumors in laboratory animals following repeated applications without washing or removal between applications. The significance of this finding to human exposure has not been determined. Other studies with active skin carcinogens have shown that washing the animal's skin with soap and water between applications reduced tumor formation. Potential risks to humans can be minimized by observing good work practices and personal hygiene procedures.

MUTAGENICITY (GENETIC EFFECTS)

Some crude oils and crude oil fractions have been positive in mutagenic assay tests.

REPRODUCTIVE EFFECTS

Contains ingredients identified as embryotoxic with the potential of fetal loss.

12. ECOLOGICAL INFORMATION

Keep out of sewage, drainage and waterways. Report spills and releases, as applicable, under federal, provincial and local regulations.

13. DISPOSAL CONSIDERATIONS

Maximize product recovery for reuse or recycling. Contaminated materials may be classified as a hazardous waste due to the low flash point and benzene. Empty containers can have residues that are subject to hazardous waste disposal requirements. Dispose of waste in accordance with all applicable federal, provincial, and/or local regulations.

14. TRANSPORT INFORMATION

PROPER SHIPPING NAME:	Petroleum Crude Oil
TDG CLASS:	3
TDG IDENTIFICATION NUMBER:	UN1267
TDG SHIPPING LABEL:	Flammable Liquid
SHIPPING DESCRIPTION:	Petroleum Crude Oil, 3, UN1267, PGII

15. REGULATORY INFORMATION

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

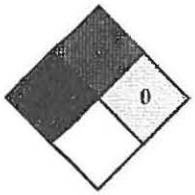
Workplace Hazardous Materials Information Systems (WHMIS): This product has been classified in accordance with the hazard criteria of the CPR (Controlled Product Regulations), and the MSDS contains all of the information required by the CPR.
Class B, Division 2 (Flammable Liquid)
D1A - Very Toxic Material Causing Immediate and Serious Toxic Effects
Class D, Division 2, Subdivision A (Very toxic by other means)
Class D, Division 2, Subdivision B(Toxic by other means)

This substance is listed on the Canadian Domestic Substances List (DSL).

16. OTHER INFORMATION

Issued by: Health and Safety Department, Plains Midstream Canada Telephone 403-261-7466
Technical Development by Deerfoot Consulting Inc. Telephone 403-720-3700

NFPA HAZARD RATING -	HEALTH:	3	High
	FIRE:	3	High
	REACTIVITY:	0	Negligible



Acronyms:

ANSI	=	American National Standards Institute
ACGIH	=	American Conference of Governmental Industrial Hygienists
API	=	American Petroleum Institute
CSA	=	Canadian Standards Association
HMIS	=	Hazardous Materials Information System
MSHA	=	Mine Safety and Health Administration
NAERG	=	North American Emergency Response Guide
NFPA	=	National Fire Protection Association
NIOSH	=	National Institute of Occupational Safety and Health
NTP	=	National Toxicology Program
OSHA	=	U.S. Occupational Safety & Health Administration
PAH	=	Poly-Aromatic Hydrocarbons
ppm	=	parts per million (volume/volume)
SCBA	=	Self-Contained Breathing Apparatus
STEL	=	Short Term Exposure Limit
TLV	=	Threshold Limit Value
TWA	=	Time Weighted Average
WHMIS	=	Workplace Hazardous Materials Information System - Canadian

Disclaimer of Expressed and Implied Warranties

The information presented in the Material Safety Data Sheet is based on data believed to be accurate as of the date this Material Safety Data Sheet was prepared. However, neither Plains Midstream Canada Deerfoot Consulting Inc nor any of their subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use.

U.S. Oil
MSDS #388

MATERIAL SAFETY DATA SHEET

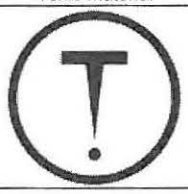
Canadian Natural
Supplier: Canadian Natural Resources Ltd.
2500, 855 2nd Street S.W.
Calgary, Alberta, Canada T2P 4J8

24 Hour Emergency Telephone Number:
1-888-878-3700

1. PRODUCT IDENTIFICATION

CRUDE/CONDENSATE BLEND

SYNONYMS:
1. Heavy Blend
2. Crude
3. Petroleum Hydrocarbon
4. Blend

WHIMIS		
Class B, Division 2: Flammable Liquid	**Class D, Division 1, Subdivision A:** Very Toxic Effects	**Class D, Division 2, Subdivision B:** Toxic Material
		

TDG	
FLAMMABLE LIQUID	**SHIPPING NAME:** Petroleum Products N.O.S. **P.I.N.:** 1267

DESCRIPTION: A naturally occurring mixture of paraffins, naphthenes, aromatic hydrocarbons and small amounts of sulphur and nitrogen compounds mixed with condensate The composition and properties will vary significantly according to the percent of condensate mixed with the crude. Condensate contains carbon numbers in the range C2 to C20.

2. HAZARDOUS INGREDIENTS

The following components are defined in accordance with sub-paragraph 13(a)(I) to (iv) or paragraph 14(a) of the Hazardous Product Act:

NAME	%	CAS#
Hydrocarbons (aromatic and paraffinic hydrocarbons)	100	8002-05-9
Toluene	100 ppm	108-88-3
Benzene	10 ppm	71-43-2
Xylene	100 ppm	1330-20-7
Condensate	20%	64741-47-5

3. TYPICAL PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	Viscous Liquid
SPECIFIC GRAVITY:	0.7 to 1.1 (Typically 0.93 with a 20% condy blend)
DENSITY:	0.7 g/cc
APPEARANCE/ODOUR:	Aromatic or petroleum odour. Usually black or green liquid.
ODOUR THRESHOLD:	Not applicable
VAPOUR PRESSURE:	59 – 72 kPa @ 20°C (Moderate)
VAPOUR DENSITY:	Not available
EVAPORATION RATE:	Variable
BOILING POINT/RANGE:	30°C – 300°C
FREEZING/MELTING POINT:	Not available
VISCOSITY:	< centistokes @ 0°C
pH:	Not available
SOLUBILITY IN WATER:	Insoluble
COEFF. OF WATER / OIL DIST.:	Not available
PERCENT VOLATILE:	100%

4. HEALTH HAZARD INFORMATION

Nature of Hazard

INHALATION:
May cause headache, dizziness, loss of appetite, weakness, loss of coordination, and unconsciousness. Crude oil vapours are irritating to the upper respiratory tract. High vapour concentrations are irritating to the eyes, nose, throat and lungs and may cause headaches and dizziness, may be anaesthetic and may cause other central nervous system effects.

EYE CONTACT:
Blend vapours are moderately irritating to the eyes.

SKIN CONTACT:
Prolonged skin contact may result in defatting of the skin resulting in dry cracked skin and dermatitis.

INGESTION:
Minimal toxicity. Small amounts of this liquid ingested into the lungs from swallowing or vomiting may cause severe health effects (e.g. bronchopneumonia or pulmonary edema).

CHRONIC EFFECTS:
Benzene is a known human carcinogen and may cause damage to the bone marrow/blood making system and may result in leukemia. Prolonged exposure may also cause damage to the peripheral nervous system (e.g. Fingers, feet, arms, etc.).

TOXICITY DATA:
Product is not listed as a carcinogen by any agent, but individual components have been associated with carcinogenicity, mutagenicity, reproductive and teratogenicity properties in animal experiments.

OCCUPATIONAL EXPOSURE LIMITS (OELs) RECOMMENDED:

ACGIH:	For oil mists	5mg/m³
	For Hydrogen sulphide	10 ppm (14mg/m³)
	For Benzene	a TLV of 10 ppm (30 mg/m3), and it is described as a substance of suspect carcinogenic potential in man.
Manufacturer:	For total hydrocarbons	100 ppm

5. FIRST AID MEASURES

INHALATION:
Remove individual to fresh air immediately. If breathing stops, administer artificial resuscitation. Keep victim warm and at rest. Seek medical attention.

...OVER

MATERIAL SAFETY DATA SHEET

Canadian Natural
Supplier: Canadian Natural Resources Ltd.
2500, 855 2nd Street S.W.
Calgary, Alberta, Canada T2P 4J8

24 Hour Emergency Telephone Number:
1-888-878-3700

EYE CONTACT:
Immediately flush eyes with plenty of water for at least 15 minutes and seek medical attention.

SKIN CONTACT:
Remove contaminated clothing as soon as possible. Wash exposed skin thoroughly with soap and water. If irritation develops, consult a physician.

INGESTION:
If this material is swallowed DO NOT induce vomiting. If vomiting begins, lower victim's head in an effort to prevent vomitus from entering lungs. Seek medical attention. Never give anything by mouth to an unconscious person.

EMERGENCY PROCEDURES:
Because Hydrogen sulphide inhalation can be fatal, rescuers must wear positive pressure full face piece, self-contained or supplied air NIOSH approved respirators before attempting the rescue.

6. PREVENTATIVE AND CORRECTIVE MEASURES

SPECIAL PROTECTION INFORMATION:
Use in a well ventilated area. Adequate ventilation should be provide in the workplace to maintain the hydrocarbon vapours below the applicable occupational exposure level. Under normal conditions respiratory protection is not required. Respiratory protection may be required in poorly ventilated areas. Air supplied respirators or positive pressure self contained breathing apparatus is required when atmospheric concentrations of hydrocarbon vapours are likely to exceed the 10x the occupational exposure limit. Non-vented chemical goggles should be worn to prevent eye injury. Chemical resistant gloves, apron and/or clothing should be worn if direct contact with liquid is likely to occur. Neoprene or nitrile materials have been shown to provide effective protection against crude oil liquid.

ENGINEERING CONTROL:
The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fumehood. Provide mechanical ventilation in confined spaces. Use explosion proof equipment.

SPILL CONTROL AND DISPOSAL:
Evacuate personnel. Eliminate all ignition sources. Contain spill and absorb with inert absorbent. Large spills should be removed with explosion proof vacuum equipment. Large pools may be covered with foam to prevent vapour evolution.

HANDLING AND STORAGE:
Store in a cool, well ventilated place away from incompatible materials. So not pressurize, cut, heat or weld empty containers. Do Not reuse empty containers without commercial cleaning or reconditioning. Do not handle or store near and open flame, source of heat or source of ignition. Material will accumulate static charges which may cause a spark. Static charge build up could become an ignition source. Use proper grounding and bonding procedures. Store and load at normal temperature and at atmospheric pressure.

WASTE DISPOSAL METHOD:
Contaminated material should be placed in disposable containers and disposed in compliance with federal, provincial and local regulations.

7. FIRE AND EXPLOSION HAZARD

FLASH-POINT (Test Method):	<-18°C
AUTO-IGNITION:	Not available
FLAMMABLE LIMITS (% Volume):	Not available

GENERAL HAZARDS:
Static discharge: Highly flammable, vapours are heavier than air and may collect in low-lying areas. Vapours may travel considerable distances to ignition sources and cause a flash fire. All storage containers and pumping equipment must be grounded.

FIRE FIGHTING:
Fire extinguishing substances: foam, water spray and dry chemical. Water may be ineffective, but water should be used to keep fire-exposed containers cool. If a leak or spill has not ignited, use water spray to disperse vapours. Use full protective equipment and self-contained breathing apparatus (SCBA) for fires in enclosed areas.

EXPLOSION/SENSITIVITY DATA:
Stable under normal conditions of temperatures and pressure..

8. REACTIVITY DATA

STABILITY:
This material is stable. Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:
Heat, Ignition sources, Oxidizing material

9. PREPARATION

Prepared by:	CNRL HEALTH AND SAFETY
Date:	January 1, 2011
Expires:	March 31, 2013

CAUTION

The information contained herein is provided free of charge and is offered to the user in good faith as accurate. Certain of the information has been obtained from sources outside of the supplier and while the supplier believes such information to be correct, it cannot guarantee its accuracy or completeness.

The information contained herein relates only to the product or material set forth in Section 1 and may not be applicable or complete if such product material is used in combination with any other product or material or in any process. The information may not be applicable or complete for all individuals or if the products or material is used for a purpose or under conditions which are abnormal or not reasonable foreseeable. For greater certainty, uses other that those described in Section 1 must be reviewed with the supplier.

It is the user's obligation to consider, investigate and verify the information, to use the product safety and to comply with all applicable laws and regulations. The supplier makes no warranties, guarantees or conditions express or implied in respect of the information contained herein.

ConocoPhillips Alaska, Inc

MATERIAL SAFETY DATA SHEET
Crude Oil, Alaska North Slope

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Crude Oil, Alaska North Slope

Synonyms: ANS Crude
Alaska North Slope (ANS) Crude Oil
Crude Oil (ANS Type)
Earth Oil
Petroleum Oil
Rock Oil

Chemical Family: Petroleum Hydrocarbon

Responsible Party: CPA
A Subsidiary of ConocoPhillips
P.O. Box 100360
700 G. Street
Anchorage, AK 99510-0360

For Additional MSDSs 800-762-0942

Technical Information: 907-659-7812

EMERGENCY OVERVIEW

24 Hour Emergency Telephone Numbers:
Spill, Leak, Fire or Accident
Call CHEMTREC
North America: (800)424-9300
Others: (703)527-3887 (collect)

California Poison Control System: (800) 356-3129

Health Hazards/Precautionary Measures: May contain or liberate poisonous hydrogen sulfide gas. Harmful if inhaled. Skin cancer hazard. Causes eye and skin irritation. Overexposure to a component may cause damage to the peripheral nervous system. Aspiration hazard if swallowed. Can enter lungs and cause damage. Use ventilation adequate to keep exposure below recommended limits, if any. Avoid breathing vapor or mist. Avoid contact with eyes, skin and clothing. Do not taste or swallow. Wash thoroughly after handling.

Physical Hazards/Precautionary Measures: Flammable liquid and vapor. Keep away from heat, sparks, flames, static electricity or other sources of ignition.

Appearance: Thicl light yellow to dark black
Physical form: Oily liquid
Odor: Petroleum hydrocarbon

NFPA Hazard Class:

Health: 2 (Moderate)
Flammability: 3 (High)
Reactivity: 0 (Least)

HMIS Hazard Class

Health: 2* (Moderate)
Flammability: 3 (High)
Physical Hazard: 0 (Least)

*Indicates possible chronic health effects.

2. COMPOSITION/INFORMATION ON INGREDIENTS

HAZARDOUS COMPONENTS	% VOLUME	EXPOSURE GUIDELINE Limits	Agency	Type
Crude Oil (Petroleum) CAS# 8002-05-9	100	(See: Oil Mist, If Generated)		
Hydrogen Sulfide CAS# 7783-06-4	<5 ppm dissolved in liquid	10 ppm	ACGIH	TWA
		15 ppm	ACGIH	STEL
		20 ppm	OSHA	CEIL
		100 ppm	NIOSH	IDLH
		50 ppm	OSHA	10 min. peak; once per 8-hr shift
n-Hexane CAS# 110-54-3	1-2.1	50 ppm	ACGIH	TWA-SKIN
		500 ppm	OSHA	TWA
		1100 ppm	NIOSH	IDLH
Toluene CAS# 108-88-3	1-1.5	50 ppm	ACGIH	TWA-SKIN
		200 ppm	OSHA	TWA
		300 ppm	OSHA	CEIL
		500 ppm	NIOSH	IDLH
		500 ppm	OSHA.	10 min. peak; once per 8-hr shift
Xylenes CAS# 1330-20-7	0.3-1.4	100 ppm	ACGIH	TWA
		150 ppm	ACGIH	STEL
		100 ppm	OSHA	TWA
		900 ppm	NIOSH	IDLH
Benzene CAS# 71-43-2	<0.5	0.5 ppm	ACGIH	TWA-SKIN
		2.5 ppm	ACGIH	STEL-SKIN
		1 ppm	OSHA	TWA
		5 ppm	OSHA	STEL
		500 ppm	NIOSH	IDLH
Ethyl Benzene CAS# 100-41-4	<0.5	100 ppm	ACGIH	TWA
		125 ppm	ACGIH	STEL
		100 ppm	OSHA	TWA
		800 ppm	NIOSH	IDLH

REFERENCE	EXPOSURE GUIDELINE Limits	Agency	Type
Oil Mist, If Generated CAS# None	5 mg/m3	ACGIH	TWA
	10 mg/m3	ACGIH	STEL
	5 mg/m3	OSHA	TWA
	2500 mg/m3	NIOSH	IDLH
	5 mg/m3	NOHSC	TWA

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

1%=10,000 PPM.

Contains benzene. If exposure concentrations exceed the 0.5 ppm action level, OSHA requirements for personal protective equipment, exposure monitoring, and training may apply (29CFR1910.1028). Also see Section 4.

Total sulfur approximately 1.0 to 1.8 wt%
Vanadium approximately 26 to 100 ppm

All components are listed on the TSCA inventory.

3. HAZARDS IDENTIFICATION

Potential Health Effects:

Eye: Contact may cause mild eye irritation including stinging, watering, and redness.

Skin: Contact may cause mild skin irritation including redness, and a burning sensation. Prolonged or repeated contact can worsen irritation by causing drying and cracking of the skin leading to dermatitis (inflammation). No harmful effects from skin absorption are expected.

Inhalation (Breathing): Low to moderate degree of toxicity by inhalation.

May contain or liberate hydrogen sulfide - see Other Comments section below.

Ingestion (Swallowing): Low degree of toxicity by ingestion. ASPIRATION HAZARD - This material can enter lungs during swallowing or vomiting and cause lung inflammation and damage.

Signs and Symptoms: Effects of overexposure may include irritation of the nose and throat, irritation of the digestive tract, nausea, vomiting, diarrhea and transient excitation followed by signs of nervous system depression (e.g., headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue).

Cancer: Skin cancer hazard (see Sections 11 and 15).

Target Organs: Inadequate data available for this material.

Developmental: Potential hazard to the fetus (see Section 11).

Other Comments: This material may contain or liberate hydrogen sulfide, a poisonous gas with the smell of rotten eggs. The smell disappears rapidly because of olfactory fatigue so odor may not be a reliable indicator of exposure. Effects of overexposure include irritation of the eyes, nose, throat and respiratory tract, blurred vision, photophobia (sensitivity to light), and pulmonary edema (fluid accumulation in the lungs). Severe exposures can result in nausea, vomiting, muscle weakness or cramps, headache, disorientation and other signs of nervous system depression, irregular heartbeats, convulsions, respiratory failure, and death.

This material may contain polynuclear aromatic hydrocarbons (PNAs) which have been known to produce a phototoxic reaction when contaminated skin is exposed to sunlight. The effect is similar in appearance to an exaggerated sunburn, and is temporary in duration if exposure is discontinued. Continued exposure to sunlight can result in more serious skin problems including pigmentation (discoloration), skin eruptions (pimples), and possible skin cancers.

Pre-Existing Medical Conditions: Conditions aggravated by exposure may include skin disorders and respiratory (asthma-like) disorders.

4. FIRST AID MEASURES

Eye: If irritation or redness develops, move victim away from exposure and into fresh air. Flush eyes with clean water. If symptoms persist, seek medical attention.

Skin: Wipe material from skin and remove contaminated shoes and clothing. Cleanse affected area(s) thoroughly by washing with mild soap and water and, if necessary, a waterless skin cleanser. If irritation or redness develops and persists, seek medical attention.

Inhalation (Breathing): If respiratory symptoms or other symptoms of exposure develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek immediate medical attention. If victim is not breathing, clear airway and immediately begin artificial respiration. If breathing difficulties develop, oxygen should be administered by qualified personnel. Seek immediate medical attention.

Ingestion (Swallowing): Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. If victim is drowsy or unconscious and vomiting, place on the left side with the head down. If possible, do not leave victim unattended and observe closely for adequacy of breathing. Seek medical attention.

Note To Physicians: Acute aspirations of large amounts of oil-laden material may produce a serious aspiration pneumonia. Patients who aspirate these oils should be followed for the development of long-term sequelae. Inhalation exposure to oil mists below current workplace exposure limits is unlikely to cause pulmonary abnormalities.

Federal regulations (29 CFR 1910.1028) specify medical surveillance programs for certain exposures to benzene above the action level or PEL (specified in Section (i)(1)(i) of the Standard). In addition, employees exposed in an emergency situation shall, as described in Section (i)(4)(i), provide a urine sample at the end of the shift for measurement of urine phenol.

5. FIRE FIGHTING MEASURES

Flammable Properties:

Flash Point: <24°F/<-4°C Estimated
OSHA Flammability Class: Flammable liquid
LEL%: 1.1 (ASTM E-681) / UEL%: 7.3
Autoignition Temperature: 720°F/382 (ASTM 659-78)

Unusual Fire & Explosion Hazards: This material is flammable and can be ignited by heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, or mechanical/electrical equipment, and electronic devices such as cell phones, computers, calculators, and pagers which have not been certified as intrinsically safe). Vapors may travel considerable distances to a source of ignition where they can ignite, flash back, or explode. May create vapor/air explosion hazard indoors, in confined spaces, outdoors, or in sewers. Vapors are heavier than air and can accumulate in low areas. If container is not properly cooled, it can rupture in the heat of a fire.

Extinguishing Media: Dry chemical, carbon dioxide, or foam is recommended. Water spray is recommended to cool or protect exposed materials or structures. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Water may be ineffective for extinguishment, unless used under favorable conditions by experienced fire fighters.

Fire Fighting Instructions: Long-duration fires involving crude or residual fuel oil stored in tanks may result in a boilover. The contents of the tank may be expelled beyond the containment dikes or ditches. All personnel should be kept back a safe distance when a boilover is anticipated (reference NFPA 11 or API 2021).

For fires beyond the incipient stage, emergency responders in the immediate hazard area should wear bunker gear. When the potential chemical hazard is unknown, in enclosed or confined spaces, or when explicitly required by DOT, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate immediate hazard area, keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Move undamaged containers from immediate hazard area if it can be done with minimal risk.

Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done with minimal risk. Avoid spreading burning liquid with water used for cooling purposes.

6. ACCIDENTAL RELEASE MEASURES

Flammable. Keep all sources of ignition and hot metal surfaces away from spill/release. The use of

explosion-proof equipment is recommended.

Stay upwind and away from spill/release. Notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Wear appropriate protective equipment including respiratory protection as conditions warrant (see Section 8).

Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Dike far ahead of spill for later recovery or disposal. Use foam on spills to minimize vapors (see Section 5). Spilled material may be absorbed into an appropriate absorbent material.

Notify fire authorities and appropriate federal, state, and local agencies. Immediate cleanup of any spill is recommended. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, notify the National Response Center (phone number 800-424-8802).

7. HANDLING AND STORAGE

Handling: Open container slowly to relieve any pressure. Bond and ground all equipment when transferring from one vessel to another. Can accumulate static charge by flow or agitation. Can be ignited by static discharge. The use of explosion-proof equipment is recommended and may be required (see appropriate fire codes). Refer to NFPA-704 and/or API RP 2003 for specific bonding/grounding requirements.

Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. The use of appropriate respiratory protection is advised when concentrations exceed any established exposure limits (see Sections 2 and 8).

Do not wear contaminated clothing or shoes. Keep contaminated clothing away from sources of ignition such as sparks or open flames. Use good personal hygiene practices.

Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, ANSI Z49.1, and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

Storage: Keep container(s) tightly closed. Use and store this material in cool, dry, well-ventilated areas away from heat, direct sunlight, hot metal surfaces, and all sources of ignition. Post area "No Smoking or Open Flame." Store only in approved containers. Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage. Outdoor or detached storage is preferred. Indoor storage should meet OSHA standards and appropriate fire codes.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits (see Section 2), additional engineering controls may be required. Where explosive mixtures may be present, electrical systems safe for such locations must be used (see appropriate electrical codes).

Personal Protective Equipment (PPE):

Respiratory: A NIOSH certified air purifying respirator with an organic vapor cartridge may be used under conditions where airborne concentrations are expected to exceed exposure limits (see Section 2).

Protection provided by air purifying respirators is limited (see manufacturer's respirator selection guide). Use a NIOSH approved self-contained breathing apparatus (SCBA) or equivalent operated in a pressure demand or other positive pressure mode if there is potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection.

A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use.

When benzene values equal or exceed applicable exposure limits the use of respiratory protection should comply with the requirements in OSHA 29 CFR 1910.1028-Benzene.

Skin: The use of gloves impervious to the specific material handled is advised to prevent skin contact, possible irritation, absorption, and skin damage (see glove manufacturer literature for information on permeability).

Use nitrile, PVA, or Viton® gloves to prevent skin contact. Use Viton® gloves for extended use (more than 4 hours) or immersion. Depending on conditions of use, apron and/or arm covers may be necessary.

Eye/Face: Approved eye protection to safeguard against potential eye contact, irritation, or injury is recommended. Depending on conditions of use, a face shield over safety glasses or goggles may be necessary.

Other Protective Equipment: Eye wash and quick-drench shower facilities should be available in the work area. Thoroughly clean shoes and wash contaminated clothing before reuse. It is recommended that impervious clothing be worn when skin contact is possible.

Full body clothing may include CPF2, CPF3, or CPF4 or Saranex® coated Tyvek®, depending on the task.

Suggestions for the use of specific protective materials are based on readily available published data. Users should check with specific manufacturers to confirm the performance of their products.

9. PHYSICAL AND CHEMICAL PROPERTIES

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm).
Appearance: Thicl light yellow to dark black
Physical State: Oily liquid
Odor: Petroleum hydrocarbon
pH: Not applicable
Vapor Pressure (mm Hg): 2.6-6.2 lbs. (Reid psi) @100°F
Vapor Density (air=1): >1
Boiling Point/Range: -54 to 1100°F / -18 to 593°C
Freezing/Melting Point: No Data
Solubility in Water: Negligible
Specific Gravity: 0.8939
Percent Volatile: 1-50
Evaporation Rate (nBuAc=1): <1
Bulk Density: 6.9 lbs/gal
Flash Point: <24°F / <-4°C Estimated
Flammable/Explosive Limits (%): LEL: 1.1 (ASTM E-681) / UEL: 7.3

10. STABILITY AND REACTIVITY

Stability: Stable under normal ambient and anticipated storage and handling conditions of temperature and pressure. Flammable liquid and vapor. Vapor can cause flash fire.

Conditions To Avoid: Avoid all possible sources of ignition (see Sections 5 and 7).

Materials to Avoid (Incompatible Materials): Avoid contact with nitric acid and strong oxidizing agents.

Hazardous Decomposition Products: Combustion can yield carbon, nitrogen and sulfur oxides and other organic compounds.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Crude Oil (Petroleum) (CAS# 8002-05-9)

Carcinogenicity: Chronic application of crude oil to mouse skin resulted in an increased incidence of skin tumors. IARC concluded in its Crude Oil Monograph that there is limited evidence of carcinogenicity in animals, and that crude oil is not classifiable as to its carcinogenicity in humans (Group 3). It has not been listed as a carcinogen by NTP or OSHA.

Developmental: Dermal exposure to crude oil during pregnancy resulted in limited evidence of developmental toxicity in laboratory animals. Decreased fetal weight and increased resorptions were noted at maternally toxic doses. No significant effects on pup growth or other developmental landmarks were observed postnatally.

n-Hexane (CAS# 110-54-3)

Target Organ(s): Excessive exposure to n-hexane can result in peripheral neuropathies. The initial symptoms are symmetrical sensory numbness and paresthesias of distal portions of the extremities. Motor weakness is typically observed in muscles of the toes and fingers but may also involve muscles of the arms, thighs and forearms. The onset of these symptoms may be delayed for several months to a year after the beginning of exposure. The neurotoxic properties of n-hexane are potentiated by exposure to methyl ethyl ketone and methyl isobutyl ketone.

Prolonged exposure to high concentrations of n-hexane (>1,000 ppm) has resulted in decreased sperm count and degenerative changes in the testes of rats but not those of mice.

Toluene (CAS# 108-88-3)

Target Organ(s): Epidemiology studies suggest that chronic occupational overexposure to toluene may damage color vision. Subchronic and chronic inhalation studies with toluene produced kidney and liver damage, hearing loss and central nervous system (brain) damage in laboratory animals. Intentional misuse by deliberate inhalation of high concentrations of toluene has been shown to cause liver, kidney, and central nervous system damage, including hearing loss and visual disturbances.

Developmental: Exposure to toluene during pregnancy has demonstrated limited evidence of developmental toxicity in laboratory animals. The effects seen include decreased fetal body weight and increased skeletal variations in both inhalation and oral studies.

Xylenes (CAS# 1330-20-7)

Target Organ(s): A six week inhalation study with xylene produced hearing loss in rats.

Developmental: Both mixed xylenes and the individual isomers produced limited evidence of developmental toxicity in laboratory animals. Inhalation and oral administration of xylene resulted in decreased fetal weight, increased incidences of delayed ossification, skeletal variations and resorptions.

Benzene (CAS# 71-43-2)

Carcinogenicity: Benzene is an animal carcinogen and is known to produce acute myelogenous leukemia (a form of cancer) in humans. Benzene has been identified as a human carcinogen by NTP, IARC and OSHA.

Ethyl Benzene (CAS# 100-41-4)

Carcinogenicity: Rats and mice exposed to 0, 75, 250, or 750 ppm ethyl benzene in a two year inhalation study demonstrated limited evidence of kidney, liver, and lung cancer. Ethyl benzene has been listed as a possible human carcinogen by IARC. Ethyl benzene has not been listed as a carcinogen by NTP, or OSHA.

12. ECOLOGICAL INFORMATION

Environmental Fate: No Data Found

Ecotoxicity:
Aquatic toxicity:
90 ppm/24hr/juvenile American shad/TLm/fresh water
91 ppm/24hr/juvenile American shad/Tm/salt water
3 ppm/time period not specified/fresh water fish/toxic/fresh water
200 ppm/24 hr/coral sporites/20-90% 8.1 normal response/salt water

Biochemical Oxygen Demand (BOD): 8%, 5 days

13. DISPOSAL CONSIDERATIONS

Maximize recovery for reuse or recycling.

This material, if discarded as produced, would be a RCRA "characteristic" hazardous waste due to the characteristic(s) of ignitability (D001), benzene (D018). If the spilled or released material impacts soil, water, or other media, characteristic testing of the contaminated materials may be required prior to their disposal. Further, this material, once it becomes a waste, is subject to the land disposal restrictions in 40 CFR 268.40 and may require treatment prior to disposal to meet specific standards. Consult state and local regulations to determine whether they are more stringent than the federal requirements.

Container contents should be completely used and containers should be emptied prior to discard. Container rinsate could be considered a RCRA hazardous waste and must be disposed of with care and in full compliance with federal, state and local regulations. Larger empty containers, such as drums, should be returned to the distributor or to a drum reconditioner. To assure proper disposal of smaller empty containers, consult with state and local regulations and disposal authorities.

14. TRANSPORT INFORMATION

DOT Shipping Description:	Petroleum Crude Oil,3,UN1267,II
Non-Bulk Package Marking:	Petroleum Crude Oil, UN 1267
Non-Bulk Package Label:	Flammable
Bulk Package Placard/Marking:	Flammable/1267
Hazardous Substance/RQ	None
Packaging References	49 CFR 173.150, 202, 242
Emergency Response Guide:	128

15. REGULATORY INFORMATION

EPA SARA 311/312 (Title III Hazard Categories):

Acute Health:	Yes
Chronic Health:	Yes
Fire Hazard:	Yes
Pressure Hazard:	No
Reactive Hazard:	No

SARA 313 and 40 CFR 372:
This material contains the following chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372:

Component	CAS Number	Weight %
Hydrogen Sulfide	7783-06-4	<5 ppm dissolved in liquid
n-Hexane	110-54-3	0.8-1.6
Toluene	108-88-3	1-1.5
Xylenes	1330-20-7	0.3-1.4
Benzene	71-43-2	<0.5
Ethyl Benzene	100-41-4	<0.5

California Proposition 65:

Warning: This material contains the following chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm, and are subject to the requirements of California Proposition 65 (CA Health & Safety Code Section 25249.5):

Component	Effect
Benzene	Cancer, Developmental and Reproductive Toxicant
Various Polycyclic Aromatic Hydrocarbons	Skin Cancer
Toluene	Developmental Toxicant

Carcinogen Identification:

This material has not been identified as a carcinogen by NTP, IARC, or OSHA. See Section 11 for carcinogenicity information of individual components, if any.

EPA (CERCLA) Reportable Quantity:

--None--

Canada - Domestic Substances List: Listed

WHMIS Class:

B2-Flammable Liquid
D1A-Materials causing immediate and serious toxic effects - Very Toxic Material
D2B-Materials causing other toxic effects - Toxic Material

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

16. OTHER INFORMATION

Issue Date: 02/28/03
Previous Issue Date: 04/26/01
Revised Sections: New Format
MSDS Number: 791002
Status: Final

Disclaimer of Expressed and Implied Warranties:

The information presented in this Material Safety Data Sheet is based on data believed to be accurate as of the date this Material Safety Data Sheet was prepared. **HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE.** No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.

MATERIAL SAFETY DATA SHEET

MSDS: 934

Gasoline

MSDS DATE: 12/02/2008

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **Gasoline**

SYNONYMS: Regular, Premium, Mid-Grade, Subgrade, Gasohol

PRODUCT CODE:	E10 Premium Gasohol	(13111131)	E10 Shell Premium Gasohol	(11121031)
	E10 Regular Gasohol	(13211131)	Unleaded Regular	(11211020)
	E10 Midgrade Gasohol	(13311131)	E10 Shell Regular Gasohol	(11221031)
	E10 Shell Midgrade Gasohol	(11321031)	Subgrade 84	(11221031)
	Mid Unleaded	(11311020)	Subgrade 86	(11321031)
	Premium 92 Unleaded	(11111020)	Subgrade 89	(11121031)

This Material Safety Data Sheet applies to the listed materials and synonym descriptions for Hazard Communication purposes only. Technical specifications vary greatly depending on the material and are not reflected in this document. Consult specification sheets for technical information. This material contains ingredients that are considered to be hazardous as defined by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

IMPORTANT: Read this MSDS before handling or disposing of this material. Pass this information on to employees, customers and material users.

MANUFACTURER: U. S. OIL & REFINING CO.
ADDRESS: 3001 Marshall Ave., Tacoma, WA 98421

EMERGENCY PHONE: (253)-383-1651
FAX PHONE: (253)-272-2495
CHEMTREC PHONE: (800) 424-9300
NATIONAL RESPONSE: (800) 424-8802

CHEMICAL NAME: Gasoline
CHEMICAL FAMILY: Motor Fuels

PRODUCT USE: Motor fuel for internal combustion engines.

PREPARED BY: U.S. OIL & REFINING CO.

MSDS # 934

CAS #: 8006-61-9

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

Gasoline is a complex blend of hydrocarbons derived from various refinery streams. It contains primarily paraffinic, olefinic, napthenic, and aromatic hydrocarbons. Gasoline may also contain up to 4.9% benzene and various gasoline additives.

Name	CAS NUMBER	CONCENTRATION %
GASOLINE	8006-61-9	100%
TOLUENE	108-88-3	0-10%
BENZENE	71-43-2	0-4.9%
CYCLOHEXANE	110-82-7	0-1%
ETHYLBENZENE	100-41-4	0-3%
NAPHTHALENE	91-20-3	0-1%
N-HEXANE	110-54-3	0-3%
ETHANOL	64-17-5	0-10%
1,2,4- TRIMETHYLBENZENE	95-63-6	0-8%
XYLENES	1330-20-7	0-9.9%
CUMENE	98-82-8	0-0.5%

SECTION 3: HAZARDS IDENTIFICATION

Danger! This product is a highly flammable liquid and vapor. This product contains petroleum hydrocarbons that can pose health risks. Avoid liquid, mist and vapor contact. Harmful or fatal if swallowed. Aspiration hazard, can enter lungs and cause damage. May cause irritation or be harmful if inhaled or absorbed through the skin. Avoid prolonged or repeated skin contact.

PHYSICAL STATE: Clear, Bright Liquid / Vapor,

ROUTES OF ENTRY: Dermal Contact. Eye Contact. Inhalation. Ingestion.

POTENTIAL HEALTH EFFECTS

EYES: May cause eye irritation, stinging, watering, redness and swelling.

SKIN: Prolonged or repeated skin contact tends to remove skin oils, possibly leading to irritation and dermatitis. It is likely that some components can enter the body by passing through the skin and may cause similar effects as inhaling or ingesting this product.

INGESTION: May irritate the mouth, throat and stomach. This material may cause nausea, vomiting, dizziness, drowsiness, diarrhea, and other central nervous system effects. DO NOT INDUCE VOMITING. Aspiration into the lungs can cause chemical pneumonitis.

INHALATION: May cause headache, nausea, blurred vision, and other central nervous system effects. Extremely high concentrations may cause dizziness, loss of consciousness and death.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: This product may contain up to 4.9 weight percent benzene. Benzene can cause anemia, and other blood diseases, including leukemia. Benzene has been classified as a human carcinogen by the EPA, OSHA and IARC. Benzene is also considered a mutagen.

The presence of n-hexane in this product represents a distinct hazard of producing peripheral polyneuropathy, a progressive disorder of the nervous system, which with sufficiently high exposure has the potential of becoming irreversible. Adverse effects include numbness, tingling, pain and loss of muscle control.

Disorders associated with skin, liver, respiratory system, and central nervous system may be aggravated by significant exposure to this product.

OVER-EXPOSURE SIGNS/SYMPTOMS: Nasal and respiratory tract irritation, central nervous system effects including excitation, euphoria, dizziness, drowsiness, delirium, nausea, headache, seizures, or sudden death could occur as a result of long term and/or high concentration exposure to vapors. May also cause anemia and irregular heart rhythm.

See Toxicological Information (Section 11)

SECTION 4: FIRST AID MEASURES

EYES: Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Seek medical advice if pain or redness continues.

SKIN: In case of contact, immediately flush skin with large amounts of water for at least 15 minutes. Remove contaminated clothing promptly and launder before reuse. Contaminated leather goods should be discarded. Wash exposed area thoroughly with soap and water. If irritation persists or symptoms described in the MSDS develop, seek medical attention.

INGESTION: This material may cause nausea, vomiting, diarrhea and restlessness. DO NOT INDUCE VOMITING. Aspiration into the lungs presents a significant chemical pneumonitis hazard. Obtain medical attention promptly. If vomiting occurs spontaneously, keep head below hips to prevent aspiration.

INHALATION: If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

NOTES TO PHYSICIANS OR FIRST AID PROVIDERS: In case of ingestion, gastric lavage with activated charcoal can be used promptly to prevent absorption. Individuals intoxicated by the material should be hospitalized immediately, with acute and continuing attention to neurological and cardiopulmonary function. Positive pressure ventilation may be necessary. Persons on disulfiram (Antabuse®) therapy should be aware that the ethyl alcohol in this product is hazardous to them just as is alcohol from any source. Disulfiram reactions (vomiting, headache and even collapse) may follow ingestion of small amounts of alcohol and have also been described from skin contact. Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in persons exposed to high concentrations of hydrocarbon solvents (e.g., in enclosed spaces or with deliberate abuse). If sympathomimetic drugs are administered, observe for the development of cardiac arrhythmias.

SECTION 5: FIRE-FIGHTING MEASURES

FLAMMABILITY OF THE PRODUCT:	Flammable
FLAMMABLE LIMITS IN AIR, (% BY VOLUME)	LOWER: Approximately 1.3 UPPER: Approximately 8.2
FLASH POINT:	Approximately – 43°C (ASTM D-56)
AUTOIGNITION TEMPERATURE:	Approximately 530 °F
PRODUCTS OF COMBUSTION:	These products are carbon oxides (CO, CO2), water vapor, smoke, fumes, unburned hydrocarbons and other products of incomplete combustion.
FIRE HAZARDS IN THE PRESENCE OF VARIOUS SUBSTANCES:	Extremely flammable! This material releases vapors at or below ambient temperatures. When mixed with air in certain proportions and exposed to an ignition source, these vapors can burn in the open or explode in confined spaces. Vapors are heavier than air, and can travel long distance along the ground before reaching a point of ignition and flashing back.
EXPLOSION HAZARDS IN THE PRESENCE OF VARIOUS SUBSTANCES:	Explosive in the presence of open flames, sparks, heat and static discharge. Vapors may create vapor/air explosion hazard indoors, in confined spaces, outdoors, or in sewers.
FIRE-FIGHTING MEDIA AND INSTRUCTIONS:	Flammable liquid and vapor. Use dry chemical, foam, or carbon dioxide to extinguish the fire. Consult foam manufacturer for appropriate media, application rates and water/foam ratio. Water spray may be used to disperse vapors and/or flush spills away from source of ignition. Water spray can be used to cool tanks and exposures. Vapor suppressing foam may be used to suppress vapors. Vapor may cause flash fire. Vapors are heavier than air and may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flashback. Runoff to sewer may create fire or explosion hazard.
SPECIAL FIRE FIGHTING EQUIPMENT:	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	This material will release flammable vapors which if exposed to a source of ignition can burn or be explosive in confined spaces. Keep away from heat and open flame.
FIRE FIGHTING ADDITIONAL ADVICE:	Keep adjacent containers cool by spraying with water. If possible remove containers from the danger zone. If the fire cannot be extinguished the only course of action is to evacuate immediately. Contain residual material at affected sites to prevent material from entering drains (sewers), ditches, and waterways.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:

Immediately contact emergency personnel. An accidental release will cause an immediate fire or explosion hazard. Eliminate all ignition sources and stop spill/release if it can be done without risk. Isolate hazard area and restrict entry to emergency crew. Stay upwind and away from spill and notify personnel downwind. Keep unauthorized personnel out. Wear appropriate protective equipment including respiratory protection as conditions warrant. (Section 8). Do not enter or stay in area unless monitoring indicates that it is safe to do so.

Do not touch or walk through spilled material. Tanks, vessels or other confined spaces which have contained material should be freed of vapors before entering. The container should be checked to ensure a safe atmosphere before entry. Empty containers may contain toxic, flammable, or explosive residues or vapors. Do not cut, grind, drill, weld or reuse empty containers that contained this material. Do not transfer this material to another container unless the container receiving the material is labeled with proper DOT shipping name, hazard class and other information that describes the material and its hazards.

ENVIRONMENTAL PRECAUTIONS

Contain spill in smallest possible area. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. If facility or operation has an "oil or hazardous substance contingency plan", activate its procedures.

Flammable. Review Fire Fighting Measures Section before proceeding with clean up.

Spilled material may be absorbed by an appropriate absorbent, and then handled in accordance with environmental regulations. Prevent spilled material from entering sewers, storm drains, other unauthorized treatment or drainage systems and natural waterways. Contact fire authorities and appropriate federal, state and local agencies. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, contact the National Response Center at 800-424- 8802. For highway or railway spills, contact Chemtrec at 800-424-9300. Additional reporting may be required to state and local agencies.

METHODS FOR CLEANING UP:

Contain spilled material to ensure runoff does not reach a drainage ditch or waterway. Do not flush away residues with water. For small spills, use absorbent pads or add absorbent (soil may be used in the absence of other suitable materials) and use a nonsparking or explosion-proof means to transfer material to a sealable, appropriate container for disposal. For large spills, dike spilled material or otherwise contain to facilitate removal with appropriate spill response personnel and equipment. Place spilled material in an appropriate container for disposal and dispose in accordance with Federal, State and Local regulations. Notify authorities if any exposure to the general public or the environment occurs or is likely to occur.

SECTION 7: HANDLING AND STORAGE

HANDLING

Highly flammable liquid and vapor. Use only as a motor fuel. Keep containers closed except when ready to use. Open container slowly to relieve any pressure. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment.

Prior to refueling, stop all engines and auxiliary equipment. Turn off all electronic equipment including cellular phones. Do not leave nozzle unattended during filling or refueling a vehicle.

Do not ingest. Do not get in eyes, on skin or on clothing. Use only with adequate ventilation. Avoid breathing vapor or mist. Keep away from heat, sparks and flame. Wash thoroughly after handling. In case of fire, use foam, dry chemical or carbon dioxide as described in the Fire Fighting Measures Section of the MSDS. "Empty" container contains residue (liquid and/or vapor) and may explode in heat of a fire. Do not pressurize, cut, weld, braze, solder, or drill on or near this container. Use good personal hygiene practices. After handling this material, wash hands before eating, drinking, or using toilet facilities. Keep out of reach of children. Failure to use caution may cause serious injury or illness. To prevent ingestion and exposure - Do not siphon by mouth to transfer material between containers. Do not wear contaminated clothing or shoes. Keep contaminated clothing away from sources of ignition such as sparks or open flames.

STORAGE:

Store in a segregated and approved area. Only store this product in approved and properly labeled gasoline containers and keep containers tightly closed and sealed until read to use. Post area "No Smoking or Open Flame". Avoid all possible sources of ignition (spark or flame). Outdoor or detached storage is preferred. Indoor storage should meet OSHA standards and appropriate fire codes. Keep container in a cool, dry, well-ventilated area. Containers should be able to withstand pressures expected from warming or cooling in storage. Drums must be equipped with self closing valves, pressure vacuum bungs, and flame arresters. Protect containers against physical damage. Post area "No smoking or Open Flame". "Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain of have contained this material, refer to OSHA regulations, ANSI Z49.1, and other refereces pertaining to cleaning, repairing, welding, or other contemplated operations.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Ensure that eyewash stations and safety showers are close to the workstation location.

PERSONAL PROTECTION

SKIN: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this material. Flame Retardant (FR) Clothing may be recommended.

RESPIRATORY: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the material and the safe working limits of the selected respirator.

HANDS: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical materials if a risk assessment indicates this is necessary. Suggested protective materials: Nitrile.

Eye: Eye protection (chemical-type goggles and/or face shield) should be worn whenever there is a likelihood of splashing or spraying liquid. Contact lenses should not be worn. Eye wash water should be provided.

Other: Use good personal hygiene practices. In case of skin contact, wash with mild soap and water or a waterless hand cleaner. Immediately remove soiled clothing and wash thoroughly before reuse. Discard oil-soaked leather goods.

SECTION 8: EXPOSURE CONTROLS/ PERSONAL PROTECTION

PROTECTIVE CLOTHING OR EQUIPMENT: GLOVES, HARDHAT, FACE SHIELD, BOOTS, SAFETY GLASSES, RESPIRATOR, FR CLOTHING

PERSONAL PROTECTIVE EQUIPMENT IN CASE OF A LARGE SPILL: Splash goggles. Full suit. Vapor respirator. Boots. Gloves. Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the material. Suggested protective clothing might not be adequate. Consult a specialist before handling this material.

Established Occupational Exposure Limits

Substance	Value	Time/Type	Source
Gasoline	300 PPM	TWA	ACGIH
	500 PPM	STEL	ACGIH
BENZENE	0.5 PPM	TWA – Skin	ACGIH
	2.5 PPM	STEL - Skin	ACGIH
	1 PPM	TWA	OSHA
	5 PPM	STEL	OSHA
	500 PPM	IDLH	NIOSH
CYCLOHEXANE	300 PPM	TWA	OSHA/ACGIH
ETHYLBENZENE	100 PPM	TWA	OSHA/ACGIH
	125 PPM	STEL	ACGIH
	800 PPM	IDLH	NIOSH
TRIMETHYLBENZENES	25 PPM	TWA	ACGIH
NAPHTHALENE	10 ppm	TWA	OSHA/ACGIH
	15 ppm	STEL	OSHA/ACGIH
N-HEXANE	50 PPM	TWA – Skin	ACGIH
	500 PPM	TWA	OSHA
	1,100 PPM	IDLH	NIOSH
ETHANOL	1,000 PPM	TWA	ACGIH
TOLUENE	50 PPM	TWA – Skin	ACGIH
	100 PPM	TWA	NIOSH
	150 PPM	STEL	NIOSH
	200 PPM	TWA	OSHA
	300 PPM	CEIL	OSHA
	500 PPM	IDLH	OSHA
	500 PPM	10 min peak/8 hr shift	OSHA
XYLENES	100 PPM	TWA	OSHA/ACGIH
	150 PPM	STEL	ACGIH
	900 PPM	IDLH	NIOSH

Consult local authorities for acceptable exposure limits.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Liquid.
COLOR	Transparent, clear to amber, or red.
ODOR	Petroleum hydrocarbon, Gasoline odor
BOILING POINT	100-400 °F
SPECIFIC GRAVITY	0.72-0.83 (Water = 1)
VISCOSITY:	Less Than 1 CST
VAPOR PRESSURE	Approximately 7-15 Reid Vapor Pressure (@ 100 °F)
VAPOR DENSITY	Approximately 3.5 (Air = 1)
VOLATILITY	Appreciable
MATERIALS TO AVOID:	Strong oxidizers or strong acids
HAZARDOUS DECOMPOSITION PRODUCTS:	Burning or excessive heating may produce carbon monoxide, smoke, unburned hydrocarbons and other harmful gases.

SECTION 10: STABILITY AND REACTIVITY

STABILITY AND REACTIVITY:	The material is stable. Stable under normal ambient and anticipated conditions of storage and handling. Extremely flammable liquid and vapor. Vapor can cause flash fire.
INCOMPATIBILITY WITH VARIOUS SUBSTANCES:	Avoid strong oxidizing agents (chlorates, nitrates, peroxides, and liquid chlorine), acids, alkalis.
HAZARDOUS DECOMPOSITION PRODUCTS:	These products are carbon oxides (CO, CO_2), nitrogen oxides (NO_x), particulate matter, and VOC's.
HAZARDOUS POLYMERIZATION:	Not expected to occur.
CONDITIONS TO AVOID (STABILITY):	Heat, sparks, open flame, and build up of static electricity. Avoid high temperatures and all sources of ignition. Keep away from strong oxidizing agents.

SECTION 11: TOXICOLOGICAL INFORMATION (Continued)

TOXICITY DATA

CARCINOGENICITY: Benzene has been identified by the EPA and IARC as a human carcinogen. Gasoline mixtures are listed as a possible carcinogen by IARC and NIOSH. Risk of cancer depends on duration and level of exposure.

TARGET ORGANS: Potential gasoline components which have demonstrated developmental and or target organ issues include: n-hexane, toluene, xylenes, benzene, ethyl benzene, trimethylbenzene, cyclohexane, and naphthalene.

SECTION 12: ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION: This product is potentially toxic to aquatic organisms and should be kept out of sewage and drainage systems and all bodies of water. On release to the environment the lighter, product components will readily evaporate, but the remainder may become dispersed in the water column or adsorbed to soil or sediment. Primary components of this product are considered biodegradable in aerobic conditions.

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Due to the varying nature of the material, any generated wastes will require an adequate characterization of physical and chemical properties to ensure proper disposal. Disposal of this material, solutions and any by-products should at all times comply with all applicable federal, state, and local environmental regulations.

Consult your state and local authorities.

SECTION 14: TRANSPORT INFORMATION

Regulatory Information	UN Number	Emergency Response Guidebook	Proper shipping name	Class	Packing Group
DOT Classification	UN1203	Guide 128	Gasoline, UN 1203 Gasohol, NA 1203	3	II
International Maritime Dangerous Goods (IMDG)	UN1203		Gasoline, UN 1203	3	II
International Civil Aviation Org. / International Air Transport Assoc. (ICAO/IATA)	UN1203		Gasoline, UN 1203	3	II

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS:

EPA SARA Sections 302, 304 & 313 and CERCLA :

This material contains the following chemicals subject to the reporting requirements of SARA 302, SARA 304, SARA 313, CERCLA and 40 CFR 372:

Chemical Name	CAS Number	Material Concentration	CERCLA/SARA Section 302 TPQ (lbs.)	CERCLA/SARA Section 304 RQ (lbs.)
CUMENE	98-82-8	<0.5		5,000
BENZENE	71-43-2	<4.6		10
CYCLOHEXANE	110-82-7	<1		1,000
ETHYLBENZENE	100-41-4	<2		1,000
1,2,4 TRIMETHYLBENZENE	95-63-6	<8		
NAPHTHALENE	91-20-3	<1		100
N-HEXANE	110-54-3	<1		5,000
TOLUENE	108-88-3	<10		1,000
XYLENES	1330-20-7	<10		100

Carcinogen Identification:

This mixture may contain chemicals that have been identified as a carcinogen by NTP, IARC, or OSHA.

EPA SARA 311/312 Title III Hazard Categories:

Acute Health Hazard: Yes
Chronic Health Hazard: Yes
Fire Hazard: Yes
Pressure Hazard: No
Reactive Hazard: No

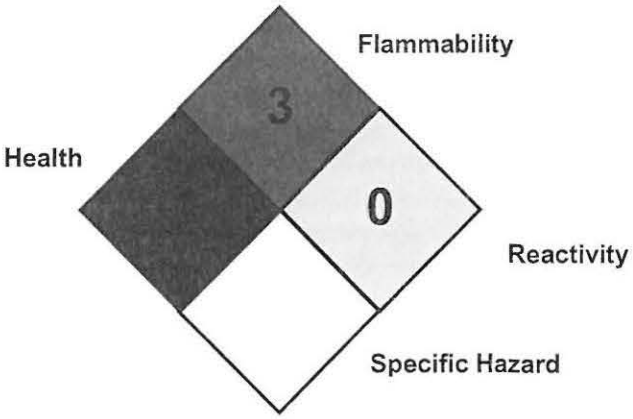
SECTION 16: OTHER INFORMATION

HAZARDOUS MATERIAL INFORMATION SYSTEM (U.S.A.)

HMIS III		
HEALTH	*	2
FLAMMABILITY		3
PHYSICAL HAZARD		
PERSONAL PROTECTION		

* Chronic Health Hazard

NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A.)



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MATERIAL SAFETY DATA SHEET

MSDS: 941

Jet Fuel

REVISION DATE: 2/26/2009

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **Jet Fuel**

SYNONYMS: Jet Fuel, Kerosene, Jet A, Jet A-1, JP-8, Petroleum Distillate Fuel

PRODUCT CODE: Jet A (212110) Jet A-1 (212212)
Jet A-1 (50) (212211) JP-8 (212130)

This Material Safety Data Sheet applies to the listed products and synonym descriptions for Hazard Communication purposes only. Technical specifications vary greatly depending on the product and are not reflected in this document. Consult specification sheets for technical information. This product contains ingredients that are considered to be hazardous as defined by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

IMPORTANT: Read this MSDS before handling or disposing of this product. Pass this information on to employees, customers and product users.

MANUFACTURER: U. S. OIL & REFINING CO.
ADDRESS: 3001 Marshall Ave., Tacoma, WA 98421

EMERGENCY PHONE: (253)-383-1651
FAX PHONE: (253)-272-2495
CHEMTREC PHONE: (800) 424-9300
NATIONAL RESPONSE: (800) 424-8802

CHEMICAL FAMILY: Hydrocarbon

PRODUCT USE: Jet Fuel is a complex blend of hydrocarbons derived from various refinery streams, This product is intended for us as a fuel or for use in an engineered process. Use in other applications may result in higher exposures and require additional controls, such as local exhaust ventilation and personal protective equipment.

PREPARED BY: U.S. OIL & REFINING CO.

CAS #: 8008-20-6

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

NAME	CAS NUMBER	CONCENTRATION %
Kerosene/Hydrocarbon mixture	8008-20-6	90 - 100%
Cyclohexane	110-82-7	0 – 1%
1,2,4 Trimethylbenzene	95-63-6	0 – 2%
Benzene	71-43-2	0 - .2%
Toluene	108-88-3	0 - .5%
Xylene	1330-20-7	0 – 2%
Naphthalene	91-20-3	0 – 3%
Ethylbenzene	100-41-4	0 - 0.5%

SECTION 3: HAZARDS IDENTIFICATION

Warning! Combustible! Mist or vapors can cause a flash fire. Liquid, mist or vapors can cause eye, skin and respiratory tract irritation. Ingestion of liquid and aspiration into the lungs can result in chemical pneumonia.

PHYSICAL STATE:	Liquid
Color:	Water white to light amber
Odor:	Faint petroleum odor

ROUTES OF ENTRY: Dermal Contact. Eye Contact. Inhalation. Ingestion.

POTENTIAL HEALTH EFFECTS

EYES: Eye irritation may result from contact with liquid, mists and/or vapors. In severe cases, permanent eye damage may occur.

SKIN: Contact with the skin may cause irritation. Skin irritation leading to dermatitis may occur upon prolonged or repeated contact. Symptoms include redness, itching and dermatitis. Repeated contact may cause harmful effects in other parts of the body.

INGESTION: This material can irritate the mouth, throat, and/or stomach. Aspiration into the lungs may cause chemical pneumonia. Symptoms include burning sensation of the mouth, nausea and vomiting. In severe cases loss of consciousness may occur.

INHALATION: Vapors or mists can irritate the nose, throat and/or lungs and can cause central nervous system depression. Symptoms include headache, nausea, fatigue and dizziness. In severe cases loss of consciousness or death may occur.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: This product contains petroleum distillates similar to those shown to produce skin tumors on laboratory animals. Avoid prolonged or repeated skin contact.

Caution is recommended for personnel with pre-existing central nervous system diseases. Personnel with pre-existing central nervous system diseas, skin disorders, or chronic respiratory diseases should avoid exposure to this product.

OVER-EXPOSURE SIGNS/SYMPTOMS: Headache, nausea, vomiting, dizziness, central nervous system- respiratory depression, convulsions, loss of consciousness, coma or death. Eye or skin irritation.

See toxicological information (section 11)

SECTION 4: FIRST AID MEASURES

EYES:	Flush eyes with plenty of water for a minimum of 15 minutes. Seek medical care if irritation persists.
SKIN:	Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention if irritation or pain persists. Launder or dry-clean clothing prior to re-use. Discard contaminated leather goods.
INGESTION:	WARNING! DO NOT INDUCE VOMITING. If aspirated into the lungs, may cause chemical pneumonitis. Seek medical attention promptly.
INHALATION:	If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get immediate medical attention if breathing is difficult or stops.
NOTES TO PHYSICIANS OR FIRST AID PROVIDERS:	Ingestion/Inhalation of this product or subsequent vomiting may lead to aspiration, which may cause pneumonitis.

SECTION 5: FIRE-FIGHTING MEASURES

FLAMMABILITY OF THE PRODUCT:	**Combustible liquid**
FLAMMABLE LIMITS IN AIR, (% BY VOLUME):	LOWER: Approx 0.7 UPPER: Approx 5.0
FLASH POINT:	Closed Cup >38° C, (100° F)
AUTOIGNITION TEMPERATURE:	Not determined
PRODUCTS OF COMBUSTION:	Normal combustion forms water vapor and carbon dioxide. Incomplete burning can produce carbon monoxide and particulate matter.
FIRE/EXPLOSION HAZARDS IN THE PRESENCE OF VARIOUS SUBSTANCES:	Combustible liquid. When heated above the flash point, this material will release vapors that can ignite when exposed to open flame, sparks and static discharge. Mists or sprays may be flammable at temperatures below the normal flash point. Keep away from heat and open flame.
FIRE-FIGHTING MEDIA AND INSTRUCTIONS:	Combustible Liquid. Use dry chemical, foam or carbon dioxide to extinguish the fire. Consult foam manufacturer for appropriate media, application rates and water/foam ratio. If a leak or spill has not ignited, ventilate area and use water spray to disperse gas or vapor and to protect personnel attempting to stop a leak. Use water to flush spills away from sources of ignition. Do not flush down public sewers. Collect contaminated fire-fighting water separately. It must not enter the municipal sewage system. Dike area of fire to prevent runoff. Decontaminate emergency personnel and equipment with soap and water. Combustible liquid and vapor. Vapor may cause flash fire. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flashback. Runoff to sewer may create fire or explosion hazard.
SPECIAL FIRE FIGHTING EQUIPMENT:	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Cool tanks, containers and exposed structures with water.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Moderately combustible. When heated above the flash point, this material will release flammable vapors which if exposed to a source of ignition can burn or be explosive in confined spaces. Mists or sprays may be flammable at temperatures below the normal flash point. Keep away from heat and open flame.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:

Immediately contact emergency personnel. Eliminate all ignition sources. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Do not touch or walk through spilled material. Tanks, vessels or other confined spaces which have contained product should be freed of vapors before entering. The container should be checked to ensure a safe atmosphere before entry. Empty containers may contain toxic, flammable/combustible or explosive residues or vapors. Do not cut, grind, drill, weld or reuse empty containers that contained this product. Do not transfer this product to another container unless the container receiving the product is labeled with proper DOT shipping name, hazard class and other information that describes the product and its hazards.

ENVIRONMENTAL PRECAUTIONS:

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. If facility or operation has an "*oil or hazardous substance contingency plan*", activate its procedures. Stay upwind and away from spill. Wear appropriate protective equipment including respiratory protection as conditions warrant. Do not enter or stay in area unless monitoring indicates that it is safe to do so. Isolate hazard area and restrict entry to emergency crew. Review Fire Fighting Measures section before proceeding with clean up. Keep all sources of ignition (flames, smoking, flares, etc.) away from release. Contain spill in smallest possible area.

Recover as much product as possible (e.g., by vacuuming). Stop leak if it can be done without risk. Use water spray to disperse vapors. Spilled material may be absorbed by an appropriate absorbent, and then handled in accordance with environmental regulations. Prevent spilled material from entering sewers, storm drains, other unauthorized treatment or drainage systems and natural waterways. Contact fire authorities and appropriate federal, state and local agencies. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, contact the National Response Center at 800-424- 8802. For highway or railway spills, contact Chemtrec at 800-424-9300.

METHODS FOR CLEANING UP:

If emergency personnel are unavailable, contain spilled material. For small spills, add absorbent (soil may be used in the absence of other suitable materials) and use a nonsparking or explosion-proof means to transfer material to a sealable, appropriate container for disposal. For large spills, dike spilled material or otherwise contain it to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

Water spill: Eliminate sources of ignition and warn other ships in the area to stay clear. Notify the proper authorities. Confine with skimming equipment if available or set booms to recover the spill.

SECTION 7: HANDLING AND STORAGE

HANDLING

Do not ingest. Do not get in eyes, on skin or on clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing vapor or mist. Keep away from heat, sparks and flame. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Wash thoroughly after handling. In case of fire, use water spray, foam, dry chemical or carbon dioxide as described in the Fire Fighting Measures section of the MSDS. Do not pressurize, cut, weld, braze, solder, drill on or near this container. "Empty" container contains residue (liquid and/or vapor) and may explode in heat of a fire. Use good personal hygiene practices. After handling this product, wash hands before eating, drinking or using toilet facilities. Keep out of reach of children. Failure to use caution may cause serious injury or illness. Do not use as a cleaning solvent or for other non-fuel uses. To prevent ingestion and exposure - Do not siphon by mouth to transfer product between containers.

STORAGE:

Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

For information regarding transferring material refer to OSHA Standard 29 CFR 1910.106, "Flammable and Combustible Liquids", National Fire Protection Association (NFPA) 77, "Recommended Practice on Static Electricity", and/or the American Petroleum Institute (API) Recommended Practice 2003, "Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents".

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Special ventilation may be required for handling conditions at elevated temperatures. Ensure that eyewash stations and safety showers are close to the workstation location.

PERSONAL PROTECTION

SKIN: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Flame retardant clothing is recommended. In case of skin contact, wash with mild soap and water or a waterless hand cleaner. Immediately remove soiled clothing and wash thoroughly before reuse. Discard oil-soaked leather goods.

RESPIRATORY: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

HANDS: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eye: Eye protection (chemical-type goggles and/or face shield) should be worn whenever there is a likelihood of splashing or spraying liquid. Contact lenses should not be worn. Eye wash water should be provided.

Other: Use good personal hygiene practices.

PROTECTIVE CLOTHING OR EQUIPMENT: Gloves, Hardhat, Face Shield, Boots, Safety Glasses, Respirator, Fire Retardant Clothing

PERSONAL PROTECTIVE EQUIPMENT IN CASE OF A LARGE SPILL: Splash goggles. Full suit. Vapor respirator. Boots. Gloves. Suggested protective clothing might not be adequate. Consult a specialist before handling this product.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION (Continued)

Established Occupational Exposure Limits

SUBSTANCE	VALUE	TIME/TYPE	SOURCE
Stoddard Solvent	500 ppm 60 ppm	8 Hour PEL 8 Hour PEL	OSHA NIOSH
Cyclohexane	300 ppm	98 Hour PEL	OSHA
Benzene	1 ppm 5 ppm	8 Hour PEL STEL	OSHA OSHA
Toluene	50 ppm	8 Hour TWA	ACGIH
Xylene	100 ppm 150 ppm	8 Hour TWA STEL	OSHA OSHA
Napthalene	10 ppm 15 ppm	8 Hour TWA STEL	OSHA NIOSH

Consult local authorities for acceptable exposure limits.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	Liquid
COLOR:	Water white to light amber
ODOR:	Faint Petroleum Odor
BOILING POINT:	160 to 300°C (320 to 572°F)
FREEZING POINT:	-50 to -40°C
SPECIFIC GRAVITY:	0.775 to 0.840 (Water = 1) (@ 60°F)
VISCOSITY:	1.3 – 2.2 cSt @ 100°F (D-445)
VAPOR PRESSURE:	2.2 kPa @37.8°C (100F)
VAPOR DENSITY:	>1 (Air = 1)
VOLATILITY:	Not Determined
EVAPORATION RATE:	Not Available
MATERIALS TO AVOID:	Reacts with strong oxidizing material and strong acids
HAZARDOUS DECOMPOSITION PRODUCTS:	Burning or excessive heating may produce carbon monoxide and other harmful gases and vapors including oxides and/or other compounds of sulfur and nitrogen.

SECTION 10: STABILITY AND REACTIVITY

STABILITY AND REACTIVITY:	The product is stable
INCOMPATIBILITY WITH VARIOUS SUBSTANCES:	Reactive with strong oxidizing agents and strong acids
HAZARDOUS DECOMPOSITION PRODUCTS:	None known
HAZARDOUS POLYMERIZATION:	Will not occur
CONDITIONS TO AVOID (STABILITY):	Heat, sparks and open flame. Strong oxidizers. Strong acids.

SECTION 11: TOXICOLOGICAL INFORMATION

TOXICITY DATA

Jet Fuel/Straight-run Kerosene CAS 8008-20-6

CARCINOGENICITY: Application of petroleum hydrocarbons of similar composition and boiling range to mouse skin resulted in an increased incidence of skin tumors in some studies. Potential components which are listed by IARC as carcinogens or potential carcinogens are: benzene and ethylbenzene. Risk of cancer depends on duration and level of exposure.

TARGET ORGANS: Potential components which have demonstrated developmental and or target organ issues are: benzne, toluene, xylenes, naphthalene and ethylbenzene.

SECTION 12: ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION: This product is potentially toxic to aquatic organisms and should be kept out of sewage and drainage systems and all bodies of water.

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

This material, if discarded as produced, is not a RCRA "listed" hazardous waste. However, conditions of use which results in chemical, physical changes or contamination, may subject it to regulation as a hazardous waste. Transportation, treatment, storage and disposal of waste material must be conducted in accordance with federal, state and local regulations.

Consult your local or regional authorities.

SECTION 14: TRANSPORT INFORMATION

REGULATORY INFORMATION	UN NUMBER	EMERGENCY RESPONSE GUIDEBOOK	PROPER SHIPPING NAME	CLASS	PACKING GROUP
DOT Classification	UN1863	Guide 128	Fuel, Aviation, Turbine Engine	3	III

Note: This material may be re-classified as a combustible liquid for domestic land transportation under 49 CFR 173.150 (f)

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS:

EPA SARA Sections 302, 304 & 313 and CERCLA :

This material contains the following chemicals subject to the reporting requirements of SARA 302, SARA 304, SARA 313, CERCLA and 40 CFR 372:

Chemical Name	CAS Number	Material Concentration	CERCLA/SARA Section 302 TPQ (lbs.)	CERCLA/SARA Section 304 RQ (lbs.)
BENZENE	71-43-2	0 - 0.2%		10
1,2,4 TRIMETHYLBENZENE	95-63-6	0 - 2%		N/A
NAPHTHALENE	91-20-3	1 - 3%		100
XYLENES	1330-20-7	0 - 2%		100

Carcinogen Identification:

This mixture may contain chemicals that have been identified as a carcinogen by NTP, IARC, or OSHA.

Extremely Hazardous Substances for Emergency Response and Planning 40 CFR 355 & 40 CFR 370:

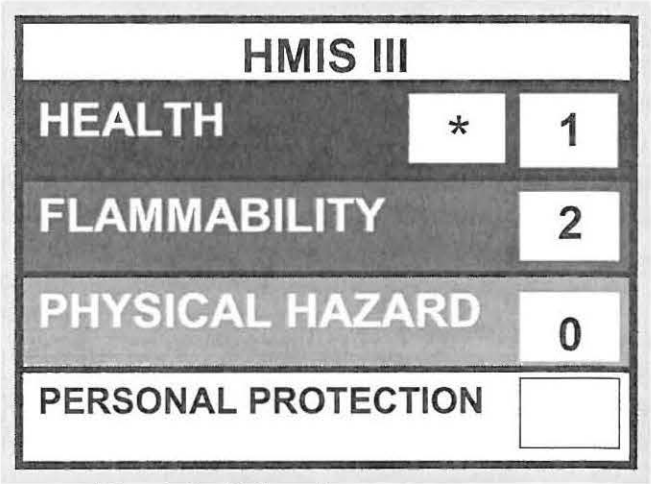
None.

EPA SARA 311/312 Title III Hazard Categories:

Acute Health Hazard:	**YES**
Chronic Health Hazard:	**YES**
Fire Hazard:	**YES**
Pressure Hazard:	**NO**
Reactive Hazard:	**NO**

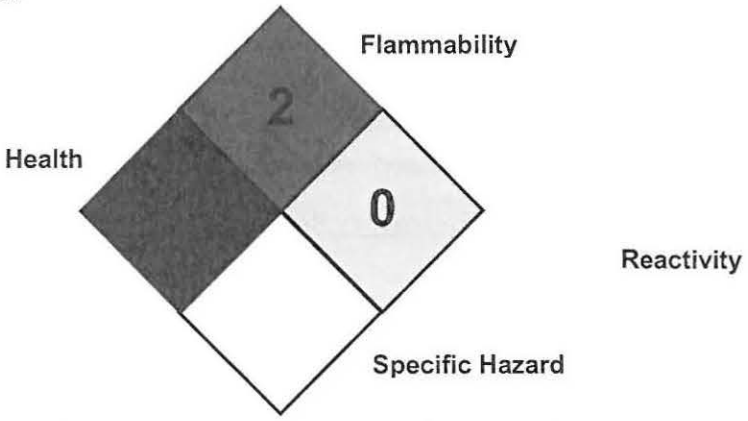
SECTION 16: OTHER INFORMATION

HAZARDOUS MATERIAL
INFORMATION SYSTEM
(U.S.A.)



* Chronic Health Hazard

NATIONAL FIRE PROTECTION
ASSOCIATION (U.S.A.)



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The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. **FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THE PRODUCT.**

MATERIAL SAFETY DATA SHEET
Diesel

MSDS: 844

REVISION DATE: 04/3/2009

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **Diesel**

SYNONYMS: #2 Diesel Clear, Diesel Government Use, F76 Navy Distillate, Heating Oil #2, Low Sulfur Diesel-Off Road, Ultra Low Sulfur Diesel-Clear, Ultra Low Sulfur Diesel-Dyed, #2 Fuel Oil, ULSD

PRODUCT CODE:

#2 Diesel Clear	(311100)	Diesel, Govt. Use	(312400)
Ultra Low Sulfur Diesel, Clear	(301100)	Heating Oil	(312200)
Low Sulfur Diesel, Off Road	(312300)	Ultra Low Sulfur Diesel, Dyed	(302300)
F76 Navy Distillate	(311400)		

This Material Safety Data Sheet applies to the listed products and synonym descriptions for Hazard Communication purposes only. Technical specifications vary greatly depending on the product and are not reflected in this document. Consult specification sheets for technical information. This product contains ingredients that are considered to be hazardous as defined by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

IMPORTANT: Read this MSDS before handling or disposing of this product. Pass this information on to employees, customers and product users.

MANUFACTURER: U. S. OIL & REFINING CO.
ADDRESS: 3001 Marshall Ave., Tacoma, WA 98421

EMERGENCY PHONE: (253)-383-1651
FAX PHONE: (253)-272-2495
CHEMTREC PHONE: (800) 424-9300
NATIONAL RESPONSE: (800) 424-8802

CHEMICAL FAMILY: Hydrocarbon

PRODUCT USE: Diesel is a complex blend of hydrocarbons derived from various refinery streams. This product is intended for use as a fuel or for use in an engineered process. Use in other applications may result in higher exposures and require additional controls such as local exhaust ventilation and personal protective equipment.

PREPARED BY: U.S. OIL & REFINING CO.

CAS #: 68476-34-6

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

NAME	CAS NUMBER	CONCENTRATION %
Diesel Fuel #2	68476-34-6	0 - 100
Kerosene	8008-20-6	0 - 100
Fuels, Diesel	68334-30-5	0 - 100
Fuel Oil #2	68476-30-2	0 - 100
Naphthalene	91-20-3	0 - 0.5

SECTION 3: HAZARDS IDENTIFICATION

Warning! Combustible. Mist or vapors can cause a flash fire. Liquid, mist or vapors can cause eye, skin and respiratory tract irritation. Ingestion or liquid aspiration into the lungs can result in chemical pneumonia

PHYSICAL STATE:	Liquid
COLOR:	Varies, clear, yellow (pale to straw), greenish-yellow, red, green color.
ODOR:	Faint petroleum odor
ROUTES OF ENTRY:	Dermal Contact. Eye Contact. Inhalation. Ingestion.

POTENTIAL HEALTH EFFECTS

EYES:	Eye irritation may result from contact with liquid, mists and/or vapors. Effects may become serious with repeated or prolonged contact.
SKIN:	Contact with the skin may cause irritation. Prolonged contact may cause dermatitis. Repeated contact may cause harmful effects in other parts of the body.
INGESTION:	This material can irritate the mouth, throat, and/or stomach. Aspiration into the lungs may cause chemical pneumonia. In severe cases loss of consciousness may occur.
INHALATION:	Vapors or mists can irritate the nose, throat and/or lungs. Breathing high concentrations can cause dizziness, headache and vomiting or loss of consciousness.
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:	This product contains petroleum distillates similar to those shown to produce skin tumors on laboratory animals. Avoid prolonged or repeated skin contact.
OVER-EXPOSURE SIGNS/SYMPTOMS:	Headache, severe eye irritation, nausea, dizziness, damage to central nervous system, respiratory depression, convulsions, or loss of consciousness.

See toxicological information (section 11)

SECTION 4: FIRST AID MEASURES

EYES:	Flush eyes with plenty of water for a minimum of 15 minutes. Seek medical care if irritation persists.
SKIN:	Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention if irritation develops. Launder or dry-clean clothing prior to re-use.
INGESTION:	WARNING! DO NOT INDUCE VOMITING. If aspirated into the lungs, may cause chemical pneumonitis. Seek medical attention immediately.
INHALATION:	If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.
NOTES TO PHYSICIANS OR FIRST AID PROVIDERS:	Ingestion/Inhalation of this product or subsequent vomiting may lead to aspiration, which may cause pneumonitis.

SECTION 5: FIRE-FIGHTING MEASURES

FLAMMABILITY OF THE PRODUCT:	**Combustible liquid**
FLAMMABLE LIMITS IN AIR, (% BY VOLUME):	LOWER: Approx 0.7 UPPER: Approx 5.0
FLASH POINT:	Approximately 52°C, (125°F)
AUTOIGNITION TEMPERATURE:	Approximately 257°C (495°F)
PRODUCTS OF COMBUSTION:	Normal combustion forms water vapor and carbon dioxide. Incomplete burning can produce carbon monoxide and particulate matter.
FIRE/EXPLOSION HAZARDS IN THE PRESENCE OF VARIOUS SUBSTANCES:	Combustible liquid. When heated above the flash point, this material will release vapors that can ignite when exposed to open flame, sparks and static discharge. Mists or sprays may be flammable at temperatures below the normal flash point. Keep away from heat and open flame.
FIRE-FIGHTING MEDIA AND INSTRUCTIONS:	Combustible Liquid. Use dry chemical, foam or carbon dioxide to extinguish the fire. Consult foam manufacturer for appropriate media, application rates and water/foam ratio. If a leak or spill has not ignited, ventilate area and use water spray to disperse gas or vapor and to protect personnel attempting to stop a leak. Use water to flush spills away from sources of ignition. Do not flush down public sewers. Collect contaminated fire-fighting water separately. It must not enter the municipal sewage system. Dike area to prevent runoff. Decontaminate emergency personnel and equipment with soap and water. Combustible liquid and vapor. Vapor may cause flash fire. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flashback. Runoff to sewer may create fire or explosion hazard.
SPECIAL FIRE FIGHTING EQUIPMENT:	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Cool tanks, containers and exposed structures with water.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Moderately combustible. When heated above the flash point, this material will release flammable vapors which if exposed to a source of ignition can burn or be explosive in confined spaces. Mists or sprays may be flammable at temperatures below the normal flash point. Keep away from heat and open flame.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:

Immediately contact emergency personnel. Eliminate all ignition sources. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Do not touch or walk through spilled material. Tanks, vessels or other confined spaces which have contained product should be freed of vapors before entering. The container should be checked to ensure a safe atmosphere before entry. Empty containers may contain toxic, flammable/combustible or explosive residues or vapors. Do not cut, grind, drill, weld or reuse empty containers that contained this product. Do not transfer this product to another container unless the container receiving the product is labeled with proper DOT shipping name, hazard class and other information that describes the product and its hazards.

ENVIRONMENTAL PRECAUTIONS:

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. If facility or operation has an "*oil or hazardous substance contingency plan*", activate its procedures. Stay upwind and away from spill. Wear appropriate protective equipment including respiratory protection as conditions warrant. Do not enter or stay in area unless monitoring indicates that it is safe to do so. Isolate hazard area and restrict entry to emergency crew. Review Fire Fighting Measures section before proceeding with clean up. Keep all sources of ignition (flames, smoking, flares, etc.) away from release. Contain spill in smallest possible area.

Recover as much product as possible (e.g., by vacuuming). Stop leak if it can be done without risk. Use water spray to disperse vapors. Spilled material may be absorbed by an appropriate absorbent, and then handled in accordance with environmental regulations. Prevent spilled material from entering sewers, storm drains, other unauthorized treatment or drainage systems and natural waterways. Contact fire authorities and appropriate federal, state and local agencies. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, contact the National Response Center at 800-424- 8802. For highway or railway spills, contact Chemtrec at 800-424-9300.

METHODS FOR CLEANING UP:

If emergency personnel are unavailable, contain spilled material. For small spills, add absorbent (soil may be used in the absence of other suitable materials) and use a non-sparking or explosion-proof means to transfer material to a sealable, appropriate container for disposal. For large spills, dike spilled material or otherwise contain to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

Water spill: Eliminate sources of ignition and warn other ships in the area to stay clear. Notify the proper authorities. Confine with skimming equipment if available or set booms to recover the spill.

SECTION 7: HANDLING AND STORAGE

HANDLING

Do not ingest. Do not get in eyes, on skin or on clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing vapor or mist. Keep away from heat, sparks and flame. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Wash thoroughly after handling. In case of fire, use water spray, foam, dry chemical or carbon dioxide as described in the Fire Fighting Measures section of the MSDS. Do not pressurize, cut, weld, braze, solder, drill on or near this container. "Empty" container contains residue (liquid and/or vapor) and may explode in heat of a fire. Use good personal hygiene practices. After handling this product, wash hands before eating, drinking or using toilet facilities. Keep out of reach of children. Failure to use caution may cause serious injury or illness. Do not use as a cleaning solvent or for other non-fuel uses. To prevent ingestion and exposure - Do not siphon by mouth to transfer product between containers.

STORAGE:

Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

For information regarding transferring material refer to OSHA Standard 29 CFR 1910.106, "Flammable and Combustible Liquids", National Fire Protection Association (NFPA) 77, "Recommended Practice on Static Electricity", and/or the American Petroleum Institute (API) Recommended Practice 2003, "Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents".

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Special ventilation may be required for handling conditions at elevated temperatures. Ensure that eyewash stations and safety showers are close to the workstation location.

PERSONAL PROTECTION

SKIN: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Flame retardant clothing is recommended. In case of skin contact, wash with mild soap and water or a waterless hand cleaner. Immediately remove soiled clothing and wash thoroughly before reuse. Discard oil-soaked leather goods.

RESPIRATORY: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

HANDS: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

EYE: Eye protection (chemical-type goggles and/or face shield) should be worn whenever there is a likelihood of splashing or spraying liquid. Contact lenses should not be worn. Eye wash water should be provided.

OTHER: Use good personal hygiene practices.

PROTECTIVE CLOTHING OR EQUIPMENT: Gloves, Hardhat, Face Shield, Boots, Safety Glasses, Respirator, Fire Retardant Clothing

PERSONAL PROTECTIVE EQUIPMENT IN CASE OF A LARGE SPILL: Splash goggles, full suit, vapor respirator, boots and gloves. Suggested protective clothing might not be adequate. Consult a specialist before handling this product.

Established Occupational Exposure Limits

SUBSTANCE	VALUE	TIME/TYPE	SOURCE
Diesel Fuel No. 2	100 mg/m^3	8 Hour TWA	NIOSH
Nonane	200 ppm	8 Hour TWA	ACGIH
Naphthalene	10 ppm 15 ppm	8 Hour TWA STEL	OSHA NIOSH

Consult local authorities for acceptable exposure limits.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	Liquid
COLOR:	Varies, clear, yellow (pale to straw), greenish-yellow, red, green color.
ODOR:	Faint Petroleum Odor
BOILING POINT:	150 to 360°C (300 to 680°F)
FREEZING POINT:	Not Determined
SPECIFIC GRAVITY:	0.84 to 0.88 (Water = 1) (@ 60°F)
VISCOSITY:	3 cSt @ 40°C
VAPOR PRESSURE:	Not Determined
VAPOR DENSITY:	>1 (Air = 1)
VOLATILITY:	Not Determined
EVAPORATION RATE:	Not Available
MATERIALS TO AVOID:	Reacts with strong oxidizing material and strong acids
HAZARDOUS DECOMPOSITION PRODUCTS:	Burning or excessive heating may produce carbon monoxide and other harmful gases and vapors including oxides and/or other compounds of sulfur and nitrogen.

SECTION 10: STABILITY AND REACTIVITY

STABILITY AND REACTIVITY:	The product is stable
INCOMPATIBILITY WITH VARIOUS SUBSTANCES:	Reactive with strong oxidizing agents and strong acids
HAZARDOUS DECOMPOSITION PRODUCTS:	None known
HAZARDOUS POLYMERIZATION:	Will not occur
CONDITIONS TO AVOID (STABILITY):	Heat, sparks and open flame. Strong oxidizers and strong acids.

SECTION 11: TOXICOLOGICAL INFORMATION

TOXICITY DATA

Diesel is a complex blend of hydrocarbons derived from various refinery streams. At high levels of exposure, humans experience multiple organ failures. Long-term repeated skin exposure to similar materials has been reported to result in an increase in skin tumors in laboratory rodents.

Diesel also contains naphthalene, which has been classified as a Group 2B carcinogen by the International Agency for Research on Cancer (IARC).

SECTION 12: ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION: This product is potentially toxic to aquatic organisms and should be kept out of sewage and drainage systems and all bodies of water.

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Waste material should be properly characterized to make a correct determination of waste classification. Along with properly characterizing all waste materials, consult EPA, state and local regulations regarding the proper disposal of this material.

Consult your local or regional authorities.

SECTION 14: TRANSPORT INFORMATION

REGULATORY INFORMATION	UN NUMBER	EMERGENCY RESPONSE GUIDEBOOK	PROPER SHIPPING NAME	CLASS	PACKING GROUP
DOT Classification	UN1993	Guide 128	Diesel Fuel	3	III

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS:

EPA SARA Sections 302, 304 & 313 and CERCLA :

This material contains the following chemicals subject to the reporting requirements of SARA 302, SARA 304, SARA 313, CERCLA and 40 CFR 372:

Chemical Name	CAS Number	Material Concentration	CERCLA/SARA Section 302 TPQ (lbs.)	CERCLA/SARA Section 304 RQ (lbs.)
NAPHTHALENE	91-20-3	0 -0.5%		100

Carcinogen Identification:

This mixture may contain chemicals that have been identified as a carcinogen by NTP, IARC, or OSHA.

Extremely Hazardous Substances for Emergency Response and Planning 40 CFR 355 & 40 CFR 370:

None

Toxic Chemicals for Emission Reporting (SARA 313)

None—no toxic chemical is present greater than 1% or 0.1% carcinogen

EPA SARA 311/312 Title III Hazard Categories:

Acute Health Hazard:	**YES**
Chronic Health Hazard:	**YES**
Fire Hazard:	**YES**
Pressure Hazard:	**NO**
Reactive Hazard:	**NO**

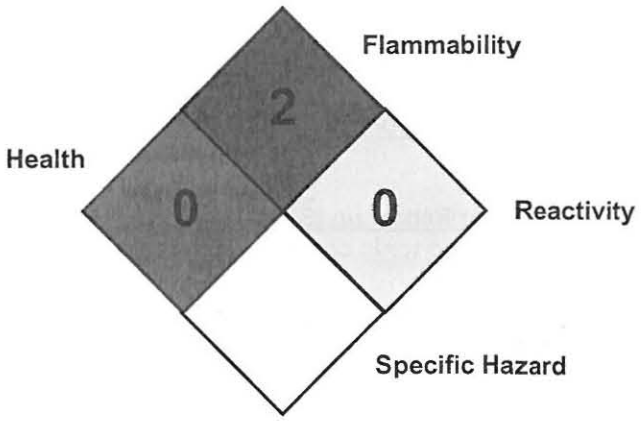
SECTION 16: OTHER INFORMATION

HAZARDOUS MATERIAL
INFORMATION SYSTEM
(U.S.A.)

HMIS III		
HEALTH	*	1
FLAMMABILITY		2
PHYSICAL HAZARD		0
PERSONAL PROTECTION		

* Chronic Health Hazard

NATIONAL FIRE PROTECTION
ASSOCIATION (U.S.A.)



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MATERIAL SAFETY DATA SHEET

MSDS: 955

Marine Distillate

REVISION DATE: 06/11/2009

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **Marine Distillate Fuel Oil, All Grades**

SYNONYMS: Marine Diesel Oil, MDO, Marine Gas Oil, MGO, Marine Diesel Fuel, Marine Distillate Fuel, DMA, DMB, DMC

PRODUCT CODE: ISO-DMB (411000)
Marine Gas Oil- Low Dyed (312500)
Marine Diesel Oil-High (421000)
Marine Gas Oil High Clear (321500)

This Material Safety Data Sheet applies to the listed products and synonym descriptions for Hazard Communication purposes only. Technical specifications vary greatly depending on the product and are not reflected in this document. Consult specification sheets for technical information. This product contains ingredients that are considered to be hazardous as defined by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

IMPORTANT: Read this MSDS before handling or disposing of this product. Pass this information on to employees, customers and product users.

MANUFACTURER: U. S. OIL & REFINING CO.
ADDRESS: 3001 Marshall Ave., Tacoma, WA 98421

EMERGENCY PHONE: (253)-383-1651
FAX PHONE: (253)-272-2495
CHEMTREC PHONE: (800) 424-9300
NATIONAL RESPONSE: (800) 424-8802

CHEMICAL FAMILY: Hydrocarbon

PRODUCT USE: This product is a complex blend of hydrocarbons derived from various refinery streams, and can contain hydrogen sulfide and polycyclic aromatic hydrocarbons. This product is intended for use as a fuel or for use in an engineered process. Use in other applications may result in higher exposures and require additional controls such as local exhaust ventilation and personal protective equipment.

PREPARED BY: U.S. OIL & REFINING CO.

CAS #: 68476-34-6

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

NAME	CAS NUMBER	CONCENTRATION %
Petroleum Distillate	68476-34-6	80 – 100
Fuel Oil, Residual	68476-33-5	0 – 20
Naphthalene	91-20-3	0 - 0.5

SECTION 3: HAZARDS IDENTIFICATION

Warning! Combustible. Mist or vapors can cause a flash fire. Liquid, mist or vapors can cause eye, skin and respiratory tract irritation. Ingestion or liquid aspiration into the lungs can result in chemical pneumonia. This product may contain or release Hydrogen sulfide whis is a highly toxic, highly flammable gas which can be fatal if inhaled at certain concentrations. This product may also contain polycyclic aromatic oils which may be carcinogenic to humans.

PHYSICAL STATE:	Liquid
COLOR:	Varies, clear, yellow (pale to straw), greenish-yellow, red, green color, black.
ODOR:	Faint petroleum odor
ROUTES OF ENTRY:	Dermal Contact. Eye Contact. Inhalation. Ingestion.

POTENTIAL HEALTH EFFECTS

EYES:	Eye irritation may result from contact with liquid, mists and/or vapors. Effects may become serious with repeated or prolonged contact.
SKIN:	Contact with the skin may cause irritation. Prolonged contact may cause dermatitis. Repeated contact may cause harmful effects in other parts of the body.
INGESTION:	This material can irritate the mouth, throat, and/or stomach. Aspiration into the lungs may cause chemical pneumonia. In severe cases loss of consciousness may occur.
INHALATION:	Vapors or mists can irritate the nose, throat and/or lungs. Breathing high concentrations can cause dizziness, headache and vomiting or loss of consciousness. Hydrogen sulfide can evolve from this product, which can cause dizziness, nausea, headache or death.
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:	This product contains petroleum distillates similar to those shown to produce skin tumors on laboratory animals. Avoid prolonged or repeated skin contact.
OVER-EXPOSURE SIGNS/SYMPTOMS:	Headache, severe eye irritation, nausea, dizziness, damage to central nervous system, respiratory depression, convulsions, or loss of consciousness.

See toxicological information (section 11)

SECTION 4: FIRST AID MEASURES

EYES: Flush eyes with plenty of water for a minimum of 15 minutes. Seek medical care if irritation persists.

SKIN: Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention if irritation develops. Launder or dry-clean clothing prior to re-use.

INGESTION: WARNING! DO NOT INDUCE VOMITING. If aspirated into the lungs, may cause chemical pneumonitis. Seek medical attention immediately.

INHALATION: If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get immediate medical attention.

NOTES TO PHYSICIANS OR FIRST AID PROVIDERS: Ingestion/Inhalation of this product or subsequent vomiting may lead to aspiration, which may cause pneumonitis.

SECTION 5: FIRE-FIGHTING MEASURES

FLAMMABILITY OF THE PRODUCT:	**Combustible liquid**
FLAMMABLE LIMITS IN AIR, (% BY VOLUME):	LOWER: Approx 0.6 UPPER: Approx 7.5
FLASH POINT:	Approximately 60°C, (140°F)
AUTOIGNITION TEMPERATURE:	Approximately 257°C (495°F)
PRODUCTS OF COMBUSTION:	Normal combustion forms water vapor and carbon dioxide. Incomplete burning can produce carbon monoxide and particulate matter.
FIRE/EXPLOSION HAZARDS IN THE PRESENCE OF VARIOUS SUBSTANCES:	Combustible liquid. When heated above the flash point, this material will release vapors that can ignite when exposed to open flame, sparks and static discharge. Mists or sprays may be flammable at temperatures below the normal flash point. Keep away from heat and open flame.
FIRE-FIGHTING MEDIA AND INSTRUCTIONS:	Combustible Liquid. Use dry chemical, foam or carbon dioxide to extinguish the fire. Consult foam manufacturer for appropriate media, application rates and water/foam ratio. If a leak or spill has not ignited, ventilate area and use water spray to disperse gas or vapor and to protect personnel attempting to stop a leak. Use water to flush spills away from sources of ignition. Do not flush down public sewers. Collect contaminated fire-fighting water separately. It must not enter the municipal sewage system. Dike area to prevent runoff. Decontaminate emergency personnel and equipment with soap and water. Combustible liquid and vapor. Vapor may cause flash fire. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flashback. Runoff to sewer may create fire or explosion hazard.
SPECIAL FIRE FIGHTING EQUIPMENT:	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Cool tanks, containers and exposed structures with water.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Moderately combustible. When heated above the flash point, this material will release flammable vapors which if exposed to a source of ignition can burn or be explosive in confined spaces. Mists or sprays may be flammable at temperatures below the normal flash point. Keep away from heat and open flame.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:

Immediately contact emergency personnel. Eliminate all ignition sources. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Do not touch or walk through spilled material. Tanks, vessels or other confined spaces which have contained product should be freed of vapors before entering. The container should be checked to ensure a safe atmosphere before entry. Empty containers may contain toxic, flammable/combustible or explosive residues or vapors. Do not cut, grind, drill, weld or reuse empty containers that contained this product. Do not transfer this product to another container unless the container receiving the product is labeled with proper DOT shipping name, hazard class and other information that describes the product and its hazards.

ENVIRONMENTAL PRECAUTIONS:

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. If facility or operation has an "*oil or hazardous substance contingency plan*", activate its procedures. Stay upwind and away from spill. Wear appropriate protective equipment including respiratory protection as conditions warrant. Do not enter or stay in area unless monitoring indicates that it is safe to do so. Isolate hazard area and restrict entry to emergency crew. Review Fire Fighting Measures section before proceeding with clean up. Keep all sources of ignition (flames, smoking, flares, etc.) away from release. Contain spill in smallest possible area.

Recover as much product as possible (e.g., by vacuuming). Stop leak if it can be done without risk. Use water spray to disperse vapors. Spilled material may be absorbed by an appropriate absorbent, and then handled in accordance with environmental regulations. Prevent spilled material from entering sewers, storm drains, other unauthorized treatment or drainage systems and natural waterways. Contact fire authorities and appropriate federal, state and local agencies. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, contact the National Response Center at 800-424- 8802. For highway or railway spills, contact Chemtrec at 800-424-9300.

METHODS FOR CLEANING UP:

If emergency personnel are unavailable, contain spilled material. For small spills, add absorbent (soil may be used in the absence of other suitable materials) and use a non-sparking or explosion-proof means to transfer material to a sealable, appropriate container for disposal. For large spills, dike spilled material or otherwise contain to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

Water spill: Eliminate sources of ignition and warn other ships in the area to stay clear. Notify the proper authorities. Confine with skimming equipment if available or set booms to recover the spill.

SECTION 7: HANDLING AND STORAGE

HANDLING

Do not ingest. Do not get in eyes, on skin or on clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing vapor or mist. Keep away from heat, sparks and flame. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Wash thoroughly after handling. In case of fire, use water spray, foam, dry chemical or carbon dioxide as described in the Fire Fighting Measures section of the MSDS. Do not pressurize, cut, weld, braze, solder, drill on or near this container. "Empty" container contains residue (liquid and/or vapor) and may explode in heat of a fire. Use good personal hygiene practices. After handling this product, wash hands before eating, drinking or using toilet facilities. Keep out of reach of children. Failure to use caution may cause serious injury or illness. Do not use as a cleaning solvent or for other non-fuel uses. To prevent ingestion and exposure - Do not siphon by mouth to transfer product between containers.

STORAGE:

Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

For information regarding transferring material refer to OSHA Standard 29 CFR 1910.106, “Flammable and Combustible Liquids”, National Fire Protection Association (NFPA) 77, “Recommended Practice on Static Electricity”, and/or the American Petroleum Institute (API) Recommended Practice 2003, “Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents”.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Special ventilation may be required for handling conditions at elevated temperatures. Ensure that eyewash stations and safety showers are close to the workstation location.

PERSONAL PROTECTION

SKIN: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Flame retardant clothing is recommended. In case of skin contact, wash with mild soap and water or a waterless hand cleaner. Immediately remove soiled clothing and wash thoroughly before reuse. Discard oil-soaked leather goods.

RESPIRATORY: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

HANDS: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

EYE: Eye protection (chemical-type goggles and/or face shield) should be worn whenever there is a likelihood of splashing or spraying liquid. Contact lenses should not be worn. Eye wash water should be provided.

OTHER: Use good personal hygiene practices.

PROTECTIVE CLOTHING OR EQUIPMENT: Gloves, Hardhat, Face Shield, Boots, Safety Glasses, Respirator, Fire Retardant Clothing

PERSONAL PROTECTIVE EQUIPMENT IN CASE OF A LARGE SPILL: Splash goggles, full suit, vapor respirator, boots and gloves. Suggested protective clothing might not be adequate. Consult a specialist before handling this product.

Established Occupational Exposure Limits

SUBSTANCE	VALUE	TIME/TYPE	SOURCE
Diesel Fuel No. 2	100 mg/m^3	8 Hour TWA	NIOSH
Fuel Oil, Residual	100 mg/m^3	8 Hour TWA	ACGIH
Nonane	200 ppm	8 Hour TWA	ACGIH
Naphthalene	10 ppm 15 ppm	8 Hour TWA STEL	OSHA NIOSH

Consult local authorities for acceptable exposure limits.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	Liquid
COLOR:	Varies, clear, yellow (pale to straw), greenish-yellow, red, green, black color.
ODOR:	Faint Petroleum Odor
BOILING POINT:	176 to 650°C (350 to 1200°F)
FREEZING POINT:	Not Determined
SPECIFIC GRAVITY:	0.84 to 0.91 (Water = 1) (@ 60°F)
VISCOSITY:	8 cSt @ 40°C
VAPOR PRESSURE:	Not Determined
VAPOR DENSITY:	>1 (Air = 1)
VOLATILITY:	Not Determined
EVAPORATION RATE:	Not Available
MATERIALS TO AVOID:	Reacts with strong oxidizing material and strong acids
HAZARDOUS DECOMPOSITION PRODUCTS:	Burning or excessive heating may produce carbon monoxide and other harmful gases and vapors including oxides and/or other compounds of sulfur and nitrogen.

SECTION 10: STABILITY AND REACTIVITY

STABILITY AND REACTIVITY:	The product is stable
INCOMPATIBILITY WITH VARIOUS SUBSTANCES:	Reactive with strong oxidizing agents and strong acids
HAZARDOUS DECOMPOSITION PRODUCTS:	None known
HAZARDOUS POLYMERIZATION:	Will not occur
CONDITIONS TO AVOID (STABILITY):	Heat, sparks and open flame. Strong oxidizers and strong acids.

SECTION 11: TOXICOLOGICAL INFORMATION

TOXICITY DATA

This product is a complex blend of hydrocarbons derived from various refinery streams. At high levels of exposure, humans experience multiple organ failures. Long-term repeated skin exposure to similar materials has been reported to result in an increase in skin tumors in laboratory rodents. This product may contain naphthalene and other compounds that have been reported to cause skin cancer and have toxic effects towards liver, kidneys and central nervous system. Risk of cancer depends on duration and level of exposure.

Naphthalene, which has been classified as a Group 2B carcinogen by the International Agency for Research on Cancer (IARC).

SECTION 12: ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION: This product is potentially toxic to aquatic organisms and should be kept out of sewage and drainage systems and all bodies of water.

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Waste material should be properly characterized to make a correct determination of waste classification. Along with properly characterizing all waste materials, consult EPA, state and local regulations regarding the proper disposal of this material.

Consult your local or regional authorities.

SECTION 14: TRANSPORT INFORMATION

REGULATORY INFORMATION	UN NUMBER	EMERGENCY RESPONSE GUIDEBOOK	PROPER SHIPPING NAME	CLASS	PACKING GROUP
DOT Classification	UN1993	Guide 128	Fuel Oil	3	III

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS:

EPA SARA Sections 302, 304 & 313 and CERCLA :

This material contains the following chemicals subject to the reporting requirements of SARA 302, SARA 304, SARA 313, CERCLA and 40 CFR 372:

Chemical Name	CAS Number	Material Concentration	CERCLA/SARA Section 302 TPQ (lbs.)	CERCLA/SARA Section 304 RQ (lbs.)
NAPHTHALENE	91-20-3	0 -0.5%		100

Carcinogen Identification:

This mixture may contain chemicals that have been identified as a carcinogen by NTP, IARC, or OSHA.

Extremely Hazardous Substances for Emergency Response and Planning 40 CFR 355 & 40 CFR 370:

None

Toxic Chemicals for Emission Reporting (SARA 313)

None—no toxic chemical is present greater than 1% or 0.1% carcinogen

EPA SARA 311/312 Title III Hazard Categories:

Acute Health Hazard:	**YES**
Chronic Health Hazard:	**YES**
Fire Hazard:	**YES**
Pressure Hazard:	**NO**
Reactive Hazard:	**NO**

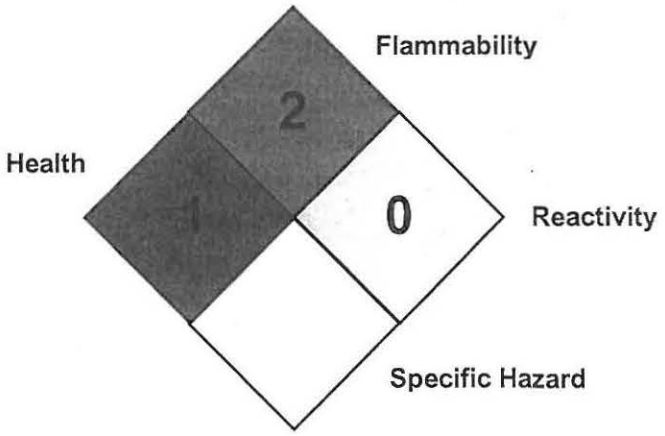
SECTION 16: OTHER INFORMATION

HAZARDOUS MATERIAL
INFORMATION SYSTEM
(U.S.A.)

HMIS III		
HEALTH	*	1
FLAMMABILITY		2
PHYSICAL HAZARD		0
PERSONAL PROTECTION		

* Chronic Health Hazard

NATIONAL FIRE PROTECTION
ASSOCIATION (U.S.A.)



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The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. **FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THE PRODUCT.**

MATERIAL SAFETY DATA SHEET
Residual Fuel Oil

MSDS: 940
REVISION: 12/18/2008

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **Residual Fuel Oil**

SYNONYMS: Residual Fuel Oil, Fuel Oil #6, Bunker C Fuel Oil, IFO-30, IFO-100, IFO-120, IFO-180, IFO-240, IFO-280, IFO-320, IFO-380, IFO-500, IFO-600, IFO-700, ISO Marine Fuels

PRODUCT CODE:								
	Bunker C Fuel Oil	(422010)	IFO-30	(422030)	IFO-100	(422100)	IFO-120	(422120)
	IFO-180	(422180)	IFO-240	(422240)	IFO-280	(422280)	IFO-320	(422320)
	IFO-380	(422380)	IFO-500	(422500)	IFO-600	(422600)	IFO-700	(422700)
	Generic Marine Fuels	(429999)						

This Material Safety Data Sheet applies to the listed products and synonym descriptions for Hazard Communication purposes only. Technical specifications vary greatly depending on the product and are not reflected in this document. Consult specification sheets for technical information. This product contains ingredients that are considered to be hazardous as defined by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

IMPORTANT: Read this MSDS before handling or disposing of this product. Pass this information on to employees, customers and product users.

MANUFACTURER: U. S. OIL & REFINING CO.
ADDRESS: 3001 Marshall Ave., Tacoma, WA 98421

EMERGENCY PHONE: (253)-383-1651
FAX PHONE: (253)-272-2495
CHEMTREC PHONE: (800) 424-9300
NATIONAL RESPONSE: (800) 424-8802

CHEMICAL NAME: Residual Fuel Oil
CHEMICAL FAMILY: Hydrocarbon

PRODUCT USE: Residual Fuel Oil is a complex blend of hydrocarbons derived from various refinery streams, usually residue, and can contain hydrogen sulfide and polycyclic aromatic hydrocarbons. Typical streams include atmospheric tower bottoms and vacuum tower bottoms. The composition is complex and varies with the source of crude oil. This product is intended for us as a refinery feedstock, fuel or for use in an engineered process. Use in other applications may result in higher exposures and require additional controls, such as local exhaust ventilation and personal protective equipment.

PREPARED BY: U.S. OIL & REFINING CO.

CAS #: Mixture

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

RESIDUAL FUEL OIL CONSISTS OF DISTILLATES AND RESIDUAL FRACTIONS BLENDED TO PRESCRIBED VISCOSITY RANGES. THIS PRODUCT IS LIKELY TO CONTAIN TRACE AMOUNTS OF HYDROGEN SULFIDE.

Name	CAS NUMBER	CONCENTRATION %
Fuel Oil, Residual	68476-33-5	100% (Approx)

SECTION 3: HAZARDS IDENTIFICATION

Danger! This product may contain or release Hydrogen Sulfide a highly toxic, highly flammable gas which can be fatal if inhaled at certain concentrations. This product may also contain polycyclic aromatic oils which may be carcinogenic to humans. This product may cause irritation to eyes, skin and respiratory system. Avoid liquid, mist and vapor contact. Harmful or fatal if swallowed. Aspiration hazard, can enter lungs and cause damage. May cause irritation or be harmful if inhaled or absorbed through the skin. Avoid prolonged or repeated skin contact. Contains polycyclic aromatic compounds which have been shown to cause anemia, disorders of the liver, bone marrow and lymphoid tissues in rats following dermal application. Combustible Liquid. Vapors may explode. May cause irritation to eyes, skin and respiratory system. Avoid liquid, mist and vapor contact. Harmful or fatal if swallowed. Aspiration hazard, can enter lungs and cause damage. May cause irritation or be harmful if inhaled or absorbed through the skin. CAUTION: This product is normally shipped hot and may cause burns to skin or eyes.

PHYSICAL STATE: Liquid (Thick, Oily Liquid)

ROUTES OF ENTRY: Dermal Contact. Eye Contact. Inhalation. Ingestion.

POTENTIAL HEALTH EFFECTS

EYES: Hot material can cause burns to the eyes. Eye irritation, tearing blurred vision may result from contact with liquid, mists and/or vapors.

SKIN: Hot material can cause burns to the skin. Contact may cause moderate irritation, de-fatting (cracking), redness, itching, inflammation, dermatitis and possible secondary infection. Repeated contact with components in this product may cause harmful effects in other parts of the body.

INGESTION: May cause burns to mouth, throat and stomach. This product may cause nausea, vomiting, diarrhea and restlessness. DO NOT INDUCE VOMITING. May cause harmful central nervous system effects, similar to those listed under "inhalation".

INHALATION: Nasal and respiratory tract irritation, central nervous system effects including dizziness, drowsiness, blurred vision, fatigue, nausea, headache, loss of reflexes or loss of consciousness may occur. Hydrogen sulfide can evolve from this product, which can cause dizziness, nausea, headache or death.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Repeated or prolonged contact with spray or mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray or mist may produce respiratory tract irritation. This product may contain compounds that are possibly carcinogenic to humans.

OVER-EXPOSURE SIGNS/SYMPTOMS: Nasal and respiratory tract irritation, central nervous system effects including dizziness, drowsiness, blurred vision, fatigue, nausea, headache, loss of consciousness, respiratory arrest or sudden death could occur as a result of long term and/or high concentration exposure to vapors.

See toxicological information (section 11)

SECTION 4: FIRST AID MEASURES

EYES: This product is normally stored and shipped hot (110°F to 200 °F) and thermal burns are a risk. Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Seek medical advice if pain or redness continues.

SKIN: This product is normally stored and shipped hot (110°F to 200 °F) and thermal burns are a risk. In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention. Wash exposed area thoroughly with soap and water. Remove contaminated clothing promptly and launder before reuse. Contaminated leather goods should be discarded. If irritation persists or symptoms described in the MSDS develop, seek medical attention.

INGESTION: This product may cause nausea, vomiting, diarrhea and restlessness. DO NOT INDUCE VOMITING. Seek prompt medical attention.

INHALATION: If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Seek prompt medical attention if breathing is difficult or if not breathing.

SECTION 5: FIRE-FIGHTING MEASURES

FLAMMABILITY OF THE PRODUCT: **Combustible**

FLAMMABLE LIMITS IN AIR, (% BY VOLUME): LOWER: Not Determined
UPPER: Not Determined

FLASH POINT: Closed Cup >60° C, (140° F)

AUTOIGNITION TEMPERATURE: Approx 500 F

PRODUCTS OF COMBUSTION: These products are carbon oxides (CO, CO_2), nitrogen and sulfur oxides (NO_X, SO_X), particulate matter, VOC's.

FIRE HAZARDS IN THE PRESENCE OF VARIOUS SUBSTANCES: When heated above the flash point, this material will release vapors that can ignite when exposed to open flames, sparks and static discharge. Mists or sprays may be flammable at temperatures below the normal flash point. Keep away from heat and open flame.

FIRE-FIGHTING MEDIA AND INSTRUCTIONS: Combustible Liquid. Use dry chemical, foam or carbon dioxide to extinguish the fire. Consult foam manufacturer for appropriate media, application rates and water/foam ratio. If a leak or spill has not ignited, ventilate area and use water spray to disperse gas or vapor and to protect personnel attempting to stop a leak. Use water to flush spills away from sources of ignition.

SPECIAL FIRE FIGHTING EQUIPMENT: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Cool tanks and containers exposed to fire with water. Improper use of water and extinguishing media containing water may cause frothing which can spread the fire over a larger area.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Moderately combustible. When heated above the flash point, this material will release flammable vapors which if exposed to a source of ignition can burn or be explosive in confined spaces. Mists or sprays may be flammable at temperatures below the normal flash point. Keep away from heat and open flame.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:

Immediately contact emergency personnel. Eliminate all ignition sources and stop spill/release if it can be done without risk. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Do not touch or walk through spilled material. Tanks, vessels or other confined spaces which have contained product should be freed of vapors before entering. The container should be checked to ensure a safe atmosphere before entry. Empty containers may contain toxic, combustible or explosive residues or vapors. Do not cut, grind, drill, weld or reuse empty containers that contained this product. Do not transfer this product to another container unless the container receiving the product is labeled with proper DOT shipping name, hazard class and other information that describes the product and its hazards.

ENVIRONMENTAL PRECAUTIONS:

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. If facility or operation has an "oil or hazardous substance contingency plan", activate its procedures. Stay upwind and away from spill. Wear appropriate protective equipment including respiratory protection as conditions warrant. Do not enter or stay in area unless monitoring indicates that it is safe to do so. Isolate hazard area and restrict entry to emergency crew. Review Fire Fighting Measures section before proceeding with clean up.

Keep all sources of ignition (flames, smoking, flares, etc.) and hot surfaces away from release. Contain spill in smallest possible area.

Recover as much product as possible. Stop leak if it can be done without risk. Use water spray to disperse vapors. Spilled material may be absorbed by an appropriate absorbent, and then handled in accordance with environmental regulations. Prevent spilled material from entering sewers, storm drains, unauthorized treatment or drainage systems and natural waterways. Contact fire authorities and appropriate federal, state and local agencies. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, contact the National Response Center at 800-424-8802. For highway or railway spills, contact Chemtrec at 800-424-9300.

METHODS FOR CLEANING UP:

If emergency personnel are unavailable, contain spilled material. For small spills, use absorbent pads or add absorbent (soil may be used in the absence of other suitable materials) and use a nonsparking or explosion-proof means to transfer material to a sealable, appropriate container for disposal. For large spills, dike spilled material or otherwise contain it to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

SECTION 7: HANDLING AND STORAGE

HANDLING: Do not ingest. Do not get in eyes, on skin or on clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing vapor or mist. Keep away from heat, sparks and flame. Wash thoroughly after handling. In case of fire, use water spray, foam, dry chemical or carbon dioxide as described in the Fire Fighting Measures section of the MSDS. Do not pressurize, cut, weld, braze, solder, drill on or near this container. "Empty" container contains residue (liquid and/or vapor) and may explode in heat of a fire. Use good personal hygiene practices. After handling this product, wash hands before eating, drinking, or using toilet facilities. Keep out of reach of children. Failure to use caution may cause serious injury or illness.

STORAGE: Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Avoid all possible sources of ignition (spark or flame).

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide ventilation to keep the airborne concentrations of vapors below their respective occupational exposure limits.

PERSONAL PROTECTION

SKIN: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Flame Retardant Clothing is recommended.

RESPIRATORY: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

HANDS: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Heat-resistant gloves should be used when handling this product at elevated temperatures.

EYE: Eye protection (chemical-type goggles and/or face shield), should be worn whenever there is a likelihood of splashing or spraying liquid. Contact lenses should not be worn. Eye wash water should be provided.

OTHER: Use good personal hygiene practices. In case of skin contact, wash with mild soap and water or a waterless hand cleaner. Immediately remove soiled clothing and wash thoroughly before reuse. Discard oil-soaked leather goods.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION Continued

PROTECTIVE CLOTHING OR EQUIPMENT: Gloves, hardhat, face shield, boots, safety glasses, respirator, FR clothing.

PERSONAL PROTECTIVE EQUIPMENT IN CASE OF A LARGE SPILL: Splash goggles. Full suit. Vapor respirator. Boots. Gloves. Suggested protective clothing might not be adequate. Consult a specialist before handling this product.

Established Occupational Exposure Limits

Substance	Value	Time/Type	Source
OIL MIST, MINERAL	5 MG/M3 10 MG/M3	8 hr PEL 15 min STEL	OSHA ACGIH
HYDROGEN SULFIDE	10 PPM 15 PPM	8 hr PEL 15 min STEL	OSHA OSHA

Consult local authorities for acceptable exposure limits.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Liquid. (Thick, oily liquid.)

COLOR: Brown to Black Viscous Liquid

ODOR: Strong Petroleum Odor, Asphalt like

BOILING POINT: 175 to 650°C (350 to 1200°F)

SPECIFIC GRAVITY: 0.93 to 1.0 (Water = 1) (@ 60° F)

VISCOSITY: 90 to 700 mm^2/s @ 50°C (cSt @ 122°F)

VAPOR PRESSURE: Not Determined

VAPOR DENSITY: >1 (Air = 1)

VOLATILITY: Negligible

EVAPORATION RATE: Negligible

MATERIALS TO AVOID: Strong acids, alkalis, and strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Burning or excessive heating may produce carbon monoxide and other harmful gases and vapors including oxides and/or other compounds of sulfur and nitrogen.

SECTION 10: STABILITY AND REACTIVITY

STABILITY AND REACTIVITY:	The product is stable.
INCOMPATIBILITY WITH VARIOUS SUBSTANCES:	Reactive with oxidizing agents, acids, alkalis.
HAZARDOUS DECOMPOSITION PRODUCTS:	These products are carbon oxides (CO, CO_2), nitrogen and sulfur oxides (NO_x, SO_x), particulate matter, VOC's.
HAZARDOUS POLYMERIZATION:	Will not occur.
CONDITIONS TO AVOID (STABILITY):	Heat and open flame

SECTION 11: TOXICOLOGICAL INFORMATION

TOXICITY DATA

Fuel Oil No. 6 (CAS 68553-00-4)

May contain compounds reported to cause skin cancer and have toxic effects towards liver, kidneys and central nervous system. Risk of cancer depends on duration and level of exposure.

SECTION 12: ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION:	Not evaluated at this time.
PRODUCTS OF DEGRADATION:	These products are carbon oxides (CO, CO_2) and water.

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL:	The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with all applicable federal, state and local environmental regulations.

Consult your state or local authorities.

SECTION 14: TRANSPORT INFORMATION

REGULATORY INFORMATION	UN NUMBER	EMERGENCY RESPONSE GUIDEBOOK	PROPER SHIPPING NAME	CLASS	PACKING GROUP
DOT Classification	NA1993	Guide 128	Fuel Oil	3	III

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS:

Extremely Hazardous Substances for Emergency Response and Planning 40 CFR 355 & 40 CFR 370:

NONE

Toxic Release Chemicals for Emission Reporting (SARA 313):

NONE

EPA SARA 311/312 Title III Hazard Categories

Acute Health Hazard:	No
Chronic Health Hazard:	Yes
Fire Hazard:	Yes
Pressure Hazard:	No
Reactive Hazard:	No

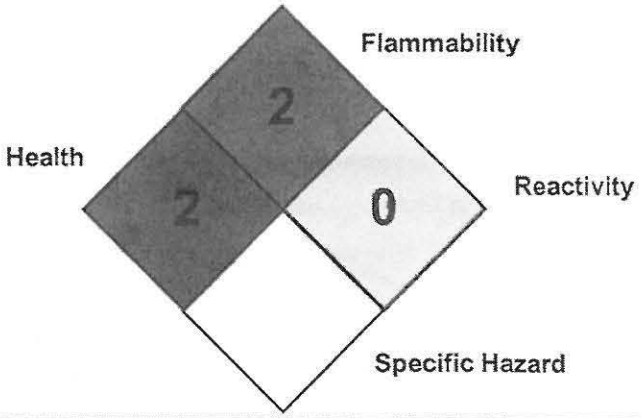
SECTION 16: OTHER INFORMATION

HAZARDOUS MATERIAL INFORMATION SYSTEM (U.S.A.)

HMIS III		
HEALTH	*	2
FLAMMABILITY		2
PHYSICAL HAZARD		0
PERSONAL PROTECTION		

* Chronic Health Hazard

NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A.)



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U. S. OIL & REFINING CO.

MATERIAL SAFETY DATA SHEET

RAW VACUUM GAS OIL **MSDS No. 644400**

Revised 2/13/06

U. S. OIL & REFINING CO.
3001 Marshall Ave.
Tacoma, WA 98421

EMERGENCY ASSISTANCE:
COMPANY: (253) 383-1651
CHEMTREC: (800) 424-9300

IMPORTANT: Read this MSDS before handling or disposing of this product. Pass this information on to employees, customers and product users.

1. GENERAL

Trade Name: RAW VACUUM GAS OIL
Other Names: FCC FEED STOCK

Chemical Family: HYDROCARBON
Generic Name: GAS OIL
DOT Hazard Class: NONE
Proper Shipping Name: RAW VACUUM GAS OIL
DOT UN ID No.: NONE, NOT REGULATED BY 49 CFR

NFPA Hazard Rating: HEALTH: 1
FIRE: 1
REACTIVITY: 0
SPECIAL:

2. PRODUCT COMPONENTS

Component	CAS Number	Percent
VACUUM DISTILLATE CONSISTS OF VARIABLE MIXTURES OF STRAIGHT RUN FRACTIONS. THIS PRODUCT COULD CONTAIN TRACE AMOUNTS OF HYDROGEN SULFIDE (A TOXIC GAS).	70592-77-7	100 (AP)
COMPONENTS INCLUDE:		
1. PETROLEUM DISTILLATES	7059277-7	100 (AP)
2. HYDROGEN SULFIDE	77831-06-4	TRACE

3. OCCUPATIONAL EXPOSURE LIMITS

Substance	Value	Time/Type	Date	Source
OIL MIST,MINERAL	5 MG/M^3	8 Hr PEL	1989	OSHA
(SEE SECTION 11)	10 MG/M^3	15 Min STEL	1983	ACGIH
HYDROGEN SULFIDE	10 PPM	8 Hr PEL	1989	OSHA
	15 PPM	15 Min STEL	1989	OSHA

4. HEALTH INFORMATION

Summary: SKIN CONTACT WITH HOT OIL MAY CAUSE SEVERE THERMAL BURNS.

Routes of Exposure	Signs and Symptoms
Inhalation	NO SIGNIFICANT SIGNS OR SYMPTOMS INDICATIVE OF ANY ADVERSE HEALTH EFFECTS ARE EXPECTED TO OCCUR UPON SHORT-TERM EXPOSURES.
Eye Contact	EYE IRRITATION MAY RESULT FROM CONTACT WITH LIQUID, MISTS, AND/OR VAPORS.
Skin Contact	SKIN IRRITATION MAY OCCUR UPON PROLONGED OR REPEATED SKIN CONTACT.
Ingestion	NAUSEA, VOMITING, DIARRHEA, AND RESTLESSNESS
Overexposure Effects:	THIS PRODUCT MAY CONTAIN AROMATIC OILS. ALTHOUGH THERE IS NO SPECIFIC EVIDENCE THAT THIS MATERIAL IS CARCINOGENIC TO HUMANS, EXPERIMENTS HAVE SHOWN THAT SIMILAR MATERIALS CONTAINING POLYCYCLIC AROMATIC HYDROCARBONS HAVE CAUSED SKIN CANCER ON TEST ANIMALS.

5. FIRE AND EXPLOSION

Flash Point (Method): GT 275°F (PMCC) SEE BELOW

Autoignition Temperature (Method): AP 750 (ESTIMATE)

Flammable Limits (% Vol. in air) at Normal Atmospheric Temperature and Pressure LOWER: AP 0.6
UPPER: AP 7.5

Unusual Fire and Explosion Hazards:

MODERATELY COMBUSTIBLE! WHEN HEATED ABOVE THE FLASH POINT, THIS MATERIAL WILL RELEASE FLAMMABLE VAPORS WHICH IF EXPOSED TO A SOURCE OF IGNITION CAN BURN OR BE EXPLOSIVE IN CONFINED SPACES. MISTS OR SPRAYS MAY BE FLAMMABLE AT TEMPERATURES BELOW THE NORMAL FLASH POINT. KEEP AWAY FROM HEAT AND OPEN FLAME.

Extinguishing Media:

DRY CHEMICAL, HALON, AND CARBON DIOXIDE. FOAM AND WATER FOG ARE EFFECTIVE, BUT MAY CAUSE FROTHING.

Special Firefighting Procedures:

FOR FIRES INVOLVING THIS MATERIAL, DO NOT ENTER ANY ENCLOSED FIRE SPACE WITHOUT PROPER PROTECTIVE EQUIPMENT, INCLUDING SELF-CONTAINED BREATHING APPARATUS. COOL TANKS AND CONTAINERS EXPOSED TO FIRE WITH WATER. IMPROPER USE OF WATER AND EXTINGUISHING MEDIA CONTAINING WATER MAY CAUSE FROTHING WHICH CAN SPREAD THE FIRE OVER A LARGER AREA.

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6. EMPLOYEE PROTECTION

Respiratory: NONE IS NEEDED UNDER NORMAL CONDITIONS WITH ADEQUATE VENTILATION. IF EXPOSURE EXCEEDS THE CONTROL LIMITS, RESPIRATORY PROTECTIVE EQUIPMENT WHICH MEETS 29 CFR 1910.134 AND IS NIOSH/MSHA APPROVED MUST BE WORN.

Ventilation: USE ADEQUATE VENTILATION TO KEEP OIL MISTS/VAPORS BELOW THE OCCUPATIONAL EXPOSURE LIMITS. SPECIAL VENTILATION MAY BE REQUIRED FOR HANDLING CONDITIONS AT ELEVATED TEMPERATURES.

Eye: EYE PROTECTION (CHEMICAL-TYPE GOGGLES AND/OR FACE SHIELD) SHOULD BE WORN WHENEVER THERE IS A LIKELIHOOD OF SPLASHING OR SPRAYING LIQUID. CONTACT LENSES SHOULD NOT BE WORN. EYE WASH WATER SHOULD BE PROVIDED.

Skin: WHEN SKIN CONTACT IS POSSIBLE, AND ESPECIALLY WHEN HANDLING HOT MATERIAL, PROTECTIVE CLOTHING SUCH AS GLOVES, IMPERVIOUS APRON, LONG-SLEEVES, BOOTS, AND FACE PROTECTION MUST BE WORN.

Other: USE GOOD PERSONAL HYGIENE PRACTICES. IN CASE OF SKIN CONTACT, WASH WITH MILD SOAP AND WATER OR A WATERLESS HAND CLEANER. IMMEDIATELY REMOVE SOILED CLOTHING AND WASH THOROUGHLY BEFORE REUSE. DISCARD OIL-SOAKED LEATHER GOODS.

7. EMERGENCY AND FIRST AID

Inhalation: IMMEDIATELY REMOVE FROM CONTAMINATED AREA TO FRESH AIR. FOR RESPIRATORY DISTRESS, GIVE OXYGEN OR ADMINISTER CPR (CARDIOPULMONARY RESUSCITATION), IF NECESSARY. OBTAIN PROMPT MEDICAL ATTENTION.

Eye Contact: FLUSH WITH CLEAN LOW-PRESSURE WATER FOR AT LEAST 15 MINUTES. IF IRRITATION PERSISTS, OBTAIN MEDICAL ATTENTION.

Skin Contact: REMOVE CONTAMINATED CLOTHING. WASH AFFECTED AREA THOROUGHLY WITH SOAP AND WATER. IF IRRITATION PERSISTS, SEEK MEDICAL ATTENTION. WASH CLOTHING THOROUGHLY BEFORE REUSE, BUT DISCARD CONTAMINATED LEATHER GOODS. HOT LIQUID MAY CAUSE BURNS; FLUSH WITH COOL LOW-PRESSURE WATER AND GET MEDICAL TREATMENT.

Ingestion: DO NOT INDUCE VOMITING, SINCE ASPIRATION INTO THE LUNGS WILL CAUSE CHEMICAL PNEUMONIA. MUST OBTAIN MEDICAL ATTENTION PROMPTLY.

8. SPILL AND DISPOSAL

Actions if Material is Spilled or Leaked:

CONTAIN SPILL. REMOVE ALL IGNITION SOURCES AND SAFELY STOP FLOW OF SPILL. SPILL MAY CREATE SLIPPING HAZARDS. IN URBAN AREAS CLEAN UP ASAP; IN NATURAL ENVIRONMENTS, SEEK ADVICE FROM ECOLOGISTS. EVACUATE ALL NON-ESSENTIAL PERSONNEL. USE PROPER PROTECTIVE EQUIPMENT. PADS/ABSORBENT MATERIAL CAN BE USED. THIS MATERIAL WILL FLOAT ON WATER AND RESULTING RUNOFF MAY CREATE A FIRE HAZARD. NOTIFY THE NATIONAL RESPONSE CENTER (800/424-8802) AND COMPLY WITH ALL LAWS. THE SPILLED MATERIAL AND ANY WATER OR SOIL WHICH IT HAS CONTACTED MAY BE HAZARDOUS TO ANIMAL/AQUATIC LIFE.

Waste Disposal Methods:

MAXIMIZE PRODUCT RECOVERY FOR REUSE PRIOR TO DISPOSAL. CONDITIONS OF USE MAY CAUSE THIS MATERIAL TO BECOME A "HAZARDOUS WASTE" AS DEFINED BY STATE OR FEDERAL LAWS. USE APPROVED TREATMENT, TRANSPORTERS, AND DISPOSAL SITES IN COMPLIANCE WITH ALL APPLICABLE LAWS. IF SPILL IS INTRODUCED INTO A WASTEWATER SYSTEM, THE CHEMICAL AND BIOLOGICAL OXYGEN DEMAND WILL LIKELY INCREASE. PROPERLY ACCLIMATE THE BIOMASS TO THE SPILL MATERIAL. POTENTIAL DISPOSAL METHODS INCLUDE LAND FARMING, INCINERATION AND LAND DISPOSAL, IF PERMITTED.

9. PHYSICAL AND CHEMICAL DATA

Specific Gravity (H_2O = 1 @ 39.2°F): AP 0.91 to .93

Hazardous Polymerization: NOT EXPECTED TO OCCUR

Evaporation Rate (Ratio of Time): N/AP

Vapor Pressure: (REID-PSIA AT 100°F) LT 0.1

Viscosity Units, Temp. (Method): 30 TO 50 CST AT 122 °F

Dry Point: N/AP

Volatile Characteristics: NA

Pour Point: >85°F

Other Physical and Chemical Properties: BLENDED TO MEET REGULATORY AND CUSTOMER REQUIREMENTS INCLUDING VISCOSITY, POUR, SULFUR, AND HEAVY METALS.

Appearance and Odor: DARK GREEN TO BLACK COLORED VISCOUS LIQUID; SLIGHTLY CRACKED OR BURNT TO ASPHALTIC ODOR.

Conditions to Avoid: HEAT, AND OPEN FLAME

Materials to Avoid: STRONG ACIDS, ALKALIES, AND STRONG OXIDIZERS.

Hazardous Decomposition Products: BURNING OR EXCESSIVE HEATING MAYPRODUCE CARBON MONOXIDE AND OTHER HARMFUL GASES AND VAPORS INCLUDING OXIDES AND/OR OTHER COMPOUNDS OF SULFUR AND NITROGEN.

10. SARA TITLE III

Extremely Hazardous Substances for Emergency Response and Planning:

Component	CAS Number	Percent	TPQ(lbs)	RQ(lbs)
NONE				

Toxic Chemicals for Emission Reporting

Component	CAS Number	Percent (Typical)
NONE		

EPA Hazard Classification:

Acute Health Hazard: X
Chronic Health Hazard: X
Fire Hazard:
Pressure Hazard:
Reactive Hazard:
Not Applicable:

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11. ADDITIONAL PRECAUTIONS

Handling & Storage:

PARTS AND EQUIPMENT USING OR CONTAINING THIS MATERIAL MUST BE STEAM-CLEANED PRIOR TO ALL MAINTENANCE PROCEDURES. ALL MATERIAL SAMPLING SHOULD BE CONDUCTED IN A MANNER WHICH AVOIDS VAPOR INHALATION OR SKIN CONTACT. SPECIAL CARE AND LABELING MUST BE PROVIDED DURING TRANSPORTATION/HANDLING OF LABORATORY SAMPLES. USE GOOD PERSONAL HYGIENE PRACTICES. WASH HANDS WITH PLENTY OF SOAP AND WATER BEFORE EATING, DRINKING, SMOKING OR USE OF TOILET FACILITIES. DO NOT USE SOLVENTS (GASOLINE, KEROSENE, ETC.) OR ABRASIVE SKIN CLEANERS. OIL-SOAKED CLOTHING MUST BE PROMPTLY REMOVED AND LAUNDERED BEFORE REUSE. DISCARD CONTAMINATED LEATHER GOODS.

General Comments:

SPECIFIC EXPOSURE STANDARDS/CONTROL LIMITS FOR THIS MATERIAL HAVE NOT BEEN AGREED UPON; THEREFORE, ACGIH TLV GUIDELINES (SEE SECTION 3) ARE SUGGESTED FOR INTERIM USE UNTIL SPECIFIC STANDARDS/CONTROL LIMITS ARE ADOPTED.

SOME OF THE INFORMATION PRESENT AND CONCLUSIONS DRAWN HEREIN ARE FROM SOURCES OTHER THAN DIRECT TEST DATA ON THE MIXTURE ITSELF.

-----**NOTE**-------Qualifications

EQ = Equal	**AP** = Approximately	**N/AV** = Not Available
LT = Less Than	**UK** = Unknown	**N/AP** = Not Applicable
GT = Greater than	**TR** = Trace	**N/DA** = No Data Available

Disclaimer of Liability

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The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. **FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THE PRODUCT.**

MATERIAL SAFETY DATA SHEET
Asphalt Cement

MSDS: 950

REVISION DATE: 06/15/2009

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **Asphalt Cement, All Grades**

SYNONYMS: Asphalt Cement (all grades), PG-Asphalt (all grades), Bituminous Cement

PRODUCT CODE:

PG 58-22	(511412)	PG 58-28	(511413)	PG 58-28 Plus	(511423)	PG 64-22	(511414)
PG 64-10	(511415)	PG 52-28	(512311)	PG 64-22	(513622)	PG 64-28	(513623)
PG 58-34	(513624)	PG 70-22	(513626)	PG 52-34	(513627)	PG 76-22	(513628)
PG 58-40	(513625)	AC-7	(512110)	150-200A	(512111)	AC-2.5	(512210)
AC-5	(512310)	Artic AC-5	(512420)	PG 52-40	(512314)		

This Material Safety Data Sheet applies to the listed products and synonym descriptions for Hazard Communication purposes only. Technical specifications vary greatly depending on the product and are not reflected in this document. Consult specification sheets for technical information. This product contains ingredients that are considered to be hazardous as defined by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

IMPORTANT: Read this MSDS before handling or disposing of this product. Pass this information on to employees, customers and product users.

MANUFACTURER: U. S. OIL & REFINING CO.
ADDRESS: 3001 Marshall Ave., Tacoma, WA 98421

EMERGENCY PHONE: (253)-383-1651
FAX PHONE: (253)-272-2495
CHEMTREC PHONE: (800) 424-9300
NATIONAL RESPONSE: (800) 424-8802

CHEMICAL FAMILY: Hydrocarbon

PREPARED BY: U.S. OIL & REFINING CO.

CAS #: 8052-42-4

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

NAME	CAS NUMBER	CONCENTRATION %
Petroleum Asphalt	8052-42-4	85-100%
Polymer Additive	Mixture	0-15%
Anti-Strip Additive	Mixture	0-1.0%
Hydrogen Sulfide	7783-06-04	Trace

SECTION 3: HAZARDS IDENTIFICATION

Warning! Material is normally shipped at elevated temperatures and can cause severe eye and skin burns. Water contact can cause a violent eruption of hot asphalt.

PHYSICAL STATE:	Semi-solid; Solid at ambient temperature
Color:	Black
Odor:	Asphaltic
ROUTES OF ENTRY:	Dermal Contact. Eye Contact. Inhalation. Ingestion.

POTENTIAL HEALTH EFFECTS

EYES:	Eye contact with hot product can cause severe burns. Contact with this product at warm or ambient temperatures may cause eye irritation.
SKIN:	Skin contact with hot product can cause severe thermal burns. Prolonged or frequent contact with product at warm or ambient temperatures may cause skin irritation.
INGESTION:	Contact with hot product can cause thermal burns. Ingestion of this material is expected to have a low order of acute toxicity.
INHALATION:	Vapors can irritate the eyes, nose, throat and/or lungs. Inhalation at high concentrations may cause headaches, nausea, dizziness, unconsciousness or death. Significant concentrations of hydrogen sulfide gas can be present in the vapor space of storage tanks and transport compartments. Exposure to high concentrations of hydrogen sulfide can cause unconsciousness and death.
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:	Skin, eye and respiratory disorders may be aggravated by exposure to this product. burns.
OVER-EXPOSURE SIGNS/SYMPTOMS:	Inhalation of high concentrations may cause eye and respiratory irritation, headaches, dizziness, nausea, unconsciousness and possibly death. Prolonged or repeated contact with product at warm or near ambient temperature may cause skin irritation. Skin contact with hot product may cause thermal burns. Prolonged or repeated contact with this product at warm or ambient temperatures may cause skin irritation and dermatitis; however, based on human experience this product is judged to be neither corrosive nor an irritant by OSHA criteria. Eye contact may cause thermal burns or eye irritation.

See toxicological information (section 11)

SECTION 4: FIRST AID MEASURES

EYES: For contact with molten material, flush eyes with clean low-pressure water for a minimum of 15 minutes. Seek immediate medical care.

SKIN: For contact with hot molten material, cool skin by quenching with large amounts of cool water. Do not attempt to remove solidified material from the skin, this may cause further skin/tissue damage. For skin contact with product at ambient temperatures, remove contaminated clothing. Wipe excess product off. Wash affected area with a waterless cleanser followed by soap and water. Mineral oil may be used to soften the product to aid the removal process. Seek medical attention if pain or irritation persists.

INGESTION: Ingestion is not likely. If it occurs, do not induce vomiting. If large amounts are swallowed, seek medical attention.

INHALATION: If affected, move person to fresh air. Administer oxygen or administer CPR (cardiopulmonary resuscitation) for respiratory distress and seek prompt medical attention. If symptoms or irritation occur, seek prompt medical attention.

NOTES TO PHYSICIANS OR FIRST AID PROVIDERS: Immerse skin covered with hot material in cool water to limit tissue damage and prevent spread of liquid product. Recommended practice is to not attempt to remove hot material. Allow the solidified material to remain in place until cooled and allow material to naturally fall off. If removal is necessary, mineral oil may be used to assist in minimizing skin loss when removing the solidified material.

SECTION 5: FIRE-FIGHTING MEASURES

FLAMMABILITY OF THE PRODUCT: NFPA Class IIIB combustible material

FLAMMABLE LIMITS IN AIR, (% BY VOLUME): Lower: Not Determined
Upper: Not Determined

FLASH POINT: >316°C (600°F) (COC)

AUTOIGNITION TEMPERATURE: Not Determined

PRODUCTS OF COMBUSTION: Carbon dioxide, carbon monoxide, sulfur oxides, hydrogen sulfide, smoke, fumes, and unburned hydrocarbons

FIRE-FIGHTING MEDIA AND INSTRUCTIONS: Use dry chemical, foam, carbon dioxide or water fog. Water or foam may cause frothing and must be applied carefully to avoid frothing. Use water to keep fire exposed containers cool. Minimize breathing of vapors, fumes or decomposition materials.

Collect contaminated fire-fighting water separately. Do not allow liquid runoff to enter sewers or public waters.

SECTION 5: FIRE-FIGHTING MEASURES (Continued)

SPECIAL FIRE FIGHTING EQUIPMENT:

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Cool tanks and containers exposed to fire with water.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

When heated above the flash point, this material will release flammable vapors which if exposed to a source of ignition can burn or be explosive in confined spaces. Mists or sprays may be flammable at temperatures below the normal flash point. Keep away from open flame. Use of water or foam on product above 212°F can cause product to expand with explosive force.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:

Immediately contact emergency personnel. Eliminate all ignition sources. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Do not touch or walk through spilled material.

ENVIRONMENTAL PRECAUTIONS:

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. If facility or operation has an "*oil or hazardous substance contingency plan*", activate its procedures. Stay upwind and away from spill. Wear appropriate protective equipment including respiratory protection as conditions warrant. Do not enter or stay in area unless monitoring indicates that it is safe to do so. Isolate hazard area and restrict entry to emergency crew. Contain spill in smallest possible area.

Prevent spilled material from entering sewers, storm drains, other unauthorized treatment or drainage systems and natural waterways. Contact fire authorities and appropriate federal, state and local agencies. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, contact the National Response Center at 800-424-8802. For highway or railway spills, contact Chemtrec at 800-424-9300.

METHODS FOR CLEANING UP:

Land Spill: Shovel and dispose of with an appropriate disposal facility in accordance with local, state and federal regulations.

Water Spill: Depending on density, asphalts tend to float or sink. Asphalt will have minimal dispersion movement in water. Eliminate sources of ignition and warn other ships in the area to stay clear. Notify the proper authorities. Confine with skimming equipment if available or set booms to recover the spill.

SECTION 7: HANDLING AND STORAGE

HANDLING: Do not breathe fumes or vapor from heated material. Stay upwind when opening hatches and vents. Wear appropriate personal protective equipment to avoid skin, face and eye contact with heated material. Significant concentrations of hydrogen sulfide can be present in vapor space of storage tanks and transport compartments, which may require additional precautions.

STORAGE: Material is frequently stored in cone roof storage tanks. Storage temperatures above 350°F will increase the risk of formation of pyrophoric sulfides and carbonaceous deposits on the roof and rafters. Refer to API Recommended Practice 2023 for additional storage guidance.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Special ventilation may be required for handling conditions at elevated temperatures. Ensure that eyewash stations and safety showers are close to the workstation location.

PERSONAL PROTECTION

SKIN: PPE selection should be based on a risk assessment. Heat-resistant gloves, impervious apron, long-sleeved shirts, leather boots, safety glasses, face shield should be worn when indicated by a risk assessment.

RESPIRATORY: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

EYE: Eye protection (chemical-type goggles and/or face shield) should be worn whenever there is a likelihood of splashing or spraying liquid. Contact lenses should not be worn. Eye wash water should be provided.

OTHER: Use good personal hygiene practices.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION (Continued)

PERSONAL PROTECTIVE EQUIPMENT IN CASE OF A LARGE SPILL: Splash goggles. Full suit. Vapor respirator. Boots. Gloves. Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product. Suggested protective clothing might not be adequate. Consult a specialist before handling this product.

Established Occupational Exposure Limits

SUBSTANCE	VALUE	TIME/TYPE	SOURCE
Asphalt	.5 mg/m^3	8 hour TWA	ACGIH
Hydrogen Sulfide	10 ppm	8 hour PEL	OSHA
Hydrogen Sulfide	15 ppm	15 min STEL	OSHA

Consult local authorities for acceptable exposure limits.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Liquid

COLOR: Black

ODOR: Asphaltic

BOILING POINT: >480°C (900°F)

FLASH POINT: >316°C (600°F)

FREEZING POINT: Not Established

SPECIFIC GRAVITY: 0.98 to 1.3 (Water = 1) (@ 60°F)

VISCOSITY: >0.1 PaS @ 135°C

VAPOR PRESSURE: Not Determined

VAPOR DENSITY: >1 (Air = 1)

VOLATILITY: Negligible

EVAPORATION RATE: Not Determined

SECTION 10: STABILITY AND REACTIVITY

MATERIALS TO AVOID:	Open flame and extreme heat
STABILITY AND REACTIVITY:	The product is stable
INCOMPATIBILITY WITH VARIOUS SUBSTANCES:	Reacts with strong oxidizers
HAZARDOUS DECOMPOSITION PRODUCTS:	At ambient temperature this product does not decompose. Burning or excessive heating may produce carbon monoxide, sulfur oxides, hydrogen sulfide and other harmful vapors and gases.
HAZARDOUS POLYMERIZATION:	Will not occur
CONDITIONS TO AVOID (STABILITY):	Heat, sparks, and open flame. Strong oxidizers.

SECTION 11: TOXICOLOGICAL INFORMATION

Fumes emitted from heated product are irritating to the eyes and respiratory tract. Dust/particles may be the source of physical irritants. Symptoms of overexposure to hydrogen sulfide include insomnia, irritability, headache, fatigue, gastrointestinal problems and loss of sense of smell up to 100 ppm. Exposures to hydrogen sulfide above 100 ppm may cause drowsiness, loss of consciousness, respiratory failure or death.

Certain extracts of asphalt have been shown to produce cancers in laboratory rodents. The carcinogenic potency of asphalt is considered low, provided asphalt is not contaminated with coal tar.

Based on animal and human data, an A4 Not Classifiable as a Human Carcinogen, notation is assigned to asphalt fume.

SECTION 12: ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION:	Not evaluated at this time.
PRODUCTS OF DEGRADATION:	This product is expected to have a very low rate of biodegradation.
TOXICITY OF THE PRODUCTS OF BIODEGRADATION:	Bioaccumulation of components is unlikely due to very low water solubility.

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

This material, if discarded as produced, is not a RCRA "listed" hazardous waste.

Disposal of empty containers and container rinseate should at all times comply with all applicable federal, state and local environmental regulations.

Consult your local or regional authorities.

SECTION 14: TRANSPORT INFORMATION

REGULATORY INFORMATION	UN NUMBER	EMERGENCY RESPONSE GUIDEBOOK	PROPER SHIPPING NAME	CLASS	PACKING GROUP
DOT Classification	UN3257	Guide 128	Elevated temperature liquid, n.o.s.	9	III

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS:

Extremely Hazardous Substances for Emergency Response and Planning 40 CFR 355 & 40 CFR 370:

Hydrogen Sulfide

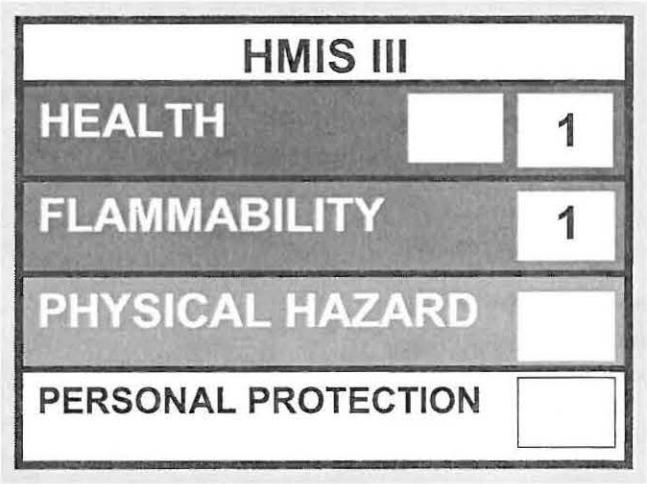
EPA SARA Sections 302, 304 & 313 and CERCLA:
This material does not contain any chemicals subject to the reporting requirements of SARA 302, SARA 304, SARA 313, CERCLA or 40 CFR 372

EPA SARA 311/312 Title III Hazard Categories:

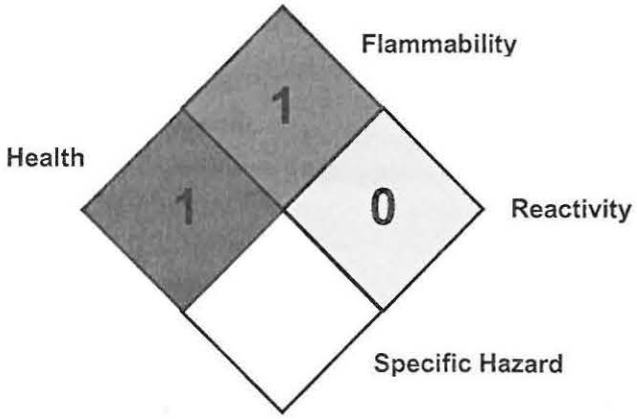
Acute Health Hazard:	**YES**
Chronic Health Hazard:	**NO**
Fire Hazard:	**NO**
Pressure Hazard:	**NO**
Reactive Hazard:	**NO**

SECTION 16: OTHER INFORMATION

HAZARDOUS MATERIAL
INFORMATION SYSTEM



NATIONAL FIRE PROTECTION
ASSOCIATION (U.S.A.)



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MATERIAL SAFETY DATA SHEET
Asphalt Emulsions

MSDS: 951
REVISION DATE: 4/1/09

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **Asphalt Emulsions, All Grades**

SYNONYMS: Asphalt Emulsions (all grades), Emulsified Asphalts (all grades), Cationic Emulsified Asphalt (all grades)

PRODUCT CODE:

CMS-2P	(N/AV)	CMS-2S	(N/AV)	STE-1	(534110)
CSS-1	(533110)	CSS-1H	(533210)	CMS-2	(531110)
CRS-2	(532110)	CRS-2P	(532420)		

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IMPORTANT: Read this MSDS before handling or disposing of this product. Pass this information on to employees, customers and product users.

MANUFACTURER: U. S. OIL & REFINING CO.
ADDRESS: 3001 Marshall Ave., Tacoma, WA 98421

EMERGENCY PHONE: (253)-383-1651
FAX PHONE: (253)-272-2495
CHEMTREC PHONE: (800) 424-9300
NATIONAL RESPONSE: (800) 424-8802

CHEMICAL FAMILY: Asphalt Mixture

PREPARED BY: U.S. OIL & REFINING CO.

CAS #: Mixture

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

NAME	CAS NUMBER	CONCENTRATION %
Petroleum Asphalt	8052-42-4	60 - 75%
Water	7732-18-5	25 - 40%
Naphtha	64741-46-4	0 - 10%
Polymer Additive	Mixture	0 – 3%
Organic Amine Emulsifier	Mixture	0 - 6%
Hydrochloric Acid	7647-01-0	1 - 5%

SECTION 3: HAZARDS IDENTIFICATION

Warning! Can cause eye and skin irritation. Hot product can cause burns. Fumes from product can cause irritation to the eyes, skin and respiratory system.

PHYSICAL STATE:	Liquid
Color:	Brown-Black
Odor:	Asphaltic, Sweet Odor
ROUTES OF ENTRY:	Dermal Contact. Eye Contact. Inhalation. Ingestion.

POTENTIAL HEALTH EFFECTS

EYES:	Eye contact may result in eye irritation or burns.
SKIN:	Skin contact with hot product can cause thermal burns. Skin contact with product at warm or ambient temperatures may cause skin irritation. Prolonged or frequent contact with product at warm or ambient temperatures may cause more serious skin disorders.
INGESTION:	This material can irritate the mouth, throat, stomach, and cause nausea, vomiting, diarrhea. Ingestion of hot product can cause thermal burns.
INHALATION:	No significant health effects are expected to occur from short-term exposures to this product at ambient temperatures. If handled at elevated temperatures, vapors and mists can irritate the eyes, nose, throat and/or lungs.
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:	Skin, eye and respiratory disorders may be aggravated by exposure to this product.

SECTION 4: FIRST AID MEASURES

EYES:	For contact with molten material, flush eyes with clean low-pressure water for a minimum of 15 minutes. Seek immediate medical care.
SKIN:	Remove contaminated clothing. Wipe excess product off with a dry cloth. Wash affected area well with a waterless cleanser followed by soap and water. Thoroughly clean contaminated clothing. Seek medical attention if pain or irritation persists.
INGESTION:	Do not induce vomiting. Seek prompt medical attention if significant amounts are swallowed or irritation/discomfort occurs.
INHALATION:	If affected, move person to fresh air. Administer oxygen or administer CPR (cardiopulmonary resuscitation) for respiratory distress and seek prompt medical attention. If symptoms or irritation occur, seek prompt medical attention.

SECTION 5: FIRE-FIGHTING MEASURES

FLAMMABILITY OF THE PRODUCT:	NFPA Class IIIB combustible material
FLAMMABLE LIMITS IN AIR, (% BY VOLUME):	Lower: Not Applicable Upper: Not Applicable
FLASH POINT:	Not Applicable
AUTOIGNITION TEMPERATURE:	Not Determined
PRODUCTS OF COMBUSTION:	Carbon dioxide, carbon monoxide, sulfur oxides, hydrogen sulfide, smoke, fumes, and unburned hydrocarbons
FIRE-FIGHTING MEDIA AND INSTRUCTIONS:	Use dry chemical, foam, carbon dioxide or water fog. Use water to keep fire exposed containers cool. Minimize breathing of vapors, fumes or decomposition materials. Collect contaminated fire-fighting water separately. Do not allow liquid runoff to enter sewers or public waters.
SPECIAL FIRE FIGHTING EQUIPMENT:	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Cool tanks and containers exposed to fire with water.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Asphalt emulsions will normally not ignite. However asphalt emulsion may separate forming a layer of asphalt and a layer of water in the storage tank. Asphalt and asphalt residue will burn at elevated temperatures.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:

Immediately contact emergency personnel. Eliminate all ignition sources. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Do not touch or walk through spilled material.

ENVIRONMENTAL PRECAUTIONS:

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. If facility or operation has an "*oil or hazardous substance contingency plan*", activate its procedures. Stay upwind and away from spill. Wear appropriate protective equipment including respiratory protection as conditions warrant. Do not enter or stay in area unless monitoring indicates that it is safe to do so. Isolate hazard area and restrict entry to emergency crew. Contain spill in smallest possible area.

Prevent spilled material from entering sewers, storm drains, other unauthorized treatment or drainage systems and natural waterways. Contact fire authorities and appropriate federal, state and local agencies. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, contact the National Response Center at 800-424-8802. For highway or railway spills, contact Chemtrec at 800-424-9300.

METHODS FOR CLEANING UP:

For small spills, absorb or cover with dry earth, sand or appropriate absorbent material. Dispose of material at an appropriate disposal facility in accordance with local, state and federal regulations.

SECTION 7: HANDLING AND STORAGE

HANDLING:

Do not breathe fumes or vapor from heated material. Stay upwind when opening hatches and vents. Wear appropriate personal protective equipment to avoid skin, face and eye contact with heated material. Significant concentrations of hydrogen sulfide can be present in vapor space of storage tanks and transport compartments, which may require additional precautions.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Special ventilation may be required for handling conditions at elevated temperatures. Ensure that eyewash stations and safety showers are close to the workstation location.

PERSONAL PROTECTION

SKIN: PPE selection should be based on a risk assessment. Heat-resistant gloves, impervious apron, long-sleeved shirts, leather boots, safety glasses, face shield should be worn when indicated by a risk assessment.

RESPIRATORY: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

EYE: Eye protection (chemical-type goggles and/or face shield) should be worn whenever there is a likelihood of splashing or spraying liquid. Contact lenses should not be worn. Eye wash water should be provided.

OTHER: Use good personal hygiene practices.

PERSONAL PROTECTIVE EQUIPMENT IN CASE OF A LARGE SPILL: Splash goggles. Full suit. Vapor respirator. Boots. Gloves. Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product. Suggested
protective clothing might not be adequate. Consult a specialist before handling this product.

Established Occupational Exposure Limits

SUBSTANCE	VALUE	TIME/TYPE	SOURCE
Asphalt	.5 mg/m^3	8 hour TWA	ACGIH
Hydrogen Chloride, Anhydrous	5 ppm	Ceiling	OSHA
Hydrogen Sulfide	10 ppm	8 hour PEL	OSHA
Hydrogen Sulfide	15 ppm	15 min STEL	OSHA

Consult local authorities for acceptable exposure limits.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	Liquid
COLOR:	Black-Brown
ODOR:	Asphaltic, Sweet
BOILING POINT:	Approximately 212°F
FLASH POINT:	Not Applicable
FREEZING POINT:	Not Available
SPECIFIC GRAVITY:	1.0 to 1.3 (Water = 1) (@ 60°F)
VISCOSITY:	Approximately 250 SSF @ 122°F
VAPOR PRESSURE:	Not Determined
VAPOR DENSITY:	>1 (Air = 1)
VOLATILITY:	Negligible
EVAPORATION RATE:	Not Determined

SECTION 10: STABILITY AND REACTIVITY

MATERIALS TO AVOID:	Open flame and extreme heat
STABILITY AND REACTIVITY:	The product is stable
INCOMPATIBILITY WITH VARIOUS SUBSTANCES:	Reacts with strong oxidizers
HAZARDOUS DECOMPOSITION PRODUCTS:	At ambient temperature this product does not decompose. Burning or excessive heating may produce carbon monoxide sulfur oxides, hydrogen sulfide and other harmful vapors and gases.
HAZARDOUS POLYMERIZATION:	Will not occur
CONDITIONS TO AVOID (STABILITY):	Heat, sparks and open flame. Strong oxidizers.

SECTION 11: TOXICOLOGICAL INFORMATION

Fumes emitted from heated product are irritating to the eyes and respiratory tract. Dust/particles may be the source of physical irritants. Repeated or prolonged skin contact with asphalt at ambient temperatures can result in skin irritation. Symptoms of overexposure to hydrogen sulfide include insomnia, irritability, headache, fatigue, gastrointestinal problems and loss of sense of smell up to 100 ppm. Exposures to hydrogen sulfide above 100 ppm may cause drowsiness, loss of consciousness, respiratory failure or death.

Certain extracts of asphalt have been shown to produce cancers in laboratory rodents. The carcinogenic potency of asphalt is considered low, provided asphalt is not contaminated with coal tar.

Based on animal and human data, an A4 Not Classifiable as a Human Carcinogen, notation is assigned to asphalt fume.

SECTION 12: ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION:	Not evaluated at this time. This product is soluble in water and will disperse in water environment. Water insoluble hydrocarbons from this material may separate.
PRODUCTS OF DEGRADATION:	This product is expected to have a low rate of biodegradation.
TOXICITY OF THE PRODUCTS OF BIODEGRADATION:	Bioaccumulation of components is not expected.

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL:

The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

This material, if discarded as produced, is not a RCRA "listed" hazardous waste.

Disposal of empty containers and container rinseate should at all times comply with all applicable federal, state and local environmental regulations.

Consult your local or regional authorities.

SECTION 14: TRANSPORT INFORMATION

Not regulated by the U.S. Dept of Transportation as a hazardous material.

REGULATORY INFORMATION	UN NUMBER	EMERGENCY RESPONSE GUIDEBOOK	PROPER SHIPPING NAME	CLASS	PACKING GROUP
DOT Classification	N/A	N/A	N/A	N/A	N/A

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS:

Extremely Hazardous Substances for Emergency Response and Planning 40 CFR 355 & 40 CFR 370:

Hydrogen Sulfide

EPA SARA Sections 302, 304 & 313 and CERCLA:
This material does not contain any chemicals subject to the reporting requirements of SARA 302, SARA 304, SARA 313, CERCLA or 40CFR 372

EPA SARA 311/312 Title III Hazard Categories:

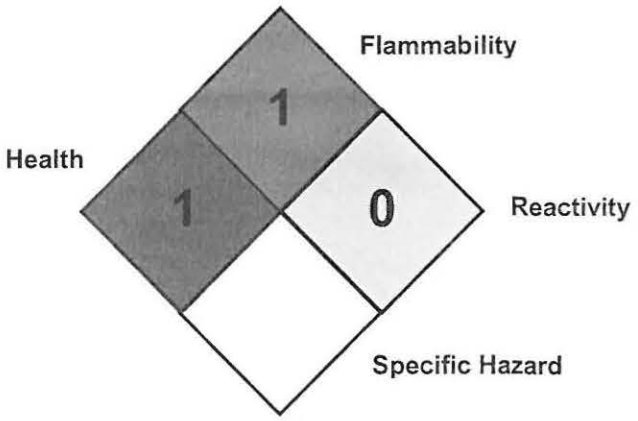
Acute Health Hazard:	YES
Chronic Health Hazard:	NO
Fire Hazard:	NO
Pressure Hazard:	NO
Reactive Hazard:	NO

SECTION 16: OTHER INFORMATION

HAZARDOUS MATERIAL
INFORMATION SYSTEM

HMIS III	
HEALTH	1
FLAMMABILITY	1
PHYSICAL HAZARD	
PERSONAL PROTECTION	

NATIONAL FIRE PROTECTION
ASSOCIATION (U.S.A.)



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The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. **FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THE PRODUCT.**

MATERIAL SAFETY DATA SHEET
Specialty Asphalt

MSDS: 952
REVISION DATE: 4/1/09

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **Specialty Asphalt, All Grades**

SYNONYMS: Specialty asphalt (all grades), Flux (all grades)

PRODUCT CODE:

Flux Oil	(541210)	SP-5	(512312)	SP-18	(512313)
Blending Flux	(541110)	MC Cold Mix	(521010)		

This Material Safety Data Sheet applies to the listed products and synonym descriptions for Hazard Communication purposes only. Technical specifications vary greatly depending on the product and are not reflected in this document. Consult specification sheets for technical information. This product contains ingredients that are considered to be hazardous as defined by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

IMPORTANT: Read this MSDS before handling or disposing of this product. Pass this information on to employees, customers and product users.

MANUFACTURER: U. S. OIL & REFINING CO.
ADDRESS: 3001 Marshall Ave., Tacoma, WA 98421

EMERGENCY PHONE: (253)-383-1651
FAX PHONE: (253)-272-2495
CHEMTREC PHONE: (800) 424-9300
NATIONAL RESPONSE: (800) 424-8802

CHEMICAL FAMILY: Hydrocarbon

PREPARED BY: U.S. OIL & REFINING CO.

CAS #: 8052-42-4

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

NAME	CAS NUMBER	CONCENTRATION %
Petroleum Asphalt	8052-42-4	85-100%
Polymer Additive	Mixture	0-15%
Anti-Strip Additive	Mixture	0-1.0%
Hydrogen Sulfide	7783-06-04	Trace

SECTION 3: HAZARDS IDENTIFICATION

Warning! Material is normally shipped at elevated temperatures and can cause severe eye and skin burns. Water contact can cause a violent eruption of hot asphalt.

PHYSICAL STATE:	Semi-solid; Solid at ambient temperature
Color:	Black
Odor:	Asphaltic

ROUTES OF ENTRY:	Dermal Contact. Eye Contact. Inhalation. Ingestion.

POTENTIAL HEALTH EFFECTS

EYES:	Eye contact with hot product can cause severe burns. Contact with this product at warm or ambient temperatures may cause eye irritation.
SKIN:	Skin contact with hot product can cause severe thermal burns. Prolonged or frequent contact with product at warm or ambient temperatures may cause skin irritation.
INGESTION:	Contact with hot product can cause thermal burns. Ingestion of this material is expected to have a low order of acute toxicity.
INHALATION:	Vapors can irritate the eyes, nose, throat and/or lungs. Inhalation at high concentrations may cause headaches, nausea, dizziness, unconsciousness or death. Significant concentrations of hydrogen sulfide gas can be present in the vapor space of storage tanks and transport compartments. Exposure to high concentrations of hydrogen sulfide can cause unconsciousness and death.
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:	Skin, eye and respiratory disorders may be aggravated by exposure to this product. burns.
OVER-EXPOSURE SIGNS/SYMPTOMS:	Inhalation of high concentrations may cause eye and respiratory irritation, headaches, dizziness, nausea, unconsciousness and possibly death. Prolonged or repeated contact with product at warm or near ambient temperature may cause skin irritation. Skin contact with hot product may cause thermal burns. Prolonged or repeated contact with this product at warm or ambient temperatures may cause skin irritation and dermatitis; however, based on human experience this product is judged to be neither corrosive nor an irritant by OSHA criteria. Eye contact may cause thermal burns or eye irritation.

See toxicological information (section 11)

SECTION 4: FIRST AID MEASURES

EYES: For contact with molten material, flush eyes with clean low-pressure water for a minimum of 15 minutes. Seek immediate medical care.

SKIN: For contact with hot molten material, cool skin by quenching with large amounts of cool water. Do not attempt to remove solidified material from the skin, this may cause further skin/tissue damage. For skin contact with product at ambient temperatures, remove contaminated clothing. Wipe excess product off. Wash affected area with a waterless cleanser followed by soap and water. Mineral oil may be used to soften the product to aid the removal process. Seek medical attention if pain or irritation persists.

INGESTION: Ingestion is not likely. If it occurs, do not induce vomiting. If large amounts are swallowed, seek medical attention.

INHALATION: If affected, move person to fresh air. Administer oxygen or administer CPR (cardiopulmonary resuscitation) for respiratory distress and seek prompt medical attention. If symptoms or irritation occur, seek prompt medical attention.

NOTES TO PHYSICIANS OR FIRST AID PROVIDERS: Immerse skin covered with hot material in cool water to limit tissue damage and prevent spread of liquid product. Recommended practice is to not attempt to remove hot material. Allow the solidified material to remain in place until cooled and allow material to naturally fall off. If removal is necessary, mineral oil may be used to assist in minimizing skin loss when removing the solidified material.

SECTION 5: FIRE-FIGHTING MEASURES

FLAMMABILITY OF THE PRODUCT: NFPA Class IIIB combustible material

FLAMMABLE LIMITS IN AIR, (% BY VOLUME): Lower: Not Determined
Upper: Not Determined

FLASH POINT: >175°C (347°F) (COC)

AUTOIGNITION TEMPERATURE: Not Determined

PRODUCTS OF COMBUSTION: Carbon dioxide, carbon monoxide, sulfur oxides, hydrogen sulfide, smoke, fumes, and unburned hydrocarbons

FIRE-FIGHTING MEDIA AND INSTRUCTIONS: Use dry chemical, foam, carbon dioxide or water fog. Water or foam may cause frothing and must be applied carefully to avoid frothing. Use water to keep fire exposed containers cool. Minimize breathing of vapors, fumes or decomposition materials.

Collect contaminated fire-fighting water separately. Do not allow liquid runoff to enter sewers or public waters.

SECTION 5: FIRE-FIGHTING MEASURES (Continued)

SPECIAL FIRE FIGHTING EQUIPMENT:

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Cool tanks and containers exposed to fire with water.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

When heated above the flash point, this material will release flammable vapors which if exposed to a source of ignition can burn or be explosive in confined spaces. Mists or sprays may be flammable at temperatures below the normal flash point. Keep away from open flame. Use of water or foam on product above 212°F can cause product to expand with explosive force.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:

Immediately contact emergency personnel. Eliminate all ignition sources. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Do not touch or walk through spilled material.

ENVIRONMENTAL PRECAUTIONS:

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. If facility or operation has an "*oil or hazardous substance contingency plan*", activate its procedures. Stay upwind and away from spill. Wear appropriate protective equipment including respiratory protection as conditions warrant. Do not enter or stay in area unless monitoring indicates that it is safe to do so. Isolate hazard area and restrict entry to emergency crew. Contain spill in smallest possible area.

Prevent spilled material from entering sewers, storm drains, other unauthorized treatment or drainage systems and natural waterways. Contact fire authorities and appropriate federal, state and local agencies. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, contact the National Response Center at 800-424-8802. For highway or railway spills, contact Chemtrec at 800-424-9300.

METHODS FOR CLEANING UP:

Land Spill: Shovel and dispose of with an appropriate disposal facility in accordance with local, state and federal regulations.

Water Spill: Depending on density, asphalts tend to float or sink. Asphalt will have minimal dispersion movement in water. Eliminate sources of ignition and warn other ships in the area to stay clear. Notify the proper authorities. Confine with skimming equipment if available or set booms to recover the spill.

SECTION 7: HANDLING AND STORAGE

HANDLING: Do not breathe fumes or vapor from heated material. Stay upwind when opening hatches and vents. Wear appropriate personal protective equipment to avoid skin, face and eye contact with heated material. Significant concentrations of hydrogen sulfide can be present in vapor space of storage tanks and transport compartments, which may require additional precautions.

STORAGE: Material is frequently stored in cone roof storage tanks. Storage temperatures above 350°F will increase the risk of formation of pyrophoric sulfides and carbonaceous deposits on the roof and rafters. Refer to API Recommended Practice 2023 for additional storage guidance.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Special ventilation may be required for handling conditions at elevated temperatures. Ensure that eyewash stations and safety showers are close to the workstation location.

PERSONAL PROTECTION

SKIN: PPE selection should be based on a risk assessment. Heat-resistant gloves, impervious apron, long-sleeved shirts, leather boots, safety glasses, face shield should be worn when indicated by a risk assessment.

RESPIRATORY: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

EYE: Eye protection (chemical-type goggles and/or face shield) should be worn whenever there is a likelihood of splashing or spraying liquid. Contact lenses should not be worn. Eye wash water should be provided.

OTHER: Use good personal hygiene practices.

PERSONAL PROTECTIVE EQUIPMENT IN CASE OF A LARGE SPILL: Splash goggles. Full suit. Vapor respirator. Boots. Gloves. Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product. Suggested
protective clothing might not be adequate. Consult a specialist before handling this product.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION (Continued)

Established Occupational Exposure Limits

SUBSTANCE	VALUE	TIME/TYPE	SOURCE
Asphalt	.5 mg/m^3	8 hour TWA	ACGIH
Hydrogen Sulfide	10 ppm	8 hour PEL	OSHA
Hydrogen Sulfide	15 ppm	15 min STEL	OSHA

Consult local authorities for acceptable exposure limits.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	Liquid
COLOR:	Black
ODOR:	Asphaltic
BOILING POINT:	>300°C (572°F)
FLASH POINT:	>175°C (347°F)
FREEZING POINT:	Not Established
SPECIFIC GRAVITY:	0.98 to 1.3 (Water = 1) (@ 60°F)
VISCOSITY:	>0.7 PaS @ 60°C
VAPOR PRESSURE:	Not Determined
VAPOR DENSITY:	>1 (Air = 1)
VOLATILITY:	Negligible
EVAPORATION RATE:	Not Determined

SECTION 10: STABILITY AND REACTIVITY

MATERIALS TO AVOID:	Open flame and extreme heat
STABILITY AND REACTIVITY:	The product is stable
INCOMPATIBILITY WITH VARIOUS SUBSTANCES:	Reacts with strong oxidizers
HAZARDOUS DECOMPOSITION PRODUCTS:	At ambient temperature this product does not decompose. Burning or excessive heating may produce carbon monoxide, sulfur oxides, hydrogen sulfide and other harmful vapors and gases.
HAZARDOUS POLYMERIZATION:	Will not occur
CONDITIONS TO AVOID (STABILITY):	Heat, sparks, and open flame. Strong oxidizers.

SECTION 11: TOXICOLOGICAL INFORMATION

Fumes emitted from heated product are irritating to the eyes and respiratory tract. Dust/particles may be the source of physical irritants. Symptoms of overexposure to hydrogen sulfide include insomnia, irritability, headache, fatigue, gastrointestinal problems and loss of sense of smell up to 100 ppm. Exposures to hydrogen sulfide above 100 ppm may cause drowsiness, loss of consciousness, respiratory failure or death.

Certain extracts of asphalt have been shown to produce cancers in laboratory rodents. The carcinogenic potency of asphalt is considered low, provided asphalt is not contaminated with coal tar.

Based on animal and human data, an A4 Not Classifiable as a Human Carcinogen, notation is assigned to asphalt fume.

SECTION 12: ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION:	Not evaluated at this time.
PRODUCTS OF DEGRADATION:	This product is expected to have a very low rate of biodegradation.
TOXICITY OF THE PRODUCTS OF BIODEGRADATION:	Bioaccumulation of components is unlikely due to very low water solubility.

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

This material, if discarded as produced, is not a RCRA "listed" hazardous waste.

Disposal of empty containers and container rinseate should at all times comply with all applicable federal, state and local environmental regulations.

Consult your local or regional authorities.

SECTION 14: TRANSPORT INFORMATION

REGULATORY INFORMATION	UN NUMBER	EMERGENCY RESPONSE GUIDEBOOK	PROPER SHIPPING NAME	CLASS	PACKING GROUP
DOT Classification	UN3257	Guide 128	Elevated temperature liquid, n.o.s.	9	III

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS:

Extremely Hazardous Substances for Emergency Response and Planning 40 CFR 355 & 40 CFR 370:

Hydrogen Sulfide

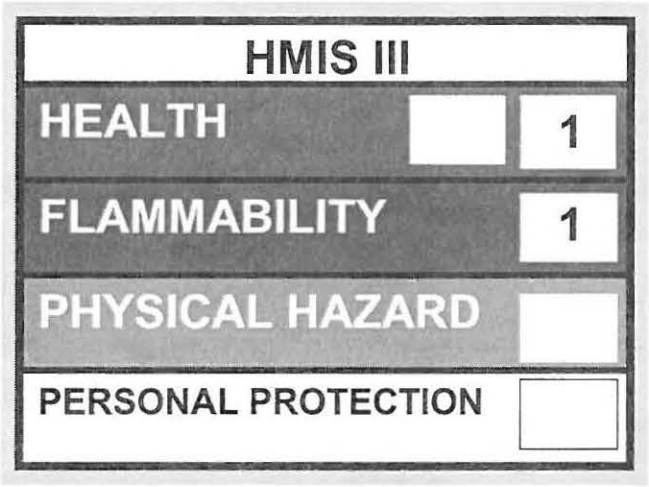
EPA SARA Sections 302, 304 & 313 and CERCLA:
This material does not contain any chemicals subject to the reporting requirements of SARA 302, SARA 304, SARA 313, CERCLA or 40CFR 372

EPA SARA 311/312 Title III Hazard Categories:

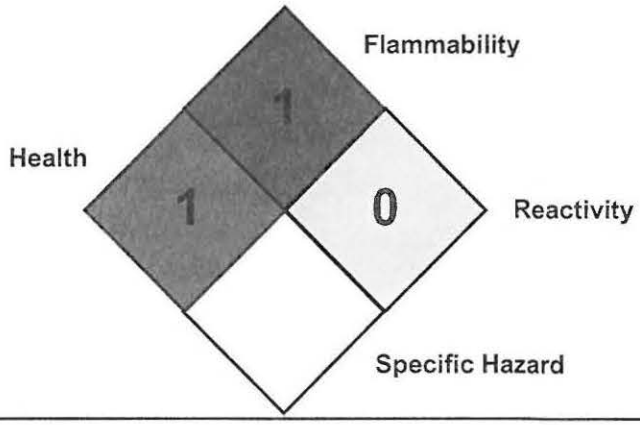
Acute Health Hazard:	**YES**
Chronic Health Hazard:	**NO**
Fire Hazard:	**NO**
Pressure Hazard:	**NO**
Reactive Hazard:	**NO**

SECTION 16: OTHER INFORMATION

HAZARDOUS MATERIAL
INFORMATION SYSTEM



NATIONAL FIRE PROTECTION
ASSOCIATION (U.S.A.)



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APPENDIX N

USOR TRAINING & CERTIFICATION PROGRAM OUTLINE

Section N-1

U. S. Oil & Refining Co.
Oil Spill Prevention

TRAINING AND CERTIFICATION PROGRAM

1.0 PURPOSE

2.0 SCOPE

- 2.1 Operations and Supervisory Personnel
- 2.2 Management Personnel
- 2.3 Maintenance Personnel
- 2.4 Indirect Operations Personnel

3.0 CERTIFICATION

- 3.1 Training Methods
- 3.1.a Regulatory Level
- 3.1.b Plant Fundamentals
- 3.1.c Job Specific
- 3.2 Documentation/Testing
- 3.3 Competencies
- 3.4 Evaluation
- 3.5 Re-certification
- 3.6 Certification Course Outline
- 3.7 Certificates

4.0 TRAINING

- 4.1 Management Training Outline
- 4.2 Maintenance Training Outline
- 4.3 Indirect Operations Personnel Training Outline
- 4.4 Continuing Ed Requirements
- 4.5 Trainer Requirements

Appendix

A. Environmental, Health & Safety Training Matrix

B. Operations Department Job Specific Training Summary

C. Training Certificate

1.0 PURPOSE

In 1991 the Washington legislature passed the Oil Spill Prevention & Response Act. This comprehensive regulation mandated that facilities handling petroleum products establish training and certification programs to ensure that employees and contractors receive training to reduce the possibility of oil spills caused by human error factors. This manual serves as the training and certification program established by U.S. Oil & Refining Co. to comply with WAC 173-180 Part E requirements.

2.0 SCOPE

The Oil Spill Prevention Training & Certification regulations identify four categories of personnel that require training and /or certification. Categories include: certification of operations & supervisory personnel and training for management, maintenance and indirect operations personnel. Table 1 identifies categories of employees at U.S. OIL & REFINING CO. and general outline of topics required for training and/or certification. Detailed outlines addressing the training components contained in Table 1 for these four personnel classifications are discussed in the Oil Handlers Training & Certification Program Manual.

2.1 KEY OPERATIONS & SUPERVISORY PERSONNEL

The following U.S. Oil personnel will be certified under this training program:

- Oil Movement Superintendents
- Shift Supervisors
- Day Coordinators
- B Helpers
- Pump Gaugers

The course outline for supervisory and operations personnel is found in Table 2.

2.2 MANAGEMENT PERSONNEL

The following management positions will be trained under this program:

- VP Manufacturing
- Operations Manager
- Maintenance Manager
- Engineering Manager
- Administrative Service Manager
- Environmental, Health & Safety Manager

The course outline for Management personnel is found in Table 3.

2.3 MAINTENANCE TRAINING

The following maintenance positions will receive initial oil spill prevention training:
- Maintenance Supervisors
- U.S. Oil Mechanics

The course outline for Maintenance personnel is found in Table 4.

2.4 INDIRECT OPERATIONS

- Maintenance Contractors

Table 1 identifies the different categories of employees at U.S. Oil and the general outline of topics required for training and/or certification. The course outline for Indirect Operations employees is found on Table 5. All routine maintenance contractors who will be working unescorted in the refinery will receive Oil Spill Awareness Training. Examples of contractors who fall into this category include:

- Mechanical Contractors
- Vacuum Truck Companies
- Electrical Companies
- Excavation Contractors
- Insulation Contractors

3.0 CERTIFICATION

The required certification of key supervisory and operations personnel is accomplished through integration into U.S. Oil & Refining Co's existing training programs. Training of operations personnel is accomplished through a structure that utilizes three different levels of training.

3.1 TRAINING METHODS

3.1.a REGULATORY LEVEL (First Level)

The first training level includes all required Safety, Health & Environmental subjects. An example of the different training subjects is found in Appendix A. The regulatory aspects of the oil spill worker certification program will be accomplished through this system. The specific training outline for this course is on Table 2 at the Table of Contents.

3.1.b PLANT FUNDAMENTALS (Second Level)

The second level includes plant fundamentals training. This includes plant equipment, refining process, tank, pump & exchanger basics and process safety. This training is completed using purchased modules with technical assistance being provided by supervisors and engineering. Multiple choice tests accompany each fundamental module.

3.1.c JOB SPECIFIC TRAINING (Third Level)

The third level of training is task specific training to each individual work post. This includes: process overview, review of standing orders, specific training on oil handling, transfer, storage and monitoring of refinery equipment, operating manuals, emergency procedures and equipment trouble shooting are also covered during this training. This job specific level includes both on the job and classroom study training. Written tests, oral interviews and field demonstrations are completed to qualify for each job post. The required completion tasks for each operator's job post are found in Appendix B.

3.2 DOCUMENTATION/TESTING

All training completed at USOR is verified and documented using a computerized PC based program with hard copy back up. Verification is done by testing, when appropriate, at all levels of training. A passing grade of 80% is used to indicate understanding of materials. An individual who scores less than 80% will be required to review the course material with the trainer and pass a second exam. If the second exam is failed, personal interviews will be conducted by the appropriate department head to determine if the employee possesses the skills necessary for post qualification. Employees who, after review of skills by department head, cannot meet minimum passing test scores and expectations will be disqualified from the work post. An employee will not be assigned to work a position/job until such time that the employee has demonstrated the appropriate skill level.

3.3 COMPETENCIES

The following competencies will be evaluated by shift supervision and/or operating supervisors as part of the U.S. Oil post qualification process for oil handling operators:

- Ability to address emergency situations
- Understanding of the systems involved in transferring oil
- Demonstrate ability to make line-ups and open and close proper valves
- Demonstrate knowledge of notification and communication procedures

Class room training will assure that operators are familiar with process equipment and its proper use as well as check list use for each work post.

3.4 EVALUATION

Evaluation of personnel to certify training will consist of achieving a minimum score of 80% on all written tests, and 100% on all demonstration checklists. Personnel must also demonstrate their ability to operate process equipment, knowledge of how to shut down equipment in an emergency and knowledge of notification and communication procedures. The qualifying operating superintendent or shift supervisor will assure these post competencies are demonstrated.

3.5 RE-CERTIFICATION

All operation and supervisory personnel requiring certification will be re-certified on a tri-annual basis (36 months). Re-certification will consist of classroom training with emphasis on past experiences and continuing education on spill prevention aspect of oil handling. A re-evaluation of each certified person will be completed through written examinations and practical evaluations.

3.6 CERTIFICATION COURSE OUTLINE

Table 2 lists the training course outline for certification of oil handling personnel at U.S. Oil & Refining Co.

3.7 Certificates will be issued to all key operating and supervisory personnel who successfully complete the training requirements. Certificate is contained in appendix. The training will be conducted by the Environmental, Health & Safety Training Coordinator. The computer based records system (TRIM) will be used to generate reports indicating training needs and current employee status.

4.0 TRAINING

4.1 MANAGEMENT TRAINING OUTLINE

OBJECTIVE: To familiarize management personnel as to their role in spill prevention, and the decision-making process during emergency situations and abnormal operating events.

TOPIC: PLANT ORIENTATION

- General safety rules
- Emergency response and notifications
- Hazardous substances and locations

PROCESS OVERVIEW

- Brief description of the processing areas, locations, and fundamental operating philosophy.
- Equipment shutdown procedures and policies

MATERIALS USED:

- U.S. Oil and Refining Co. safety orientation videotape.
- Handouts: General safety rules, plot plan with emergency reporting areas
- Example of operating area manual

TRAINING TIME: 24 minutes of video and 10 minutes of question and answers.

TOPIC: OIL SPILL AWARENESS

- Overview of oil handling systems
- Management's role in spill prevention
- Minimizing the human error factors as they pertain to spills
- Awareness of environmental sensitivity and oil spill impacts
- Overview of spill prevention & spill contingency planning
- Decision-making during emergency situations and abnormal events
- Overview of spill prevention and response laws
- Drug & alcohol use awareness

MATERIALS USED:

- OPA training manual
- Emergency situation exercise
- Videotape "Drug & Alcohol awareness
- SPCC manual
- Facility Oil Spill Response Plan

TRAINING TIME: 2-2.5 hours
INSTRUCTOR: E, H & S Dept. representative

4.2 MAINTENANCE TRAINING OUTLINE

OBJECTIVE: To familiarize maintenance personnel with the safety requirements of this facility. To provide an awareness of the maintenance personnel's role in; spill prevention, response duties, and information on the equipment/systems that monitor pipeline activity.

TOPIC: PLANT ORIENTATION

- General safety rules
- Required levels of personal protective equipment
- Emergency response and notifications
- Hazardous substances and locations

PROCESS OVERVIEW

- Brief description of the processing areas, locations, and fundamental operating philosophy.
- Location and use of unit operating manuals

MATERIALS USED:

- U.S. Oil and Refining Co. videotape.
- Handouts: General safety rules, plot plan with emergency reporting areas

  TRAINING TIME: 24 minutes of video and 10 minutes of question and answers.

TOPIC: OIL SPILL AWARENESS

- Overview of oil handling systems
- Leak detection operations (PPA)& and safe shutdown responsibilities & procedures.
- Awareness of environmental sensitivity and oil spill impacts
- Overview of spill prevention & spill contingency planning
- Overview of spill prevention and response laws
- Drug & alcohol use awareness

MATERIALS USED:

- OPA training manual
- SPCC plan
- Facility Oil Spill Response Plan
- Preventative maintenance on the PPA equipment and systems
- Videotape "Drug & Alcohol awareness

TRAINING TIME: 2-2.5 hours
INSTRUCTOR: EH & S Dept. representative

4.3 INDIRECT PERSONNEL TRAINING OUTLINE

OBJECTIVE: To familiarize maintenance personnel with the safety requirements of this facility. To provide an awareness of; oil handling operations, environmental impact of spills, and information on emergency notification procedures.

TOPIC: PLANT ORIENTATION

- General safety rules
- Required levels of personal protective equipment
- Emergency response and notifications
- Hazardous substances and locations

PROCESS OVERVIEW

- Brief description of the processing areas, locations, and fundamental operating philosophy.
- Location and use of unit operating manuals

MATERIALS USED:

- U.S. Oil and Refining Co. videotape.
- Handouts: General safety rules, plot plan with emergency reporting areas

TRAINING TIME: 24 minutes of video and 10 minutes of question and answers.

TOPIC: OIL SPILL AWARENESS

- Overview of oil handling systems
- Awareness of environmental sensitivity and oil spill impacts
- Drug & alcohol use awareness

MATERIALS USED:

- OPA training manual
- Drug & Alcohol awareness handout

TRAINING TIME: 1-1.5 hours depending on the contractor
INSTRUCTOR: EH & S Dept. representative

4.3a INDIRECT PERSONNEL (Truck Drivers)

Truck drivers are trained in the same core topics as the indirect personnel. Drivers are trained by the use of the appropriate loading training manuals. The loading manuals cover all of the required information except for the "drug & alcohol" awareness topic. This topic is covered by other applicable DOT regulations as a part of the drivers company sponsored training programs.

4.4 CONTINUING EDUCATION REQUIREMENTS

The continuing education requirements for each classification will be accomplished through refresher training in each of the applicable components. Refresher training will be scheduled one year from the initial course completion date. In the event that modifications to existing programs are warranted, then training will precede the implementation of the new procedures/programs.

4.4a OPERATIONS AND SUPERVISORY PERSONNEL

Topic	Frequency
Review of changes to the core topic areas.	As they are implemented. Minimum yearly
Environmental sensitivity	Yearly
Spill procedures / Practice exercise	Yearly
Review of spills for the year.	Minimum yearly
Review of emergency S/D procedures	Yearly

Minimum Refresher Training Hours 4 hours

4.4b MANAGEMENT PERSONNEL

Topic	Frequency
Review of changes to the core topic areas.	As they are implemented. Minimum yearly
Environmental sensitivity	Yearly
Spill procedures / Practice exercise	Yearly
Review of spills for the year.	Minimum yearly

Minimum Refresher Training Hours 3 hours

4.4c MAINTENANCE PERSONNEL

Topic	Frequency
Review of changes to the core topic areas.	As they are implemented. Minimum yearly
Environmental sensitivity	Yearly
Spill procedures / Practice exercise	Yearly
Review of spills for the year.	Minimum yearly

Minimum Refresher Training Hours 2 hours

4.4d INDIRECT PERSONNEL

Topic	Frequency
Review of changes to the core topic areas.	As they are implemented. Minimum yearly
Environmental sensitivity	Yearly
Spill procedures	Yearly
Review of spills for the year.	Minimum yearly

Minimum Refresher Training Hours 1 hour

4.5 TRAINER REQUIREMENTS

Trainers that present the material associated with the training topics within this manual will have; 1) experience and or knowledge in subject matter that is presented, 2) has instructional skills and or instructional experience, 3) has demonstrated knowledge of the equipment and or systems that are contained within the field checklists. U.S. Oil & Refining Co. will utilize EH&S dept. representatives to conduct general safety training, all applicable environmental topics, and the drug & alcohol awareness information. Operations supervision will conduct all specific operator training functions. By position description, these supervisory personnel have demonstrated facility knowledge, decision-making ability, experience and personal integrity to the satisifaction of the company.

Table 1

TRAINING TOPICS	USOR					CONTRACTORS			
	SUPERVISORY	OPERATIONS	MANAGEMENT	MAINTENANCE	INDIRECT OPERATIONS	MAINTENANCE	INDIRECT OPERATIONS		
(a) Overview of all oil handling, transfer, storage, and monitoring/leak detection operations at the facility	√	√	√	√	√	√	√		
(b) Operating procedures and checklists specific to trainee's job function	√	√							
(c) Problem assessment, including recognition of human factor risks and how they can be minimized	√	√							
(d) Awareness of preventative maintenance procedures	√	√							
(e) Awareness of local environmental sensitivity and oil spill impacts	√	√	√	√	√	√	√		
(f) Major components of facility's oil spill prevention plan	√	√	√	√		√			
(g) Major components of facility's operations manual	√	√	√	√		√			
(h) Major components of facility's oil spill contingency plan	√	√	√	√		√			
(i) Decision-making for abnormal operating events and emergencies, including emergency spill prevention and safe shut down conditions, responsibilities, and procedures	√	√	√						
(j) Routine and emergency communications procedures	√	√							
(k) Overview of applicable oil spill prevention and response laws and regulations	√	√	√	√		√			
(l) Drug and alcohol use awareness, pursuant to WAC 173-180D-060(11)	√	√	√	√	√				
(m) Management role in operations & oil spill prevention			√						
(n) Recognition of human factor risks & how they can be minimized			√						
(o) Equipment problem assessment & preventative maintenance procedures				√		√			
(p) Emergency spill prevention & safe shut down conditions, responsibilities and procedures				√		√			
(q) Notification procedures for emergency spill prevention actions					√		√		

Table 2

FACILITY PERSONNEL OIL HANDLING

OPERATIONS & SUPERVISORY PERSONNEL COURSE CONTENT

REQUIRED ELEMENTS:

1. OVERVIEW OIL HANDLING, TRANSFER, STORAGE & MONITORING, LEAK DETECTION OPERATIONS (COMPLETED DURING OPERATOR AS PART OF TRAINING).
2. OPERATING PROCEDURES/CHECKLISTS (COMPLETED DURING OPERATOR POST QUALIFICATION)
3. PROBLEM ASSESSMENT/HUMAN FACTORS
4. PREVENTIVE MAINTENANCE PROCEDURES
5. OIL SPILL IMPACTS - BLAIR WATERWAY/COMMENCEMENT BAY
6. FACILITY OIL SPILL PREVENTION CONTROL & COUNTER-MEASURE PLAN
7. FACILITY OPERATIONS MANUAL
8. FACILITY OIL SPILL RESPONSE PLAN
9. EMERGENCY DECISION MAKING
10. ROUTINE & EMERGENCY COMMUNICATIONS
11. OVERVIEW OF OIL SPILL REGULATIONS
12. DRUG & ALCOHOL AWARENESS

Table 3

FACILITY PERSONNEL OIL HANDLING

MANAGEMENT PERSONNEL COURSE CONTENT

REQUIRED ELEMENTS:

1. OVERVIEW OIL HANDLING, TRANSFER, STORAGE AND MONITORING LEAK DETECTION OPERATIONS.

3. RECOGNITION OF HUMAN FACTORS AND RISK AND HOW THEY CANMINIMIZED.

4. OIL SPILL IMPACTS - BLAIR WATERWAY/COMMENCEMENT BAY

5. FACILITY OIL SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN.

6. FACILITY OPERATIONS MANUAL

7. FACILITY OIL SPILL RESPONSE PLAN

8. EMERGENCY DECISION MAKING

9. OVERVIEW OF OIL SPILL REGULATIONS

10. DRUG & ALCOHOL AWARENESS

11. MANAGEMENT'S ROLE IN OPERATIONS AND OIL SPILL PREVENTION.

Table 4

FACILITY PERSONNEL OIL HANDLING

MAINTENANCE PERSONNEL COURSE CONTENT

REQUIRED ELEMENTS:

1. OVERVIEW OIL HANDLING, TRANSFER, STORAGE & MONITORING, LEAK DETECTION OPERATIONS.

5. OIL SPILL IMPACTS - BLAIR WATERWAY/COMMENCEMENT BAY

7. FACILITY OPERATIONS MANUAL

8. FACILITY OIL SPILL RESPONSE PLAN

9. EMERGENCY SPILL PREVENTION & SALE SHUTDOWN CONDITIONS

11. OVERVIEW OF OIL SPILL REGULATIONS

12. DRUG & ALCOHOL AWARENESS

14. EQUIPMENT PROBLEM ASSESSMENT & PREVENTIVE MAINTENANCE

15. RESPONSIBILITIES & PROCEDURES

Table 5

FACILITY PERSONNEL OIL HANDLING

INDIRECT OPERATIONS PERSONNEL COURSE CONTENT

REQUIRED ELEMENTS:

1. OVERVIEW OIL HANDLING, TRANSFER, STORAGE & MONITORING LEAK DETECTION OPERATIONS.
5. OIL SPILL IMPACTS - BLAIR WATERWAY/COMMENCEMENT BAY
8. NOTIFICATION PROCEDURES FOR EMERGENCY SPILL PREVENTION
12. DRUG & ALCOHOL AWARENESS

HUMAN RISK FACTORS

Statistics compiled by the Washington Dept. of Ecology for 1993 indicate that Ecology received 3767 spill reports and conducted 953 field responses during the 93 calendar year. Human error in one way or another was a factor in 50% of the spill incidents investigated by Ecology in 1993. Examples of human factors that contribute to errors and spill incidents are:

- Fatigue
- Drug & alcohol use
- Inattentiveness
- Impaired judgment
- Familiarity with equipment and shutdown procedures
- Repetitive operations (boredom)
- External factors
- Language problems
- Communication
- Failure to follow procedures
- Failure to have procedures reviewed

MANAGEMENT ROLE IN OPERATIONS AND OIL SPILL PREVENTION

Management at U. S. Oil & Refining Co. is committed to safe and responsible operation of the Refinery. Our goal is to make every employee and contractor believe in our zero spill philosophy. Each year, Refinery personnel make countless successful oil transfers from tank to tank and from ship to shore. Our employees are our best insurance against the crippling consequence of an oil spill. We value our employees at U. S. Oil and value their daily efforts that prevent spills. Casualty avoidance is the key component that makes our independent oil company competitive with the multinational oil companies of our region. Our employees are the reason for our success.

It is the responsibility of the management team at U. S. Oil & Refining Co. to work the human element each day and instill the pride of good work that will keep us from having an oil spill.

U. S. Oil & Refining Co.
Oil Spill Prevention Program

CONTRACTORS & VISITORS

I. U.S. Oil - Spill Prevention Philosophy

At U.S. Oil we believe that all oil spills are preventable. Our facility has been constructed utilizing technology to mitigate oil spills. In addition, the facility is operated and maintained in a fashion that prevents oil spills. A major oil spill at our refinery has the potential of putting our company out of business. During your visit or work at U.S. Oil, we ask that you also make safety and spill prevention your number one priority while in our refinery.

II. Overview of Oil Handling, Transfer Storage and Maintaining Operations at U.S. Oil

Following is a brief overview of our facility and some examples of oil handling, transfer, storage and monitoring operations at U.S. Oil

U.S. Oil & Refining Co.'s (USOR) Tacoma refinery (NAICS Code 32411) is a continuous processing plant with a 39,000 barrels per day crude oil charge rate. Products produced at the refinery include gasoline, jet fuel, diesel fuel, marine fuel oils, gas oils (intermediate product), as well as emulsified, medium curing and road asphalts. The refinery has storage capacity for approximately (b) (7)(F) [redacted] ts. During August 1996, a 14.25 mile, 6" diameter pipeline that extends from the refinery to Joint Base Lewis-McChord was purchased by McChord Pipeline Co., a wholly owned subsidiary of USOR. The petroleum product slate for McChord Pipeline Co. (NAICS Code 48691), which is located within Pierce County, will be JP-8 jet fuel.

USOR is comprised of the following geographic locations and areas of operation:

The refinery, which consists of a crude oil processing area, tank farm, finished product loading racks, and office area, is bounded by Marshall Avenue to the South, Lincoln Avenue to the Northwest and Port of Tacoma land to the East, West, and South. The refinery's main processing units consist of one crude unit, two catalytic reformers, one diesel hydrotreater unit, sulfur processing facilities, various hydrocarbon treaters, and ancillary utilities.

The second site, which is located approximately 3/4 of a mile north of the main refinery, is the refinery's marine terminal, also referred to as the dock area. This terminal is located on the Southwest side of the Blair Waterway and is bounded by Port of Tacoma's Hyundai Terminal to the Southeast, Concrete Technology to the Northwest, and Port of Tacoma Road to the Southwest. The marine terminal, which consists of two separate docks (Dock #1 and Dock #2), provides the refinery with direct access to ocean-going barges and tankers via four separate pipelines varying in size from 8 inches to 24 inches in diameter. USOR receives all of its crude oil and ships various petroleum products via marine vessels using the dock facilities. Also located at the Marine Terminal dock area are (b) (7)(F) [redacted] for loading onto barges and ocean-going vessels.

Included in this document is the entire length of USOR's transfer pipeline, which extends from the refinery to the marine terminal. The following details are specific to the transfer pipelines, which consist of the following:

1. 1 - 24" line used for the conveyance of crude oil, fuel oil, cutter stocks and vacuum gas oils
2. 1 - 10" line used for the conveyance of jet fuel
3. 1 - 8" line used to convey diesel fuel
4. 1 - 8" line used to convey gasoline

Aboveground Storage Tanks

The materials of construction for all USOR hydrocarbon storage tanks is compatible with the products being stored as well as the physical conditions under which the products are being stored. All valves which permit direct outward flow of a tank's contents are closed but not locked when in non-operating or standby status. Starter controls on all oil pumps are located at a site accessible only to authorized personnel.

(b) (7)(F) [redacted]

The remaining tanks have local auto gauges which indicate product level. A majority of these tanks are filled only during a product transfer from vessel to shore. These tanks are closely monitored during filling and are hand gauged every two hours. The hand gauge results are compared to the auto gauge levels during the product transfer.

Tankage Secondary Containment

Permanent and portable oil storage tanks are provided with secondary containment berms as necessary to prevent spilled oil from reaching navigable waters. All secondary containment berms meet or exceed the requirements set forth in NFPA 30 for sizing of containment including sufficient freeboard to allow for precipitation. Secondary containment berms are constructed of natural earthen material and are sufficiently impervious to contain spilled oil. The effluent discharges from all secondary containment berms are controlled by valves prior to discharge into the refinery's wastewater treatment system.

In addition, a tertiary containment berm has been constructed along the northern and western edge of the refinery. This berm will provide containment of tanks located along the north edge of the refinery in the unlikely event secondary containment is breached.

Refinery-to-Dock Pipeline

The transfer pipelines from the plant to the dock are seamed welded steel pipe. All valves, flanges and fittings meet the appropriate standards.

Expansion loops for thermal expansion have been added to the two refinery-to-dock pipelines subject to thermal expansion. All pipe supports, including those used for expansion loops, are designed to minimize abrasion and corrosion and allow for expansion and contraction.

(b) (7)(F) [redacted]

Truck and Rail Car Transfer Operations

Procedures for the loading and unloading of trucks and rail cars meet the industry standards and requirements contained in Department of Transportation regulations. The following paragraphs describe each type of tank car/tank truck transfer operation used at USOR:

Rail Car

Premature departure, which could result in a spill, is prevented by using physical blocks and warning lights for all railroad tank car transfers. Rail cars are inspected prior to each transfer operation to ensure all outlets are secured as necessary. Site drainage along the railroad spur is adequate for the type of products being transferred.

Tank Truck - Light Products

Light products, which consist of gasoline, diesel and jet fuel, are located at the light products loading rack. Emergency shutdown switches for loading operations are installed locally at the truck rack and refinery scalehouse. Each truck is connected to a grounded interlock system while bottom loading. If the truck should move or overfill, loading is automatically shut down. The light products loading rack is located on a concrete pad which drains to the refinery's wastewater treatment system.

Tank Truck - Asphalt

Asphalts and heavy black oils loading/unloadings are top-loaded and continuously monitored by the asphalt truck drivers and in some cases USOR loaders as well. USOR personnel, however, retain overall control over the transfer operations that occur at each asphalt loading rack including inspecting each truck to ensure that all outlets are closed. Each asphalt loading truck is positioned over a sand lined concrete pad. This not only serves to capture small amounts of spillage but also facilitates cleanup operations as well.

Marine Terminal Dock Transfer Operations

The dock and refinery pumper-gaugers are responsible for oil transfers to and from the Marine Terminal dock. The dock operator monitors transfer operations to and from the vessel while the plant pumper-gauger is responsible for monitoring the movement of oil to and from the refinery. The dock facility and vessel are inspected each half hour during transfer operations.

Fixed sumps, which are located at both docks, are positioned under flanges used for vessel connections. Material collected in these sumps is then transferred to appropriate Marine Terminal dock tankage. Portable spill containment pans are placed under cargo hose connections where no permanent containment sumps exist. Product transfer operations are started slowly while all hoses and connections are checked for leaks. When transfer operations are completed, the hoses and loading arms are drained into the sumps and the piping secured to prevent cargo spillage. In addition, biannual hydrostatic tests are performed on all dock piping, hoses and loading arms.

With the exception of gasoline only cargoes and other highly volatile products, each time a vessel or barge arrives at the Marine Terminal dock to conduct a transfer operation it is encircled by a containment boom.

Process Units

All process unit construction is in accordance with applicable codes and regulations and in accordance with proper engineering practices. In addition, process units are monitored by Operations Department personnel at all times. Constantly monitored pressure and flow instruments coupled with alarms capable of signaling low flows, high levels, high pressures, etc. give operating personnel indications of possible leaks.

Process units and associated loading racks are constructed on concrete pads sufficiently sloped to drain to sewer drains. Spills and surface drainage are collected in a system of sumps which gravity flow into the refinery wastewater treatment system.

III. Drug and Alcohol Awareness

U.S. Oil company policy prohibits working under the influence of drugs or alcohol. We encourage contractors and visitors to develop substance abuse and drug testing programs for their employees. A worker who uses drugs or alcohol on the job is more likely to have an accident than someone who isn't involved in substance abuse. It is important for each person to understand that the use of drugs or alcohol can put your life or the lives of others in danger. Don't wait for an accident to happen. Instead, help drug and alcohol abusers get the help they need if a problem exists.

IV. Notification Procedures for Emergencies

In the event of any refinery emergency (ie: oil spill, fire, gas release, or injury) there are two methods of reporting. First, contact an operator with a process radio, or dial 333 on any plant phone.

When reporting an emergency, report the following:

1. Type of emergency
2. Location of emergency
3. Type of help required
4. Seriousness of the emergency
5. Name of caller

V. Oil Spill Impacts - Blair Waterway/Commencement Bay

General Topography

Within the Blair Waterway, the shoreline is primarily man-made and consists of fairly steep, earthen material and some riprap. Industrial facilities line both sides of the shore along most of the waterway. At its northwest end, the waterway is open to Commencement Bay; at the southeast end Wapato Creek flows into Blair Waterway.

Identification of Natural Resources

As noted in the Puget Sound Environmental Atlas and Ecology's Geographic Response Plan, the following is a list of significant resources in the Commencement Bay/Blair Waterway area worthy of consideration when evaluating potential impacts due to oil spills: Commercial and sport fishing, local parks, state parks, beaches, public piers, seabird nesting areas, eelgrass and kelp beds and intertidal sediment areas.

Sensitive Area Priorities

In May 1994 a document titled "Puget Sound Geographic Response Plans" was released which identifies specific response strategies and resources necessary to protect sensitive areas throughout the Puget Sound. This document, which has been periodically updated over the years, was developed through a cooperative effort between Puget Sound regulatory agencies, industries, communities and environmental groups. Specific response strategies for Commencement Bay and the adjoining waterways are located within the Central Puget Sound Geographic Response Plan. Map #CPS-9 covers the geographic area identified as "Tacoma South" whereas Map #CPS-8 covers the geographic area identified as "Tacoma North". A current copy of these geographic response plans is contained in Appendix I of the Facility Oil Spill Response Plan.

Other Sensitive Area Considerations

Even though the isolation of Lincoln Avenue ditch is considered an oil spill response strategy, it also provides a habitat for wildlife indigenous to the Tacoma tideflats area. For oil spillage within the Blair Waterway, it is important that the mouth of Wapato Creek be protected since wildlife tend to congregate at the mouth of this creek especially during spring and summer months.