Facility Response Plan

Prepared for

Enterprise Field Services, LLC

Cameron Highway and Poseidon Pipelines

February 2011

www.jccteam.com

Prepared By:
J. Connor Consulting, Inc.
16225 Park Ten Place
Suite 700
Houston, TX 77084
(281) 578-3388

J. Connor
Consulting, Inc.

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Enterprise Field Services, LLC
Cameron Highway and Poseidon Pipelines
Facility Response Plan

Quick Reference Guide

Cameron Highway and Poseidon Pipelines	Enterprise Field Services, LLC
Cameron Highway: Chambers, Galveston, Jefferson, and Orange Counties, Texas Poseidon: Terrebonne Parish, Louisiana	2727 North Loop West Houston, TX 77008
Phone: (985) 857-8002	**Phone:** (713) 381-6500 **Fax:** (713) 880-6660

Enterprise's Cameron Highway and Poseidon Pipelines transport crude oil. The pipelines are operated in two designated response zones:

- Cameron Highway Response Zone (Chambers, Galveston, Jefferson and Orange Counties in Texas) – transports crude oil
- Poseidon Pipeline Response Zone (Terrebonne Parish, Louisiana) – transports crude oil

Name	Office	Mobile	Home
Cameron Highway			(b) (6)
Tom Mears	(409) 984-1284	(409) 781-9186	
Mike McNeer	(409) 984-1201	(409) 781-9188	
Poseidon Pipeline			
Tom Mears	(409) 984-1284	(409) 781-9186	
Norman Gibson	(985) 858-6023	(985) 790-5571	
Mike McNeer	(409) 984-1201	(409) 781-9188	

Oil Spill Response Contractors	
O'Brien Response Management (O'Brien's)	(985) 781-0804
Garner Environmental Services, Inc.	(800) 424-1716
NRC Corporation	(800) 899-4672
Clean Gulf Associates (CGA) / MSRC	(888) 242-2007
Ampol	(800) 482-6765
Oil Mop, LLC	(800) 645-6671

(b) (7)(F)

Poseidon Pipeline

Block Valve	Block Valve	Length (ft)	I.D. (in)	Flow (bbls/hr)	Discovery Time (hrs)	Shutdown Time (hrs)	WCD (bbls)
PH1	PH2	20592	23	10000	0.008	0.008	(b) (7)(F)
PH2	PH3	40128	23	10000	0.008	0.008	
PH3	PH4	7920	23	10000	0.008	0.008	
PH4	PH5	7920	23	10000	0.008	0.008	

Cameron Highway Operations

Block Valve	Block Valve	Length (ft)	I.D. (in)	Flow (bbls/hr)	Discovery Time (hrs)	Shutdown Time (hrs)	WCD
Bolivar Valve Station	Valero Tie-in	111849	23.358	12500	0.72	0.72	(b) (7)(F)
Keystone Platform Shore Landing Station	ICWW South Valve Station	49571	23.358	12500	0.72	0.72	
ICWW South Valve Station	ICWW North Valve Station	2615	23.358	12500	0.72	0.72	
ICWW North Valve Station	Sun – UNOCAL Split	92389	23.358	12500	0.72	0.72	

(b) (7)(F)

Federal C	
USCG National Response Center, Washington, DC	(800) 424-8802

Enterprise Field Services, LLC
Cameron Highway and Poseidon Pipelines
Facility Response Plan

Federal Contacts	
USCG Sector Houston/Galveston	(713) 671-5100
USCG—MSU Galveston	(409) 978-2700
U.S. EPA (Region V-Dallas, TX)	(866) 372-7745
U.S. EPA On-Scene Coordinator	(800) 533-3508
OSHA	(800) 321-6742
U.S. Fish and Wildlife Service	(281) 286-8282
U.S. Army Corps of Engineers (Galveston District)	(409) 766-3176
Wildlife Rehab & Education	(281) 731-8826
Wildlife Response Services LLC	(713) 705-5897 (281) 266-0054-pager

Cameron Highway – Texas State Contacts	
Texas Commission on Environmental Quality	(800) 832-8224
State Emergency Response Commission (SERC)—Austin (Department of Public Safety, Emergency Response Center)	(800) 832-8224
Texas General Land Office	(800) 832-8224
TXGLO, Region 1—Nederland	(409) 727-7481
TXGLO, Region 2—La Porte	(281) 470-6597
TXGLO, Region 3—Corpus Christi	(361) 825-3300
TXGLO, Region 4—Brownsville	(956) 504-1417
TXGLO, Region 5—Port Lavaca	(361) 552-8081
Railroad Commission of Texas	(512) 463-6788
Railroad Commission of Texas (District 1&2)—San Antonio	(210) 227-1313
Railroad Commission of Texas (District 3)—Houston	(713) 869-5001
Railroad Commission of Texas (District 4)—Corpus Christi	(361) 242-3113
Railroad Commission of Texas (District 8)—Midland	(432) 687-6005
Texas Department of Public Safety-Houston	(281) 517-1300
Texas Department of Public Safety-Corpus Christi	(361) 698-5500
Texas Parks and Wildlife	(800) 792-1112
UT Marine Science Institute – Animal Rehab Keep (ARK)	(361) 749-6720

Poseidon – Louisiana State Contacts	
Louisiana One-Call (State Police)	(225) 925-6113
Louisiana Department of Environmental Quality	(866) 896-5337
Louisiana Oil Spill Coordinator	(225) 925-6606
Louisiana Department of Natural Resources	(225) 342-4500
Louisiana Department of Wildlife and Fisheries	(225) 765-2800
Louisiana Department of Public Safety	(337) 491-2511

Cameron Highway – Texas Local Contacts – 911	
Orange County	
Orange County Sheriff's Office	(409) 883-2612
Bridge City Fire Department	(409) 735-2419
Bridge City Police Department	(409) 735-5028
Orange Fire and Police Departments - Dispatch	(409) 883-1026
West Orange Fire Department	(409) 886-0944
West Orange Police Department	(409) 883-7574
Vidor Police Department	(409) 769-4561
Brazoria County	
Local Emergency Planning Commissions-Brazoria County	(281) 756-1801
Alvin Police Department	(281) 388-4370
Brazoria County Sheriff's Office	(979) 849-2441
Alvin Volunteer Fire Department	(281) 585-8536
Liverpool Volunteer Fire Department	(281) 581-9565
Galveston County	
DPS Highway Patrol	(409) 933-1100
Galveston County Sheriff's Department	(409) 766-2300 (888) 384-2000

Cameron Highway – Texas Local Contacts – 911	
Galveston County Emergency Management	(281) 309-5002
Dickinson VFD	(281) 534-3031
Dickinson Police Department	(281) 337-4700
Hitchcock VFD	(409) 986-7131
Hitchcock Police Department	(409) 986-5559
Santa Fe Fire/Rescue	(409) 925-7333
Santa Fe Police Department	(409) 925-2000
Chambers County	
Chambers County Sheriff's Department	(409) 267-8318
Chambers County Emergency Management	(409) 267-8343
Anahuac VFD	(409) 267-8318
Anahuac EMS	(409) 267-6080
Beach City VFD	(281) 573-9484
Cove Fire and Rescue	(281) 573-9193
Mont Belvieu VFD	(281) 576-2021
Old River-Winfree VFD	(281) 385-5132
Winnie Stowell Fire Department	(409) 296-4133
Winnie Stowell EMS	(409) 296-9627
Jefferson County	
Jefferson County Emergency Management Office	(409) 835-8757
Port Arthur Police Department	(409) 983-8600
Port Arthur Fire Department	(409) 983-8700
Beaumont Police Department	(409) 880-3801
Beaumont Fire Department	(409) 880-3901
Port Neches Police Department	(409) 722-1424
Port Neches Fire Department	(409) 722-5885
Groves Police Department	(409) 727-1614
Groves Fire Department	(409) 962-4469
Nederland Police Department	(409) 723-1516
Nederland Fire Department	(409) 723-1531
Harris County	
Harris County Sheriff's Department	(713) 221-6000
Harris County Office of Homeland Security and Emergency Management	(713) 881-3100
Harris County Constable Precinct 1	(713) 755-5200
Harris County Constable Precinct 4	(281) 376-3472
Harris County Constable Precinct 5	(281) 492-3600
Baytown Fire Department	(281) 422-2311
Baytown Police Department	(281) 422-8371
Bellaire Fire Department	(713) 662-8202
Bellaire Police Department	(713) 662-8102
Deer Park Fire Department	(281) 478-7281
Deer Park Police Department	(281) 478-2000
Galena Park Fire Department	(713) 674-5311
Galena Park Police Department	(713) 675-3471
Houston Fire Department	(713) 247-5000
Houston Police Department	(713) 247-4400
Humble Fire Department	(281) 446-2212
Jacinto City Fire Department	(713) 674-1841
Jacinto City Police Department	(713) 672-2455
Jersey Village Fire Department	(713) 466-2132
Jersey Village Police Department	(713) 466-5824
Katy Fire Department	(281) 391-3500
Katy Police Department	(281) 391-4848
La Porte Fire Department	(281) 471-3607
La Porte Police Department	(281) 842-0405
Nassau Bay Volunteer Fire Department	(281) 333-2677
Nassau Bay Police Department	(281) 333-2212
Pasadena Fire Department	(713) 477-1122
Pasadena Police Department	(713) 477-1221
Seabrook Volunteer Fire Department	(281) 474-3434

Enterprise Field Services, LLC
Cameron Highway and Poseidon Pipelines
Facility Response Plan

Cameron Highway – Texas Local Contacts – 911	
Seabrook Police Department	(281) 291-5610
South Houston Fire Department	(713) 944-1910
Southside Place Fire Department	(713) 668-2341
Spring Valley Police Department	(713) 465-8323
Tomball Fire Department	(281) 255-2411
Tomball Police Department	(281) 351-5451
Waller Fire Department	(936) 372-9512
Waller Police Department	(936) 372-2525
Webster Fire Department	(281) 333-5829
Webster Police Department	(281) 332-2426

Poseidon – Louisiana Local Contacts – 911	
Louisiana Poison Control	**(800) 222-1222**
Lafourche Parish	
Lafourche Parish Office of Homeland Security (OHS) & Emergency Preparedness	(985) 532-8174
Lafourche Parish Sheriff's Office-Thibodaux	(985) 446-2255
Lafourche Fire District No. 1	(985) 537-5000
Golden Meadow Police Department	(985) 475-5213
Th bodaux Police Department	(985) 446-5021
Thibodaux Fire Department	(985) 447-1986
Lockport Police Department	(985) 532-9799
Lockport Volunteer Fire Department	(985) 532-3876
Terrebonne Parish	
Terrebonne Parish Sheriff's Office-Houma	(985) 876-2500
Terrebonne Parish Office of Homeland Security (OHS) & Emergency Preparedness	(985) 873-6357
Houma Police Department	(504) 873-6306
Houma Fire Department	(985) 873-6391

Cameron Highway – Texas Medical Services	
Galveston County	
John Sealy Hospital-Galveston, TX **(Burn Center)**	(409) 772-1011
UTMB Galveston	(409) 722-1011
Brazoria County	
Alvin Diagnostic and Urgent Care Center	(281) 331-6141
Angleton Danbury General Hospital-Angleton	(979) 849-7721
Memorial Hermann Southeast Hospital-Houston	(281) 929-6100
Clear Lake Regional Medical Center-Webster	(281) 332-2511
Mainland Medical Center-Texas City	(409) 938-5000
Brazosport Memorial Hospital-Lake Jackson	(979) 285-1105
Greater Beaumont Area	
Christus St. Elizabeth Hospital-Beaumont, TX	(409) 892-7171
Memorial Hermann Baptist-Beaumont	(409) 212-5000
Christus St. Mary Hospital-Port Arthur	(409) 985-7431
The Medical Center of Southeast Texas-Port Arthur	(409) 724-7389
Doctors Hospital-Groves	(409) 962-5733
Mid-Jefferson Hospital-Nederland	(409) 727-2321

Poseidon – Louisiana Medical Services	
Louisiana Poison Control	**(800) 222-1222**
Terrebonne Parish	
Leonard J. Chabert Medical Center-Houma	(985) 873-2200
Terrebonne General Hospital-Houma	(985) 873-4141

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Appendix E: Oil Spill Removal Techniques
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1.0 Plan Introduction Elements

1.1 Purpose and Scope of Plan Coverage

The specific guidelines presented in this plan have been carefully thought out and prepared in accordance with safe practices. This plan has the full approval of management at a level with authority to commit the necessary resources to implement this plan.

The purpose of this plan is to provide a written procedure for directing a plan of action in the event of a release/discharge of oil or oil based products.

The overall objective of this plan is to minimize any release that might endanger lives or property, or may jeopardize personnel outside of the facility. Personnel will utilize all resources necessary to bring any release under control. In order to prepare for such control, all personnel will be well trained and knowledgeable as to their role during a release.

Specifically, this plan:

- Identifies the Qualified Individual(s)/Person(s) in Charge (QI/PIC) having full authority to implement this response plan
- Requires immediate communication with the appropriate federal officials and persons providing personnel and equipment
- Identifies and ensures by contract or other means approved by the owner/operator, the availability of private personnel and equipment necessary to remove a worst-case discharge and mitigate or prevent a substantial threat of such a discharge
- Describes training, equipment testing, periodic drills, and response actions

1.2 Regulatory Applicability

Enterprise Field Services, LLC has reviewed the National Contingency Plan and the Area Contingency Plan. This plan was written to comply with the following:

PHMSA, DOT

49 CFR 194—Facility Response Plan (FRP)

This regulation applies to an operator of an onshore oil pipeline that, because of its location, could reasonably be expected to cause substantial harm, or significant and substantial harm to the environment by discharging oil into or on any navigable waters of the United States or adjoining shorelines.

Texas GLO

TAC Title 31, Part 1, Chapter 19—Discharge Prevention and Response Plan (DPRP)

The OSPRA regulations require the preparation and implementation of a Discharge Prevention and Response Plan seaward of the GLO Line of Demarcation for facilities located within 100 yards of coastal waters. Facilities must apply for, and obtain, an Oil Spill Prevention and Response Certificate from the GLO prior to beginning operation.

1.3 Plan Distribution

Plan Number	Plan Holder	Location
1	Rory Hebert	2220 N. River Road Port Allen, LA 70767
2	Norman Gibson	1953 Grand Cailou Rd. Houma, LA 70363
3	Mike McNeer Tom Mears	7912 South 1st Ave. Sabine Pass, TX 77655
4, 5	Melanie Barber, Environmental Planning Officer (electronic copy)	Room E22-210 1200 New Jersey Avenue, S.E., Washington, D.C. 20590, office: 202-366-4560, melanie.barber@dot.gov.
6	O'Brien Response Management Inc. (O'Brien's) (electronic copy)	2000 Old Spanish Trail Suite 210 Slidell, Louisiana 70458

1.4 Plan Review and Revision

PHMSA, DOT—FRP

If new or different operating conditions or information would substantially affect the implementation of a response plan, the owner/operator must immediately modify the plan to address such a change and, within 30 days of making the change, submit the change to PHMSA. Examples of changes in operating conditions that would cause a significant change to the plan are as follows:

- New pipeline construction or purchase
- Different worst case discharge volume
- Change in commodities transported
- Change in cleanup contractors
- Change in the Qualified Individual(s)

- Change in an NCP/ACP that has a significant impact on the appropriateness of response equipment or response strategies
- Change in response procedures
- Change in ownership

The QI will incorporate post drill evaluation results and post incident evaluation results into this plan within 90 days. If a worst case discharge occurs on the pipeline, the plan will be evaluated for effectiveness. For substantial harm plans, the plan will be resubmitted to PHMSA every five years from the last plan submission date. For significant and substantial harm plans, the response plan will be submitted to PHMSA every five years from the last approval date. Modifications to the plan will be included on the Revision Record included as **Table 1**. Updated materials will also be submitted to all non-regulatory holders of the plan (refer to **Section 1.3**).

TGLO DPRP

Facilities must apply for an Oil Spill Prevention and Response Certificate from the GLO prior to beginning operation. After the GLO determines the application is administratively complete, the GLO will contact the facility operator to schedule an on-site inspection and review of their Discharge Prevention and Response Plan. The Plan must support the facility's current operations and must be developed in accordance with Title 31, Part 1, Chapter 19, Subchapter B, Rule §19.13—Requirements for Discharge Prevention and Response Plans.

The GLO will issue an Oil Spill Prevention and Response Certificate with a term of five years from the date of issuance. Each Certificate will be assigned an identification number, which will allow the facility operator to review and amend the facility information on the GLO's Oil Spill Prevention and Response Program interactive website.

The Certificate becomes void when there is a change in the operator, or when the facility changes its operations in a manner that increases its facility classification level. These changes will require the operator to update the Discharge Prevention and Response Plan and apply for a new Certificate. Plan revision will be documented in the Revision Record included as **Table 1** in this Section.

Table 1: Revision Record

Change Number	Change Date	Pages Affected	Description of Change
1	February 2012	Quick Reference Guide pg. i; pgs. 2, 4, 7, 22; Appendix B pgs. 2, 7-10	Remove Pete Luke as QI; Update SMT and Phone Numbers

1.5 Management Certification

Enterprise Field Services, LLC has developed this plan for the Cameron Highway and Poseidon Pipelines to prevent and/or control the spills of oil or hazardous substances. Enterprise Field Services, LLC herein commits the necessary resources to fully prepare and implement this plan and has obtained through contracts the necessary private personnel and equipment to respond, to the maximum extent practicable, to a worst case discharge or substantial threat of such a discharge.

Terry L. Hurlburt

Certifying Representative (Print)

Sr. Vice President

Title

Signature

3-25-2010

Date

1.6 Plan Custodian

The Plan Custodian is responsible for coordinating the plan's annual reviews and enforcing inspections, training, and exercises; and ensuring the company follows the Regulatory Compliance Schedule, which is located in **Section 1.7.**

Rory Hebert

Plans Custodian - Name (Print)

Field Environmental

Title

1.7 Regulatory Compliance Schedule

The following table is a summary of required drills, training, exercises, reviews and testing.

Failure to meet the requirements of this schedule may lead to Federal and/or State Agency enforcement actions.

Table 2: Regulatory Compliance Schedule

Exercise	Frequency	Participants	Cross Reference
QI Notification Exercise	Quarterly	QI's and Facility Personnel	Section 7.0
QI Training	Annually	QI's	Section 7.0
Spill Management Team (table top) / Simulated Spill Drill*	Annually	SMT, QI's and Oil-handling Personnel	Section 7.0
OSRO Equipment Deployment Exercise	Annually	OSRO	Section 2.8
Facility Equipment Inspections	See Section 6.4	Operator	Section 6.4
Plan Review/Update	Annually	Operator	Section 1.4
Plan Expiration	February 2016	Operator request new plan	Section 1.4

Facility Response Plan Drill Requirement

* In a 3-year period, all components of the response plan must be exercised and at least one drill must include a worst case discharge scenario. Annually, at least one exercise must be unannounced. Unannounced means the personnel participating in the exercise must not be advised in advance of the exact date, time and scenario of the exercise.

Additionally, the owner/operator will participate in unannounced exercises as directed by the lead federal or state agency. The objectives of the unannounced exercises will be to test notifications and equipment deployment for response to the average most probable discharge. After participating in an unannounced exercise the owner/operator will not be required to participate in another unannounced exercise for at least 3 years.

Records of all regulatory compliance items listed above will be generated and maintained by the owner/operator for 3 years. Optional forms are located in **FORMS Appendix**.

TGLO Drill Requirement

The annual SMT tabletop exercise will include notification to the NRC, the TGLO and response contractors, to determine availability and response times. Each call that is made will begin with the statement "This is a drill".

2.0 Information Summary

2.1 Facility Overview

Facility Name	Owner and Operator
Cameron Highway and Poseidon Pipelines	**Enterprise Field Services, LLC**
Cameron Highway: Chambers, Galveston, Jefferson, and Orange Counties, Texas Poseidon: Terrebonne Parish, Louisiana	2727 North Loop West Houston, TX 77008
Phone: (985) 857-8002	**Phone:** (713) 381-6500 **Fax:** (713) 880-6660

Enterprise's Cameron Highway and Poseidon Pipelines transport crude oil. An MSDS sheet for crude oil is included in **Appendix D**. The pipelines are operated in two designated response zones:

- Cameron Highway Response Zone (Chambers, Galveston, Jefferson and Orange Counties in Texas) – transports crude oil
- Poseidon Pipeline Response Zone (Terrebonne Parish, Louisiana) – transports crude oil

GIS-based pipeline maps are included in **Appendix A**.

2.2 Qualified Individuals / Persons in Charge (GLO–PIC)

The QI(s)/GLO–PIC(s) have the responsibility and authority to initiate spill cleanup operations, obligate funds to carry out response activities, and act as liaison with the pre-designated Federal On-Scene Coordinator (FOSC). QIs/GLO–PICs and alternates are listed in **Appendix B**, along with their 24-hour contact information.

Name	Office	Mobile	Home
Cameron Highway			
Tom Mears	(409) 984-1284	(409) 781-9186	(b) (6)
Mike McNeer	(409) 984-1201	(409) 781-9188	
Poseidon Pipeline			
Tom Mears	(409) 984-1284	(409) 781-9186	
Norman Gibson	(985) 858-6023	(985) 790-5571	
Mike McNeer	(409) 984-1201	(409) 781-9188	

2.3 Significant and Substantial Harm Determination

In accordance with §194.103, a line section can be expected to cause significant and substantial harm to the environment in the event of a discharge of oil into or on the navigable waters or adjoining shorelines if; the pipeline is greater than 6 5/8 inches (168 millimeters) in outside nominal diameter, greater than 10 miles (16 kilometers) in length, and the line section:

1) Has experienced a release greater than 1,000 barrels (159 cubic meters) within the previous five years,

2) Has experienced two or more reportable releases, as defined in §195.50, within the previous five years,
3) Contains any electric resistance welded pipe, manufactured prior to 1970, operates at a maximum operating pressure established under §195.406 that corresponds to a stress level greater than 50 percent of the specified minimum yield strength of the pipe,
4) Is located within a 5 mile (8 kilometer) radius of potentially affected public drinking water intakes and could reasonably be expected to reach public drinking water intakes, or
5) Is located within a 1 mile (1.6 kilometer) radius of potentially affected environmentally sensitive areas, and could reasonably be expected to reach these areas.

The Cameron Highway and Poseidon Pipelines can be expected to cause significant and substantial harm based on both of the above-stated criterion numbers 4 and 5. Those sections are noted in **Table 3.** Refer to **Appendix A** for a facility overview map and Environmental Sensitivity Index Maps showing the locations of public drinking water intakes and environmental sensitivities.

2.4 Transfers and Throughputs

The average daily throughput volume for Poseidon Pipeline is 240,000 bbls/day. The average daily throughput volume for Cameron Highway Pipeline is 300,000 bbls/day. Throughputs are expressed in hourly rates on **Table 3A** and **Table 3B**.

2.5 Worst Case Discharge

The table below has been developed to provide the following:

- Worst case discharge volume calculations for each line section
- The worst case discharge line section within the response zone (line volume noted in **boldface)**
- All line sections expected to cause significant and substantial harm to the environment in the event of a discharge (denoted in the table with *)

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Table 3A
Poseidon Pipeline Operations

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[redacted]

Table 3B

(b) (7)(F)

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2.6 Emergency Response Equipment

2.6.1 Signs

The facility will maintain a sign or placard in a prominent location that states that the GLO and NRC are to be notified in the event of an oil spill. The sign will also include the 24-hour phone numbers for these agencies.

2.6.2 Communications Equipment

UHF handheld radio communication systems (intrinsically safe) and cellular phones will be utilized in case of an emergency. The operator will exchange radios with the OSRO and/or SMT during the incident. This will enable the SMT to communicate with spill response team members by radios tuned to designated frequencies.

2.6.3 Oil Spill Response Equipment

The operator does not own or maintain oil spill response equipment. This location has been determined to be reasonably accessible to areas of environmental vulnerability in the event of an emergency and secure from acts of vandalism or theft. OSROs are under contract to provide response equipment and personnel in the event of an unauthorized discharge (refer to **Section 2.10.5**).

2.6.4 Firefighting Equipment

The facility does not own and/or maintain firefighting equipment.

2.7 Discharge Response Scenarios

Cameron Highway Pipeline Worst Case Discharge

0730: An operator flying over Galveston Bay notices a large oil leak in the vicinity of the Cameron Highway – Texas City Segment. The leak (an estimated 60,043 bbl) is traced back to the pipeline and the block valve at the Bolivar Valve Station is closed.

0740: The operator notifies the Qualified Individual (QI), who in turn notifies O'Brien's Response Management, the contracted Spill Management Team (SMT).

0815: The IC calls out selected members of the Spill Management Team (SMT).

0845: The Planning Section Chief surveys the area within the 5-mile planning distance and determines that, given the size of the spill, the following sensitive areas are at risk: Galveston Bay and the shorelines and waterways associated with Galveston Bay.

0900: The Operations Section Chief contacts the contracted OSRO, Garner Environmental, and requests 2 vacuum trucks, 1500' of containment boom, 2600' of sorbent boom, 900' of snare, and 70 bundles of sorbent pads.

0915: Garner informs the Operations Section Chief that they will deploy equipment and personnel from their Houston location and that they will be onsite in one hour. However, given the amount of equipment requested, it may take several hours for all equipment to arrive at the facility.

1000: Garner equipment begins to arrive onsite with 4 truck drivers (2 vacuum, 2 equipment), 8 techs, and 1 supervisor. It will take an estimated 2 hours for the remaining equipment to arrive.

1015: Cleanup operations begin utilizing vacuum trucks and sorbents. Technicians begin inspecting the areas around the facility to determine locations of greatest concern.

1035: Fly-overs report that the sheen is heaviest in the eastern part of Galveston Bay. Wildlife and shorelines have been impacted.

1105: Based on the Planning Section's analysis and recommendation to focus on the eastern part of the bay, the Operations Section Chief instructs Garner to deploy containment boom and attempt to corral the sheen in that direction.

1130: To collect oil and reduce the probability of the sheen escaping containment, Garner lines the inside of the hard boom with sorbent boom.

1150: Additional Garner response equipment arrives (2 trucks, 2 drivers).

Days 2-9

The Planning Section continues to gather environmental data, which is used to establish the daily Incident Action Plan.

Day 10

0830: All generated waste is collected by response personnel properly. At no time during the response did oily water escape the secondary containment system.

0920: Garner leaves the facility transporting the oily waste for disposed.

Day 11

0400: The IC convenes an incident summary meeting with the SMT members and Qualified Individual.

Poseidon Pipeline Worst Case Discharge

0730: After a hurricane, an operator flies over Timbalier Bay (once it is determined safe to do so). The operator sees a sheen in the area of the Poseidon Pipeline. The leak ((b) (7)(F) [redacted]) is traced back to the pipeline and it is shut down.

0740: The operator notifies the Qualified Individual (QI), who in turn notifies O'Brien's Response Management, the contracted Spill Management Team (SMT).

0815: The IC calls out selected members of the Spill Management Team (SMT).

0845: The Planning Section Chief surveys the area within the 5-mile planning distance and determines that, given the size of the spill, the following sensitive areas are at risk: Timbalier Bay and the shorelines and waterways associated with Timbalier Bay.

0900: The Operations Section Chief contacts the contracted OSRO, Oil Mop, and requests 2 vacuum trucks, 1200' of containment boom, 2200' of sorbent boom, 800' of snare, and 50 bundles of sorbent pads.

0915: Oil Mop informs the Operations Section Chief that they will deploy equipment and personnel from their Houma location and that they will be onsite in one hour. However, given the amount of equipment requested, it may take several hours for all equipment to arrive at the facility.

1015: Oil Mop equipment begins to arrive at the facility with 4 truck drivers (2 vacuum, 2 equipment), 8 techs, and 1 supervisor. It will take an estimated 2 hours for the remaining equipment to arrive.

1020: Cleanup operations begin utilizing vacuum trucks and sorbents. Technicians begin inspecting the areas around the facility to determine locations of greatest concern.

1035: Fly-overs report that the sheen is heaviest in the southern part of the Timbalier Bay. Wildlife and shorelines have been impacted.

1105: Based on the Planning Section's analysis and recommendation to focus on the southern portion of Timbalier Bay, the Operations Section Chief instructs Oil Mop to deploy containment boom and attempt to corral the sheen in that direction.

1130: To collect oil and reduce the probability of the sheen escaping containment, Oil Mop lines the inside of the hard boom with sorbent boom.

1155: Additional Oil Mop response equipment arrives (2 trucks, 2 drivers).

Days 2-9

The Planning Section continues to gather environmental data, which is used to establish the daily Incident Action Plan.

Day 10

0830: All generated waste is collected by response personnel properly. At no time during the response did oily water escape the secondary containment system.

0920: Oil Mop leaves the facility transporting the oily waste for disposed.

Day 11

0400: The IC convenes an incident summary meeting with the SMT members and Qualified Individual.

2.8 Oil Spill Contractors

Response resources and contractors are identical for each response zone. O'Brien Response Management Inc. (O'Brien's) is the contract Spill Management Team, while Garner Environmental Services, Inc. is under contract as the primary provider of spill response equipment and personnel. Garner Environmental Services, Inc. is a USCG-Certified OSRO and is available 24/7 to respond to a worse case discharge to the maximum extent practicable.

The OSROs are relied upon for equipment and staffing. The OSRO classification also serves as acceptable documentation of an equipment testing program. For non-classified spill contractors, the operator has insured that such contractors have a maintenance program established for their equipment. Contact information for spill contractors is included below, while information on services agreements is included in **Appendix C**.

Contractor	Phone	Response Time
O'Brien's Response Management	(985) 781-0804	30 min.
Garner Environmental Services, Inc.	(800) 424-1716	1-6 hr
Oil Mop, LLC	(800) 645-6671	1.5-6 hr
Ampol	(800) 482-6765	1.5-6 hr

2.9 Response Zones

The Cameron Highway and Poseidon Pipelines are covered under two response zones. The Cameron Highway Response Zone covers Galveston County, Texas, while the Poseidon Response Zone covers Terrebonne Parish, Louisiana. The DOT, PHMSA regulations require that the operator identify response resources which are available to respond within specified timeframes following discovery of a worst case discharge, or to mitigate the substantial threat of such a discharge. The specified timeframes are as follows:

	Tier 1	Tier 2	Tier 3
High Volume Area	6 hours	30 hours	54 hours
All other Areas	12 hours	36 hours	60 hours

The Galveston Bay is classified as "a high volume area." As such, OSROs are under contract and committed to respond to all pipeline sections within the 6-hour, Tier 1 timeframe. The Poseidon Pipeline does not travel through a "high volume area", therefore, all response resources will follow those timeframes specified for "all other areas". OSROs are under contract and committed to respond to all Poseidon pipeline sections within the 12-hour, Tier 1 timeframe.

Garner Environmental Services, Inc. is under contract as the primary service provider, and is committed to respond to all pipeline sections within the 12-hour, Tier 1 timeframe. Additional contractors are available, as necessary, to fulfill Tier 2 and Tier 3 time requirements (refer to **Section 2.8).**

3.0 Core Plan Elements

3.1 Abnormal Operating Conditions

Spill detection, emergency transfer, and mitigation procedures are identical for each response zone. The pipeline is protected by high/low pressure devices. The pipeline is monitored 24 hours per day. The Operations Manager is responsible for leak detection along the pipeline. The procedures used to prevent and quickly detect spills are described in the facility's Operating and Maintenance (O&M) manual. In addition to the electronic monitoring system, leaks or ruptures are located by routine pipeline inspections. Pressure recording charts, pressure gauges, meters, communication equipment and safety devices will be observed for indications of abnormal operations. All abnormal operations will be documented on the Abnormal Incident Report form included in **FORMS Appendix**.

Abnormal conditions are unexpected, unintentional, non-emergency events that cause a pipeline system's normal operating limits to be exceeded. In some instances, these abnormal conditions can be the early stages of a pipeline emergency. Abnormal operations may include the following:

- Unintended closure of valves or shutdowns
- Increase or decrease in pressure or flow rate outside normal operating limits
- Operation of safety devices
- Loss of communications
- Any other malfunction of a component, deviation from normal operation, or personnel error which could cause a hazard to persons or property

3.1.1 Unintended Valve Closure or Shutdown

In the event of unintended valve closure or shutdown, the operator will immediately evaluate the condition, to see if an increase in pressure over the MOP occurred. If such an increase occurred, the line will be shut in, and pressures monitored to determine whether the line integrity has been violated. If the monitoring of line pressure indicates a potential leak or rupture, the Operations Manager will be notified immediately. Once the cause has been determined, a minimum of one hour of pressure monitoring will be completed. If the pressure readings indicate that line integrity has been maintained, and the problem has been identified and corrected, the line may be restarted with concurrence from the Operations Manager. If an increase over MOP did not occur, the line operation may continue, provided the cause of the valve closure or shutdown has been determined and corrected.

3.1.2 Pressure or Flow Rate Readings Outside Normal Operating Limits

In the event that pressure or flow rate readings are outside of the normal operating limits, the readings will be checked against the design limits of the line. If the readings exceed the design limits, the line will be shut in immediately. Pressure will be monitored to determine that the line integrity has not been violated. If the monitoring of line pressures indicates a potential leak or rupture, the Operations Manager will be notified immediately. Once the cause has been determined, a minimum of one hour of pressure monitoring will be completed. If the pressure readings indicate that line integrity has been maintained, and the problem has been identified and corrected, the line may be restarted with concurrence from the Operations Manager. If the readings did not exceed the design limits of the line, operations may continue.

3.1.3 Operation of Safety Devices

If any safety device is triggered, the operator will immediately notify the Facility Operator. An investigation will then be conducted to determine the cause of the problem. After the problem has been corrected, the line will be evaluated to determine whether or not the design limits were exceeded. If the design limits

were exceeded, operators will follow the appropriate procedures outlined in the facility's O&M manual. If pressure readings indicate that line integrity has been maintained, and the problem has been identified and corrected, the line may be restarted with concurrence from the Operations Manager. If the design limits of the line were not exceeded, the pipeline operation will continue providing the safety condition has been corrected.

3.1.4 Loss of communications

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3.1.5 Other Malfunctions/Deviations/Personnel Error

The Operations Manager will evaluate all other conditions and determine a course of action to be taken.

3.2 Preliminary Assessment

Evaluate safety considerations through the following actions:

- Perform air monitoring surveys prior to entering a spill area
- Approach area wearing protective equipment, including breathing apparatus if uncertain of product spilled
- Keep the public a safe distance from the spill area
- Avoid contact with spilled product
- Secure the release if possible to do so in a safe manner (e.g. close valve, turn off pump, blind the flange)
- Contain the release with sorbent material, loose dirt, sandbags, or other materials that are available
- Be aware of conditions such as high currents, poor visibility, or inclement weather which may cause undue personnel hazards during boating operations
- Identify safety hazards involved in handling spilled oils such as:
  - Extremely slippery walking surfaces
  - Physical hazards associated with spilled product including, but not limited to, skin irritation (from skin contact), diarrhea (from ingestion), eye irritation (from exposure to vapors), dizziness (from inhalation), nausea (from inhalation or ingestion), and asphyxiation (from inhalation)
- Determine extent and movement of the spill
- Identify sensitive areas and determine protection priorities

3.3 Initial Response

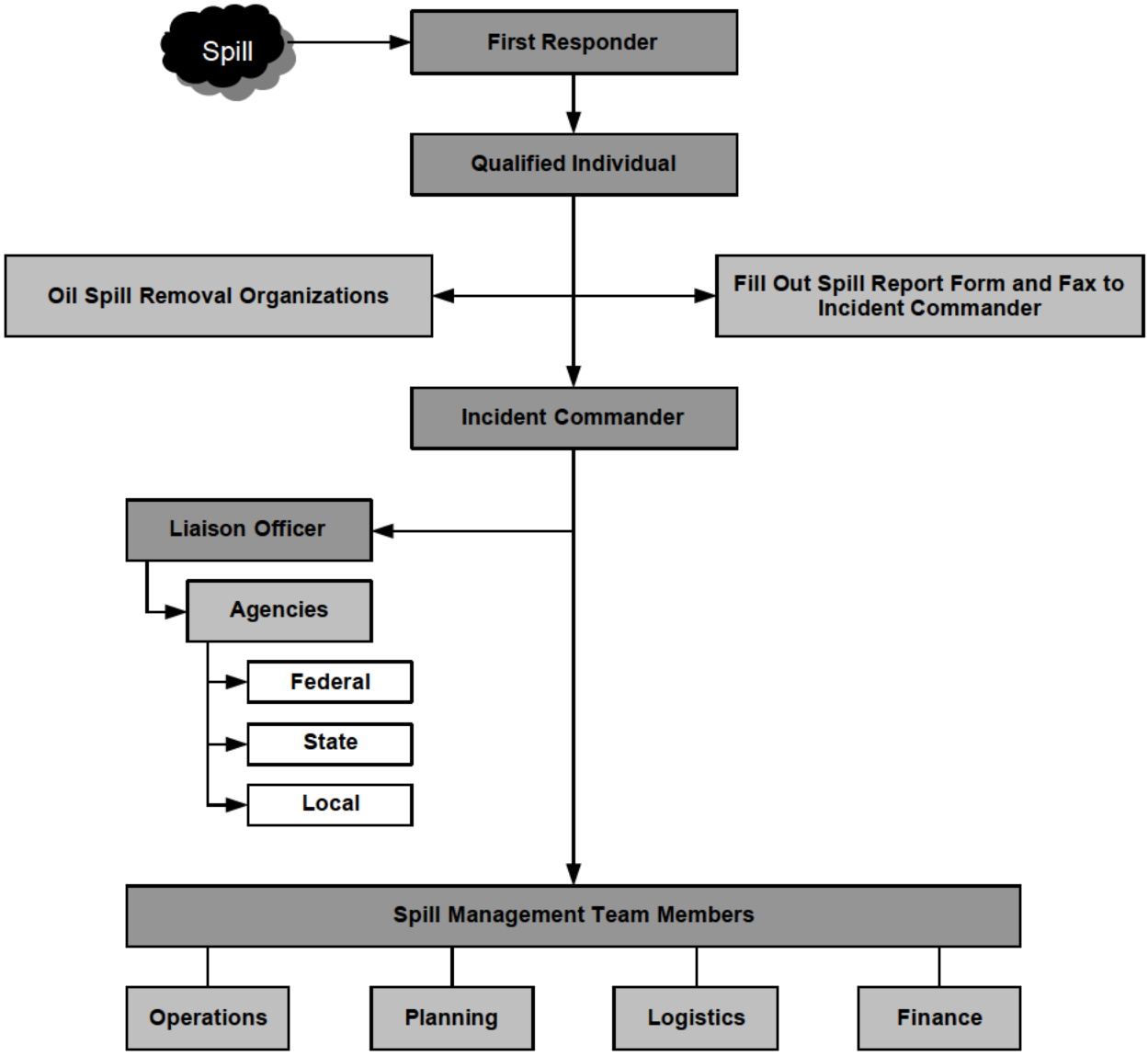
Any person observing or becoming aware of an oil spill of any size must immediately report the incident to the Qualified Individual (QI). The Spill Report Form (**FORMS Appendix**) will be completed while discussing the incident. Information not immediately known may be added to the form as it becomes available. Operations personnel are capable of initiating notifications on a 24-hour basis. Notification

procedures are identical for each Response Zone, however state and local *agencies notified* will be contingent upon spill location and impacted/threatened areas. Notification will take place as indicated in **Figure 1,** Spill Notification Flowchart. When making these initial notifications, personnel should attempt to provide the following information:

- Name of caller and callback number
- Exact location and nature of the incident (e.g., fire, release)
- Time of incident
- Name and quantity of material(s) involved, or to the extent known (refer to MSDS)
- The extent of personal injuries, damage and/or fire, if any
- The possible hazards to human health, or the environment, outside the facility;
- Body of water affected (if any)
- If applicable, quantity in water (size and color of slick or sheen if the material is lighter than water) or amount released to the atmosphere
- Present weather conditions–wind speed and direction, movement of slick or sheen, current/tide;
- Potential for fire
- Action being taken to control release.
- Contact information for all points of notification is included in **Appendix B**.

Detergents or other surfactants are prohibited from being used on an oil spill in the water, and that dispersants may only be used with the approval of the Regional Response Team.

Figure 1: Spill Notification Flowchart



*SMT and QI information are located in **Appendix B**.
*Spill Report Form is located in **FORMS Appendix**.

3.3.1 Federal Agency Notification Requirements

The Incident Commander will notify the Liaison Officer, who will in turn make all initial and follow-up federal agency notifications on a 24-hour basis. Agencies will be notified in the order established in this section.

National Response Center (NRC) **(800) 424-8802**

The NRC is the clearinghouse for all USCG and USDOT oil and chemical spill notifications. Placing a call to the NRC satisfies the notification requirements for each of these agencies. Immediate notification (less than one hour) is required for all discharges of oil sufficient to produce a sheen into navigable waters of the United States, and for all chemical releases in excess of the reportable quantities listed in 40 CFR 302.4. Below are the reporting requirements for each agency, along with the agency's telephone number.

U.S. Department of Transportation **(800) 424-8802**

The following notification requirements apply if NRC has not already been contacted.

The DOT must be notified by telephone if an incident:

- Caused a death or a personal injury requiring hospitalization.
- Resulted in either a fire or explosion not intentionally set by the operator
- Caused estimated damage to the property of the operator or others, or both, exceeding $50,000.
- In the judgment of the operator was significant even though it did not meet the criteria above.
- Resulted in pollution that violated applicable water quality standards, caused discoloration of the water surface or shoreline, or deposited a sludge or emulsion in the shoreline or beneath the water surface (195.52).

For reportable incidents, the Liaison Officer shall telephone the NRC at the earliest practicable moment, with the following information:

- Operator of pipeline and their telephone number.
- Name and telephone number of the person reporting the incident.
- Location of the accident.
- Time of the accident.
- Fatalities or personal injury, if any.
- All other significant facts known by the operator that are relevant to the cause of the incident or extent of the damages.

Additionally, if additional information is obtained that leads any of the following deviations from the initial report, then an additional report must be called in to the FOSC:

- An increase or decrease in the number of previously reported injuries or fatalities
- A revised estimate of the product release amount that is at least 10 times greater than the amount reported
- A revised estimate of the property damage that is at least 10 times greater than the reported property damage estimate

A written report (DOT PHMSA Form 7100.2) is due as soon as practicable but not more than 30 days after discovery of the incident.

Environmental Protection Agency (EPA) Region VI **(866) 372-7745**

Any person in charge of an offshore facility, an onshore facility or a vessel, which has, within a 24-hour period, released a reportable quantity of a hazardous substance, shall immediately notify the National Response Center. Notification does not need to be made to the Environmental Protection Agency, unless there is a violation of the facility's NPDES permit, which may endanger health or the environment. Any visual sheen constitutes a reportable quantity for oil.

If the facility discharges more than 1,000 gallons of oil in a single discharge or more than 42 gallons of oil in each of two discharges occurring within any twelve month period, the following must be submitted to EPA within 60 days: name of facility; name of reporting party; location of facility; maximum storage or handling of the facility and normal daily throughput; corrective action and countermeasures that have been taken, including a description of equipment repairs and replacements; adequate description of the facility, including maps, flow diagrams, and topographical maps; the cause of such discharge as including a failure analysis of the system or subsystem in which the failure occurred, additional preventive measures that have been taken or contemplated to minimize the possibility of recurrence and such other information as the EPA may reasonably require pertinent to the Plan or discharge.

United States Coast Guard—MSU Galveston **(409) 978-2700**
United States Coast Guard—Sector Houston-Galveston **(713) 671-5100**
United States Coast Guard—MSU Morgan City **(985) 380-5320**

The USCG must be notified via the NRC for all chemical releases (to air, land or water) deemed reportable by 40 CFR 302.4 and oil discharges into coastal navigable waters of the U.S. sufficient to create a sheen. A written report is not required.

Occupational Safety & Health Administration (OSHA) **(800) 321-6742**

OSHA must be notified by telephone if an accident occurred which caused a death, or three or more personnel injuries which required hospitalization.

3.3.2 State Agency Notification Requirements

The Incident Commander will notify the Liaison Officer, who will in turn make initial and follow-up state agency notifications. Coordination will take place among the groups listed within this section.

Louisiana One-Call (State Police) **(225) 925-6595**

Spills that meet the requirements specified by either state or federal Right-to-Know Laws must be reported immediately (within one hour). A written report is required within five business days.

The Louisiana State Police must be notified of any actual or threatened discharge involving one or more barrels of petroleum material, or an amount that exceeds the reportable quantity of hazardous material, into the water or onto land. The Office of the State Police is the lead agency for emergency response in Louisiana. Continue to report any material changes (that is, quantity, quality, location of the discharge) prior to the arrival of a State On-Scene Coordinator.

Louisiana Department of Environmental Quality **(225) 342-1234**

The Louisiana Department of Environmental Quality (DEQ) must be notified of any actual or threatened discharge involving one or more barrels of petroleum material, or an amount that exceeds the reportable quantity of hazardous material, into the water or onto land. The DEQ division that handles this notification is the Office of Water Resources. Continue to report any material changes (that is, quantity, quality, location of the discharge) prior to the arrival of a State On-Scene Coordinator. Within seven calendar days following the verbal report, a written report will be submitted.

Louisiana Oil Spill Coordinator **(225) 219-5800**

Notify the Louisiana Oil Spill Coordinator within one hour of any spill that threatens state waters.

Texas General Land Office **(800) 832-8224**

The Texas General Land Office (GLO) must be notified within one hour of any spill sufficient enough to create a sheen on coastal waters of the state of Texas.

Texas Railroad Commission—District 3 (Houston) **(713) 869-5001**

Operators are required to immediately notify the Texas Railroad Commission of a fire, leak, spill or break greater than 5 bbls. Notice must be made to the appropriate commission district office by telephone. A written follow-up report must be filed giving the full description of the event, and it must include the volume of crude oil, gas, geothermal resources, other well liquids, or associated products lost. All Spills of crude oil into water must be reported to the commission.

Texas Commission on Environmental Quality **(800) 832-8224**

The Texas Commission on Environmental Quality (TCEQ) must be notified within 24 hours of any spill which could have the potential to adversely affect human health or the environment.

Any amount of material other than oil spilled to waters of the state which has the potential to alter and/or degrade water quality must be reported to the TCEQ. Reportable quantities are set forth in 40 CFR 302.4, with the exception that no RQ will exceed 100 lbs. for material that enters waters of the state. The TCEQ reportable quantity (RQ) for spills on land of oil is 5 bbls. A leak of any size, no matter how small, must be reported if surface and/or ground water quality is affected.

3.3.3 Local Agency Notification

Texas Notifications

The Incident Commander will notify the Liaison Officer, who will in turn make initial and follow-up notification to the following Local Emergency Planning Committee(s) (LEPC):

Brazoria County LEPC **(979) 864-1201**
Chambers County LEPC **(409) 267-8343**
Galveston County LEPC **(281) 534-8442**
Jefferson County LEPC **(409) 835-8757**

Louisiana Notifications

The Incident Commander will notify the Liaison Officer, who will in turn make the initial and follow-up notification to the following Parish Office of Homeland Security (OHS) & Emergency Preparedness:

Terrebonne Parish LEPC & OHS **(985) 873-6357**

3.3.4 Community Notifications

In the event that community notification of a spill is required, the police departments can be reached immediately on a 24-hour basis by dialing "911." Other Community notifications include:

- Local Fire Department
- Local radio and television stations (for broadcasting messages to the public)

Contact information for community points of notification is included in **Appendix B**.

In the event that public notification of a spill is required, as deemed necessary by the Federal On-Scene Coordinator, the following guidelines will be noted:

- The nature and extent of the economic losses that have occurred or are likely to occur
- The persons who are likely to incur economic losses
- The geographical area that is affected or is likely to be affected
- The most effective method of reasonably notifying potential claimants of the designated source
- Any relevant information or recommendations submitted by the owner, operator, or guarantor of the designated source

3.3.5 Other Notifications

There are a number of other notifications that must be made if the incident is of a sufficient magnitude. These Include:

- OSROs (available 24/7)
- Wildlife rehabilitation personnel
- Natural Resource Damage Assessment (NRDA) experts

Contact information for these points of notification is included in **Appendix B.**

3.4 Establishment of a Response Management System

Prior to the arrival of the contracted Incident Commander (IC), the Facility Operator will be the acting IC during a response. As the incident escalates, more personnel will be called in to form an Incident Command System. The National Incident Management System (NIMS) will be used by the facility, in concert with OSROs and federal, state and local agencies. A full discussion on the facility's ICS can be found in **Section 4.0.**

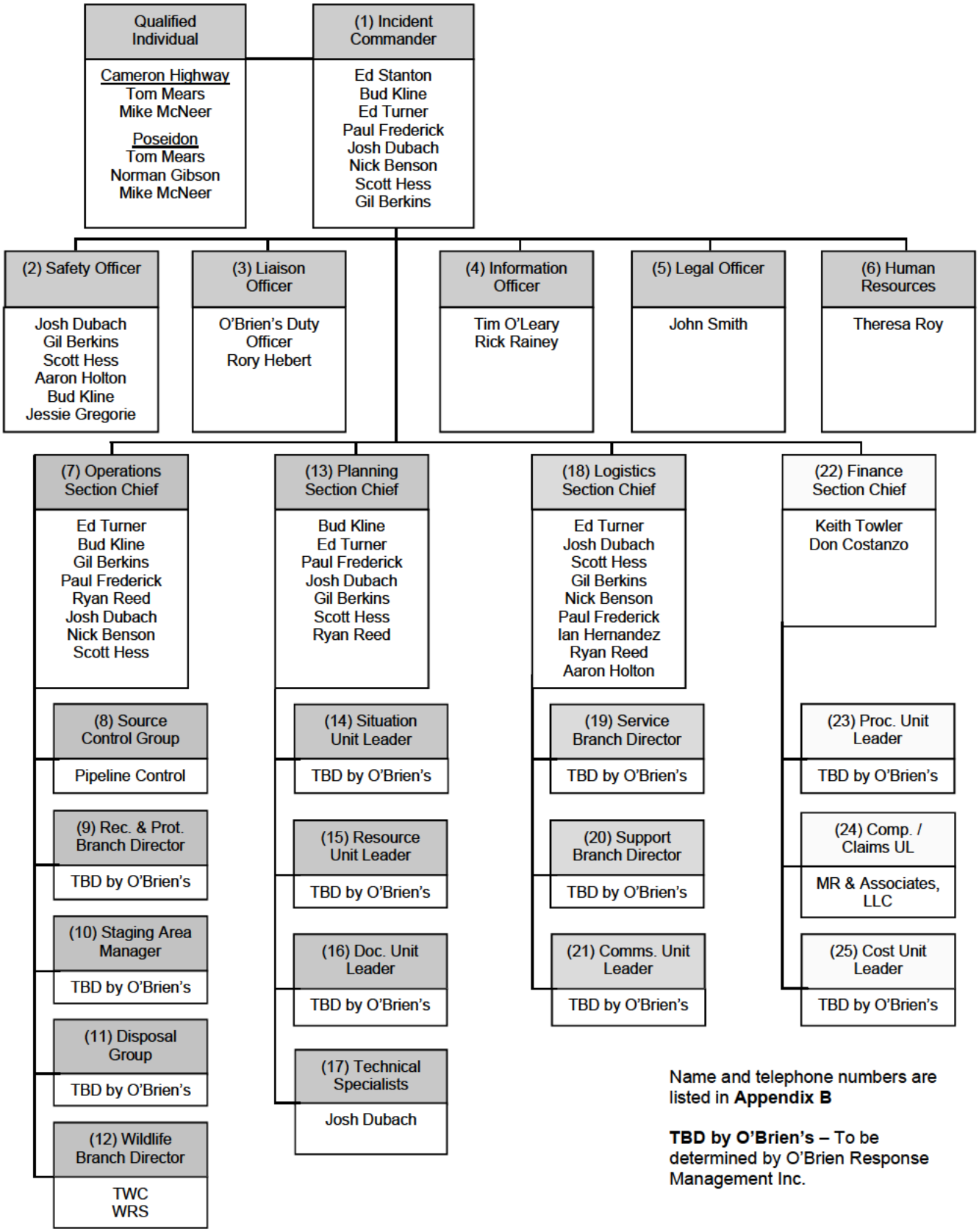
4.0 Response Management System

4.1 General

Response activities are identical for each Response Zone. The Spill Management Team (SMT) has been created and organized to plan for and manage response operations. The organizational structure of the Spill Management Team (SMT) is based on National Incident Management System (NIMS) Incident Command System (ICS). The structure of the Team is modular. A portion of the team may be utilized during a small incident or the entire team may be utilized during a large incident (depending on the size of the environmental impact).

The SMT will develop strategies and priorities for a response, supervise contractors, handle safety and security matters, and provide logistical support for contractor personnel. The SMT will handle all communications with the media and the public. An SMT organizational chart is included as **Figure 2**, while specific duties of various divisions of the SMT are described in **Figure 3**. The Incident Commander (IC) will determine the extent of the SMT utilization, depending upon circumstances present. SMT contact information is included in **Appendix B**.

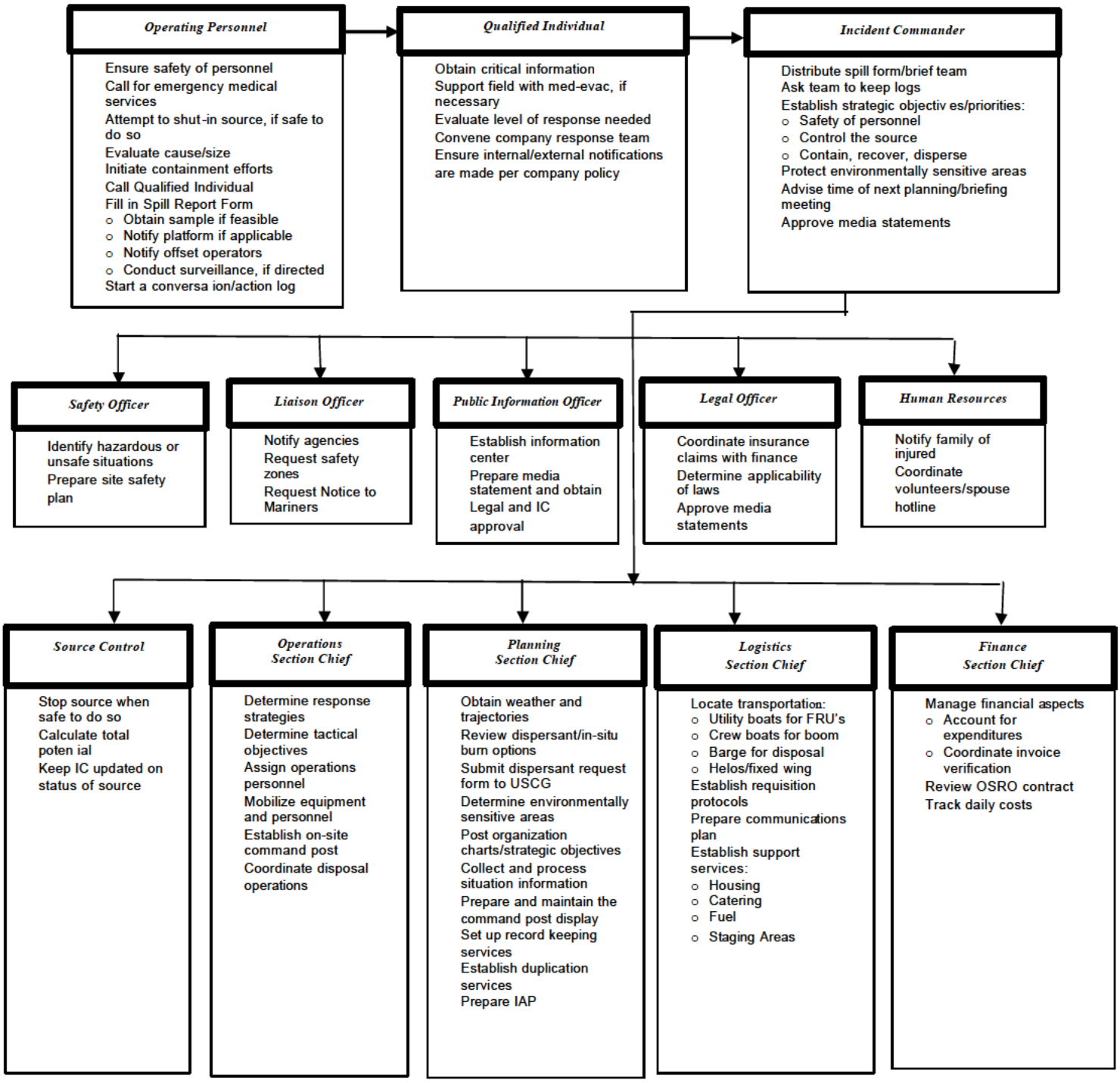
Figure 2: Spill Management Team Organizational Chart



Additional SMT role necessity and designation will be determined at the time of the incident.

Figure 3: Spill Management Team Duties

*Activity Checklists for various members of the SMT have been included in **Appendix F**.*



4.2 Interface with Federal, State, and Local Agencies

The Unified Command Structure will be utilized as a method of integrating federal, state, and local agencies with the SMT. The purpose of this system is to organize the variety of agencies that may be involved in a response into a consistent team that performs their duties in a concerted, unified effort.

The Unified Command Structure consists of three key on-scene coordinators: Federal On-Scene Coordinator (FOSC), State On-Scene Coordinator (SOSC), and the Incident Commander (IC). These three entities will share decision-making authority as Incident Commanders in the Command center and will consult with each other regarding spill response management issues. The SOSC will coordinate all state and local agencies involved in the response. The facility's Qualified Individual will coordinate all facility personnel and contract activities.

Depending upon the size and complexity of the incident, additional federal and state agency personnel may integrate into the other functions of the SMT.

4.3 Spill Management Team (SMT)

4.3.1 Duties

Command and Control

Prior to the arrival of the Incident Commander (IC), the Facility Operator will assume the position of IC. If the Facility Operator is absent, this position will be assumed by the Emergency Team Captain. The Incident Commander will be responsible for setting up the Command Post, start carrying out command activities, approving and authorizing the Incident Action Plan (IAP), authorizing the release of information, and ensuring response fund availability. All emergency control activities will be coordinated from the Command Post. The Command Post will be a facility (vehicle or building) with adequate communication equipment, resource information, lighting, space for staff, etc.

The *Command Staff* will consist of the Incident Commander, Safety Officer, Liaison Officer and Public Information Officer, and other management staff as necessary or as requested.

Incident Commander

The Incident Commander will ensure that all of the following duties are successfully performed in a safe manner:

- Activate internal alarms and hazard communication systems to notify all facility personnel.
- Notify all response personnel, as needed. Identify the character, exact source, amount, and extent of the release, as well as the other items needed for notification.
- 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.
- Assess the interaction of the spilled substance with water and/or other substances and notify response personnel at the scene of that assessment.
- Assess the possible hazards to human health and the environment due to the release. This assessment must consider both the direct and the indirect effects of the release (i.e., the effects of any toxic, irritating, or asphyxiating gases that may be generated, or the effects of any hazardous surface water runoffs from water or chemical agents used to control fire and heat-induced explosion).
- Assess and implement prompt removal actions to contain and remove the substance released.
- Coordinate rescue and response actions as previously arranged with all response personnel.

- Use authority to immediately access company funding to initiate cleanup activities.
- Direct cleanup activities until properly relieved of this responsibility.

The *Qualified Individual* has authority to immediately access company funds to initiate cleanup activities. In the event that major cleanup activity funding is needed, corporate notification and involvement would facilitate the immediate accessing of company funds. The *Incident Commander* will execute the majority of the command activities.

Safety Officer

The Safety Officer's primary function is to assess hazardous and unsafe situations and develop measures for assuring personnel safety and correct unsafe acts or conditions. The Safety Officer will ensure the preparation and implementation of the Site Safety Plan and approve the Medical Plan. The Safety Officer has the authority to stop or prevent unsafe acts or conditions when immediate action is required.

Public Information Officer

This position will be responsible for coordination of all media releases. In his absence, or until he arrives, the Incident Commander will designate someone to organize all media personnel in one location and ensure that no one enters the facility and that no statement is given to the media without prior approval from the Incident Commander.

Liaison Officer

This position will be the point of contact for representatives from Federal, State and local regulatory agencies. They will be responsible for appropriate notification to such agencies as required.

The *Section Chiefs* (Planning, Operations, Logistics and Finance) report to the Incident Commander and are not part of the Command Staff.

Planning Section Chief

The Planning Chief oversees all incident-related data gathering and analysis. Additionally, the Planning Chief will manage the development of spill trajectories, wildlife impact assessments and weather information (atmospheric, tidal and current). The Planning Section Chief will also oversee the determination of environmentally sensitive areas and special considerations for those areas. The Planning Chief will be positioned at the Incident Command Post during the emergency.

Spill Tracking and Trajectory contractors are listed in **Appendix B**.

Operations Section Chief

The Operations Chief will be responsible for the implementation of the Incident Action Plan (IAP) and Site Safety Plan, as well as developing the Operations portion of the IAP and briefing and designating personnel. This position will report directly to the Incident Commander, but can also be the Incident Commander in smaller situations or until assistance arrives.

Logistics Section Chief

The Logistics Chief will be responsible for the orders and delivery coordination of response equipment, materials and supplies to all response locations. The Logistics Chief will ensure that applicable resources are fueled and maintained, as well as oversee the establishment and maintenance of communications

systems, the coordination of meals and bathing, and all onsite security initiatives. The Logistics Chief will coordinate all related transportation services.

Finance Section Chief

The Finance Section Chief will be responsible for the management of all contracts needed to support the response operations. This responsibility includes the comprehensive tracking and documentation of response costs, as well as receiving and processing claims related to the incident.

4.3.2 Incident Command Post

The designated Incident Command Post is located at the O'Brien's corporate office, 2000 Old Spanish Trail, Suite 210, Slidell, LA 70458. An alternative Command Post will be set up at Enterprise Field Services, LLC, 2727 North Loop West, Houston, Tx 77008 if necessary.

4.3.3 Information

Internal Communication

Information flow is vital to response operations. The Communications Unit Leader will establish a communications plan and call out additional communications equipment, as needed. Cellular phones and/or VHF/UHF handheld radio communication systems will be utilized in addition to land line systems. Networks will be developed as necessary (command, tactical, support, ground-to-air, air-to-air, etc). The facility will exchange radios with the OSRO and/or SMT during the incident. This will enable the SMT to communicate with spill response team members by radios tuned to designated frequencies.

Community Notification

In the event that community notification of a spill is required, the police or sheriff's department will be notified for assistance by calling 911. In the event that public notification of a spill is required, as deemed necessary by the FOSC, note the following guidelines:

- The nature and extent of the economic losses that have occurred or are likely to occur
- The persons who are likely to incur economic losses
- The geographical area that is affected or is likely to be affected
- The most effective method of reasonably notifying potential claimants of the designated source
- Any relevant information or recommendations submitted by the owner, operator, or guarantor of the designated source

Media Notification

Accurate reporting of activities to the news media and to the general public is necessary during an oil spill. The primary objective is to ensure that all reports are timely, factual and represent the company's position fairly and accurately.

For larger spills with more media interest, it may be necessary to seek assistance from the FOSC. Under Unified Command, a Joint Information Center (JIC) may be established. The Public Information Officer will make every reasonable effort to cooperate with the media and provide necessary facilities to accommodate their needs.

It may become necessary to make scheduled press releases during highly publicized, sensitive, or incidents of great public concern. The press should be consulted to establish a schedule. It may be beneficial to arrange for a single contact point with the press which can then provide information to all other press organizations.

Public statements will contain the following type of information as appropriate:

- Nature, time, and location of the incident and other facts that are not in dispute
- Time, place, and number of people injured or killed
- Current status of the incident
- Name of contact for more information
- Steps the company has taken or has firm plans to take to contain, control, or handle the spill (if facts are not in contention)
- Whether or not danger is present
- Whether or not there have been any evacuations or power disruptions
- State that it is the company's policy to prevent pollution of the sea, coastline or inland waters (whichever is appropriate) and to minimize danger to the environment
- Containment and cleanup experts on the scene or on the way
- Type of oil spilled
- Volume, if known (or estimates as provided to regulatory agencies)
- Movement of wind, current, and weather which may affect movement of the spill
- Equipment and manpower directed to efforts
- Special efforts to protect property or wildlife
- Concurrence that appropriate agencies have been (are being) fully notified and/or informed

Statements regarding the following should be avoided:

- Liability for a spill
- Speculation regarding the cause and size of spill
- Dollar amounts of damage and/or containment and cleanup
- Estimates of time required to complete cleanup
- Promises that property, environment, etc. will be restored to normal
- Statements regarding appropriateness of response by other companies or governmental agencies
- Names of injured or dead until next of kin have been notified
- Discussion of previous incidents

Providing information directly to members of the impacted community, free of the filtering and potentially distorting effect of the media is critical to public understanding of the incident response. Community relations may include scheduling of public meetings, preparing speeches, and coordinating public activities with public officials and protocol personnel. An Initial Media Release form is located in **FORMS Appendix**.

Plans for Families of Employees

In the event of a large incident, with numerous responders, the Incident Commander will add a Human Resources Officer to his or her Command Staff. This person will be the point of contact for families of employees. Personnel will be tracked through logs. There will be official check in logs at the incident which will support personnel accountability. Supervisors must maintain a Unit Log indicating names of personnel assigned in their unit. If necessary, Human Resources will contact the appropriate supervisor to relay a message to the employee.

4.3.4 Safety

Spill response activities pose varying degrees of danger to responders. The primary objective of any response activity is the protection of the safety and health of responders and the general public. Realizing this objective requires the chemical and physical hazards associated with each response activity be assessed and appropriate methods implemented to prevent or minimize potential harm. For example, the identification (or detection) of a particular chemical constituent of the spill material may necessitate changes in the safety protocols employed in the response. Additionally, potential impacts to the health and safety of the public must be identified and controlled (or minimized) through the utilization of early countermeasures. In order to satisfy the requirements of this plan, each response organization must have an effective health and safety program, including medical surveillance and health monitoring, appropriate safety equipment, standardized safety procedures, and an active training program. The Safety Officer is responsible for monitoring and assessing hazardous or unsafe situations and instituting (or formulating) measures that ensure personnel safety.

The Safety Officer will:

- Monitor activities and developing situations
- Utilize the established (or customary) chain of command to prevent or correct unsafe activities or conditions
- Ensure the preparation and implementation of the Site Safety Plan
- Identify hazardous or unsafe situations associated with the incident by ensuring the performance of a preliminary and continuous site characterization and analysis, which shall include the identification of all actual and potential physical, biological, and chemical hazards known or suspected to be present on the site
- Participate in the planning meetings to identify any health or safety concerns inherent in the operations daily work plan
- Review Incident Action Plan for safety implications and integrate safety measures in each Incident Action Plan
- Exercise emergency authority to stop or prevent unsafe acts
- Investigate accidents that occur within incident areas
- Ensure the preparation and implementation of the site specific Health and Safety Plan (HASP) in accordance with the ACP and State and Federal OSHA regulations. The HASP shall at a minimum address, include, or contain the following elements:
  - Health and safety hazard analysis for each site task or operation
  - Comprehensive operations work plan
  - Personnel training requirements
  - PPE selection criteria
  - Site specific occupational medical monitoring requirements
  - Air monitoring plan for area personnel
  - Site control measures
  - Confined space entry procedures (only if needed)
  - Pre-entry briefings (tailgate meetings), initial and as needed
  - Pre-operations health and safety conference for all incident participants
  - Quality assurance of HASP effectiveness
  - Assign assistants and manage the incident safety organization
  - Review and approve the medical plan
  - Maintain unit/activity log

A Site Safety Assessment form is located in the **FORMS Appendix**.

4.3.5 Wildlife Rehabilitation Procedures

Only trained personnel from the U.S. Fish and Wildlife Service or the State Parks and Wildlife Departments, or rehabilitators permitted by these agencies are allowed to capture and rehabilitate oiled wildlife.

If a spill results in damage to wildlife, Wildlife Rehab & Education (WR&E), Inc. and or Wildlife Response Services LLC will be utilized.

Wildlife Rehab &Education, Inc. (WR&E)	Wildlife Response Services LLC
Sharon Schmalz Wildlife Center 7007 Katy Road Houston, TX, 77024 (281) 731-8826-cell (713) 861-WILD (9453) (b) (6) (713) 279-1417-pager	Rhonda Murgatroyd P.O. Box 842 Seabrook, Texas 77586 (713) 705-5897 (281) 266-0054-pager
South Texas Coastal Response	
Tony Amos UT Marine Science Institute & Animal Rehab Keep (ARK) (361) 749-6720	

- When it is first determined that bird rescue and rehabilitation operations may be needed, Wildlife Rehab & Education (WR&E) or Wildlife Response Service LLC will be notified as soon as possible.
- The WR&E Oiled Wildlife Response Team or the Wildlife Response Service LLC Response Team will advise state and federal agencies and Enterprise Field Services, LLC if a rehabilitation facility needs to be set up or if the Clean Gulf Associates or Texas General Land Office Oiled Wildlife Response Trailers need to be utilized.
- The WR&E Response Team or Wildlife Response Service LLC Response Team will supervise the medical care, cleaning, aftercare and release of the oiled wildlife and act as liaison with state and federal agencies and Enterprise Field Services, LLC regarding the oiled wildlife response.

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4.4 Operations

4.4.1 Operational Response Objectives

- Continuously assess personnel safety
- Secure or isolate the source
- Contain the product
- Protect sensitive areas
- Recover product
- Rehabilitate wildlife and resources
- Clean impacted areas
- Coordinate response actions
- Document response
- Customize response organization
- Think ahead and anticipate needs

4.4.2 Assessment/Monitoring

- Conduct overflights (photos, videos, air eye)
- Classify the type and size of spill
- Acquire samples
- Determine chemical and physical properties of spilled material
- Obtain on-scene weather forecast (12, 24, 48, and 72-hour)
- Track oil movement or projected movement
- Continuously assess human health and environmental concerns
- Determine extent of contamination

4.4.3 Planning Considerations/Protection Priorities

Resource constraints, time constraints, and various response constraints limit the amount of areas that can be protected during a major oil or HAZMAT spill. The following list provides a prioritization of types of areas that must be protected during an incident (this list was adopted from the USCG's One Gulf Plan).

1) Public Health

- Storm drain inlets
- Public drinking water intakes
- Public utility water intakes

2) Threatened and Endangered Species
3) Habitat and Species Concentrations
   - Designated wildlife refuges and game management areas
   - Wildlife concentrations (which may vary seasonally)
   - Vegetated wetlands and shoreline
   - Public oyster seed grounds
   - Commercial and recreational fisheries management areas
   - Coastal restoration projects
4) Other Public Lands
5) Cultural and Historical Sites
6) Exposed Tidal Flats
   - Shell beaches and rip rap
   - All other beaches
7) Sheltered Rocky Shores and Sea Walls
8) Private Recreational Areas and Facilities
9) Marinas
10) Private and Industrial Raw Water Supplies

4.4.4 Procedures for Implementation of Tactical Plan

- Maximize protection of response personnel
- Deploy boom immediately to prevent the spread of pollution and to protect the environment
- Boom off sensitive areas
- Deploy boom to corral a drifting slick and divert it to a suitable collection point
- Maximize on-water containment and recovery operations
- Handle wastes to minimize secondary environmental impacts
- Site Specific Response Sheets have been included in **Appendix A** These sheets are from the National Contingency Plan, Sector Houston-Galveston, Sector New Orleans, and Specific Geographic Response Plans

4.4.5 Procedures for Mobilization of Resources

A major consideration during a spill is the coordination of the transportation and delivery of manpower, equipment, and materials used in response operations. The ground support unit (Logistics) will work with local authorities (state police) to establish land routes which will expedite the movement of personnel, equipment, materials and supplies to the Staging Area and waste products from the Staging Area. The facility will utilize status boards to coordinate all equipment, personnel and materials mobilized to the spill site. Equipment will first be mobilized from the OSRO warehouse to the Staging Area. The Staging Area Manager will direct which equipment will be delivered to which Division/Task Force. Mobilization of Resources can be completed within Tier I, II, and III time requirements.

4.4.6 Sustained Actions

Response operations will need to be managed 24-hours a day, seven days a week until the operation is complete. Once the initial emergency stage of the spill situation has transformed to the sustained action stage, the response management structure will develop more prolonged mitigation and recovery action strategies.

4.5 Alternative Response Strategies

Alternative Response Strategies are a general category of response countermeasures other than mechanical recovery, such as the use of in-situ burning, chemical dispersants, or other biological or chemical agents, utilized to clean up a spill. The response strategies pursued will depend on the nature of the spill, changing conditions, available resources, and time.

Subpart J of the National Contingency Plan (NCP) regulates the use of dispersants, other chemical agents, and bioremediation agents; it also establishes the NCP Product Schedule, which is a listing of dispersants and other chemical or biological products that may be authorized by EPA for use on oil spills. Inclusion of a product on the NCP product schedule indicates only that the technical product data requirements have been satisfied: listing does not mean that the product is recommended or certified for use on an oil spill.

The Federal On-Scene Coordinator (FOSC) may authorize the use of any of these response options with the concurrence of the Regional Response Team (RRT). The FOSC must first obtain concurrence of the incident-specific EPA representative to the RRT and, as appropriate, the RRT representatives from the state(s) with jurisdiction over the area threatened by the release or discharge, and, as practicable, in consultation with the DOC and DOI natural resource trustees.

Currently, there are no pre-approved response options for inland spills within the United States.

4.5.1 Dispersants

Detergents or other surfactants are prohibited from being used on an oil spill in the water, and that dispersants may only be used with the approval of the Regional Response Team. Due to the location of the Cameron Highway and Poseidon Pipelines, there are no situations where the use of dispersants would be appropriate.

4.5.2 In-Situ Burning

As is the case when any non-traditional cleanup method is considered, extensive evaluation and planning is required before any implementing action takes place. This determination can be made by:

- Analyzing the spill situation in question and comparing it to the parameters that will support product combustion (determine if the product will respond to in-situ burning)
- Assessing threats to human health/welfare, and natural resources
- Assessing availability of resources that will be required for in-situ burning operations, and estimating long term costs (determine if in-situ burning is feasible)
- Reviewing general guidelines for in-situ burning to gain additional information and possible factors to be considered
- Weighing the advantages and disadvantages of in-situ burning against the advantages and disadvantages of other remediation/response methods

Use of in-situ burning requires Regional Response Team (RRT) approval. An In-Situ Burning Authorization Form (refer to **FORMS Appendix**) should be completed, submitted to, and approved by the Regional Response Team before any controlled burning can take place.

4.5.3 Other Chemical/Biological Agents

There are a wide variety of biological and chemical treating agents that are available for use during a spill. These products include bioremediation-enhancing nutrients, elasticity modifiers, emulsion treating agents, firefighting foam, shoreline pre-treatment agents, solidifiers, surface collecting agents, and surface washing agents. Approval for the use of any of these products must be obtained by the FOSC from the Regional Response Team. They must only be utilized if safe to do so. A Request Format for Use of Alternative Response Technology should be utilized to facilitate the approval process (refer to **FORMS Appendix**).

4.6 Termination and Follow-up Actions

Cleanup will be conducted as thoroughly as possible, but will be terminated when, in the opinion of the Incident Commander and FOSC:

- There is no detectable oil in the water
- Further removal actions would cause more environmental harm than remaining oil
- Cleanup measures would be excessive in view of their insignificant contribution to minimizing a threat to the public health, welfare, or the environment
- Actions required to repair unavoidable damage resulting from removal activities have been completed

The Planning Section Chief will develop a plan of demobilization and assist Operations units to ensure that an orderly, safe, and cost-effective demobilization of personnel and equipment is accomplished.

General demobilization considerations for all personnel are:

- Complete all work assignments
- Brief subordinates regarding demobilization
- Complete and file required forms and reports
- Follow check out procedures provided by the IC
- Evaluate performance of subordinates prior to release
- Return communications equipment or other non-expendable supplies
- Report to assigned departure points on time or slightly ahead of schedule

The IC will convene a meeting to summarize the incident, and a complete report will be developed within 90 days. This report will record the incident as it developed and will identify, in detail, the actions taken, resources committed, and any problems encountered. The IC will include a recommendation outlining any suggested changes of policies or procedures. The format of this report will be as follows:

- Summary of Events-a chronological narrative of all events, including:
- The location of the oil discharge
- The cause of the discharge or the release
- The initial situation
- The organization of the response, including State participation
- The resources committed
- Content and time of notice to natural resource trustees relating to injury or possible injury to natural resources
- Comments on Federal or State damage assessment activities and efforts to replace or restore damaged natural resources

- Treatment/disposal/alternative technology approaches pursued and followed
- Public information/community relations activities
- Effectiveness of Removal Actions-a thorough analysis of removal actions taken by:
  - The company
  - State and local agencies
  - Federal agencies and special teams
  - Contractors, private groups, and volunteers (if applicable)
- Difficulties Encountered-a list of problems affecting response, including problems of governmental coordination.

Recommendations-IC recommendations, including at a minimum:

- Means to prevent a reoccurrence of the discharge or release
- Improvement of response actions
- Any recommended changes in the plan

Enclosures to the report:

- Maps, charts, photographs, or diagrams of the areas affected by the spill
- Radio, telephone, and other applicable logs
- Photographic documentation of the response, arranged chronologically
- Any other documentation necessary to supplement the information in the IC report

4.6.1 Medical Needs of Public and Responders

If a non-responding employee or member of the general public is in need of medical attention due to an suspected exposure to the spill, the following steps will be taken:

- A person witnessing a medical emergency will respond by calling 911
- Assess the situation
- Determine condition of injured person
- Render first aid if possible
- If the injured person is able, have him or her prepare an appropriate incident report. If the injured person is unable, the Safety Officer or his or her designee will fill out the report.
- Contact the Command Post to arrange for transportation to medical facility, if needed
- Interview all witnesses
- Transport injured person
- Send incident report with the injured person and forward copy to the Safety Officer
- Document the facts of the incident investigation with photos, written information, etc.

Phone numbers for hospitals, medical centers, other medical assistance, and transportation are listed in **Appendix B**.

4.6.2 Oil Characteristics

The oil types handled by the facility are described as follows:

Group 2—Diesel-like products and light crude oils

(For example, natural gas condensate, no.2 fuel oil, jet fuels, kerosene, marine diesel, West Texas crude)

- Moderately volatile (flash point varies from 100–125°F/40–65°C)

- Light fractions (up to two-thirds of the spill volume) will evaporate
- Low to moderate viscosity (spread rapidly into thin slicks)
- Specific gravity of 0.80–0.85, API gravity of 35–45, so slicks will float on the water surface except under turbulent mixing conditions
- Moderate to high acute toxicity to biota; product-specific toxicity related to type and concentration of aromatic compounds in the water-soluble fraction
- Will coat and penetrate substrate (some subsurface contamination)
- Stranded oil tends to smother organisms
- Containment/recovery from the water is most effective early in the response action

Group 3—Medium oils and intermediate products

(For example, North Slope Crude, South Louisiana Crude, intermediate fuel oils, lube oil)

- Moderately volatile (flash point higher than 125°F/52°C)
- Up to one-third will evaporate
- Moderate to high viscosity
- Specific gravity of 0.85–0.95 and API gravity of 17.5–35
- Variable acute toxicity, depending on amount of light fraction
- Can form stable emulsions
- Will coat and penetrate substrate (heavy subsurface contamination likely)
- Stranded oil tends to smother organisms

4.6.3 Oil/Debris Containment and Removal Procedures

Shallow Water/Shoreline Protection

Every effort must be made to protect environmentally and economically sensitive areas. The following methods will be employed for protection of these areas:

- Open water boom—In areas of shallow water, it may be possible to collect or corral the oil with open water boom and take it to deeper water or low-current areas that have better skimmer access and higher recovery rates.
- Bottom-seal boom—This boom is designed for deployment on a sandy beach. This boom's special features allow it to conform to the substrate, so that it can continue to act as a barrier to oil during changing tides or lower water levels. Shallow water boom is effective in higher-current areas because the shallow skirt minimizes the drag in the current.
- Sorbent Boom—Sorbent boom is designed primarily to absorb oil although it can act as a protective measure against thin oil sheens under very quiet water conditions. Snare boom (pom-poms tied onto a line) is effective as a sorbent of more viscous oils under higher wave and current conditions. In any current, sorbent boom can contain only the thinnest sheens. When used with conventional booms, sorbents can be placed outside of the boom to pick up small amounts of escaping oil, or inside the boom to absorb small amounts of contained oil.
- Inland Boom—Inland boom is the smallest conventional boom and is designed for deployment in very shallow water; as the draft is only 6-12 inches. It is normally deployed in more protected waters where there is little or no wave action.

Spills in Natural Environments

The response techniques, or combination of techniques, employed in a spill are dependent upon the product spilled, quantity, location, response time, weather conditions, responder capability, and

availability of response equipment. Response strategies have been described in terms of environmental sensitivity for a range of shallow water and inland habitat types.

Sound cleanup decisions depend on accurate information about the types of habitats that the oil affects, the degree of oiling, and the location of oiling. *Characteristic Coastal Habitats, Choosing Spill Response Alternatives,* and *Options for Minimizing Environmental Impacts of Freshwater Spill Response*, illustrate typical physical and biological attributes of North American coastal habitats (or aquatic habitats) at risk from oil spills. The text describes each habitat and discusses both how oil is likely to behave there and considerations for treating oil. Digital versions (.pdf) of these documents are available at the following Web site:

http://response.restoration.noaa.gov/book_shelf/911_coastal.pdf

Portions of these document(s) covering oil spill removal techniques have been included in **Appendix F**.

The Characteristic Coastal Habitats collection is a useful aid for training people who will be participating in cleanup assessment as part of an environmental unit within the Incident Command System. It also complements NOAA's Shoreline *Assessment Manual and Shoreline Assessment Job Aid.*

4.7 Waste Management

Oil spill cleanup by mechanical recovery will involve the further handling of recovered oil and oiled materials. These will be directed to the appropriate reclamation/disposal site. Normally, the waste generated from a mechanical recovery operation will be classified as Exploration and Production Waste (E&P). In rare instances where it is suspected that extraneous substances have been introduced into a spill, it is appropriate to test the recovered oil for hazardous waste characteristics (ignitability, reactivity, corrosivity, and toxicity). Oil/debris disposal procedures can meet Tier I, II, and III time requirements utilizing equipment and manpower from the OSROs listed in this plan.

4.7.1 Oil/Water/Debris Separation

The different types of waste generated during response operations require different disposal methods. Waste will be separated by material type for temporary storage prior to transport. **Table 3** lists some of the options available for separating oily wastes into liquid and solid components. The table also depicts methods that may be employed to separate free and/or emulsified water from the oily liquid waste.

Table 3: Separation Methods for Different Types of Recovered Wastes

Waste Type	Separation Methods
Liquids	
Non-emulsified oils	Gravity separation of free water
Emulsified oils	ι Emulsion broken to release water by: o Heat treatment o Emulsion breaking chemicals o Centrifuge o Filter/belt press
Solids	
Oil mixed with sand	ι Collection of liquid oil leaching from sand during temporary storage ι Extraction of oil from sand by washing with water or solvent ι Mechanical sand cleaner ι Removal of solid oils by sieving
Oil mixed with cobbles, pebbles or gravel	ι Screening ι Collection of liquid oil leaching from shoreline material during temporary storage ι Mechanical sand/gravel cleaner ι Extraction of oil from shoreline material by washing with water or solvent
Tar balls	Separation from sand by sieving

4.7.2 Temporary Storage of Recovered Oil

- Oil recovered by skimmer(s) is transferred to portable tanks. It is important to ensure temporary storage devices are of sufficient size to allow continued operations. If storage capacities are not sufficient, additional equipment could be utilized including rubber bladders, roll off boxes, and mud tanks.
- Skimmer tanks allow for gravity separation of the oil from the water. The separated water is transferred through a hose and discharged forward of the recovery pump. This method is called "decanting". This process is vital to the efficient mechanical recovery of spilled oil because it allows maximum use of limited storage capacity, thereby increasing recovery operations. Approval must be obtained from federal and state agencies prior to decanting.
- Oiled debris collected requires specific handling. Contaminated materials will be placed in leak proof, sealable containers on the recovery vessels and transported to appropriate facilities for processing, recycling, or disposal.
- Recovered oil will typically contain substantial quantities of water and debris. Excess water, sand, and other materials greatly increase the quantity of waste and its associated cost for transportation, processing, and disposal. To remedy this, different methods can be employed at the cleanup site to separate oiled debris from excess materials. Using screens, filters, conveyor systems, and settling tanks, oil/water mixtures can be drained from debris and collected in temporary containers for further treatment.

- Clean sand and shoreline materials can be separated from oiled materials and returned to the shoreline. Not only is this cost effective from an operations perspective, it also provides an efficient means of returning clean, excavated material back to the shoreline as a restorative measure.
- Oil spills often occur in remote sites that are some distance from transportation routes and storage facilities. In these situations, temporary on-scene storage arrangements may be required. Oil may be stored in Baker tanks, tank trucks, 55-gallon drums, bladders, or empty fuel storage tanks. Such tanks permit decanting of water from the oil. If suitable containers are not available, oily waste may be temporarily stored in pits dug in the soil (FOSC and SOSC will need to be contacted prior to doing this). These pits will need to be lined with plastic sheeting to prevent oil leakage and soil penetration. To minimize contamination of surrounding areas from leaching oil, storage sites should not be located on or adjacent to ravines, gullies, streams, or the sides of the hills, but rather in areas with minimal of slope.
- Temporary storage methods discussed in this section can be conducted within appropriate Tier I, II, and III time requirements utilizing equipment from USCG-certified OSROs.

4.7.3 Recycling

Whenever possible, recovered oil should be returned to the production system for recycling. A secondary means of handling recovered oil may be through a commercial oil reclaimer. When utilizing this secondary option the oil will be classified as nonhazardous and must be shipped to an approved reclaimer.

4.7.4 Disposal Regulations

- Oiled Materials-If these materials have not contacted extraneous substances, they will be classified as nonhazardous and will only be disposed of at the owner/operator's approved nonhazardous waste disposal site. In some cases it will be appropriate to seek permission from the appropriate state agency to burn the oiled material.
- Oil and oily wastes that are contaminated or excessively weathered will require transport to an approved disposal site. Any transport or disposal of material that is considered hazardous waste must follow the requirements of the Resource Conservation and Recovery Act (RCRA).
- Regulatory Guidelines:
  - Only state licensed hazardous material haulers are used to transport recovered oil. These licensed waste haulers must have a US EPA ID number and a state transporter ID number.
  - The Uniform Hazardous Waste Manifest must be filled out by the waste generator for each truckload of oily wastes hauled away for disposal.
  - When completing the manifest, the owner/operator is listed in the manifest as the generator. The manifest will need to be signed by the designated representative, and marked with the statement: "This material is being disposed of by the owner/operator as part of a response action in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR 300)."
  - Recovered waste oil must be properly packaged and labeled prior to transport in accordance with 40 CFR 262.30.
  - All wastes shipped off-site for disposal must be transported in compliance with applicable regulations. These include the RCRA regulations in 40 CFR 262-263, the DOT Hazardous Materials Regulations in 49 CFR 171-178, and any applicable state regulations. Ensure shipments of waste collected during spill cleanup activities are transported in suitable containers to eliminate secondary releases during transport. If the nature of the waste precludes packaging in the required container, the Incident Commander will request emergency exemptions from the regulations following procedures outlined in 49 CFR 107.
  - Only state-certified disposal sites will be used by waste haulers, unless recovered oil can be sent for recycling

- Unit personnel must track the Uniform Hazardous Waste Manifest and retain appropriate records per 40 CFR 262.40. Unit personnel will receive a signed copy of the manifest from a designated disposal facility within the specified time limits. The owner/operator must retain copies of Hazardous Waste Manifests in unit files for at least three years.
- A Waste Management Form (refer to **FORMS Appendix**) will be completed during the time of the spill.

4.7.5 Disposal Transportation and Designated Sites

Transportation of oil and oily waste may be accomplished by a tank, vacuum truck or by barge. Only trucks or barges which have been *certified for waste oil transport* will be utilized. Oil or oily debris recovered from a spill site may only be disposed of at authorized sites.

4.8 Incident Documentation

The Incident Commander (IC) will coordinate the post-accident review in conjunction with federal, state, and local officials. This investigation will begin after the source of the incident has been corrected, eliminated or repaired, and the facility has been declared safe by the IC. The IC will take the following steps during a post-accident investigation:

- Obtain all data, information, and reports pertaining to the accident, leak, or incident
- Interview in person or by telephone each person with direct knowledge of the accident
- Analyze the response of the emergency shutdown system, relief valve, or any other safety device to determine if the facility controls reacted as per design. Determine if design changes to the existing safety systems or additions are necessary.
- Review the response of operations personnel to determine if procedures and training were followed and are appropriate
- Evaluate other potentially dangerous situations which could have occurred and if the response of personnel and safety systems would have accommodated those situations had they occurred.
- Prepare recommendations as appropriate for changes to:
  - Design of facility
  - Operating procedures
  - Training
  - Communications
  - Emergency response plans and procedures

The IC will prepare and issue a written report to all facility/pipeline procedure holders with any changes deemed appropriate.

5.0 Other Incidents

5.1 Fire

5.1.1 Response

For all fires, if safe to do so, personnel will:

1) Determine where the fire/explosion has taken place
2) Notify everyone of the location
3) Account for all personnel in the area of the fire
4) Dial "911" and request assistance from the local fire department
5) Rescue stranded/injured personnel (if safe to do so)
6) Assess fire and determine:
   - Class of fire
   - Appropriate extinguishing agent (Product MSDS are maintained at the operations office)
   - Methods to prevent the spread of the fire
   - Necessary personnel and firefighting methods
7) Prevent environmental pollution
8) Limit damage to the facility
9) Establish communications

Facility employees are provided training to respond only to incipient fires. If an employee encounters a fire at a stage that can be controlled by means of a readily accessible fire extinguisher (e.g. small 30 pound dry chemical), if safe to do so, the employee may elect to attempt to extinguish.

If you are called on to use a fire extinguisher, remember the word PASS. To operate a fire extinguisher:

1) **P**ull the pin at the top of the extinguisher (after removing the fire extinguisher from holding rack)
2) **A**im the hose or nozzle at the base of the fire
3) **S**queeze the lever slowly.
4) **S**weep from side to side.

Approach the fire from upwind, if possible.

Remember: Aim at the base of the fire not at the flames, and the extinguisher will only operate as long as the lever is depressed.

If an attempt to extinguish the fire is unsuccessful, then the "911" call is initiated.

5.1.2 Prevention

The purpose of the Fire Prevention Plan is to inform personnel of the physical hazards of chemicals handled on-site, how physical and health hazards are communicated at the facility, and the importance of following proper work procedures and company policies to prevent the occurrence of fires.

Flammable materials handled include diesel fuel, crude oil, natural gas, natural gas condensate and produced water (oil sheen only). It is important to control potential ignition sources when handling flammable materials. These potential ignition sources include, but are not limited to, welding and burning operations, open electrical circuits, static electricity, smoking, and accumulation of combustible waste materials. The following policies are established in order to prevent potential ignition hazards:

- No flammable or combustible liquids will be allowed to escape uncontrolled.
- Buckets will be used to contain residue when breaking or disconnecting flanges or hoses.
- Product residues will be properly contained in marked and labeled drums and properly sealed to prevent evaporation.
- All welding and burning operations, and operation of internal combustion engines or electrical equipment inside firewall areas, docks, or near flammable/combustible materials require the issuance of a hot work permit prior to beginning the tasks.
- The Operator will be responsible for preventive maintenance and repairs to all electrical and emergency equipment, to include: electrical motors, cords, EPC's, etc., and fire equipment.
- All new installations will be reviewed by the Technical Services Representative, the Maintenance Manager, and the Safety Department to ensure compliance with appropriate codes and standards.
- Frequent inspections of the operations will be conducted.
- Flammable and combustible materials will be disposed of in proper receptacles, and not allowed to accumulate and present a hazard to employees or the facility.
- Hoses will be capped to prevent vapor releases or potential spills.
- All grounding leads will be attached prior to transfer operations.
- Leaks from fittings will be reported to the appropriate department so repairs can be made or equipment put out of service.
- Rags and other hazardous debris (pigs, absorbents) will be contained in hazardous waste drums positioned throughout the facility.

5.2 Gas Release

In the event of a gas release, the person making the discovery will take command of the situation until relieved by a more qualified employee. If safe to do so, the situation will be addressed in the following order:

1) Determine which gas line is leaking
   - Do not enter a gas cloud; make determination from a safe place
   - Use appropriate PPE or SCBA before proceeding
2) Eliminate all ignition sources
   - Do not operate any motor vehicles/engines
   - No smoking
   - Extinguish flame in fired heaters
   - Stop all cutting and/or welding
   - Establish fire watch (up wind)
3) Depressure the leaking line at the facility ASAP
4) If the leak is close to public housing or facilities, evacuate the public and deny entry to the leak areas
5) Call 911 for assistance, if applicable
6) Notify appropriate manager
7) Notify one of the Qualified Individuals
8) Notify appropriate gas transmission company (if applicable)
9) Notify the National Response Center
10) Once the gas line is bled off to a pressure no longer releasing gas to the atmosphere, terminate the emergency response and go to a cleanup/repair action

5.3 Personnel Injury

The facility management will most often seek a medical clinic or emergency health care facility in the event of an illness or injury. Contact information for local medical facilities and providers is included in **Appendix B**. Depending on the severity of the injury, management personnel may elect to transport the victim to the medical provider. A person witnessing a medical emergency should respond by dialing "911" with the following information:

- Name of caller
- Type of emergency and condition of employee
- Location
- Call back phone number

The respondent should render first aid (if properly trained), and if necessary, transport the injured person to a safe location. If the injured person is able, have him/her prepare an accident report. If the injured person is unable, the facility manager will fill out this report. Witnesses will be interviewed and facts of the incident will be documented on the report. Post-casualty urinalysis and alcohol breath tests (ABT) will be authorized and administered to injured persons in the case of a pipeline incident. Any injured party choosing not to accept medical treatment or post-casualty drug screens will have "refusal of treatment/drug screen" documented on the report. Personnel injury files are copied and forwarded to the corporate claims office. Medical information and updated, payments to employees and medical providers will also be processed through this office.

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5.5 Natural Disasters

5.5.1 Hurricanes

Hurricanes are tropical cyclones with torrential rains and sustained winds of 74 miles per hour or greater which blow in a counter-clockwise direction around a center "eye". Hurricane winds can exceed 155 miles per hour and severely affect areas hundreds of miles inland. As hurricanes approach the coast, a huge dome of water called a storm surge can impact the coastline, causing major damage to everything in its path. Hurricanes also spawn tornadoes and can cause severe flooding from heavy rains. Hurricanes are classified into five categories based on their wind speeds, central pressure, and damage potential.

Category	Wind Speed (MPH)	Storm Surge
I	74-95	4'-5'
II	96-110	6'-8'
III	111-130	9'-12'
IV	131-155	13'-18'
V	Greater than 155	Greater than 18'

5.5.2 Non-Hurricane Season–(December 1 to May 31)

Date	Action
	Review local Coast Guard, port authority and county emergency management agency hurricane plans and develop/update operations specific guidance.
	Purchase any missing materials required to cover windows and doors into buildings, and provide tie downs for items stored outside.
	Identify/correct any plan deficiencies.
	Identify hurricane preparation actions and assign personnel to these responsibilities.
	Conduct training/drills ensuring that personnel get to walk through their hurricane preparation duties and handle any materials and tools associated with them.
	Inspect the facility(s) for plan compliance.
	Identify and make arrangements for off-site storage selected equipment that is not needed and would be safer, stored away from the facility, on higher ground if possible. If inside storage is available and chosen, the building must be substantial enough to withstand severe storms. A firm, advance commitment should be obtained for this kind of storage since it is likely to be at a premium when a storm approaches. Outside storage must include secure tiedowns for lightweight materials.

5.5.3 Hurricane Season–(June 1 to November 30)

Date	Action
	Advise employees at beginning of hurricane season. Make hurricane preparedness handouts available, particularly for employees who are new to the region. Local publications provide articles on hurricane preparedness may be reproduced locally.
	Provide guidance to employees and their families on selection of emergency supplies and how to prepare homes for hurricanes. As soon as a hurricane watch or warning is set for an area, supplies will instantly become scarce.
	Survey all inside storage areas and identify locations that can be used to accommodate equipment and drums of oil or other chemicals that are routinely kept outside.
	Refresh stocks of consumable hurricane supplies for use at the facility.
	Review tank fill height table to ensure data is current and minimum fill levels can be reached for all category hurricanes.
	Develop a list of actions that must be taken to prepare the facility(s) for a hurricane and for recovery following storm passage. Assign personnel to the identified tasks and post the list so that employees will know what is expected of them.
	Prepare/update a list of employee home phone numbers and addresses. Supervisors should have this information.

5.5.4 Hurricane Landfall in 48 Hours

Date	Action
	Regularly monitor weather reports. Be prepared to accelerate the pace of preparedness if it is likely that a hurricane condition is going to be upgraded.
	Contact all customers and ascertain service needs. Pay particular attention to police, hospital, and emergency services. Advise customers that all deliveries will stop at Condition I, when the storm is 12 hours from landfall.
	Remind all employees that in off-duty time they should be safeguarding their homes and purchasing emergency supplies. Request employees to consider where they will ride out the storm and advise you of their intentions and locations.
	Review employee assignments for hurricane preparations and update as situations change.
	Tanks with product—If additional new product is available, fill each tank to the minimum level necessary to prevent buoyancy in the event of flooding. If time and supply permits, fill each tank to capacity. If additional product is not available, transfer appropriate product among tanks to prevent buoyancy. If minimum levels cannot be reached through product transfer, add water bottoms. Skim and pump down any oil/water collection basins.
	Identify hoses and related equipment, which will not be needed for transfers. Drain, blind, and remove hoses and related equipment to inside storage.
	Ensure availability/readiness of materials needed to protect buildings; for example, shutters, plywood, sand bags, etc.
	Lighter equipment should be tied down securely.
	Identify all files, records, computer equipment, etc. that must be protected or removed to safe storage. Assess the exact storm conditions and the resources available to accomplish the process of securing office equipment and files. Begin the process now if conditions warrant but, in any event, don't delay beyond the point where Hurricane Condition II is initially set. Make backup tapes and/or disks of computer files, as necessary.
	Survey the facility(s) and identify all items that will be moved to inside storage. Begin moving items to inside storage as conditions dictate. Ensure availability of tie-downs for materials that will not be placed in inside storage space.
	Establish a 24-hour dedicated phone line for all personnel to call and verify personal safety and return to work assignment.

5.5.5 Hurricane Landfall in 24 Hours

Date	Action
	Tanks that are empty and clean must have manhole plates removed or openings cut in them to allow rising water to enter, thus preventing tank buoyancy.
	Continue to fill tanks with product.
	Charge all spare radio and cellular phone batteries.
	Begin process of securing/protecting windows and doors with shutters or plywood. Remove awnings, signs, and decorative items likely to become missile hazards.
	Complete securing and/or removal of files, records, equipment etc. to safe storage.
	Complete moving equipment and materials to inside storage. If inside storage is insufficient, change any remaining outdoor stacks of drums to single stacks and lash together as appropriate.
	Survey the grounds to remove debris.
	Fill fuel/cargo tanks of all vehicles not needed for present operations and move to secure area. Leave vehicles locked and in park, or in gear for manual vehicles, with the brake engaged.
	Prepare a ist of locations and contact phone numbers where employees intend to be during the hurricane. Provide guidance to employees to contact the dedicated manned phone line as soon as practical after storm passage, by any means. The Operations Manager will reach agreement with subordinates on the best way to contact each other. Provide employees with a list of cellular phone numbers that are or will be issued and the name of the person holding each phone. All supervisors must be made aware of the importance of finding out the status of the facility(s) and plans for returning to work, as soon as possible following storm passage, so that this information can be passed to every person.
	Develop and publish a plan that identifies employees who will be required to complete Condition I tasking before the facility is completely secured.

5.5.6 Hurricane Landfall in 12 Hours

Date	Action
	If the decision is made by management to shut down the facility, cease all commercial transfer operations and initiate facility shutdown.
	Terminate filling of storage tanks. Close and secure all tank valves.
	If applicable, close all roof hatches and ensure roof drains of floating roof tanks are open.
	Make final survey of all grounds and buildings. Secure items found loose or remove them to protected storage.
	Drain, blind, and remove all remaining hoses and related equipment. Close and secure all valve heads; cover as appropriate.
	Complete securing of windows and doors. Close all mechanical louvers.
	Close and secure all tank valves on any installed lube oil tanks. Ensure all tanks have enough product to prevent buoyancy.
	Fill fuel/cargo tanks of all remaining vehicles and move to secure area.
	Drain, blind, and tie down all load rack loading arms. Close and secure all valves on rack. Cover all valve heads with appropriate bags (canvas or plastic). Remove or cover all computer equipment as appropriate.
	Distribute radios and any available cellular phones to key personnel as a potential, alternate form of communications when phone lines may be disrupted.
	The Operations Manger should take the OPA-90 and SPCC plans with him or her when securing the facility(s) in the event cleanup operations must be initiated.
	Shut down AC systems. Shut off electric power at main boxes, lock buildings, gates, etc. and evacuate.
	Ensure evacuation of the facility(s) in sufficient time for personnel to reach safe refuge. If facility personnel need to keep some personnel at the facility(s) during the hurricane, do so only after discussing the situation with the corporate office and receiving approval.

5.5.7 Post Hurricane Operations

Date	Action
	When conditions permit, re-man the facility(s).
	Conduct a survey of the facility(s). Initiate any urgent corrective actions and report the facility status to the corporate office by any means possible.
	Mark any safety hazards such as downed electrical lines, damaged structures, and spilled chemicals or petroleum products. Do not attempt to work on any damaged systems or spills without properly trained people and protective equipment.
	Attempt to establish communications with each of the employees and get an assessment of the condition of their personal households. Establish work assignments based on the facility's ability to function and the employees ability to respond.
	Respond to oil spills in accordance with OPA 90 plans. It is likely that response equipment will need to be brought in from outside.
	Develop a plan that prioritizes repair efforts and identifies resources necessary to accomplish the tasks. If product handling is possible, reach an agreement with the corporate office as to which customers will be given priority. Be aware that vehicle fuels will be in high demand and government agencies may have special needs that must be taken care of.

5.5.8 Tornado/Storm Warning

The purpose of this section is to establish procedures to be followed in the event the facility(s) receives a tornado warning for your area. A tornado warning indicates a tornado has been sighted or is indicated by radar.

Severe weather alerts are transmitted through sirens in some areas, and by radio and television forecasts. If a tornado warning is broadcast, everyone must assume that a tornado is headed their way and should seek shelter immediately. Typically, there are only minutes between a tornado warning and a tornado strike. So, there should not be any delays in finding suitable protection. Waiting could mean the difference between life and death. Tornado warnings are normally effective for one hour from the last notification unless indicated by the National Weather Service (NWS). Personnel should remain sheltered until the warning expires or the NWS issues a release. Occupants should listen for severe weather warnings on NWS bands or a local radio station for information if the weather suddenly becomes violent, it begins to hail, or strong wind gusts prohibit safe passage.

Minimum Action to be Taken Based on Specific Weather Alerts:

- Severe Thunderstorm Watch—Be aware that conditions may be ripe for development of a tornado.
- Severe Thunderstorm Warning—Review Severe Weather Action Plans. Usual activities can continue but occupants should be prepared to take shelter. Occupants should avoid going outside, if possible.
- Tornado Watch—Review Severe Weather Action Plans. Personnel should be prepared for impending weather.
- Tornado Warning—Close exterior doors. All personnel should seek weather shelter. Under no circumstances should anyone leave the facility. Seek shelter in a small well-supported room/closet void of windows if possible. Remain seated with backs to the wall and heads protected. Remain as low as possible to reduce potential for injury from glass or flying debris. If available, some form of covering should be used to protect heads, arms and legs.
- Lightning in the area—Avoid high ground, water, open spaces and metal objects. Avoid all metal shelters. Do not congregate with others.

When a Tornado Strikes the Area:

- The NWS will notify when it is safe to assemble
- Assess damage
- Advise the Facility Operator whether business can continue normal operations
- Work with internal and external agencies to coordinate search and rescue operations

5.6 Evacuation Plan

The primary concern during emergency situations is the safety of all personnel. Familiarity with the general layout of the facility(s), relative to public transportation routes, is necessary to ensure a safe exit during life-threatening emergencies. Factors to consider during evacuation from the facility are:

- Location of Stored Materials
- Hazards Imposed By Spilled Materials
- Spill Flow Direction
- Prevailing Wind Speed and Direction
- Water Currents, Tides, or Wave Conditions
- Route of Emergency Personnel and Equipment
- Evacuation Routes
- Alternate Routes of Evacuation
- Transportation of Injured Personnel
- Location of Shelter at the Facility

6.0 Prevention

The Plan Custodian (identified in **Section 1.7**) is the designated person accountable for discharge prevention who reports to facility management as required by 40 CFR 112.7(f)(2). Contact information is located in **Appendix B**. Due to the prevention measures outlined in this Section, the probability of a release occurring at this facility is unlikely.

The facility will conform to all applicable discharge prevention and containment procedures identified in the SPCC Rule, as well as any applicable more-stringent State rules, regulations, and guidelines.

6.1 Secondary Containment

The use of appropriate physical containment and control systems are consistently employed throughout the facility to prevent a discharge from reaching navigable waters or polluting the area immediately surrounding the facility.

General secondary containment

The facility's general secondary containment measures address the potential for discharges from all regulated parts of the facility. Containment method, design and capacity are determined by good engineering practice to contain an oil discharge until clean-up occurs. The following *general* secondary containment measures are in place at this facility:

- Curbing or drip pans
- Culverting, gutters, or other drainage systems
- Sorbent materials

6.2 Piping and Valves

Periodically and upon a regular schedule, all aboveground valves and piping associated with transfer operations are inspected for the general condition, evidence of leaks, spills or corrosion and to assure that they are in proper working order. Items such as flange joints, valve glands and bodies, drip pans, pipe supports, bleeder and gauge valves, and other such items are checked for evidence of leaks, spills or corrosion and to assure that they are in proper working order. Piping, valves, and pumps are located within containment areas or in areas where a discharge can be easily collected by facility personnel.

6.2.1 Corrosion Protection

All pipelines appurtenant to the facility are protected from corrosion through protective coatings and/or cathodic protection. If a pipeline is repaired, or if significant corrosion has been detected, that line is tested to ensure integrity. Corrosion protection with coating or cathodic protection is compatible with local soil conditions.

6.2.2 Pipe Supports

Pipeline supports are designed to minimize abrasion and corrosion and allow for expansion and contraction. U-bolt, clamp, and/or welded pipe saddles are used, as appropriate, to adequately support thrust loadings at bends.

6.2.3 Buried Piping

Buried piping installed or replaced on or after August 12, 2002 has protective wrapping or coating. Buried piping installed or replaced on or after August 12, 2002 is catholically protected or otherwise satisfies protection standards for piping in 40 CFR part 280 or 281. Exposed buried piping is inspected for deterioration and corrosion damage is corrected. Integrity and leak testing will be conducted on buried piping at time of installation, modification, construction, relocation or replacement

6.2.4 Manifolds and Flowline Testing

All manifolds have check valves on individual flowlines. This facility has a program of flowline maintenance to prevent discharges from each flowline. Any flowline pressure testing will be conducted in accordance with approved methodology. Tests will be documented and maintained on file for at least five

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6.4 Inspections, Tests, and Records

6.4.1 Weekly Inspections

Routine visual inspections are conducted weekly, and include the following (if applicable):

- Inspect all vessels for proper operation and condition, including gauges, sight glasses, level controls, pressure controls, and signs of connection leaks.
- Inspect control valve packing and pump packing for leaks.
- Inspect all block valves, unions, flange connections, and piping for leaks.
- Inspect traps and drains, for oil accumulation and proper operation of level controls and pumps.
- Inspect area surrounding vessels, piping and facility for oil sheens or accumulations, spilled material, soil discoloration, or stressed vegetation.

If the facility is operating in acceptable condition, the inspector will record his/her initials on the Weekly Inspection Log (refer to **FORMS Appendix**). If an inspection reveals that repairs are required, conditions will be reported on the Equipment Maintenance Record (refer to **FORMS Appendix**).

6.4.2 Monthly Inspections

The following will be included in the monthly inspections (if applicable):

- Level Safety High (LSH) and Level Safety Low (LSL)
- Pressure Safety High (PSH) and Pressure Safety Low (PSL)
- Emergency Shutdown System
- Quick check fire extinguishers

The Monthly Inspection Log will be completed (refer to **FORMS Appendix**).

6.4.3 Annual Inspections

Comprehensive facility self-inspections are conducted annually. Facility self-inspection requires two-steps:

1. A checklist of items to inspect
2. A method of recording the actual inspection and its findings. **The records for the FRP are maintained for five years by the operator.**

The following procedures will be included on the checklist (if applicable):

Piping Inspection Checklist

- Droplets of stored material
- Discoloration
- Corrosion
- Bowing of pipe between supports
- Evidence of stored materials seepage from valves or seals
- Localized dead vegetation

Safety Devices

- Test all high-level shutdown devices to ensure proper setting and operation.
- High and Low Level Sensors (LSH and LSL)
- High and Low Pressure Sensors (PSL and PSH)
- Fire Extinguishers
- Pressure safety valves

The Annual Inspection Log will then be completed (refer to **FORMS Appendix**). If an inspection reveals that repairs are required, conditions will be reported on the Equipment Maintenance Record (refer to **FORMS Appendix**).

Records of all equipment inspections will be maintained at the facility or in the corporate office for a period of three years. The Facility Operator, or his/her designee, will conduct an annual review of the plan contents and verify that the field personnel are properly conducting the required equipment inspections/tests and are properly maintaining the required documentation. The annual in-field review will be recorded on the Annual Documentation Review Log (refer to **FORMS Appendix**).

6.5 Preventive Maintenance

Routine visual inspections are conducted weekly by a field operator. Weekly inspection procedures are as follows:

- Inspect all vessels for proper operation and condition, including gauges, sight glasses, level controls, pressure controls, and signs of connection leaks.
- Inspect control valve packing and pump packing for leaks.
- Inspect all block valves, unions, flange connections, and piping for leaks.
- Inspect traps, drains, and sumps for oil accumulation and proper operation of level controls and pumps.
- Inspect tank seams, all tanks surfaces, and bases of tanks for leaks and external corrosion.
- Evaluate field-constructed tanks having undergone repair, alteration, reconstruction, or a change in service for risk of failure due to brittle fracture.
- Inspect vent system outlets and sump piping or gutters to ensure they are not obstructed.
- Inspect secondary containment system for integrity, and surrounding area for oil sheens or accumulations, spilled material, soil discoloration and stressed vegetation.
- Inspect containment for level of precipitation versus available capacity, side and floor permeability, debris, and erosion.

If the facility is operating in acceptable condition, the field supervisor will record his/her initials on the Weekly Inspection Log (refer to **FORMS Appendix**). If an inspection reveals that repairs are required, conditions will be reported on the Maintenance Record (refer to **FORMS Appendix)**.

6.6 Housekeeping

The required inspections are the first line of defense for the prevention of oil and gas discharges from storage facilities. Maintenance of valves, piping, flanges, metal surface of tanks, etc. must be performed when signs of potential failure or excessive corrosion are noted. Additional housekeeping measures are exercised to prevent oil from migrating offsite and are as follows:

- Oily equipment is regularly wiped down with oil absorbent pads to collect free oil and reduce volatilization.
- All oil absorbent materials (stone ground clay and cloth pads) will be collected and disposed of in either sealed plastic bags or metal drums/containers.
- Containers which are used for oil and oil contaminated materials will not be left open to allow for evaporation, or accumulation of storm water.
- The facility will be kept clean of waste materials and loose debris on a daily basis.

7.0 Training

The Plan Custodian (identified in **Section 1.7**) is the designated person accountable for discharge prevention who reports to facility management. Contact information is located in **Appendix B**.

Training, equipment testing, and drill procedures are identical for each Response Zone. Facility response training, drills/exercises, personnel response training, and spill prevention meetings in this section comply with PREP requirements. Training records of all training activities are kept on file for at least five years. **Required Training, drill and exercise frequencies are summarized in Section 1.7.**

7.1 Equipment Training

Operation and Maintenance of Equipment—Facility personnel are regularly trained in the operation and maintenance of equipment to prevent discharges; discharge protocols; applicable pollution control laws, rules, and regulations; general facility operations; and the contents of this plan. If new equipment is installed, a qualified representative will train the operations employees. Operations and maintenance manuals are located at the facility.
Operation and Maintenance of Spill Prevention and Control Equipment—Preventative maintenance is scheduled and performed for spill prevention and control equipment in accordance with manufacturer's recommendations and facility personnel operations and maintenance experience. The periodic maintenance of this equipment along with spill exercises provides personnel with a continuing opportunity for "on-the-job" training.

7.2 New Employees

All new employees are briefed on the importance of pollution prevention. Pollution prevention guidelines are reviewed to ensure an adequate understanding of the facility's FRP plan. Specific areas which are covered in the training program sessions are:

- Good general housekeeping with regard to possible oil spillage and discharges
- The function and maintenance of all secondary containment systems
- Transfer operations
- Inspections and countermeasures
- Equipment testing
- Access control and security
- Initial response and spill notification procedures
- Applicable pollution control laws, rules and regulations

7.3 Qualified Individual (GLO-PIC) Training

Training will be conducted for the Qualified Individuals listed in this plan. The training elements may include but are not limited to:

- Notification procedures
- Communication systems
- Information on products carried and/or stored
- Procedures personnel will use to mitigate or prevent any discharge of product
- Capabilities of OSROs
- Responsibilities and authorities of the QI
- Incident Command System

- Responsibilities of SMT members
- Drill and exercise program to meet regulations
- National Contingency Plan and ACPs applicable to the area of facility
- OSHA requirements for worker health and safety
- Public affairs
- Crisis management
- Salvage operations (if applicable)
- Procedures for obtaining approval for use of dispersants and in-situ burn
- Oil spill trajectory analysis
- Sensitive environmental areas

7.4 Spill Management Team Training

The key to training SMT members is to train them according to their functional role within the response organization. SMT trained contractors function as a coordinated unit, and direct the cleanup activities or preventative measures in an efficient and timely manner.

SMT members are trained in the following areas:

- Notification procedures and requirements
- Communication systems used for notification
- Information on products stored at the facility
- Operational capabilities of the contracted OSROs to respond to a small discharge (average most probable discharge, medium discharge (maximum most probable discharge), and worst case discharge
- Responsibilities and authority of the QI
- Organizational structure that will be used to manage the response actions
- Responsibilities and duties of the SMT member within the organizational structure
- Drill and exercise program to meet federal and state regulations
- Area Contingency Plans
- National Contingency Plan

7.5 Safety Training

Oil spill responders are required to adhere to the training and safety requirements outlined in the OSHA's Hazardous Waste Operations and Emergency Response regulations in 29 CFR 1910.120. Personnel having a potential for minimal exposure to a hazardous substance are required to have 24 hours of initial oil-spill response instruction and eight hours of actual field experience. Those spill responders having potential exposure to a hazardous substance at levels exceeding the permissible exposure limits (generally, those situations requiring the use of a respirator and protective clothing) are required to have 40 hours of initial training off site and 24-hours of actual field experience.

On-site management and supervisors are required to receive the same amount of training as the equipment operators and general laborers, with the addition of eight hours of specialized training in hazardous waste management. Eight hours of annual refresher training are required of both general employees and managers.

Additional safety training may be required depending on duties. This document is not a comprehensive safety plan.

7.6 Drills and Exercises

A schedule of on-site drills and notification exercises is coordinated by the corporate office. Response drills will comply with the Preparedness for Response Exercise Program (PREP), and the U.S. Coast Guard/Environmental Protection Agency training guidelines for oil spill response.

The plan will be drilled annually. Response drills will be evaluated by a "lessons learned" discussion, by open question and answer sessions, and by response efficiency to actual spills (as applicable). The operator may also include a third party consultant to observe and evaluate response drills.

QI Notification exercises will be conducted quarterly. The Qualified Individual participating in the drill will have no indication that a notification exercise is scheduled. Voice communication must be established between the operator and the QI in order for the exercise to meet requirements.

Required drills, exercises and training frequencies are detailed in **Section 1.8**.

7.7 Wildlife Rescue and Rehabilitation Volunteers

The facility will rely upon the recommendations of the U.S. Fish and Wildlife Service (USFWS) in dealing with oiled wildlife. Only trained personnel, approved by the USFWS, will be utilized to respond to incidents involving oiled wildlife.

7.8 Documentation and Record Maintenance

Drills and Training records will be maintained at the corporate office and onsite. Records will be kept on file for five years. This documentation will include:

- Annual Spill Management Team training
- Annual facility personnel training
- New employee training
- Safety training in accordance with OSHA-29 CFR 1910.120 Regulations
-
- Documentation of response contractor training, contracted SMT training, and OSRO equipment deployment exercises will be maintained at the respective contractor's office and will be requested by the Operator as necessary.

8.0 Definitions

Adverse Weather means weather conditions that make it difficult for response equipment and personnel to clean up or remove spilled oil, and that must be considered when identifying response systems and equipment in a response plan for the applicable operating environment. Factors to consider include significant wave height, ice conditions, temperatures, weather-related visibility, and currents within the area in which the systems or equipment is intended to function.

Alteration means any work on a container involving cutting, burning, welding, or heating operations that changes the physical dimensions or configuration of the container.

Breakout Tank means a container used to relieve surges in an oil pipeline system or to receive and store oil transported by a pipeline for reinjection and continued transportation by pipeline.

Captain of the Port Zone (COTP) means a zone specified in 33 CFR Part 3 and the seaward extension of that zone to the outer boundary of the exclusive economic zone (EEZ).

Cleanup means, for the purposes of this document, the removal and/or treatment of oil, hazardous substances, and/or the waste or contaminated materials generated by the incident. Cleanup includes restoration of the site and its natural resources.

Complex means a facility possessing a combination of transportation-related and non-transportation-related components that is subject to the jurisdiction of more than one Federal agency under section 311(j) of the CWA.

Containment Boom means a flotation/freeboard device, made with a skirt/curtain, longitudinal strength member, and ballast unit/weight designed to entrap and contain the product for recovery.

Contiguous Zone means the zone established by the United States under Article 24 of the Convention of the Territorial Sea and Contiguous Zone, that is contiguous to the territorial sea and that extends nine miles seaward from the outer limit of the territorial area.

Contract or Other Approved Means means:

(1) A written contractual agreement with an oil spill removal organization that identifies and ensures the availability of the necessary personnel and equipment within appropriate response times; and/or

(2) A written certification by the owner or operator that the necessary personnel and equipment resources, owned or operated by the facility owner or operator, are available to respond to a discharge within appropriate response times; and/or

(3) Active membership in a local or regional oil spill removal organization that has identified and ensures adequate access through such membership to necessary personnel and equipment to respond to a discharge within appropriate response times in the specified geographic area; and/or

(4) Any other specific arrangement approved by the Regional Administrator upon request of the owner or operator.

Discharge means, but is not limited to, any spilling, leaking, pumping, pouring, emitting, emptying, or dumping of oil, but excludes discharges in compliance with a permit under section 402 of the CWA; discharges resulting from circumstances identified, reviewed, and made a part of the public record with respect to a permit issued or modified under section 402 of the CWA, and subject to a condition in such permit; or continuous or anticipated intermittent discharges from a point source, identified in a permit or permit application under section 402 of the CWA, that are caused by events occurring within the scope of relevant operating or treatment systems. The term discharge shall not include any discharge of oil that is authorized by a permit issued under section 13 of the River and Harbor Act of 1899 (33 U.S.C. 407).

Dispersants means those chemical agents that emulsify, disperse, or solubilize oil into the water column or promote the surface spreading of oil slicks to facilitate dispersal of the oil into the water column.

Diversion Boom means a flotation/freeboard device, made with a skirt/curtain, longitudinal strength member, and ballast unit/weight designed to deflect or divert the product towards a pick up point, or away from certain areas.

Fish and Wildlife and Sensitive Environments means areas that may be identified by their legal designation or by evaluations of Area Committees (for planning) or members of the Federal On-Scene Coordinator's spill response structure (during responses). These areas may include wetlands, National and State parks, critical habitats for endangered or threatened species, wilderness and natural resource areas, marine sanctuaries and estuarine reserves, conservation areas, preserves, wildlife areas, wildlife refuges, wild and scenic rivers, recreational areas, national forests, Federal and State lands that are research national areas, heritage program areas, land trust areas, and historical and archaeological sites and parks. These areas may also include unique habitats such as aquaculture sites and agricultural surface water intakes, bird nesting areas, critical biological resource areas, designated migratory routes, and designated seasonal habitats.

Handle means to transfer, transport, pump, treat, process, store, dispose of, drill for, or produce.

Hazardous Substance means any substance designated as such by the Administrator of EPA pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); regulated pursuant to Section 311 of the Federal Water Pollution Control Act (Clean Water Act or FWPCA).

Hazardous Waste means any solid waste identified or listed as a hazardous waste by the Administrator of the EPA pursuant to the federal Solid Waste Disposal Act, as amended by the Resources Conservation and Recovery Act (RCRA), 42 U.S.C., Section 6901, et seq as amended. The EPA Administrator has identified the characteristics of hazardous wastes and listed certain wastes as hazardous in Title 40 of the Code of Federal Regulations, Part 261, Subparts C and D respectively.

Inland Area means the area shoreward of the boundary lines defined on 46 CFR Part 7, except in the Gulf of Mexico. In the Gulf of Mexico, it means the area shoreward of the lines of demarcations (COLREG lines) defined in d80.740 - 80.850 of Title 33 of the CFR. The inland area does not include the Gulf of Mexico.

Loading/Unloading Rack means a fixed structure (such as a platform, gangway) necessary for loading or unloading a tank truck or tank car, which is located at a facility subject to the requirements of this part. A loading/unloading rack includes a loading or unloading arm, and may include any combination of the following: piping assemblages, valves, pumps, shut-off devices, overfill sensors, or personnel safety devices.

National Contingency Plan means the plan prepared under the Federal Water Pollution Control Act (33 United State Code § 1321 et seq) and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 United State Code § 9601 et seq), as revised from time to time.

Natural Resource means land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources belonging to, managed by, held in trust by, appertaining to or otherwise controlled by the state, federal government, private parties, or a municipality.

Navigable Waters of the United States means “navigable waters” as defined in section 502(7) of the FWPCA, and includes:

(1) All navigable waters of the United States, as defined in judicial decisions prior to passage of the 1972 Amendments to the FWPCA (Pub. L. 92–500), and tributaries of such waters;

(2) Interstate waters;

(3) Intrastate lakes, rivers, and streams which are utilized by interstate travelers for recreational or other purposes; and

(4) Intrastate lakes, rivers, and streams from which fish or shellfish are taken and sold in interstate commerce.

Nearshore Area means the area extending seaward 12 miles from the boundary lines defined in 46 CFR Part 7, except in the Gulf of Mexico. In the Gulf of Mexico, it means the area extending seaward 12 miles from the line of demarcation (COLREG) lines) defined in d80.740 - 80.850 of Title 33 of the CFR.

Non-persistent or Group I Oil means petroleum-based oil that, at the time of shipment, consists of hydrocarbon fractions:

(1) At least 50% of which by volume, distill at a temperature of 340ºC (645ºF)

(2) At least 95% of which by volume, distill at a temperature of 370ºC (700ºF)

Offshore Area means the area beyond 12 nautical miles measured from the boundary lines defined in 46 CFR Part 7 extending seaward to 50 nautical miles, except in the Gulf of Mexico. In the Gulf of Mexico it is the area beyond 12 nautical miles of the line of demarcation (COLREG lines) defined in d80-740 - 80.850 of Title 33 of the CFR extending seaward to 50 nautical miles.

Oil means oil of any kind or in any form, including, but not limited to: fats, oils, or greases of animal, fish, or marine mammal origin; vegetable oils, including oils from seeds, nuts, fruits, or kernels; and, other oils and greases, including petroleum, fuel oil, sludge, synthetic oils, mineral oils, oil refuse, or oil mixed with wastes other than dredged spoil.

Oil-filled Operational Equipment means equipment that includes an oil storage container (or multiple containers) in which the oil is present solely to support the function of the apparatus or the device. Oil-filled operational equipment is not considered a bulk storage container, and does not include oil-filled manufacturing equipment (flow-through process). Examples of oil-filled operational equipment include, but are not limited to, hydraulic systems, lubricating systems (e.g. , those for pumps, compressors and other rotating equipment, including pumpjack lubrication systems), gear boxes, machining coolant systems, heat transfer systems, transformers, circuit breakers, electrical switches, and other systems containing oil solely to enable the operation of the device.

Oil Spill Removal Organization means an entity that provides oil spill response resources, and includes any for-profit or not-for-profit contractor, cooperative, or in-house response resources that have been established in a geographic area to provide required response resources.

Oily Waste means oil contaminated waste resulting from an oil spill or oil spill response operations.

Onshore Facility means any facility of any kind located in, on, or under any land within the United States, other than submerged lands.

Operating Area means the rivers and canals, inland, nearshore, or offshore geographic location(s) in which a facility is handling, storing, or transporting oil.

Operating Environment means rivers and canals, inland, or ocean. These terms are used to define the conditions in which response equipment is designed to function.

Owner or Operator means any person owning or operating an onshore facility or an offshore facility, and in the case of any abandoned offshore facility, the person who owned or operated or maintained the facility immediately prior to such abandonment.

Persistent Oil means a petroleum-based oil that does not meet the distillation criteria for a non-persistent oil. Persistent oils are further classified based on specific gravity as follows:

(1) Group II—specific gravity less than .85

(2) Group III—specific gravity between .85 and less than .95

(3) Group IV—specific gravity .95 to and including 1.0

(4) Group V—specific gravity greater than 1.0

Person in Charge (GLO-PIC) Texas General Land Office's term Qualified Individual.

Petroleum Oil means petroleum in any form, including but not limited to crude oil, fuel oil, mineral oil, sludge, oil refuse, and refined products.

Qualified Individual(s) means an English-speaking representative(s) of the facility identified in the plan, located in the United States, available on a 24-hour basis, familiar with implementation of the facility response plan, and trained in his or her responsibilities under the plan. This person must have full written authority to implement the facility's response plan. This includes:

(1) Activating and engaging in contracting with identified oil spill removal organization(s)

(2) Acting as a liaison with the pre-designated Federal On-Scene Coordinator (FOCS); and

(3) Obligating, either directly or through prearranged contracts, funds required to carry out all necessary or directed response activities

Regional Administrator means the Regional Administrator of the Environmental Protection Agency, in and for the Region in which the facility is located.

Regional Response Team means the federal response organization (consisting of representatives from selected federal and state agencies) which acts as a regional body responsible for planning and preparedness before an oil spill occurs and providing advice to the FOSC in the event of a major or substantial spill.

Response Resources means the personnel, equipment, supplies, and other material necessary to perform the response activities identified in a response plan.

Responsible Party means any person, owner/operator, or facility that has control over an oil or hazardous substance immediately before entry of the oil or hazardous substance into the atmosphere or in or upon the water, surface, or subsurface land of the state.

Rivers and Canals means a body of water confined within the inland area that has a projected depth of 12 feet or less, including the Intracoastal Waterway and other waterways artificially created for navigation.

Skimmers means mechanical devices used to skim the surface of the water and recover floating oil. Skimmers fall into four basic categories (suction heads, floating weirs, oleophilic surface units, and hydrodynamic devices) which vary in efficiency depending on the type of oil and size of spill.

Sorbents means materials ranging from natural products to synthetic polymeric foams placed in confined areas to soak up small quantities of oil. Sorbents are very effective in protecting walkways, boat decks, working areas, and previously uncontaminated or cleaned areas.

Spill Management Team means the personnel identified to staff the organizational structure identified in a response plan, and to manage response plan implementation.

Spill Response Personnel means federal, state, local agency, and contract personnel responsible for participating in or otherwise involved in spill response. All spill response personnel will be pre-approved on a list maintained in the response plan.

Staging Areas means designated areas near the spill site accessible for gathering and deploying equipment and/or personnel.

Storage Capacity of a container means the shell capacity of the container.

Transportation-related and **Non-transportation-related** , as applied to an onshore or offshore facility, are defined in the 1971 Memorandum of Understanding between the Secretary of Transportation and the Administrator of the Environmental Protection Agency (Appendix A of 40 CFR 112).

Unified Command means the method by which local, state, and federal agencies and the responsible party will work with the Incident Commander to:

- Determine their roles and responsibilities for a given incident
- Determine their overall objectives for management of an incident
- Select a strategy to achieve agreed upon objectives
- Deploy resources to achieve agreed-upon objectives

Waste means oil or contaminated soil, debris, and other substances removed from coastal waters and adjacent waters, shorelines, estuaries, tidal flats, beaches, or marshes in response to an unauthorized discharge. Waste means any solid, liquid, or other material intended to be disposed of or discarded and generated as a result of an unauthorized discharge of oil. Waste does not include substances intended to be recycled if they are in fact recycled within 90 days of their generation or if they are brought to a recycling facility within that time.

Wetlands means those areas that are inundated or saturated by surface or groundwater at a frequency or duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include playa lakes, swamps, marshes, bogs, and similar areas such as sloughs, prairie potholes, wet meadows, prairie river overflows, mudflats, and natural ponds.

Wildlife Rescue means efforts made in conjunction with federal and state agencies to retrieve, clean, and rehabilitate birds and wildlife affected by an oil spill.

9.0 Acronyms

ACP—Area Contingency Plan
BOEM – Bureau of Ocean Energy Management
CFR—Code of Federal Regulations
COTP—Captain of the Port
DNR—Department of Natural Resources (Louisiana)
DPRP—Discharge Prevention and Response Plan (Texas)
EPA—Environmental Protection Agency
ERAP—Emergency Response Action Plan
FAA—Federal Aviation Administration
FOSC—Federal On-Scene Coordinator
FRP—Facility Response Plan (EPA, USCG, or DOT)
GIS—Geographic Information System
GLO—General Land Office
GLO-PIC—General Land Office designation for Qualified Individual
HAZWOPER—Hazardous Waste Operations and Emergency Response
IAP—Incident Action Plan
IC—Incident Commander
ICP—Integrated Contingency Plan, Incident Command Post
ICS—Incident Command System
JIC—Joint Information Center
LDEQ—Louisiana Department of Environmental Quality
LOSCO—Louisiana Oil Spill Coordinator's Office
NIMS—National Incident Management System
MSDS—Material Safety Data Sheets
MSU—Marine Safety Unit
MTR—Marine Transportation-Related
NOAA—National Oceanic and Atmospheric Administration
NOW—Non-hazardous Oilfield Waste
NRC—National Response Center
OPA 90—Oil Pollution Act of 1990
OSRO—Oil Spill Removal Organization
OSRP—Oil Spill Response Plan
OSPRA—Oil Spill Prevention and Response Act (Texas Administrative Code)
OSHA—Occupational Safety and Health Administration
PE—Professional Engineer
PHMSA —Pipeline and Hazardous Materials Safety Administration
PIC—Person In Charge (USCG)

PPE—Personal Protective Equipment

PREP—Preparedness for Response Exercise Program

QI—Qualified Individual

RCRA—Resource Conservation and Recovery Act of 1976

RP—Responsible Party

SMT—Spill Management Team

SOSC—State On-Scene Coordinator

SPCC—Spill Prevention, Control, and Countermeasure

SPC—Spill Prevention Control Plan (Louisiana)

TOM—Transfer Operations Manual (USCG)

USCG—United States Coast Guard

USFWS—United States Fish and Wildlife Service

VRP—Vessel Response Plan (USCG)

10.0 Cross References

10.1 TGLO—DPRP

Oil Spill Prevention and Response (31TAC §19)		Plan Reference
Required elements for all facility classifications		
19.13(c)(1)	Owner and operator of the facility	Section 2.1; Appendix B
19.13(c)(2)	The person or persons in charge of the facility	Section 2.0; Appendix B
19.13(c)(3)	The name and address (both physical and mailing) of the facility	Section2.1; Appendix B
19.13(c)(4)(A)	The location of the facility by latitude and longitude	Section2.1; Appendix B
19.13(c)(4)(B)	The facility's primary activity	Section2.1
19.13(c)(4)(C)	The types of oil handled, whether MSDS have been prepared for them and the location of where the MSDS are maintained	Sections 2.1 and 4.6.2; Appendix D
19.13 (c)(4)(D)	The storage capacity of each tank used for storing oil	N/A
19.13(c)(4)(E)	The diameter of all lines through which oil is transferred	Section 2.5
19.13(c)(4)(F)	The average daily throughput of oil at the facility	Section 2.4
19.13(c)(4)(E)	The dimensions and capacity in barrels of the largest oil-handling vessel which docks at the facility	N/A
19.13(c)(5)	For a facility which normally does not have personnel on-site, a commitment to maintain in a prominent location a sign or placard which states that the GLO and National Response Center are to be notified of an oil spill and gives the 24-hour phone numbers for notifying the GLO and National Response Center	Section 2.6.1
19.13(c)(6)	A general description of measures taken by the facility to prevent unauthorized discharges of oil	Section 3.1
19.13(c)(7)	A plan to conduct an annual oil spill drill that entails notifying the GLO and National Response Center and keeping a log at the facility which documents when the notification drill was conducted and facility personnel who participated in it	Section 7.0
19.13(c)(8)	Emergency transfer procedures to be implemented if an actual or threatened unauthorized discharge of oil occurs at the facility	Sections 3.0 and 4.0
19.13(c)(9)	Strategic plans to contain and clean up unauthorized discharges of oil from the facility	Sections 3.0 and 4.0

Oil Spill Prevention and Response (31TAC §19)		Plan Reference
19.13(c)(10)	A statement that all facility personnel who might be involved in an oil spill response have been informed that detergents or other surfactants are prohibited from being used on an oil spill in the water, and that dispersants can only be used with the approval of the Regional Response Team	Section7.0
19.13(c)(11)	A description of any secondary containment or diversionary structures or equipment at the facility to prevent discharged oil from reaching coastal waters, including the methodology for determining that the structures or equipment are adequate to prevent oil from reaching coastal waters	N/A
Required elements for facilities classified as intermediate (> 1,320 gallons, = 250,000 gallons; line diameter > 4 inches, = 12 inches)		
19.13(d)(1)	A description of the worst case unauthorized discharge of oil reasonably likely to occur at the facility and the rationale used to determine this discharge	Section 2.5
19.13(d)(2)	A description and map of environmentally sensitive areas that would be impacted by the worst case discharge and plans for protecting these areas if an oil spill occurs at the facility.	Appendix A
19.13(d)(3)	A description of the facility's response strategies to contain and clean up the worst case unauthorized discharge	Section 4.0; Appendix E
19.13(d)(4)	A description of discharge prevention procedures implemented at the facility, including procedures to prevent discharges from transfers of oil	Section 3.1
19.13(d)(5)(A)	A plan to conduct an annual oil spill drill that includes notifying the GLO and National Response Center	Section 7.0
19.13(d)(5)(B)	A plan for notifying any third parties, such as discharge cleanup organizations, which have agreed to respond to an oil spill and confirming they would be able to respond to an oil spill at the facility on the day of the drill	Section 7.0
19.13(d)(5)(C)	If the facility has spill response equipment stored on site, a plan for deployment of a representative portion of the equipment which would be used to respond to the type of discharge most likely to occur at the facility	Section 2.6.3
19.13(d)(5)(D)	A log documenting when the annual drill was conducted and the facility personnel who participated in it	Section 7.0
19.13(d)(6)	If the operator has entered into any oil spill response or cleanup contracts or basic ordering agreements with a discharge cleanup organization, copies of the contracts or agreements or a narrative description of their terms	Section 2.8; Appendix C
Required elements for facilities classified as large (> 250,000 gallons; line diameter > 12 inches)		
19.13(e)(1)	Maps showing vehicular access to the facility, pipelines to and from the facility, and nearby residential or other populous areas	Appendix A
19.13(e)(2)(A)	The location of structures in which oil is stored	N/A

Oil Spill Prevention and Response (31TAC §19)		Plan Reference
19.13(e)(2)(B)	The location of all areas where oil is transferred at the facility	Appendix A
19.13(e)(2)(C)	Drainage and diversion systems at the facility, such as sewers, outfalls, catchment or containment systems or basins, sumps, and all watercourses into which surface runoff from the facility drains	N/A
19.13(e)(3)(A)	A plan to conduct an annual oil spill drill that includes notifying the GLO and National Response Center	Section 7.0
19.13(e)(3)(B)	A plan for notifying any third parties, such as discharge cleanup organizations, which have agreed to respond to an oil spill and confirming they would be able to respond to an oil spill at the facility on the day of the drill	Sections 3.0 and 4.0
19.13(e)(3)(C)	If the facility has spill response equipment stored on site, a plan for deployment of a representative portion of the equipment which would be used to respond to the type of discharge most likely to occur at the facility	N/A
19.13(e)(3)(D)	A log documenting when the annual drill was conducted and the facility personnel who participated in it	Section 7.0; FORMS Appendix
19.13(e)(4)(A)	A detailed description of the facility's discharge prevention and response capability, including leak detection and safety systems to prevent accidental discharges of oil, including a description of equipment and procedures	Section 3.1
19.13(e)(4)(B)	Schedules, methods, and procedures for testing, maintaining, and inspecting storage tanks, pipelines, and other equipment used for handling oil	Section 6.4
19.13(e)(4)(C)	Schedules, methods, and procedures for conducting accidental discharge response drills	Section 7.0
19.13(e)(4)(D)	Details of whether the facility's oil spill response capability will primarily be based on contracts or agreements with third parties or on the facility's own personnel and equipment	Section 2.8
19.13(e)(4)(E)	Planned response actions, the chain of command, lines of communication, and procedures for notifying the GLO, emergency response and public safety entities, other agencies, and neighboring facilities in the event of an unauthorized discharge of oil	Sections 3.0 and 4.0
19.13(e)(4)(F)	Oil spill response equipment and supplies located at the facility, their ownership and location, and the time required to deploy them	Section 2.6.3
19.13(e)(4)(G)	If the facility owns and maintains oil spill response equipment, the schedules, methods, and procedures for maintaining the equipment in a state of constant readiness for deployment	Section 2.6.3
19.13(e)(4)(H)	If the operator has entered into any oil spill response or cleanup contracts or basic ordering agreements with a discharge cleanup organization, copies of the contracts or agreements or a narrative description of their terms	Section 2.8; Appendix C

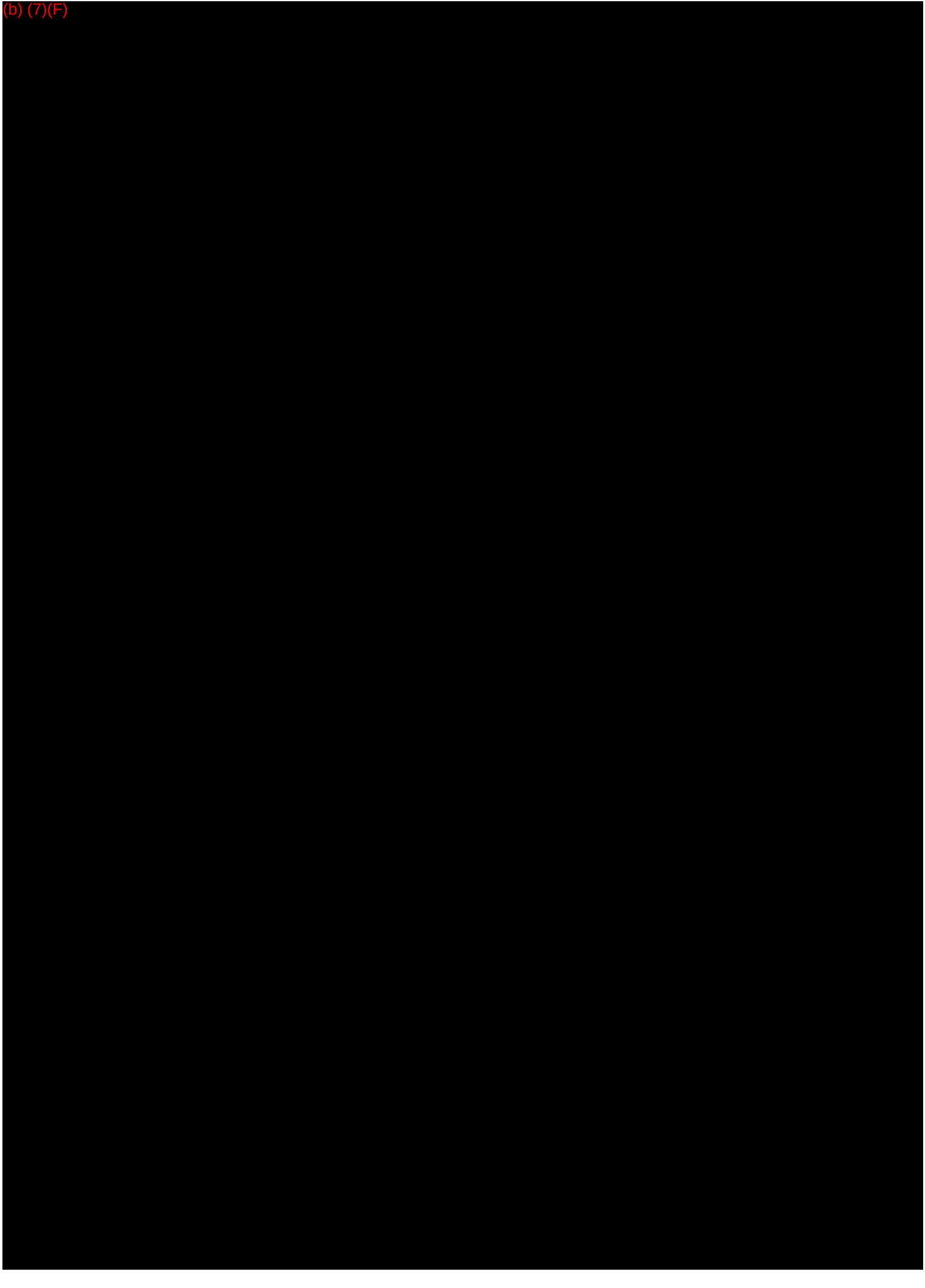
Oil Spill Prevention and Response (31TAC §19)		Plan Reference
19.13(e)(4)(I)	A description of the worst case unauthorized discharge of oil reasonably likely to occur at the facility and the rationale used to determine this discharge	Section 2.5
19.13(e)(4)(J)	A description and map of environmentally sensitive areas that would be impacted by the worst case discharge and plans for protecting these areas if an oil spill occurs at the facility.	Appendix A
19.13(e)(4)(K)	A description of the facility's response strategies to contain and clean up the worst case unauthorized discharge	Section 4.0; Appendix E
19.13(e)(4)(L)	Information on the facility's program for training facility personnel on accidental discharge prevention and response	Section 7.0
19.13(e)(4)(M)	Information on facility personnel who have been specifically designated to respond to a spill, including any training they have received and where the training records are maintained	Section 7.0; FORMS Appendix
19.13(e)(4)(N)	Plans for transferring oil during an emergency; plans for recovering, storing, separating, transporting, and disposing of oily waste materials generated during an oil spill response	Section 4.7
19.13(e)(4)(O)	Plans for providing emergency medical treatment, site safety, and security during an oil spill	Section 4.0

10.2 DOT, PHMSA—FRP

Oil Spill Response Plan (49 CFR 194)		Plan Reference
194.103 (a)	Each operator shall submit a statement with its response plan identifying which line sections in a response zone can be expected to cause significant and substantial harm to the environment in the event of a discharge of oil into navigable waters or adjoining shorelines.	Section 2.3
194.105 (a)	Each operator shall determine the worst case discharge for each of its response zones and provide the methodology, including calculations, used to arrive at the volume.	Section 2.5
194.107 (a)	Each response plan must plan for resources for responding, to the maximum extent practicable, to a worst case discharge, and to a substantial threat of such a discharge.	Section 2.7
194.107 (b)	Each response plan must be consistent with the NCP and each applicable ACP.	Section 1.2
194.107 (c)(1)(i)	Must include an information summary as required in 194.113	Section 2.0
194.107(c)(1)(ii)	Immediate notification procedures	Section 3.3
194.107(c)(1)(iii)	Spill detection and mitigation procedures	Sections 3.1, 3.2 and 4.0
194.107(c)(1)(iv)	Name, address, and telephone number of the OSRO	Section 2.8 and Appendix B
194.107(c)(1)(v)	Response activities and response resources.	Sections 2.6 and 4.0
194.107(c)(1)(vi)	Names and telephone numbers of Federal, State and local agencies which the operator expects to have pollution control responsibilities or support.	Sections 3.3 and Appendix B
194.107(c)(1)(vii)	Training procedures.	Section 7.0
194.107(c)(1)(viii)	Equipment testing	Section 2.6
194.107(c)(1)(ix)	Drill types, schedules, and procedures	Section 7.0
194.107(c)(2)	An appendix for each response zone including all information from 194.107(c)(1)(i-ix)	Section 2.9
194.111	Plan must be retained at operator's headquarters, with each QI and in the field at other locations from which response activities may be conducted.	Section 1.3
194.113(a)(1)	Name and address of the operator	Section 2.1
194.113(a)(2)	A listing of each response zone, including county and state.	Section 2.9

Oil Spill Response Plan (49 CFR 194)		Plan Reference
194.113(b)(2)	Name and telephone number of the QI available on a 24-hour basis and at least one alternate QI.	Section 2.2
194.113(b)(4)	A list of line sections for each pipeline contained in the response zone, identified by milepost or survey station number, or other operator designation	Section 2.5
194.113(b)(5)	Basis for the operator's determination of significant and substantial harm	Section 2.3
194.113(b)(6)	Type of oil and volume of the worst case discharge.	Sections 2.1 and 2.5
194.115(a)	Identify and ensure, by contract or other approved means, the resources necessary to remove, to the maximum extent practicable, a worst case discharge and to mitigate or prevent a substantial threat of a worst case discharge.	Section 2.8
194.115(b)	Identify the response resources which are available to respond within the time specified, after discovery of a WCD or to mitigate the substantial threat of such a discharge with the appropriate tier times.	Section 2.8
194.117(a)(1)	Each operator shall conduct training to ensure that all personnel know their responsibilities under the plan, name and address and procedure for contacting the operator on a 24 hour basis, name and procedures for contacting the QI on a 24 hour basis	Section 7.0
194.117(a)(2)	Reporting personnel must know the content of the information summary of the plan, the NRC phone number and notification process.	Section 7.0
194.117(a)(3)	Personnel engaged in response activities must know the characteristics and hazards of the oil discharged, the conditions that are likely to worsen emergencies, including the consequences of facility malfunctions or failures, and the appropriate corrective actions, steps necessary to control any accidental discharge of oil and to minimize the potential for fire, explosion, toxicity, or environmental damage, and proper firefighting procedures and use of equipment, fire suits, and breathing apparatus.	Sections 5.0 and Appendix D
194.117(b)	Operator shall maintain a training record for each individual that has been trained as required by this plan.	Section 7.0

(b) (7)(F)



TEXAS
GENERAL LAND OFFICE
OIL SPILL
PREVENTION & RESPONSE

LEGEND

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- SHIPPING SAFETY FAIRWAY

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- BEACH ACCESS POINT
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- HELIPORT
- LIGHTHOUSE
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- AUDUBON SANCTUARY
- BIRD ROOKERY AREA
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- MUNICIPAL AREA
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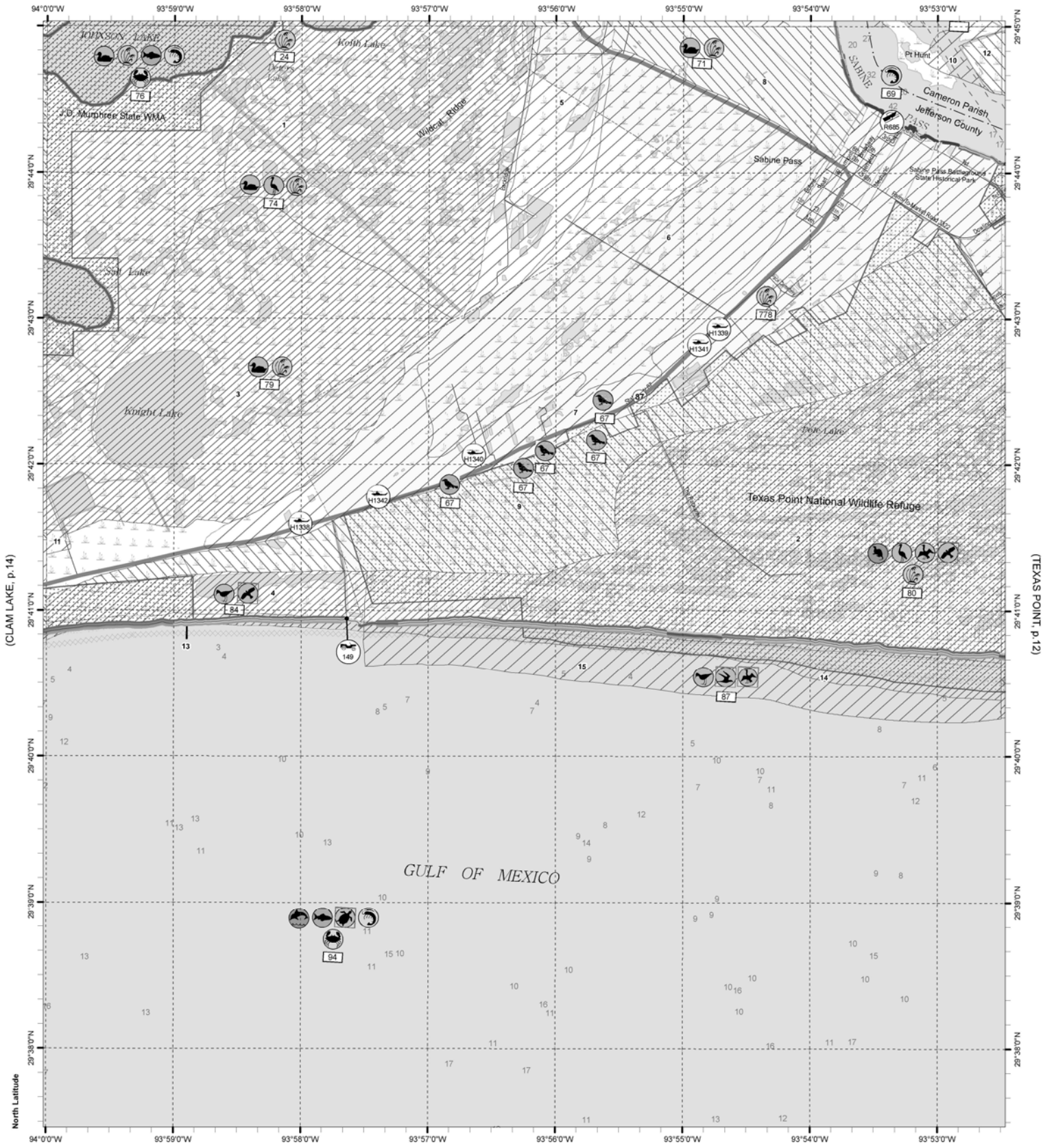
- STATE PARK/WILDLIFE MANAGEMENT AREA
- WASHOVER AREA

SABINE PASS

(PORT ARTHUR SOUTH, p.9)

DATA ACP



TEXAS GENERAL LAND OFFICE OIL SPILL PREVENTION & RESPONSE

Oil Spill Planning and Response Atlas
Upper Coast of Texas
Summer, 2008

Depth Soundings in Feet

PRIORITY PROTECTION AREAS
- HIGH
- MEDIUM
- LOW

HUMAN-USE FEATURES
- Beach Access
- Boat Ramps
- Heliports

ENVIRONMENTAL SENSITIVITY INDEX
- 10D - Mangrove Marsh
- 10C - Freshwater Swamps
- 10B - Freshwater Marshes
- 10A - Salt and Brackish Marshes
- 9 - Sheltered Tidal Flats
- 8C - Sheltered Scarps
- 8D - Sheltered Rocky/Karst Shores
- 8B - Sheltered Riprap Structures
- 8A - Sheltered Solid Manmade Structures
- 7 - Exposed Tidal Flats
- 6B - Exposed Riprap Structures
- 6A - Gravel or Shell Beaches
- 5 - Mixed Sand and Gravel or Shell Beaches
- 4 - Coarse-grained Sand Beaches
- 3B - Scarps and Steep Slopes in Sand
- 3A - Fine-Grained Sand Beaches
- 2B - Wave-cut Clay Platforms
- 2A - Scarps and Steep Slopes in Clay
- 1 - Exposed Walls and Other Solid Structures
- Washover Area

- State Parks/WMA
- Wildlife Refuges
- Counties TCEQ
- Municipal

(b) (7)(F)

(b) (7)(F)

(b) (7)(F)

(b) (7)(F)

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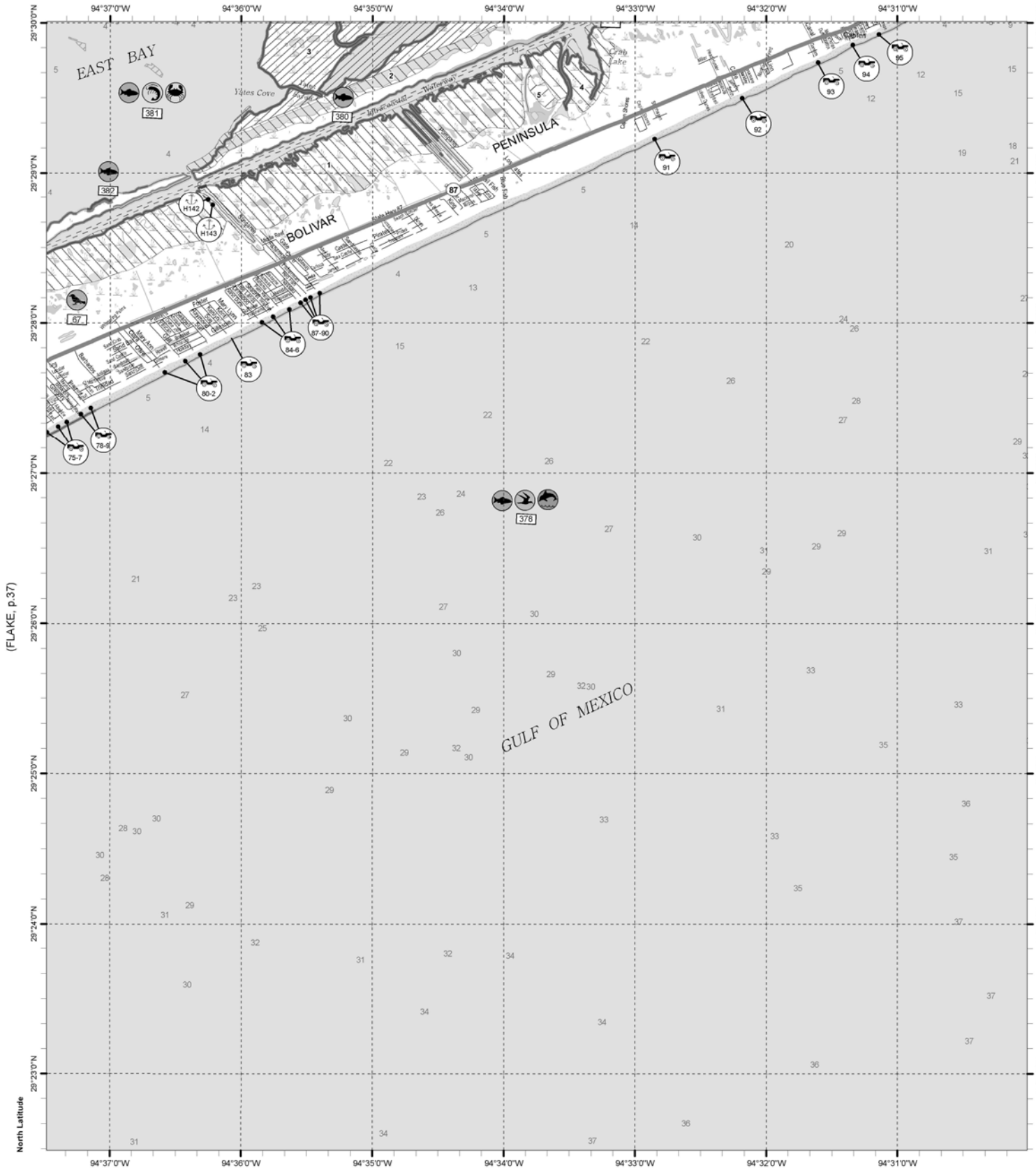
(b) (7)(F)

CAPLEN

(FROZEN POINT, p.31)

DATA ACP



TEXAS GENERAL LAND OFFICE OIL SPILL PREVENTION & RESPONSE

Oil Spill Planning and Response Atlas
Upper Coast of Texas
Summer, 2008

Depth Soundings in Feet

PRIORITY PROTECTION AREAS
- HIGH
- MEDIUM
- LOW

HUMAN-USE FEATURES
- Beach Access
- Marina

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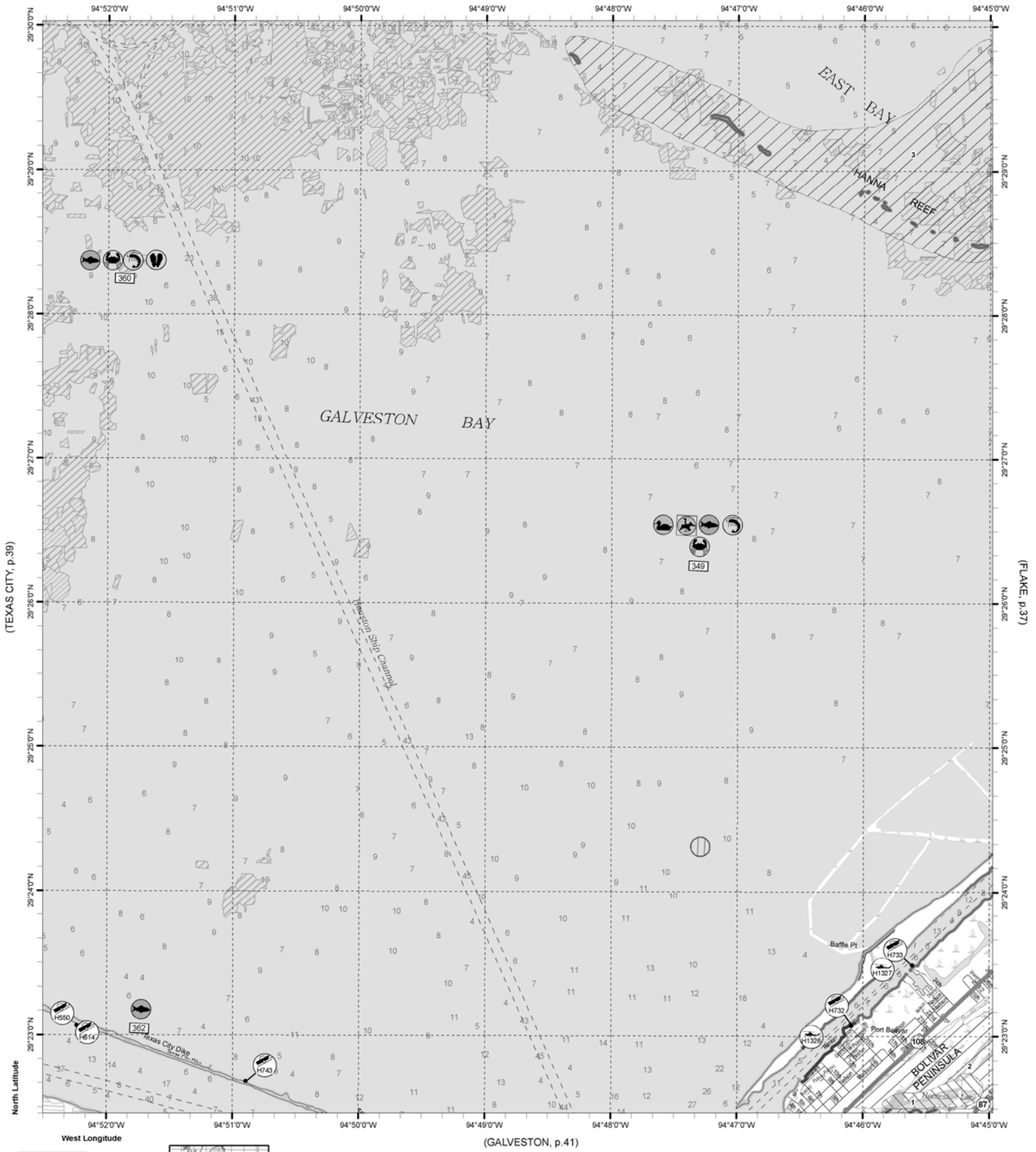
- 2A - Scarps and Steep Slopes in Clay
- 1 - Exposed Walls and Other Solid Structures

- Oyster Reef
- Oyster Shell on Mud
- Counties TCEQ
- Municipal

PORT BOLIVAR

(SMITH POINT, p.33)

DATA ACP



TEXAS GENERAL LAND OFFICE OIL SPILL PREVENTION & RESPONSE

Oil Spill Planning and Response Atlas
Upper Coast of Texas
Summer, 2008

Depth Soundings in Feet

PRIORITY PROTECTION AREAS
- HIGH
- MEDIUM
- LOW

HUMAN-USE FEATURES
- Boat Ramps
- Heliports

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- 1 - Exposed Walls and Other Solid Structures

- Oyster Reef
- Oyster Shell on Mud
- Counties TCEQ
- Municipal
- Bird Rookery

(b) (7)(F)

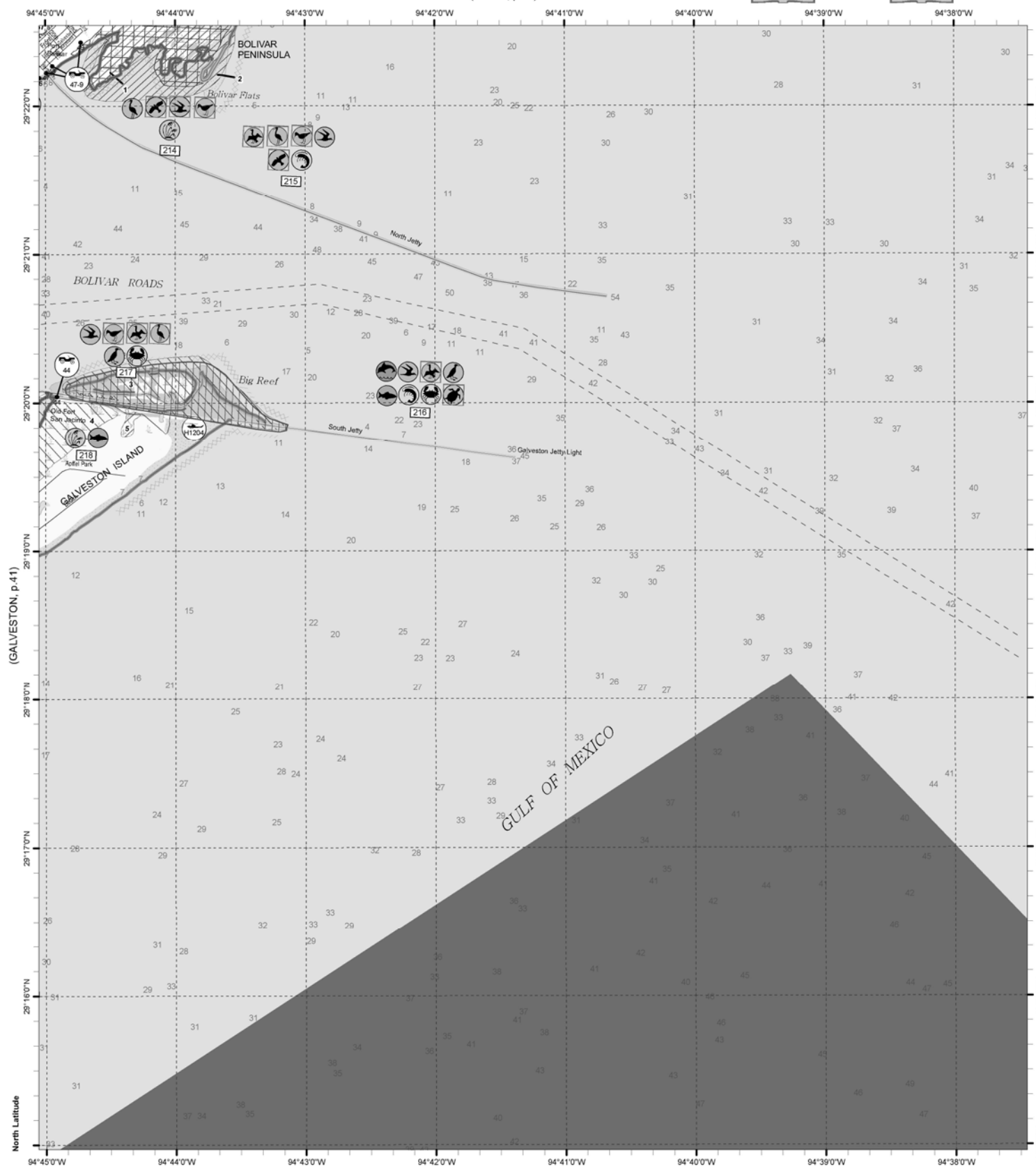
(b) (7)(F)

(b) (7)(F)

THE JETTIES

(FLAKE, p.37)

DATA ACP



TEXAS GENERAL LAND OFFICE OIL SPILL PREVENTION & RESPONSE

Oil Spill Planning and Response Atlas
Upper Coast of Texas
Summer, 2008

Miles
Nautical Miles
Feet
Kilometers

Depth Soundings in Feet

PRIORITY PROTECTION AREAS
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- 1 - Exposed Walls and Other Solid Structures
- Washover Area

- Audubon Sanctuaries
- Anchorages
- Counties TCEQ
- Municipal
- Bird Rookery

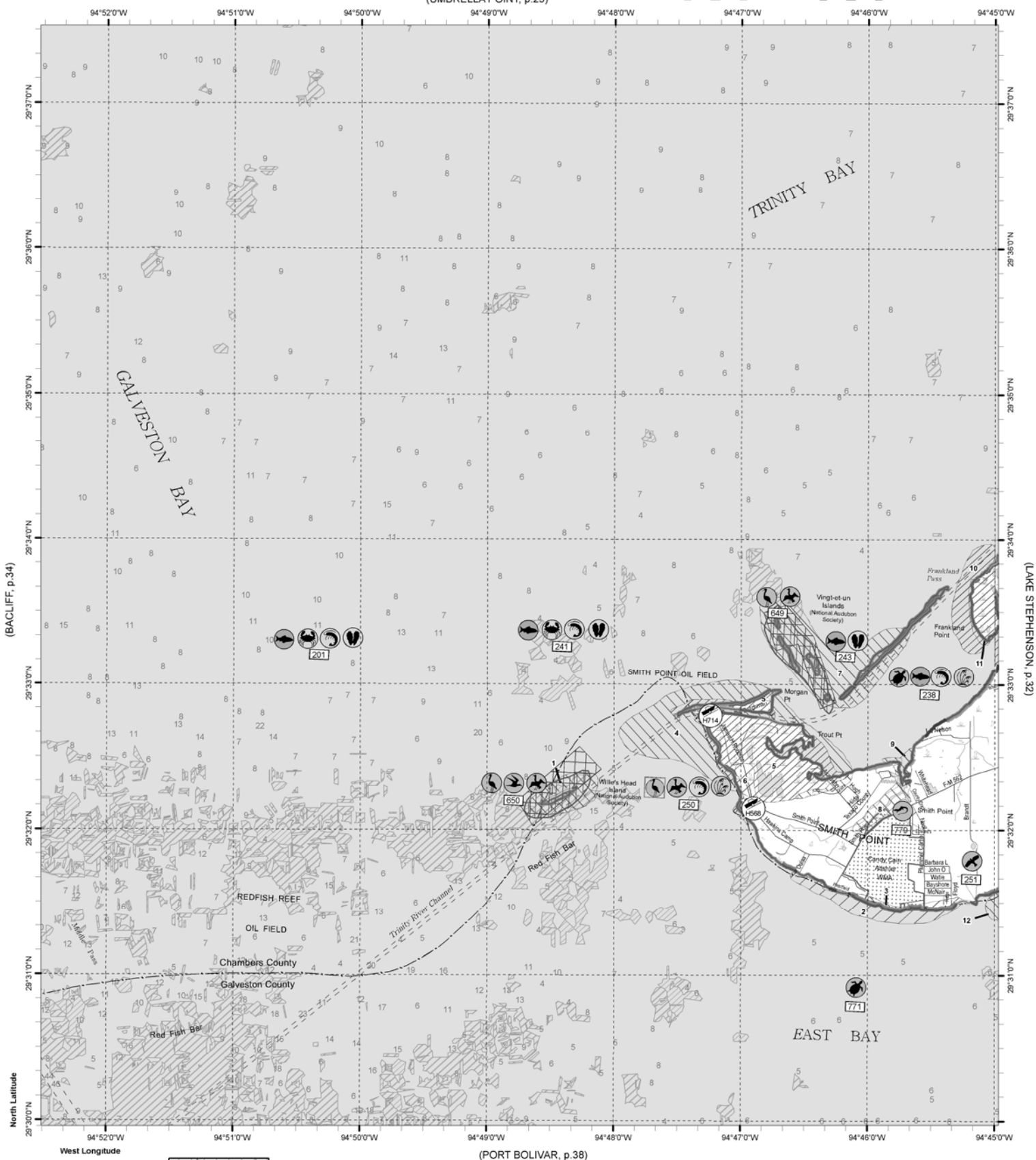
(b) (7)(F)

(b) (7)(F)

SMITH POINT

DATA ACP

(UMBRELLA POINT, p.25)



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Upper Coast of Texas
Summer, 2008

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- Boat Ramps

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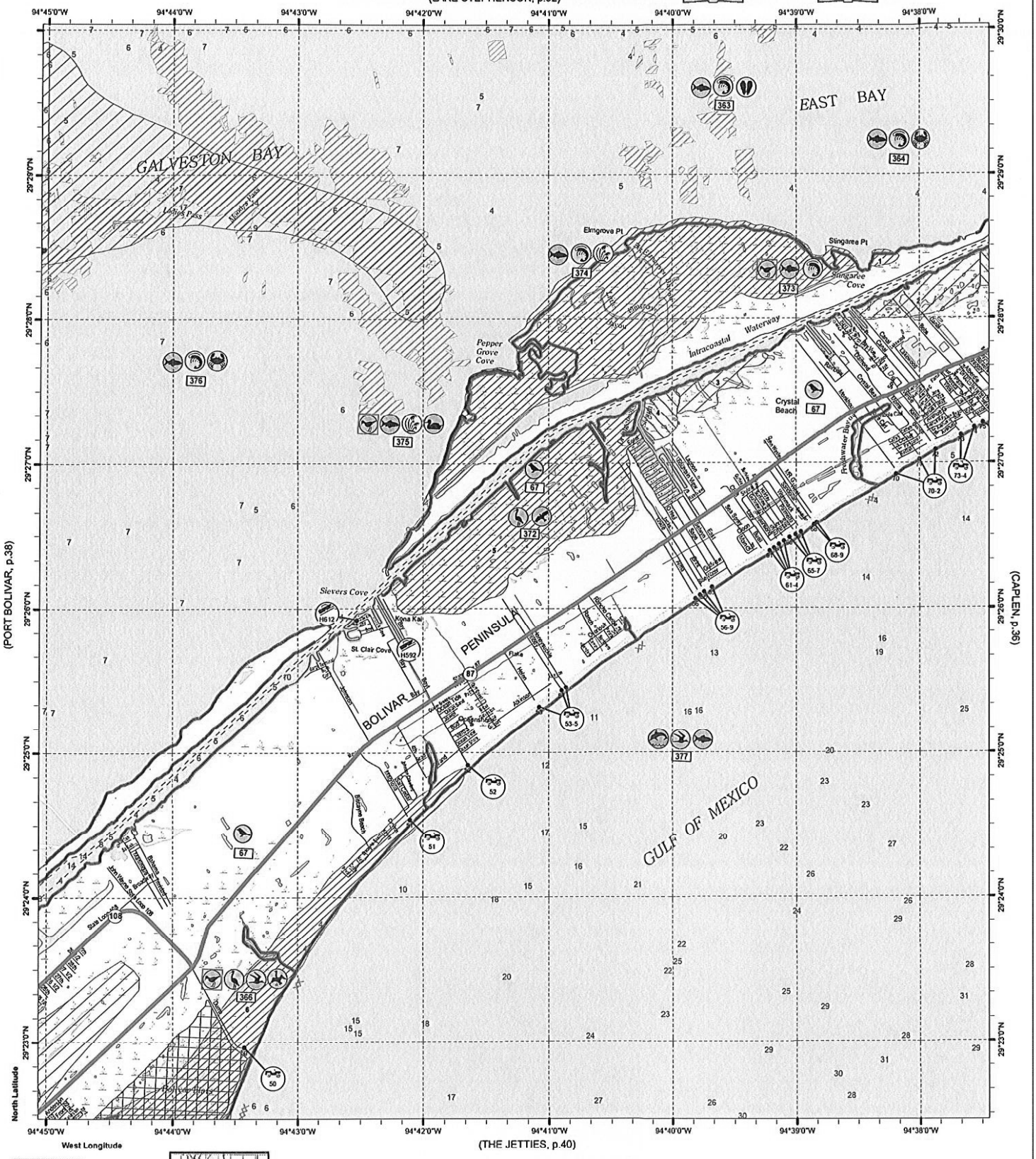
- Audubon Sanctuaries
- State Parks/WMA
- County/Municipal Parks
- Wildlife Refuges
- Oyster Reef
- Oyster Shell on Mud
- Counties TCEQ
- Municipal
- Bird Rookery

FLAKE

(LAKE STEPHENSON, p.32)

DATA ACP



TEXAS GENERAL LAND OFFICE OILSPILL PREVENTION & RESPONSE

Oil Spill Planning and Response Atlas
Upper Coast of Texas
Summer, 2008

Depth Soundings in Feet

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- Oyster Reef
- Oyster Shell on Mud
- Counties TCEQ

(b) (7)(F)

LOUISIANA

SHORELINE HABITATS (ESI)
2001 ESI Shoreline Classification

- B) EXPOSED, SO D MAN MADE STRUCTURES
- 2A) EXPOSED WAVE CUT P ATFORMS N C AY
- 2B) EXPOSED SCARPS AND STEEP S OPES N C AY
- 3A) F NE TO MED UM GRA NED SAND BEACHES
- 3B) SCARPS AND STEEP S OPES N SAND
- 4) COARSE GRA NED SAND BEACHES
- 5) M XED SAND AND GRAVE BEACHES
- 6A) GRAVE BEACHES
- 6B) R PRAP
- 7) EXPOSED T DA F ATS
- 8A) SHE TERED ROCKY SHORES AND SHE TERED SCARPS N MUD OR C AY
- 8B) SHE TERED MAN MADE STRUCTURES
- 8C) SHE TERED R PRAP
- 9A) SHE TERED T DA F ATS
- 9B) SHE TERED, VEGETATED OW BANKS
- 0A) SA T AND BRACK SH WATER MARSHES
- 0B) FRESHWATER MARSHES
- 0C) FRESHWATER SWAMPS
- 0D) SCRUB SHRUB WET ANDS

COASTAL HABITATS
From 1988 Digital Shoreline

- 0A) SA T MARSH
- 0A) BRACK SH MARSH
- 0A) NTERMED ATE MARSH
- 0B) FRESHWATER MARSH
- 0C) FORESTED WET AND
- 0D) SCRUB SHRUB WET AND
- SEAGRASS

SENSITIVE BIOLOGICAL RESOURCES

B RD
- D V NG B RD
- GU / TERN
- PASSER NE
- RAPTOR
- SHOREB RD
- WAD NG B RD
- WATERFOW
- NEST NG S TE

F SH
- F SH

TERRESTR AL MAMMAL
- BAT
- BEAR
- SMA MAMMA

NVERTEBRATE
- B VA VE
- CEPHA OPOD
- CRAB
- CRAYF SH
- NSECT
- SHR MP

REPT LE / AMPH B AN
- A GATOR
- TURT E
- OTHER REPT E / AMPH B AN

HAB TAT
- P ANT
- SEAGRASS

MUT PLE ELEMENTS
- THREATENED / ENDANGERED
- 123 RAR NUMBER

HUMAN USE FEATURES

- A RPORT / HE PORT
- BOAT RAMP
- ND AN RESERVAT ON
- MAR NA
- NAT ONA PARK / NATURE CONSERVANCY
- SEN C R VER
- STATE PARK
- W D FE REFUGE
- 123 HUMAN USE NUMBER
- PAR SH BOUNDARY
- MANAGEMENT BOUNDARY
- MAJOR ROAD
- M NOR ROAD
- SHORE NE FROM 200 PHOTO NTERPRETAT ON
- SHORE NE FROM 988 D G TA DATA

Guidelines for Interpreting ESI Maps

To help users interpret the ESI maps and tabular data, we offer the following guidelines for use in addition to the map legend:

• Shoreline Habitats. The shoreline," representing the boundary between land and water, is color coded with the ESI classification. Most shoreline habitats are shown as a line, with no areal dimension. Where there is more than one shoreline type (e.g., a beach in front of a seawall), the colors for each habitat are shown, with the color for the landward habitat on the land side of the shoreline and the color for the seaward habitat on the water side. In areas where the intertidal zone is wide (e.g., wide tidal flats, wave cut rocky platforms), the habitat from high to low water is filled with the ESI classification color. When data are available, the entire extent of wetlands are filled with colored patterns. The seaward edge of the wetland is color coded with the ESI classification; the landward extent of the wetland is indicated by a dashed, colored line.

• Biological Resources. The distribution of biological resources is shown using many different conventions. The major convention is an icon associated with a point, line, or polygon that shows the species' areal distribution. The icon's reference number corresponds to a data table with details on species and life history. Biological resource data are organized into six major groups, each with a reference color: birds (green), mammals (brown), fish (blue), shellfish (orange), reptiles (red), and rare/endangered plants and special habitats (purple). These colors are used to fill hatched polygons and the icons. Each major group has subgroups with unique icons to visually indicate the type of organism or feature present. The icon or group of icons is usually located inside the polygon it represents; however, sometimes a line is connected between the icon and the polygon or point to make it easier to relate the two. Note that icons are used to indicate the types of resources present, but the actual data are the points and polygons. A red box around an icon indicates the presence of a species on the state or Federal list of threatened or endangered species.

The number listed below each icon refers to the first column of a data table for each map. The data tables, organized by group (birds, fish, etc.), include the following information: species name, status as threatened or endangered on state and Federal lists, concentration (specifically for each point or polygon), presence by month, and special life history time periods. When a polygon contains multiple groups, the one number under the group of icons is listed under each group heading in the data tables. Where possible, the same number is used on multiple maps. For example, all bald eagle nests with the same seasonality could have the same number throughout the atlas, or the same assemblage of fish would have the same number wherever it occurred.

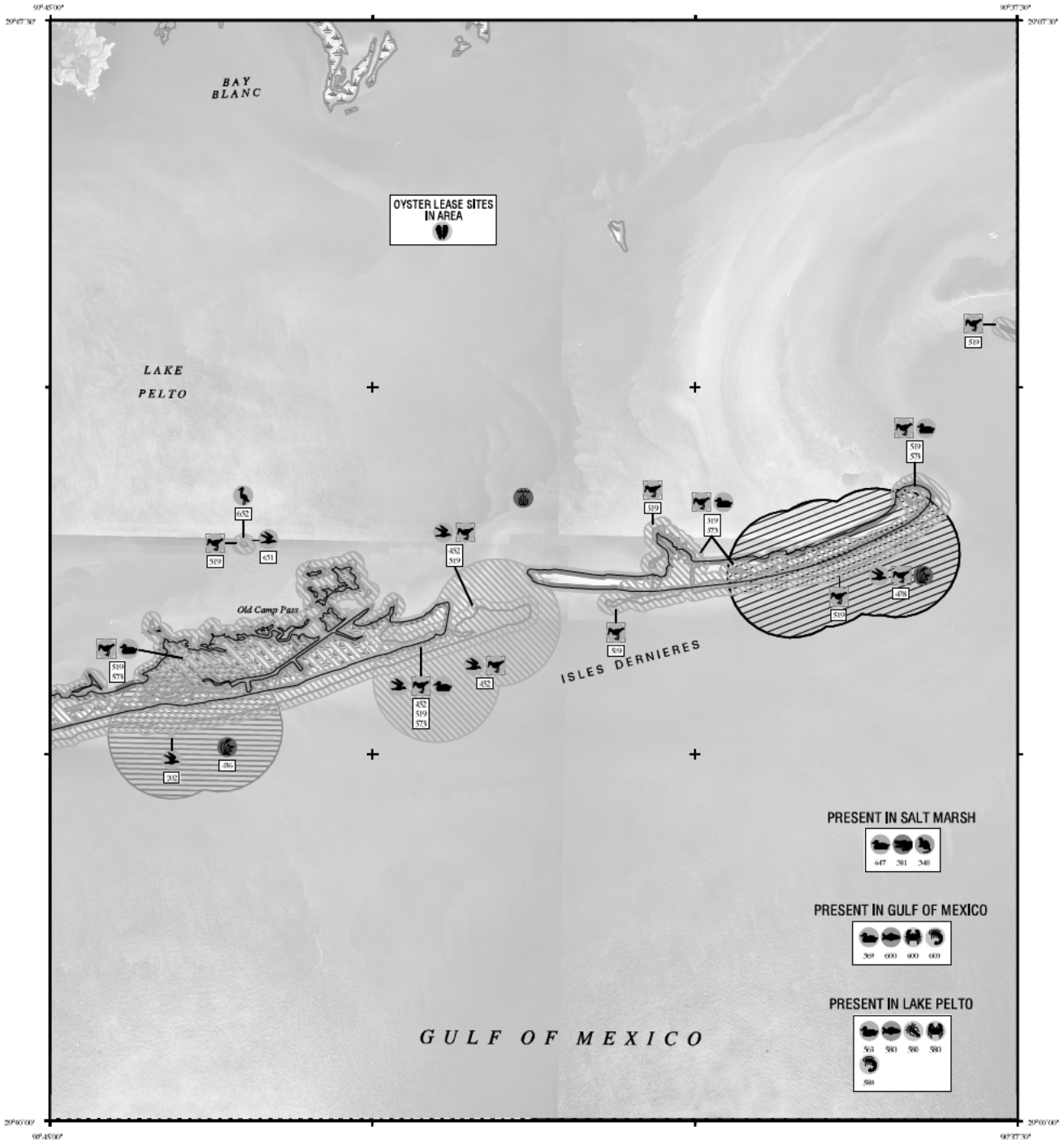
A data table has a separate listing for every unique combination of species, concentration, seasonality, life history stage, and source. By looking at the monthly seasonality data in the table for each map, the species present at the time of concern can be easily identified. An X' or number is placed under each month in which any life stage of the species is present in the area represented by the point or polygon. Numbers are used typically for fish and shellfish where data on relative abundance are available. The final columns in the data tables include the months when reproductive activities occur or early life stages are present. Users should pay close attention to the data tables because they contain much of the information needed to identify the most sensitive resources at different times of the year.

Points, lines, and polygons on a map represent the distribution of the resources. Green points show bird nesting sites, including bald eagle nests and dense colonial nesters (e.g., heron rookeries and seabird nesting colonies). Animals and habitats are also represented as: 1) hatched polygons in the color for the animal group (e.g., green for birds); 2) black hatched polygons which contain multiple groups of resources (birds and fish in the same tidal channels); 3) solid lines (usually used for fish in small streams); or 4) in common in ..." boxes. When showing the biological resource polygons would make the maps too difficult to read (usually when multiple polygons cover a large area), the polygons are not plotted and the presence of the resource is indicated by placing the icon in a box labeled common in ..." The box contains an appropriate geographic reference. Different boxes can be used on the same map when, for example: common in Winyah Bay" or common in tidal creeks." The data for these resources are still fully present in the database but are not shown to make the maps more readable.

• Human use Resources. Most of the human use resources are point features indicated by a black and white icon. Managed lands, such as refuges and sanctuaries, have their boundaries shown as a dot dash line with an icon and name placed inside. Where the feature is a known point location (e.g., a drinking water intake, boat ramp, marina), the exact location is shown as a small black dot and a line is drawn from it to the icon. Activities such as commercial and recreational fishing and areas such as recreational beaches are also indicated by an icon placed in the general area without any lines to points or polygons since the boundaries are not readily defined.

Some features, like historic and archaeological sites, are location sensitive: the agency managing the resource believes the exact location should not be shown in order to protect the site. In these cases, the icon is placed in the general area of the resource, but the exact location is not shown.

ENVIRONMENTAL SENSITIVITY INDEX MAP



SHORELINE
1988 SHORELINE
2001 SHORELINE

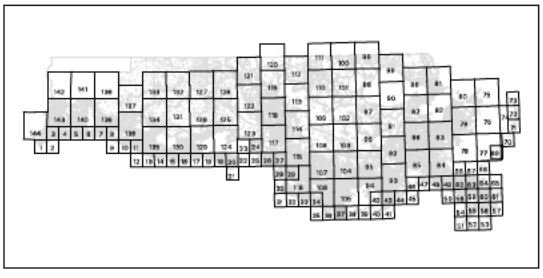
NOTE FOR COASTAL MAPS:
Due to the dynamic nature of the Louisiana coastline, biological resources may represent historical locations that do not correspond with the depicted shoreline.

SHORELINE HABITATS (ESI)
2001 ESI Shoreline Classification

- 1B EXPOSED, SOLID MAN-MADE STRUCTURES
- 2A EXPOSED WAVE-CUT PLATFORMS IN CLAY
  2B EXPOSED SCARPS AND STEEP SLOPES IN CLAY
- 3A FINE- TO MEDIUM-GRAINED SAND BEACHES
  3B SCARPS AND STEEP SLOPES IN SAND
- 4 COARSE-GRAINED SAND BEACHES
- 5 MIXED SAND AND GRAVEL BEACHES
- 6A GRAVEL BEACHES
- 6B RIPRAP
- 7 EXPOSED TIDAL FLATS
- 8A SHELTERED ROCKY SHORES AND SHELTERED SCARPS IN MUD OR CLAY
- 8B SHELTERED, MAN-MADE STRUCTURES
- 8C SHELTERED RIPRAP
- 9A SHELTERED TIDAL FLATS
  9B SHELTERED, VEGETATED LOW BANKS
- 10A SALT- AND BRACKISH-WATER MARSHES
- 10B FRESHWATER MARSHES
- 10C FRESHWATER SWAMPS
- 10D SCRUB-SHRUB WETLANDS

COASTAL HABITATS
Based on 1988 Digital Shoreline

- 10A SALT MARSH
- 10A BRACKISH MARSH
- 10A INTERMEDIATE MARSH
- 10B FRESHWATER MARSH
- 10C FORESTED WETLAND
- 10D SCRUB- SHRUB WETLAND
- SEAGRASS



SCALE 1:50000

1 5 0 1 KILOMETER
1 5 0 1 MILE

Not For Navigation

December 2003
Published at Seattle, Washington
National Oceanic and Atmospheric Administration
National Ocean Service
Office of Response and Restoration
Hazardous Materials Response Division

EASTERN ISLES DERNIERES LA-37

Louisiana ESI: ESIMAP 37

BIOLOGICAL RESOURCES:

BIRD:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Migrating	Molting
0	Black skimme			60 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAY-SEP	-	-
4	Colo ial wa e bi ds				X	X	X	X	X	X	X	X	X	X	X	X	NOV-SEP	-	-
	T ea e ed s o ebi d		T		X	X	X	X		X	X	X	X	X			-	-	-
4	Colo ial wa e bi ds				X	X	X	X	X	X	X	X	X	X	X	X	NOV-SEP	-	-
	T ea e ed s o ebi d		T		X	X	X	X		X	X	X	X	X			-	-	-
19	Pipi g plo e		T		X	X	X	X		X	X	X	X	X			-	-	-
	S o ebi ds						X	X	X		X	X	X				-	-	-
	S owy plo e				X	X	X	X		X	X	X	X	X	X	X	-	-	-
	Wilso 's plo e				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
6	esse sca p			94 IND/SQ MI	X	X	X							X	X	X	-	-	-
69	esse sca p			49 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Ame ica coo			PRESENT	X	X	X							X	X	X	-	-	-
	Ame ica wigeo			PRESENT	X	X	X	X						X	X	X	-	-	-
	Bl e-wi ged eal			PRESENT	X	X	X	X	X			X	X	X	X	X	-	-	-
	Ca asback			PRESENT	X	X	X								X	X	-	-	-
	Gadwall			PRESENT	X	X	X	X						X	X	X	-	-	-
	G ee -wi ged eal			PRESENT	X	X	X	X				X	X	X	X	X	-	-	-
	Hooded me ga se			PRESENT	X	X	X								X	X	-	-	-
	esse sca p			PRESENT	X	X	X							X	X	X	-	-	-
	Malla d			PRESENT	X	X	X							X	X	X	-	-	-
	Mo led d ck			PRESENT	X	X	X	X	X	X	X	X	X	X	X	X	MAR-SEP	-	-
	No e pi ail			PRESENT	X	X	X						X	X	X	X	-	-	-
	No e s o ele			PRESENT	X	X	X	X					X	X	X	X	-	-	-
	Ri g- ecked d ck			PRESENT	X	X	X							X	X	X	-	-	-
64	Ame ica coo			UP TO 0 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Ame ica wigeo			UP TO IND/SQ MI	X	X	X	X						X	X	X	-	-	-
	Bl e-wi ged eal			UP TO 10 IND/SQ MI	X	X	X	X	X			X	X	X	X	X	-	-	-
	Ca asback			PRESENT	X	X	X								X	X	-	-	-
	Gadwall			1 TO 1 IND/SQ MI	X	X	X	X						X	X	X	-	-	-
	G ee -wi ged eal			UP TO 46 IND/SQ MI	X	X	X	X					X	X	X	X	-	-	-
	Hooded me ga se			UP TO IND/SQ MI	X	X	X								X	X	-	-	-
	esse sca p			UP TO 6 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Malla d			UP TO IND/SQ MI	X	X	X							X	X	X	-	-	-
	Mo led d ck			TO 16 IND/SQ MI	X	X	X	X	X	X	X	X	X	X	X	X	MAR-SEP	-	-
	No e pi ail			UP TO 19 IND/SQ MI	X	X	X						X	X	X	X	-	-	-
	No e s o ele			1 TO 1 IND/SQ MI	X	X	X	X					X	X	X	X	-	-	-
	Ri g- ecked d ck			UP TO 4 IND/SQ MI	X	X	X							X	X	X	-	-	-
6 1	a g i g g ll			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-JU	-	-
6	G ea eg e			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	FEB-JU	-	-
	Reddis eg e			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	S owy eg e			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	T icolo ed e o			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-

FISH:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Eggs	Larvae	Juveniles	Adults
0	A la ic c oake											4	4	4			MAR-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	Bay a c o y																JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	Black d m																JAN-MAY	JAN-MAY	JAN-MAY	JAN-DEC	-
	C e alle ack																-	-	-	JAN-DEC	-
	Flo ida pompa o																MAY-AUG	MAY-AUG	MAY-AUG	JAN-DEC	-
	Gizza d s ad			4				4	4	4							MAR-SEP	MAR-SEP	MAR-SEP	JAN-DEC	-
	G ay s appe																-	-	-	JAN-DEC	-
	G l me ade																-	AUG-APR	AUG-APR	JAN-DEC	-
	Red d m			4						4	4	4					AUG-MAR	AUG-MAR	AUG-MAR	JAN-DEC	-
	Sa d sea o			4					4	4	4	4	4	4			FEB-OCT	FEB-OCT	FEB-OCT	JAN-DEC	-
	S eeps ead			4	4	4	4	4	4	4	4	4	4	4	4	4	-	-	JAN-JU	JAN-DEC	-
	Sil e pe c			4					4								MAR-OCT	MAR-OCT	MAR-OCT	JAN-DEC	-
	So e lo de			4					4	4	4	4	4	4	4		-	-	SEP-APR	JAN-DEC	-
	Spa is macke el																-	-	-	JAN-DEC	-
	Spo																OCT-APR	OCT-APR	OCT-APR	JAN-DEC	-
	Spo ed sea o			4					4	4	4	4		4			MAR-OCT	MAR-OCT	MAR-OCT	JAN-DEC	-
	S iped m lle			4	4	4	4	4	4	4	4	4	4	4	4	4	-	NOV-FEB	OCT-MAY	JAN-DEC	-
	Ta po																-	-	MAY-NOV	JAN-DEC	-
600	Black d m			4	4	4	4	4	4	4	4	4	4	4	4	4	JAN-DEC	DEC-MAY	JAN-DEC	JAN-DEC	-
	Flo ida pompa o																JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	G l me ade						4	4	4								JAN-DEC	SEP-MAY	JAN-DEC	JAN-DEC	-
	G l s geo		T							0	0	0	0	0	0		JAN-DEC	-	JAN-DEC	JAN-DEC	-
	Red d m			4	4	4	4	4	4	4	4	4	4	4	4	4	JAN-DEC	SEP-FEB	JAN-DEC	JAN-DEC	-
	S eeps ead			4	4	4	4	4	4	4	4	4	4	4	4	4	JAN-DEC	DEC-MAY	JAN-DEC	JAN-DEC	-
	So e lo de			4			4	4	4	4	4	4	4	4	4		JAN-DEC	SEP-FEB	JAN-DEC	JAN-DEC	-
	Spa is macke el			4					4	4	4	4	4	4			JAN-DEC	MAR-NOV	JAN-DEC	JAN-DEC	-
	Spo ed sea o																JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	S iped m lle			4			4	4	4	4	4	4					JAN-DEC	-	JAN-DEC	JAN-DEC	-
	Ta po																JAN-DEC	-	JAN-DEC	JAN-DEC	-

HABITAT:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D
4 6	Ra e pla				X	X	X	X	X	X	X	X	X	X	X	X
4	Ra e pla				X	X	X	X	X	X	X	X	X	X	X	X

INVERTEBRATE:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Eggs	Larvae	Juveniles	Adults
0	Bay sq id			4	4	4	4	4	4	4	4	4	4	4	4	4	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	Bl e c ab				4	4									4		-	JAN-DEC	JAN-DEC	JAN-DEC	-
	B ow s imp				4								4	4			JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	G l s o e c ab																-	MAR-NOV	MAR-DEC	JAN-DEC	-
	Pi k s imp																-	-	APR-OCT	JAN-DEC	-
	W i e s imp															4	APR-NOV	APR-NOV	MAR-DEC	JAN-DEC	-
600	Bl e c ab				4	4	4	4	4	4						4	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	B ow s imp					4	4	4				4	4	4			JAN-DEC	-	JAN-DEC	JAN-DEC	-
	Flo ida s o e c ab																JAN-DEC	MAR-NOV	JAN-DEC	JAN-DEC	-
	G l s o e c ab																JAN-DEC	MAR-NOV	JAN-DEC	JAN-DEC	-
	Pi k s imp			4						4	4	4	4	4	4		JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	W i e s imp				4	4	4	4	4						4		JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-

REPTILE:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Hatching	Internesting	Juveniles	Adults
1	Ame ica alliga o			TRANSIENT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC

Biologi al i fo ma io show o he maps ep ese s k ow o e a io a eas o o u e es, bu does o e essa ily ep ese he full dis ibu io o a ge of ea h spe ies. This is pa i ula ly impo a o e og i e whe o side i g po e ial impa s o p o e ed spe ies.

Louisiana ESI: ESIMAP 37 (cont.)

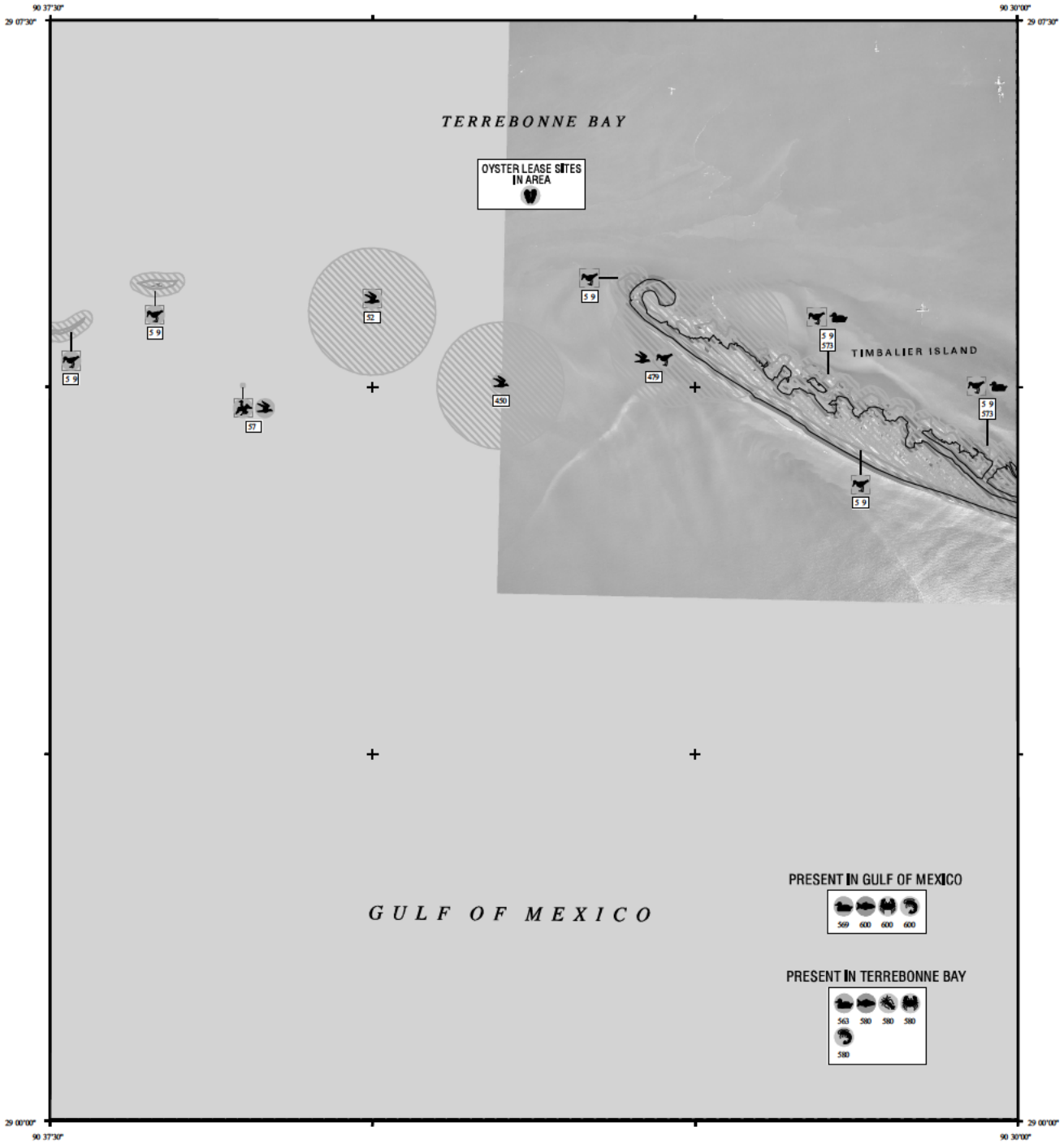
BIOLOGICAL RESOURCES: (cont.)

TERRESTRIAL MAMMAL:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D
4	Commo accoo			RESIDENT	X	X	X	X	X	X	X	X	X	X	X	X
	Mi k			RESIDENT	X	X	X	X	X	X	X	X	X	X	X	X
	M sk a			RESIDENT	X	X	X	X	X	X	X	X	X	X	X	X
	No e i e o e			RESIDENT	X	X	X	X	X	X	X	X	X	X	X	X
	N ia			TRANSIENT	X	X	X	X	X	X	X	X	X	X	X	X

Biologi al i fo ma io show o he maps ep ese s k ow o e a io a eas o o u e es, bu does o e essa ily ep ese he full dis ibu io o a ge of ea h spe ies. This is pa i ula ly impo a o e og i e whe o side i g po e ial impa s o p o e ed spe ies.

ENVIRONMENTAL SENSITIVITY INDEX MAP



SHORELINE

1988 SHORELINE

2001 SHORELINE

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SHORELINE HABITATS (ESI)
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- 1B EXPOSED, SOLID MAN-MADE STRUCTURES
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- 3A FINE- TO MEDIUM-GRAINED SAND BEACHES
- 3B SCARPS AND STEEP SLOPES IN SAND
- 4 COARSE-GRAINED SAND BEACHES
- 5 MIXED SAND AND GRAVEL BEACHES
- 6A GRAVEL BEACHES
- 6B RIPRAP
- 7 EXPOSED TIDAL FLATS
- 8A SHELTERED ROCKY SHORES AND SHELTERED SCARPS IN MUD OR CLAY
- 8B SHELTERED, MAN-MADE STRUCTURES
- 8C SHELTERED RIPRAP
- 9A SHELTERED TIDAL FLATS
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- 10C FRESHWATER SWAMPS
- 10D SCRUB-SHRUB WETLANDS

COASTAL HABITATS
Based on 1988 Digital Shoreline

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- 10A BRACKISH MARSH
- 10A INTERMEDIATE MARSH
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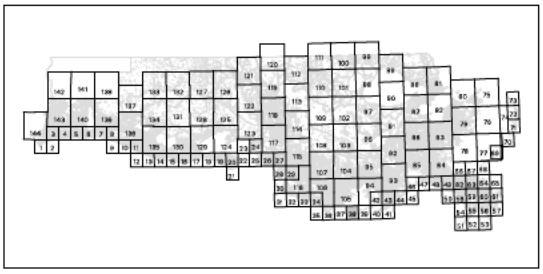
- 10C FORESTED WETLAND
- 10D SCRUB-SHRUB WETLAND
- SEAGRASS



N W E S

SCALE 1:40000

5 0 KILOMETER

5 0 MILE

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National Ocean Service
Office of Response and Restoration
Hazardous Material Response Division

NOAA Navigation

CAT ISLAND PASS LA-38

Louisiana ESI: ESIMAP 38

BIOLOGICAL RESOURCES:

BIRD:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Migrating	Molting
4 0	Colo ial wa e bi ds				X	X	X	X	X	X	X	X	X	X	X	X	NOV-SEP	-	-
4 9	Colo ial wa e bi ds				X	X	X	X	X	X	X	X	X	X	X	X	NOV-SEP	-	-
	Ra e s o ebi d				X	X	X		X	X	X	X	X	X	X	X	-	-	-
19	Pipi g plo e		T		X	X	X	X	X		X	X	X	X	X		-	-	-
	S o ebi ds						X	X	X	X	X	X	X				-	-	-
	S owy plo e				X	X	X	X		X	X	X	X	X	X	X	-	-	-
	Wilso 's plo e				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
1	E da ge ed seabi d		E		X	X	X	X	X	X	X	X	X	X	X	X	NOV-JU	-	-
6	esse sca p			94 IND/SQ MI	X	X	X							X	X	X	-	-	-
69	esse sca p			49 IND/SQ MI	X	X	X							X	X	X	-	-	-
1	Black skimme			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAY-SEP	-	-
	B ow pelica		E	6 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	NOV-JU	-	-
	Caspia e			6 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	-	-
	a g i g g ll			900 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-JU	-	-
	eas e			0 IND 90-99AV)			X	X	X	X	X	X	X				APR-SEP	-	-
	Royal e			66 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	-	-
	Sa dwic e			194 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	-	-
	Ame ica coo			PRESENT	X	X	X							X	X	X	-	-	-
	Ame ica wigeo			PRESENT	X	X	X	X						X	X	X	-	-	-
	Bl e-wi ged eal			PRESENT	X	X	X	X	X			X	X	X	X	X	-	-	-
	Ca asback			PRESENT	X	X	X								X	X	-	-	-
	Gadwall			PRESENT	X	X	X	X						X	X	X	-	-	-
	G ee -wi ged eal			PRESENT	X	X	X	X					X	X	X	X	-	-	-
	Hooded me ga se			PRESENT	X	X	X								X	X	-	-	-
	esse sca p			PRESENT	X	X	X							X	X	X	-	-	-
	Malla d			PRESENT	X	X	X							X	X	X	-	-	-
	Mo led d ck			PRESENT	X	X	X	X	X	X	X	X	X	X	X	X	MAR-SEP	-	-
	No e pi ail			PRESENT	X	X	X						X	X	X	X	-	-	-
	No e s o ele			PRESENT	X	X	X	X					X	X	X	X	-	-	-
	Ri g- ecked d ck			PRESENT	X	X	X							X	X	X	-	-	-

FISH:

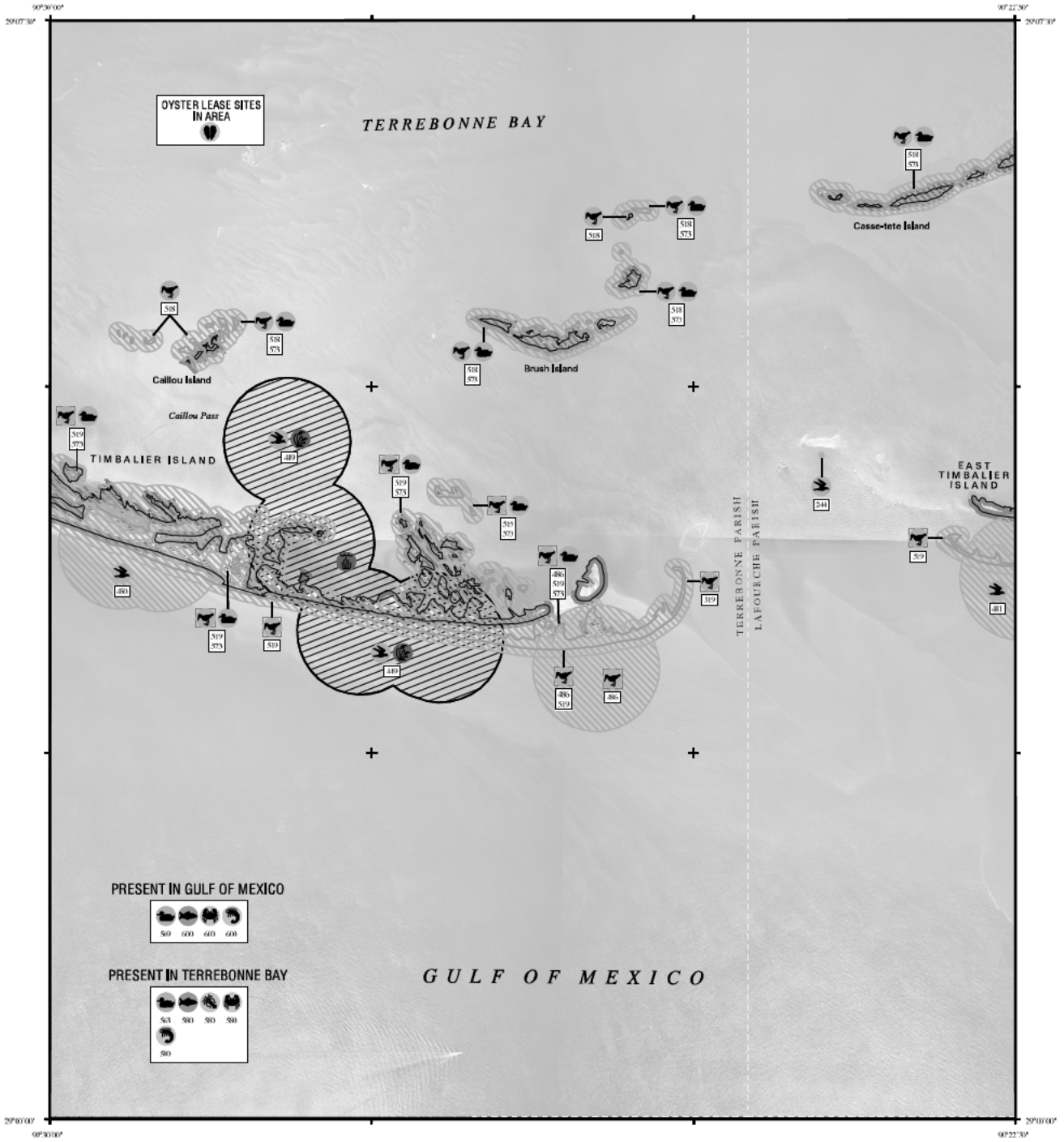
RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Eggs	Larvae	Juveniles	Adults
0	A la ic c oake											4	4	4			MAR-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	Bay a c o y																JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	Black d m																JAN-MAY	JAN-MAY	JAN-MAY	JAN-DEC	-
	C e alle ack																-	-	-	JAN-DEC	-
	Flo ida pompa o																MAY-AUG	MAY-AUG	MAY-AUG	JAN-DEC	-
	Gizza d s ad			4				4	4	4							MAR-SEP	MAR-SEP	MAR-SEP	JAN-DEC	-
	G ay s appe																-	-	-	JAN-DEC	-
	G l me ade																-	AUG-APR	AUG-APR	JAN-DEC	-
	Red d m			4						4	4	4					AUG-MAR	AUG-MAR	AUG-MAR	JAN-DEC	-
	Sa d sea o			4					4	4	4	4	4	4			FEB-OCT	FEB-OCT	FEB-OCT	JAN-DEC	-
	S eeps ead			4			4	4	4	4	4	4	4	4	4	4	-	-	JAN-JU	JAN-DEC	-
	Sil e pe c			4					4								MAR-OCT	MAR-OCT	MAR-OCT	JAN-DEC	-
	So e lo de			4					4	4	4	4	4	4	4		-	-	SEP-APR	JAN-DEC	-
	Spa is macke el																-	-	-	JAN-DEC	-
	Spo																OCT-APR	OCT-APR	OCT-APR	JAN-DEC	-
	Spo ed sea o			4					4	4	4	4		4			MAR-OCT	MAR-OCT	MAR-OCT	JAN-DEC	-
	S iped m lle			4			4	4	4	4	4	4	4	4	4	4	-	NOV-FEB	OCT-MAY	JAN-DEC	-
	Ta po																-	-	MAY-NOV	JAN-DEC	-
600	Black d m			4	4	4	4	4	4	4	4	4	4	4	4	4	JAN-DEC	DEC-MAY	JAN-DEC	JAN-DEC	-
	Flo ida pompa o																JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	G l me ade						4	4	4								JAN-DEC	SEP-MAY	JAN-DEC	JAN-DEC	-
	G l s geo		T							0	0	0	0	0	0		JAN-DEC	-	JAN-DEC	JAN-DEC	-
	Red d m			4	4	4	4	4	4	4	4	4	4	4	4	4	JAN-DEC	SEP-FEB	JAN-DEC	JAN-DEC	-
	S eeps ead			4	4	4	4	4	4	4	4	4	4	4	4	4	JAN-DEC	DEC-MAY	JAN-DEC	JAN-DEC	-
	So e lo de			4			4	4	4	4	4	4	4	4	4		JAN-DEC	SEP-FEB	JAN-DEC	JAN-DEC	-
	Spa is macke el			4					4	4	4	4	4	4			JAN-DEC	MAR-NOV	JAN-DEC	JAN-DEC	-
	Spo ed sea o																JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	S iped m lle			4			4	4	4	4	4	4	4				JAN-DEC	-	JAN-DEC	JAN-DEC	-
	Ta po																JAN-DEC	-	JAN-DEC	JAN-DEC	-

INVERTEBRATE:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Eggs	Larvae	Juveniles	Adults
0	Bay sq id			4	4	4	4	4	4	4	4	4	4	4	4	4	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	Bl e c ab				4	4									4		-	JAN-DEC	JAN-DEC	JAN-DEC	-
	B ow s imp				4								4	4			JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	G l s o e c ab																-	MAR-NOV	MAR-DEC	JAN-DEC	-
	Pi k s imp																-	-	APR-OCT	JAN-DEC	-
	W i e s imp															4	APR-NOV	APR-NOV	MAR-DEC	JAN-DEC	-
600	Bl e c ab				4	4	4	4	4	4						4	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	B ow s imp					4	4	4				4	4	4			JAN-DEC	-	JAN-DEC	JAN-DEC	-
	Flo ida s o e c ab																JAN-DEC	MAR-NOV	JAN-DEC	JAN-DEC	-
	G l s o e c ab																JAN-DEC	MAR-NOV	JAN-DEC	JAN-DEC	-
	Pi k s imp			4						4	4	4	4	4	4		JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	W i e s imp				4	4	4	4	4							4	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-

Biologi al i fo ma io show o he maps ep ese s k ow o e a io a eas o o u e es, bu does o e essa ily ep ese he full dis ibu io o a ge of ea h spe ies. This is pa i ula ly impo a o e og i e whe o side i g po e ial impa s o p o e ed spe ies.

ENVIRONMENTAL SENSITIVITY INDEX MAP



SHORELINE
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2001 SHORELINE

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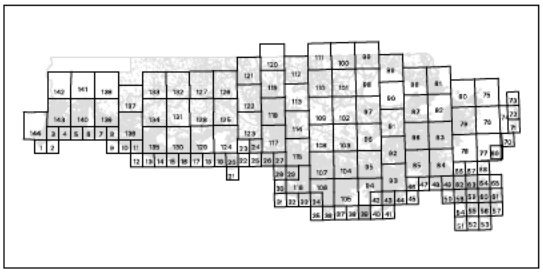


N W E S

SCALE 1:50000

1 5 0 1 KILOMETER

1 5 0 1 MILE

Not For Navigation

December 2003
Published at Seattle, Washington
National Oceanic and Atmospheric Administration
National Ocean Service
Office of Response and Restoration
Hazardous Materials Response Division

TIMBALIER ISLAND LA-39

Louisiana ESI: ESIMAP 39

BIOLOGICAL RESOURCES:

BIRD:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Migrating	Molting
44	Black skimme			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAY-SEP	-	-
	Royal e			4 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	-	-
	Sa dwic e			11 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	-	-
449	Colo ial wa e bi ds				X	X	X	X	X	X	X	X	X	X	X	X	NOV-SEP	-	-
4 0	Colo ial wa e bi ds				X	X	X	X	X	X	X	X	X	X	X	X	NOV-SEP	-	-
4 1	Ra e seabi d				X	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	-	-
4 6	T ea e ed s o ebi d		T		X	X	X	X	X		X	X	X	X	X		-	-	-
1	S o ebi ds						X	X	X	X	X	X	X	X			-	-	-
19	Pipi g plo e		T		X	X	X	X	X		X	X	X	X	X	X	-	-	-
	S o ebi ds						X	X	X	X	X	X	X	X			-	-	-
	S owy plo e				X	X	X	X		X	X	X	X	X	X	X	-	-	-
	Wilso 's plo e				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
6	esse sca p			94 IND/SQ MI	X	X	X						X	X	X		-	-	-
69	esse sca p			49 IND/SQ MI	X	X	X						X	X	X		-	-	-
	Ame ica coo			PRESENT	X	X	X						X	X	X		-	-	-
	Ame ica wigeo			PRESENT	X	X	X	X					X	X	X		-	-	-
	Bl e-wi ged eal			PRESENT	X	X	X	X	X			X	X	X	X		-	-	-
	Ca asback			PRESENT	X	X	X							X	X		-	-	-
	Gadwall			PRESENT	X	X	X	X					X	X	X		-	-	-
	G ee -wi ged eal			PRESENT	X	X	X	X				X	X	X	X		-	-	-
	Hooded me ga se			PRESENT	X	X	X							X	X		-	-	-
	esse sca p			PRESENT	X	X	X						X	X	X		-	-	-
	Malla d			PRESENT	X	X	X						X	X	X		-	-	-
	Mo led d ck			PRESENT	X	X	X	X	X	X	X	X	X	X	X	X	MAR-SEP	-	-
	No e pi ail			PRESENT	X	X	X					X	X	X	X		-	-	-
	No e s o ele			PRESENT	X	X	X	X				X	X	X	X		-	-	-
	Ri g- ecked d ck			PRESENT	X	X	X						X	X	X		-	-	-

FISH:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Eggs	Larvae	Juveniles	Adults
0	A la ic c oake											4	4	4			MAR-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	Bay a c o y																JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	Black d m																JAN-MAY	JAN-MAY	JAN-MAY	JAN-DEC	-
	C e alle ack																-	-	-	JAN-DEC	-
	Flo ida pompa o																MAY-AUG	MAY-AUG	MAY-AUG	JAN-DEC	-
	Gizza d s ad		4					4	4	4							MAR-SEP	MAR-SEP	MAR-SEP	JAN-DEC	-
	G ay s appe																-	-	-	JAN-DEC	-
	G l me ade																-	AUG-APR	AUG-APR	JAN-DEC	-
	Red d m		4							4	4	4					AUG-MAR	AUG-MAR	AUG-MAR	JAN-DEC	-
	Sa d sea o		4						4	4	4	4	4	4			FEB-OCT	FEB-OCT	FEB-OCT	JAN-DEC	-
	S eeps ead		4		4	4	4	4	4	4	4	4	4	4	4	4	-	-	JAN-JU	JAN-DEC	-
	Sil e pe c		4						4								MAR-OCT	MAR-OCT	MAR-OCT	JAN-DEC	-
	So e lo de		4						4	4	4	4	4	4	4		-	-	SEP-APR	JAN-DEC	-
	Spa is macke el																-	-	-	JAN-DEC	-
	Spo																OCT-APR	OCT-APR	OCT-APR	JAN-DEC	-
	Spo ed sea o		4						4	4	4	4		4			MAR-OCT	MAR-OCT	MAR-OCT	JAN-DEC	-
	S iped m lle		4		4	4	4	4	4	4	4	4	4	4	4	4	-	NOV-FEB	OCT-MAY	JAN-DEC	-
	Ta po																-	-	MAY-NOV	JAN-DEC	-
600	Black d m		4		4	4	4	4	4	4	4	4	4	4	4	4	JAN-DEC	DEC-MAY	JAN-DEC	JAN-DEC	-
	Flo ida pompa o																JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	G l me ade						4	4	4								JAN-DEC	SEP-MAY	JAN-DEC	JAN-DEC	-
	G l s geo		T							0	0	0	0	0	0		JAN-DEC	-	JAN-DEC	JAN-DEC	-
	Red d m		4		4	4	4	4	4	4	4	4	4	4	4	4	JAN-DEC	SEP-FEB	JAN-DEC	JAN-DEC	-
	S eeps ead		4		4	4	4	4	4	4	4	4	4	4	4	4	JAN-DEC	DEC-MAY	JAN-DEC	JAN-DEC	-
	So e lo de		4				4	4	4	4	4	4	4	4	4		JAN-DEC	SEP-FEB	JAN-DEC	JAN-DEC	-
	Spa is macke el		4						4	4	4	4	4	4			JAN-DEC	MAR-NOV	JAN-DEC	JAN-DEC	-
	Spo ed sea o																JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	S iped m lle		4			4	4	4	4	4	4						JAN-DEC	-	JAN-DEC	JAN-DEC	-
	Ta po																JAN-DEC	-	JAN-DEC	JAN-DEC	-

HABITAT:

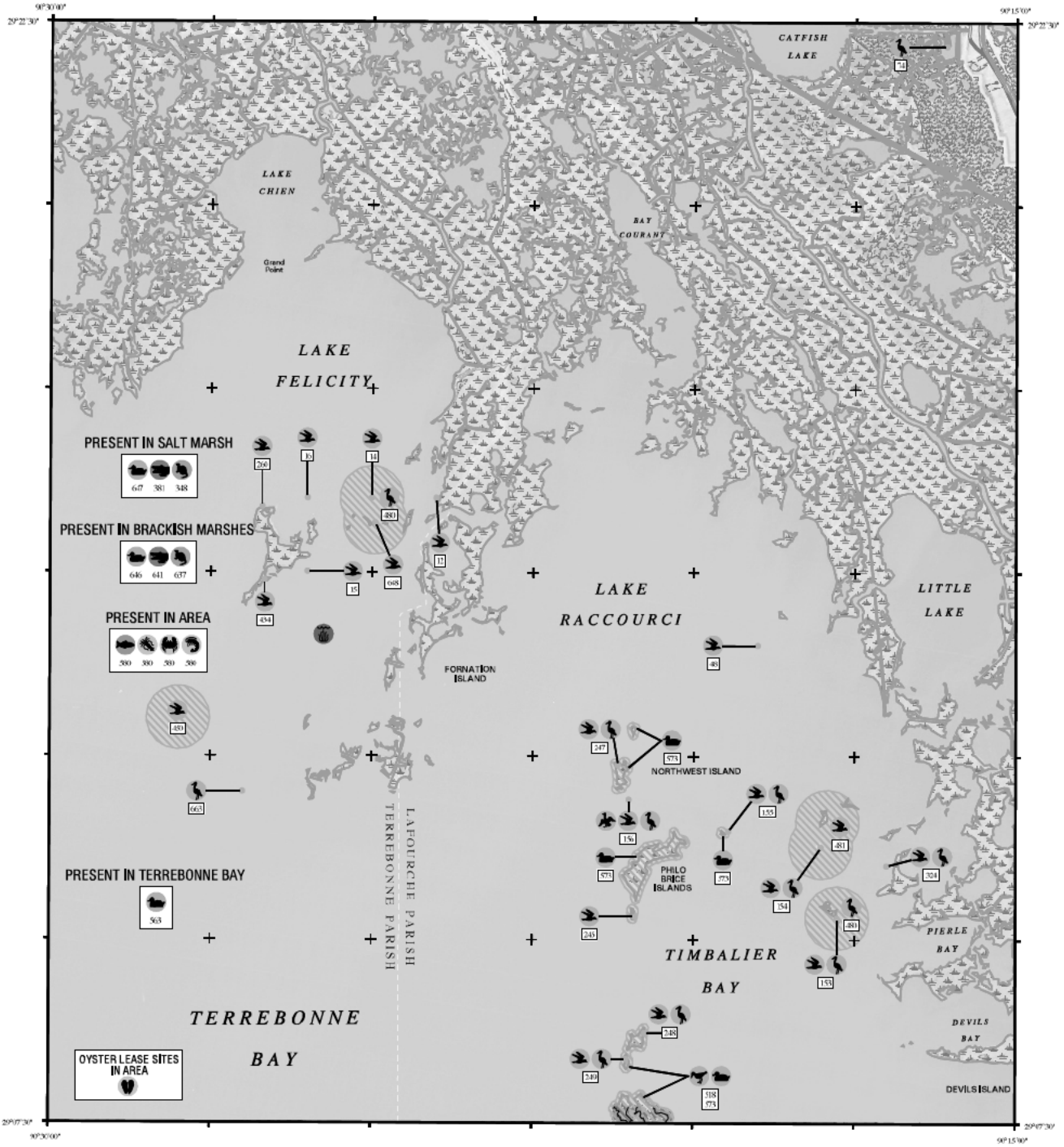
RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D
449	Ra e pla				X	X	X	X	X	X	X	X	X	X	X	X

INVERTEBRATE:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Eggs	Larvae	Juveniles	Adults
0	Bay sq id		4		4	4	4	4	4	4	4	4	4	4	4	4	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	Bl e c ab				4	4										4	-	JAN-DEC	JAN-DEC	JAN-DEC	-
	B ow s imp				4									4	4		JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	G l s o e c ab																-	MAR-NOV	MAR-DEC	JAN-DEC	-
	Pi k s imp																-	-	APR-OCT	JAN-DEC	-
	W i e s imp															4	APR-NOV	APR-NOV	MAR-DEC	JAN-DEC	-
600	Bl e c ab				4	4	4	4	4							4	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	B ow s imp					4	4	4				4	4	4			JAN-DEC	-	JAN-DEC	JAN-DEC	-
	Flo ida s o e c ab																JAN-DEC	MAR-NOV	JAN-DEC	JAN-DEC	-
	G l s o e c ab																JAN-DEC	MAR-NOV	JAN-DEC	JAN-DEC	-
	Pi k s imp		4						4	4	4	4	4	4			JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	W i e s imp				4	4	4	4	4							4	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-

Biologi al i fo ma io show o he maps ep ese s k ow o e a io a eas o o u e es, bu does o e essa ily ep ese he full dis ibu io o a ge of ea h spe ies. This is pa i ula ly impo a o e og i e whe o side i g po e ial impa s o p o e ed spe ies.

ENVIRONMENTAL SENSITIVITY INDEX MAP



SHORELINE

1988 SHORELINE

2001 SHORELINE

NOTE FOR COASTAL MAPS:
Due to the dynamic nature of the Louisiana coastline, biological resources may represent historical locations that do not correspond with the depicted shoreline.

SHORELINE HABITATS (ESI)
2001 ESI Shoreline Classification

- 1B EXPOSED, SOLID MAN-MADE STRUCTURES
- 2A EXPOSED WAVE-CUT PLATFORMS IN CLAY
  2B EXPOSED SCARPS AND STEEP SLOPES IN CLAY
- 3A FINE- TO MEDIUM-GRAINED SAND BEACHES
  3B SCARPS AND STEEP SLOPES IN SAND
- 4 COARSE-GRAINED SAND BEACHES
- 5 MIXED SAND AND GRAVEL BEACHES
- 6A GRAVEL BEACHES
- 6B RIPRAP
- 7 EXPOSED TIDAL FLATS
- 8A SHELTERED ROCKY SHORES AND SHELTERED SCARPS IN MUD OR CLAY
- 8B SHELTERED, MAN-MADE STRUCTURES
- 8C SHELTERED RIPRAP
- 9A SHELTERED TIDAL FLATS
  9B SHELTERED, VEGETATED LOW BANKS
- 10A SALT- AND BRACKISH-WATER MARSHES
- 10B FRESHWATER MARSHES
- 10C FRESHWATER SWAMPS
- 10D SCRUB-SHRUB WETLANDS

COASTAL HABITATS
Based on 1988 Digital Shoreline

- 10A SALT MARSH
- 10A BRACKISH MARSH
- 10A INTERMEDIATE MARSH
- 10B FRESHWATER MARSH
- 10C FORESTED WETLAND
- 10D SCRUB-SHRUB WETLAND
- SEAGRASS

SCALE 1:100000

Not For Navigation

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Office of Response and Restoration
Hazardous Materials Response Division

TERREBONNE BAY LA-94

Louisiana ESI: ESIMAP 94

BIOLOGICAL RESOURCES:

BIRD:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Migrating	Molting
1	Fo s e 's e			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
14	Black skimme			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAY-SEP	-	-
	Fo s e 's e			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
1	Black skimme			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAY-SEP	-	-
16	Fo s e 's e			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
4	Fo s e 's e			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
4	Ca le eg e			6 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG	-	-
	G ea eg e			9 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	FEB-JU	-	-
	i le bl e e o			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	S owy eg e			9 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	T icolo ed e o			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
1	Fo s e 's e			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	G ea eg e			4 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	FEB-JU	-	-
	a g i g g ll			4 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-JU	-	-
	i le bl e e o			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	S owy eg e			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	T icolo ed e o			14 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
1 4	Black skimme			16 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAY-SEP	-	-
	Fo s e 's e			0 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	G ea eg e			6 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	FEB-JU	-	-
	a g i g g ll			96 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-JU	-	-
	Royal e			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	-	-
	S owy eg e			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	T icolo ed e o			16 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
1	Black skimme			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAY-SEP	-	-
	Fo s e 's e			9 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	a g i g g ll			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-JU	-	-
	T icolo ed e o			6 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
1 6	A i ga			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUN	-	-
	Black skimme			6 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAY-SEP	-	-
	Caspia e			6 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	-	-
	Fo s e 's e			9 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	G ea eg e			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	FEB-JU	-	-
	i le bl e e o			10 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	S owy eg e			19 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	T icolo ed e o			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
4	Black skimme			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAY-SEP	-	-
	Caspia e			0 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	-	-
	Fo s e 's e			60 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	a g i g g ll			40 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-JU	-	-
	Royal e			110 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	-	-
4	Black skimme			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAY-SEP	-	-
	Caspia e			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	-	-
	Fo s e 's e			1 4 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	G ea eg e			0 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	FEB-JU	-	-
	a g i g g ll			4 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-JU	-	-
	S owy eg e			106 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	T icolo ed e o			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	W i e ibis			4 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG	-	-
4	Black skimme			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAY-SEP	-	-
	Caspia e			4 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	-	-
	Fo s e 's e			6 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	a g i g g ll			1 6 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-JU	-	-
	Royal e			40 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	-	-
	T icolo ed e o			16 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
49	Fo s e 's e			0 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	a g i g g ll			40 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-JU	-	-
	T icolo ed e o			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
60	Black skimme			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAY-SEP	-	-
	Fo s e 's e			90 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
4	Caspia e			10 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	-	-
	a g i g g ll			1 0 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-JU	-	-
	Royal e			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	-	-
	T icolo ed e o			10 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
4 4	Fo s e 's e			0 IND 9 COUNT)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
4 0	Colo ial wa e bi ds				X	X	X	X	X	X	X	X	X	X	X	X	NOV-SEP	-	-
4 0	Ra e wadi g bi d				X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
4 1	Ra e seabi d				X	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	-	-
1	S o ebi ds					X	X	X		X	X	X	X				-	-	-
6	esse sca p			94 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Ame ica coo			PRESENT	X	X	X							X	X	X	-	-	-
	Ame ica wigeo			PRESENT	X	X	X	X						X	X	X	-	-	-
	Bl e-wi ged eal			PRESENT	X	X	X	X	X				X	X	X	X	-	-	-
	Ca asback			PRESENT	X	X	X								X	X	-	-	-
	Gadwall			PRESENT	X	X	X	X						X	X	X	-	-	-
	G ee -wi ged eal			PRESENT	X	X	X	X					X	X	X	X	-	-	-
	Hooded me ga se			PRESENT	X	X	X								X	X	-	-	-
	esse sca p			PRESENT	X	X	X							X	X	X	-	-	-
	Malla d			PRESENT	X	X	X							X	X	X	-	-	-
	Mo led d ck			PRESENT	X	X	X	X	X	X	X	X	X	X	X	X	MAR-SEP	-	-
	No e pi ail			PRESENT	X	X	X						X	X	X	X	-	-	-
	No e s o ele			PRESENT	X	X	X	X					X	X	X	X	-	-	-
	Ri g- ecked d ck			PRESENT	X	X	X							X	X	X	-	-	-
646	Ame ica coo			4 TO 4 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Ame ica wigeo			TO 9 IND/SQ MI	X	X	X	X						X	X	X	-	-	-
	Bl e-wi ged eal			9 TO 1 IND/SQ MI	X	X	X	X	X				X	X	X	X	-	-	-
	Ca asback			UP TO IND/SQ MI	X	X	X								X	X	-	-	-
	Gadwall			46 TO 16 IND/SQ MI	X	X	X	X						X	X	X	-	-	-
	G ee -wi ged eal			TO 0 IND/SQ MI	X	X	X	X					X	X	X	X	-	-	-
	Hooded me ga se			UP TO 1 IND/SQ MI	X	X	X								X	X	-	-	-
	esse sca p			TO 10 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Malla d			TO 19 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Mo led d ck			TO 1 IND/SQ MI	X	X	X	X	X	X	X	X	X	X	X	X	MAR-SEP	-	-
	No e pi ail			1 TO 6 IND/SQ MI	X	X	X						X	X	X	X	-	-	-
	No e s o ele			6 TO 1 IND/SQ MI	X	X	X	X					X	X	X	X	-	-	-
	Ri g- ecked d ck			UP TO 14 IND/SQ MI	X	X	X							X	X	X	-	-	-
64	Ame ica coo			UP TO 0 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Ame ica wigeo			UP TO IND/SQ MI	X	X	X	X						X	X	X	-	-	-
	Bl e-wi ged eal			UP TO 10 IND/SQ MI	X	X	X	X	X	X			X	X	X	X	-	-	-
	Ca asback			PRESENT	X	X	X								X	X	-	-	-
	Gadwall			1 TO 1 IND/SQ MI	X	X	X	X						X	X	X	-	-	-
	G ee -wi ged eal			UP TO 46 IND/SQ MI	X	X	X	X					X	X	X	X	-	-	-
	Hooded me ga se			UP TO IND/SQ MI	X	X	X								X	X	-	-	-
	esse sca p			UP TO 6 IND/SQ MI	X	X	X							X	X	X	-	-	-

Biologi al i fo ma io show o he maps ep ese s k ow o e a io a eas o o u e es, bu does o e essa ily ep ese he full dis ibu io o a ge of ea h spe ies. This is pa i ula ly impo a o e og i e whe o side i g po e ial impa s o p o e ed spe ies.

Louisiana ESI: ESIMAP 94 (cont.)

BIOLOGICAL RESOURCES: (cont.)

BIRD:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Migrating	Molting
64	Malla d			UP TO IND/SQ MI	X	X	X							X	X	X	-	-	-
	Mo led d ck			TO 16 IND/SQ MI	X	X	X	X	X	X	X	X	X	X	X	X	MAR-SEP	-	-
	No e pi ail			UP TO 19 IND/SQ MI	X	X	X						X	X	X	X	-	-	-
	No e s o ele			1 TO 1 IND/SQ MI	X	X	X	X					X	X	X	X	-	-	-
	Ri g- ecked d ck			UP TO 4 IND/SQ MI	X	X	X							X	X	X	-	-	-
64	Fo s e 's e			6 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
66	G ea eg e			0 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	FEB-JU	-	-

FISH:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Eggs	Larvae	Juveniles	Adults
0	A la ic c oake											4	4	4			MAR-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	Bay a c o y																JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	Black d m																JAN-MAY	JAN-MAY	JAN-MAY	JAN-DEC	-
	C e alle ack																-	-	-	JAN-DEC	-
	Flo ida pompa o																MAY-AUG	MAY-AUG	MAY-AUG	JAN-DEC	-
	Gizza d s ad			4				4	4	4							MAR-SEP	MAR-SEP	MAR-SEP	JAN-DEC	-
	G ay s appe																-	-	-	JAN-DEC	-
	G l me ade																-	AUG-APR	AUG-APR	JAN-DEC	-
	Red d m			4						4	4	4					AUG-MAR	AUG-MAR	AUG-MAR	JAN-DEC	-
	Sa d sea o			4					4	4	4	4	4	4			FEB-OCT	FEB-OCT	FEB-OCT	JAN-DEC	-
	S eeps ead			4		4	4	4	4	4	4	4	4	4	4	4	-	-	JAN-JU	JAN-DEC	-
	Sil e pe c			4					4								MAR-OCT	MAR-OCT	MAR-OCT	JAN-DEC	-
	So e lo de			4					4	4	4	4	4	4	4		-	-	SEP-APR	JAN-DEC	-
	Spa is macke el																-	-	-	JAN-DEC	-
	Spo																OCT-APR	OCT-APR	OCT-APR	JAN-DEC	-
	Spo ed sea o			4					4	4	4	4		4			MAR-OCT	MAR-OCT	MAR-OCT	JAN-DEC	-
	S iped m lle			4	4	4	4	4	4	4	4	4	4	4	4	4	-	NOV-FEB	OCT-MAY	JAN-DEC	-
	Ta po																-	-	MAY-NOV	JAN-DEC	-

INVERTEBRATE:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Eggs	Larvae	Juveniles	Adults
0	Bay sq id			4	4	4	4	4	4	4	4	4	4	4	4	4	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	Bl e c ab				4	4									4		-	JAN-DEC	JAN-DEC	JAN-DEC	-
	B ow s imp				4								4	4			JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	G l s o e c ab																-	MAR-NOV	MAR-DEC	JAN-DEC	-
	Pi k s imp																-	-	APR-OCT	JAN-DEC	-
	W i e s imp														4		APR-NOV	APR-NOV	MAR-DEC	JAN-DEC	-

REPTILE:

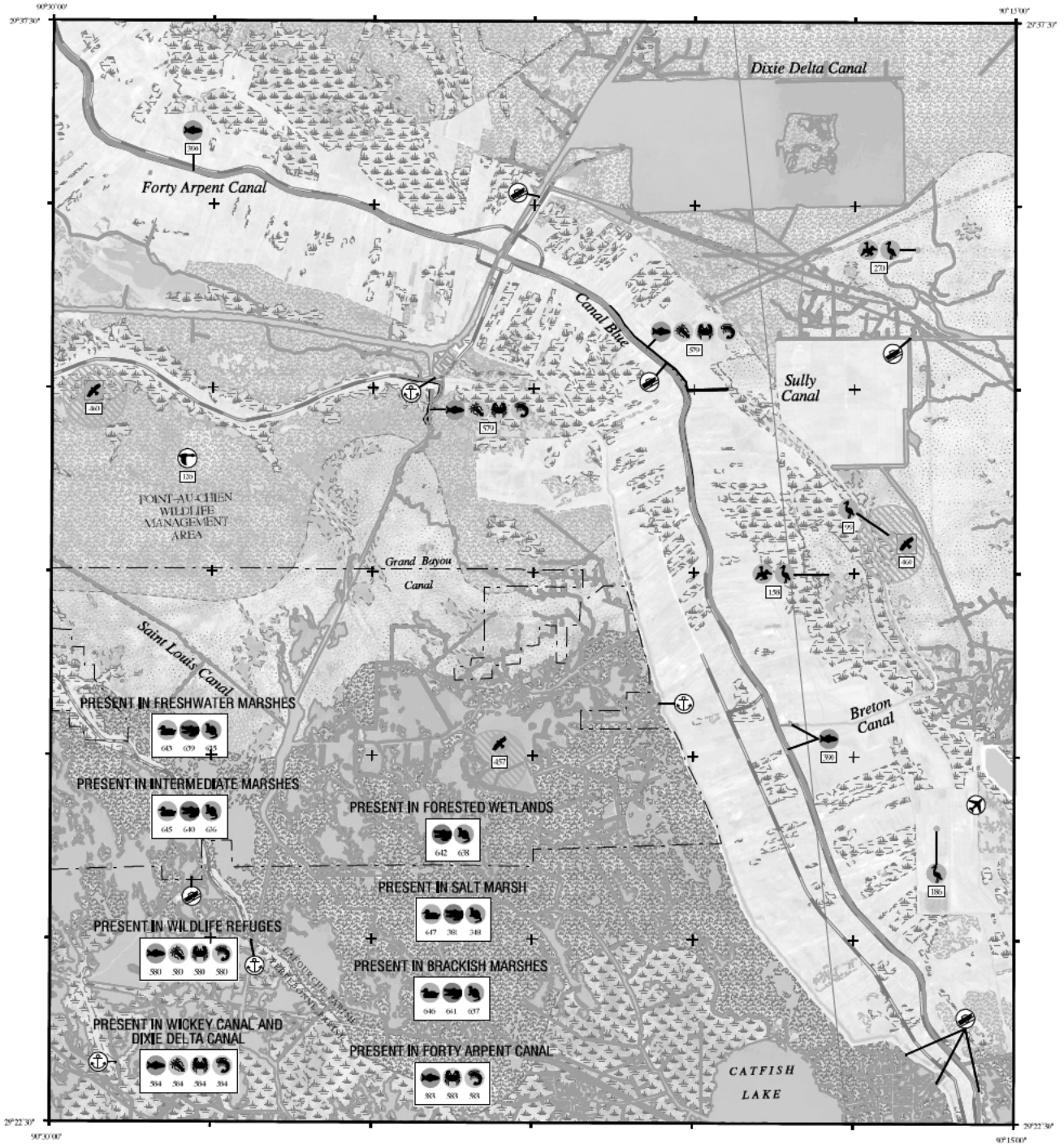
RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Hatching	Internesting	Juveniles	Adults
1	Ame ica alliga o			TRANSIENT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
641	Ame ica alliga o			TO 6 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X	JUN-AUG	AUG-SEP	-	JAN-DEC	JAN-DEC

TERRESTRIAL MAMMAL:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D
4	Commo accoo			RESIDENT	X	X	X	X	X	X	X	X	X	X	X	X
	Mi k			RESIDENT	X	X	X	X	X	X	X	X	X	X	X	X
	M sk a			RESIDENT	X	X	X	X	X	X	X	X	X	X	X	X
	No e i e o e			RESIDENT	X	X	X	X	X	X	X	X	X	X	X	X
	N ia			TRANSIENT	X	X	X	X	X	X	X	X	X	X	X	X
6	Commo accoo			6 TO 4 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	Mi k			466 TO 1 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	M sk a			9 TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	No e i e o e			TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	N ia			TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X

Biologi al i fo ma io show o he maps ep ese s k ow o e a io a eas o o u e es, bu does o e essa ily ep ese he full dis ibu io o a ge of ea h spe ies. This is pa i ula ly impo a o e og i e whe o side i g po e ial impa s o p o e ed spe ies.

ENVIRONMENTAL SENSITIVITY INDEX MAP



SHORELINE

1988 SHORELINE

2001 SHORELINE

NOTE FOR COASTAL MAPS:
Due to the dynamic nature of the Louisiana coastline, biological resources may represent historical locations that do not correspond with the depicted shoreline.

SHORELINE HABITATS (ESI)
2001 ESI Shoreline Classification

- 1B EXPOSED, SOLID MAN-MADE STRUCTURES
- 2A EXPOSED WAVE-CUT PLATFORMS IN CLAY
- 2B EXPOSED SCARPS AND STEEP SLOPES IN CLAY
- 3A FINE- TO MEDIUM-GRAINED SAND BEACHES
- 3B SCARPS AND STEEP SLOPES IN SAND
- 4 COARSE-GRAINED SAND BEACHES
- 5 MIXED SAND AND GRAVEL BEACHES
- 6A GRAVEL BEACHES
- 6B RIPRAP
- 7 EXPOSED TIDAL FLATS
- 8A SHELTERED ROCKY SHORES AND SHELTERED SCARPS IN MUD OR CLAY
- 8B SHELTERED, MAN-MADE STRUCTURES
- 8C SHELTERED RIPRAP
- 9A SHELTERED TIDAL FLATS
- 9B SHELTERED, VEGETATED LOW BANKS
- 10A SALT- AND BRACKISH-WATER MARSHES
- 10B FRESHWATER MARSHES
- 10C FRESHWATER SWAMPS
- 10D SCRUB-SHRUB WETLANDS

COASTAL HABITATS
Based on 1988 Digital Shoreline

- 10A SALT MARSH
- 10A BRACKISH MARSH
- 10A INTERMEDIATE MARSH
- 10B FRESHWATER MARSH
- 10C FORESTED WETLAND
- 10D SCRUB- SHRUB WETLAND
- SEAGRASS

SCALE 1:100000

Not For Navigation

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National Ocean Service
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Hazardous Materials Response Division

NEW ORLEANS LA-95

Louisiana ESI: ESIMAP 95

BIOLOGICAL RESOURCES:

BIRD:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Migrating	Molting
99	Ca le eg e			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG	-	-
	i le bl e e o			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	S owy eg e			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	W i e ibis			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG	-	-
1	A i ga			0 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUN	-	-
	Ca le eg e			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG	-	-
	G ea bl e e o			0 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	FEB-JU	-	-
	G ea eg e			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	FEB-JU	-	-
	i le bl e e o			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	S owy eg e			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
1 6	Ca le eg e			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG	-	-
	G ea eg e			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	FEB-JU	-	-
	i le bl e e o			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	S owy eg e			11 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	T icolo ed e o			4 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
0	A i ga			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUN	-	-
	G ea bl e e o			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	FEB-JU	-	-
	G ea eg e			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	FEB-JU	-	-
4	Ra e ap o				X	X	X	X	X	X	X	X	X	X	X	X	JAN-AUG	-	-
460	T ea e ed ap o		T		X	X	X	X	X	X	X	X	X	X	X	X	OCT-MAY	-	-
64	Ame ica coo			TO 1 IND/SQ MI	X	X	X						X	X	X		-	-	-
	Ame ica wigeo			1 TO 116 IND/SQ MI	X	X	X	X					X	X	X		-	-	-
	Bl e-wi ged eal			TO 0 IND/SQ MI	X	X	X	X	X			X	X	X	X		-	-	-
	Ca asback			UP TO 1 IND/SQ MI	X	X	X						X	X	X		-	-	-
	Gadwall			10 TO 4 IND/SQ MI	X	X	X	X					X	X	X		-	-	-
	G ee -wi ged eal			6 TO 6 IND/SQ MI	X	X	X	X				X	X	X	X		-	-	-
	Hooded me ga se			PRESENT	X	X	X							X	X		-	-	-
	esse sca p			UP TO 41 IND/SQ MI	X	X	X						X	X	X		-	-	-
	Malla d			0 TO 99 IND/SQ MI	X	X	X						X	X	X		-	-	-
	Mo led d ck			TO 1 IND/SQ MI	X	X	X	X	X	X	X	X	X	X	X	X	MAR-SEP	-	-
	No e pi ail			TO 0 IND/SQ MI	X	X	X					X	X	X	X		-	-	-
	No e s o ele			UP TO 4 IND/SQ MI	X	X	X	X				X	X	X	X		-	-	-
	Ri g- ecked d ck			UP TO 6 IND/SQ MI	X	X	X						X	X	X		-	-	-
64	Ame ica coo			TO 16 IND/SQ MI	X	X	X						X	X	X		-	-	-
	Ame ica wigeo			TO IND/SQ MI	X	X	X	X					X	X	X		-	-	-
	Bl e-wi ged eal			9 TO 4 IND/SQ MI	X	X	X	X	X			X	X	X	X		-	-	-
	Ca asback			UP TO 6 IND/SQ MI	X	X	X						X	X	X		-	-	-
	Gadwall			6 TO 40 IND/SQ MI	X	X	X	X					X	X	X		-	-	-
	G ee -wi ged eal			9 TO 144 IND/SQ MI	X	X	X	X				X	X	X	X		-	-	-
	Hooded me ga se			PRESENT	X	X	X							X	X		-	-	-
	esse sca p			TO IND/SQ MI	X	X	X						X	X	X		-	-	-
	Malla d			4 TO 66 IND/SQ MI	X	X	X						X	X	X		-	-	-
	Mo led d ck			TO 1 IND/SQ MI	X	X	X	X	X	X	X	X	X	X	X	X	MAR-SEP	-	-
	No e pi ail			UP TO 9 IND/SQ MI	X	X	X					X	X	X	X		-	-	-
	No e s o ele			4 TO 4 IND/SQ MI	X	X	X	X				X	X	X	X		-	-	-
	Ri g- ecked d ck			TO 6 IND/SQ MI	X	X	X						X	X	X		-	-	-
646	Ame ica coo			4 TO 4 IND/SQ MI	X	X	X						X	X	X		-	-	-
	Ame ica wigeo			TO 9 IND/SQ MI	X	X	X	X					X	X	X		-	-	-
	Bl e-wi ged eal			9 TO 1 IND/SQ MI	X	X	X	X	X			X	X	X	X		-	-	-
	Ca asback			UP TO IND/SQ MI	X	X	X						X	X	X		-	-	-
	Gadwall			46 TO 16 IND/SQ MI	X	X	X	X					X	X	X		-	-	-
	G ee -wi ged eal			TO 0 IND/SQ MI	X	X	X	X				X	X	X	X		-	-	-
	Hooded me ga se			UP TO 1 IND/SQ MI	X	X	X							X	X		-	-	-
	esse sca p			TO 10 IND/SQ MI	X	X	X						X	X	X		-	-	-
	Malla d			TO 19 IND/SQ MI	X	X	X						X	X	X		-	-	-
	Mo led d ck			TO 1 IND/SQ MI	X	X	X	X	X	X	X	X	X	X	X	X	MAR-SEP	-	-
	No e pi ail			1 TO 6 IND/SQ MI	X	X	X					X	X	X	X		-	-	-
	No e s o ele			6 TO 1 IND/SQ MI	X	X	X	X				X	X	X	X		-	-	-
	Ri g- ecked d ck			UP TO 14 IND/SQ MI	X	X	X						X	X	X		-	-	-
64	Ame ica coo			UP TO 0 IND/SQ MI	X	X	X						X	X	X		-	-	-
	Ame ica wigeo			UP TO IND/SQ MI	X	X	X	X					X	X	X		-	-	-
	Bl e-wi ged eal			UP TO 10 IND/SQ MI	X	X	X	X	X			X	X	X	X		-	-	-
	Ca asback			PRESENT	X	X	X							X	X		-	-	-
	Gadwall			1 TO 1 IND/SQ MI	X	X	X	X					X	X	X		-	-	-
	G ee -wi ged eal			UP TO 46 IND/SQ MI	X	X	X	X				X	X	X	X		-	-	-
	Hooded me ga se			UP TO IND/SQ MI	X	X	X							X	X		-	-	-
	esse sca p			UP TO 6 IND/SQ MI	X	X	X						X	X	X		-	-	-
	Malla d			UP TO IND/SQ MI	X	X	X						X	X	X		-	-	-
	Mo led d ck			TO 16 IND/SQ MI	X	X	X	X	X	X	X	X	X	X	X	X	MAR-SEP	-	-
	No e pi ail			UP TO 19 IND/SQ MI	X	X	X					X	X	X	X		-	-	-
	No e s o ele			1 TO 1 IND/SQ MI	X	X	X	X				X	X	X	X		-	-	-
	Ri g- ecked d ck			UP TO 4 IND/SQ MI	X	X	X						X	X	X		-	-	-

FISH:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Eggs	Larvae	Juveniles	Adults
90	a gemo bass			MED	X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
9	A la ic c oake											4	4	4	4		-	-	AUG-APR	JAN-DEC	-
	Bay a c o y																JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	Black d m																-	-	JAN-APR	JAN-DEC	-
	C e alle ack																-	-	-	JAN-DEC	-
	Gizza d s ad																MAR-SEP	MAR-SEP	MAR-SEP	JAN-DEC	-
	G l me ade																-	-	-	JAN-DEC	-
	Red d m																-	-	AUG-MAR	JAN-DEC	-
	Sa d sea o			4					4	4	4	4	4	4			-	-	-	JAN-DEC	-
	S eeps ead																-	-	-	JAN-DEC	-
	Sil e pe c			4					4								-	-	-	JAN-DEC	-
	So e lo de																-	-	-	JAN-DEC	-
	Spa is macke el																-	-	-	JAN-DEC	-
	Spo																-	-	-	JAN-DEC	-
	Spo ed sea o																-	-	-	JAN-DEC	-
	S iped m lle			4													-	-	-	JAN-DEC	-
	Ta po				4	4	4	4	4	4	4	4	4	4	4	4	-	-	-	JAN-DEC	-
0	A la ic c oake											4	4	4			MAR-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	Bay a c o y																JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	Black d m																JAN-MAY	JAN-MAY	JAN-MAY	JAN-DEC	-
	C e alle ack																-	-	-	JAN-DEC	-
	Flo ida pompa o																MAY-AUG	MAY-AUG	MAY-AUG	JAN-DEC	-
	Gizza d s ad			4				4	4	4							MAR-SEP	MAR-SEP	MAR-SEP	JAN-DEC	-
	G ay s appe																-	-	-	JAN-DEC	-
	G l me ade																-	AUG-APR	AUG-APR	JAN-DEC	-
	Red d m			4						4	4	4					AUG-MAR	AUG-MAR	AUG-MAR	JAN-DEC	-
	Sa d sea o			4					4	4	4	4	4	4			FEB-OCT	FEB-OCT	FEB-OCT	JAN-DEC	-
	S eeps ead			4	4	4	4	4	4	4	4	4	4	4	4	4	-	-	JAN-JU	JAN-DEC	-

Biologi al i fo ma io show o he maps ep ese s k ow o e a io a eas o o u e es, bu does o e essa ily ep ese he full dis ibu io o a ge of ea h spe ies. This is pa i ula ly impo a o e og i e whe o side i g po e ial impa s o p o e ed spe ies.

Louisiana ESI: ESIMAP 95 (cont.)

BIOLOGICAL RESOURCES: (cont.)

FISH:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Eggs	Larvae	Juveniles	Adults
0	Sil e pe c			4					4								MAR-OCT	MAR-OCT	MAR-OCT	JAN-DEC	-
	So e lo de			4					4	4	4	4	4	4	4		-	-	SEP-APR	JAN-DEC	-
	Spa is macke el																-	-	-	JAN-DEC	-
	Spo																OCT-APR	OCT-APR	OCT-APR	JAN-DEC	-
	Spo ed sea o			4					4	4	4	4		4			MAR-OCT	MAR-OCT	MAR-OCT	JAN-DEC	-
	S iped m lle			4	4	4	4	4	4	4	4	4	4	4	4	4	-	NOV-FEB	OCT-MAY	JAN-DEC	-
	Ta po																-	-	MAY-NOV	JAN-DEC	-
	A la ic c oake			4	4	4	4	4	4	4	4	4	4	4	4	4	-	-	-	JAN-DEC	-
	Bay a c o y			4	4	4	4	4	4	4	4	4	4	4	4	4	-	APR-OCT	APR-OCT	JAN-DEC	-
	Black d m																-	-	-	JAN-DEC	-
	C e alle ack																-	-	-	JAN-DEC	-
	Gizza d s ad																MAR-SEP	MAR-SEP	MAR-SEP	JAN-DEC	-
	G l me ade				4	4	4	4		4	4	4	4	4	4	4	-	-	-	JAN-DEC	-
	Red d m																-	-	-	JAN-DEC	-
	Sa d sea o			4					4	4	4	4	4	4			-	-	-	JAN-DEC	-
	S eeps ead																-	-	-	JAN-DEC	-
	Sil e pe c																-	-	-	JAN-DEC	-
	So e lo de																-	-	-	JAN-DEC	-
	Spo			4	4	4	4	4	4	4	4	4	4	4	4	4	-	-	-	JAN-DEC	-
	Spo ed sea o																-	-	-	JAN-DEC	-
	S iped m lle																-	-	-	JAN-DEC	-
	Ta po																-	-	-	JAN-DEC	-
4	A la ic c oake											4	4	4			MAR-DEC	MAR-DEC	JAN-DEC	JAN-DEC	-
	Bay a c o y																JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	Black d m																FEB-APR	-	FEB-APR	JAN-DEC	-
	C e alle ack																-	-	-	JAN-DEC	-
	Gizza d s ad			4				4	4	4							MAR-SEP	MAR-SEP	MAR-SEP	JAN-DEC	-
	G ay s appe																-	-	-	JAN-DEC	-
	G l me ade																-	-	-	JAN-DEC	-
	Red d m																AUG-DEC	-	AUG-MAR	JAN-DEC	-
	Sa d sea o			4					4	4	4	4	4	4			-	-	-	JAN-DEC	-
	S eeps ead			4				4	4	4	4	4	4	4	4		-	-	-	JAN-DEC	-
	Sil e pe c																MAY-SEP	MAY-SEP	MAY-SEP	JAN-DEC	-
	So e lo de			4					4	4	4	4	4	4	4		-	-	-	JAN-DEC	-
	Spa is macke el																-	-	-	JAN-DEC	-
	Spo																-	-	-	JAN-DEC	-
	Spo ed sea o																MAR-OCT	MAR-OCT	MAR-OCT	JAN-DEC	-
	S iped m lle			4	4	4	4	4	4	4	4	4	4	4	4	4	-	-	-	JAN-DEC	-
	Ta po																-	-	-	JAN-DEC	-

INVERTEBRATE:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Eggs	Larvae	Juveniles	Adults
9	Bay sq id																MAR-NOV	MAR-NOV	MAR-NOV	JAN-DEC	-
	Bl e c ab				4	4	4	4	4					4	4	4	-	JAN-DEC	JAN-DEC	JAN-DEC	-
	B ow s imp					4	4			4	4	4	4				-	-	JAN-DEC	JAN-DEC	-
	G l s o e c ab																-	-	-	JAN-DEC	-
	Pi k s imp																-	-	APR-OCT	JAN-DEC	-
	W i e s imp			4						4	4	4	4	4			-	-	MAY-DEC	JAN-DEC	-
0	Bay sq id			4	4	4	4	4	4	4	4	4	4	4	4	4	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	Bl e c ab				4	4									4		-	JAN-DEC	JAN-DEC	JAN-DEC	-
	B ow s imp				4							4	4				JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	G l s o e c ab																-	MAR-NOV	MAR-DEC	JAN-DEC	-
	Pi k s imp																-	-	APR-OCT	JAN-DEC	-
	W i e s imp															4	APR-NOV	APR-NOV	MAR-DEC	JAN-DEC	-
	Bl e c ab			4	4	4									4		-	-	-	JAN-DEC	-
	B ow s imp					4		4	4	4	4						-	-	-	JAN-DEC	-
	Pi k s imp																-	-	-	JAN-DEC	-
	W i e s imp			4					4	4	4						-	-	-	JAN-DEC	-
4	Bay sq id																MAR-DEC	MAR-DEC	MAR-DEC	JAN-DEC	-
	Bl e c ab				4	4									4		-	JAN-DEC	JAN-DEC	JAN-DEC	-
	B ow s imp					4							4	4			-	-	JAN-DEC	JAN-DEC	-
	G l s o e c ab																-	-	-	JAN-DEC	-
	Pi k s imp																-	-	APR-SEP	JAN-DEC	-
	W i e s imp					4									4		-	-	APR-DEC	JAN-DEC	-

REPTILE:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Hatching	Internesting	Juveniles	Adults
1	Ame ica alliga o			TRANSIENT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
6 9	Ame ica alliga o			661 TO 9 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X	JUN-AUG	AUG-SEP	-	JAN-DEC	JAN-DEC
640	Ame ica alliga o			9 TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X	JUN-AUG	AUG-SEP	-	JAN-DEC	JAN-DEC
641	Ame ica alliga o			TO 6 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X	JUN-AUG	AUG-SEP	-	JAN-DEC	JAN-DEC
64	Ame ica alliga o			1000 TO 0 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X	JUN-AUG	AUG-SEP	-	JAN-DEC	JAN-DEC

TERRESTRIAL MAMMAL:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D
4	Commo accoo			RESIDENT	X	X	X	X	X	X	X	X	X	X	X	X
	Mi k			RESIDENT	X	X	X	X	X	X	X	X	X	X	X	X
	M sk a			RESIDENT	X	X	X	X	X	X	X	X	X	X	X	X
	No e i e o e			RESIDENT	X	X	X	X	X	X	X	X	X	X	X	X
	N ia			TRANSIENT	X	X	X	X	X	X	X	X	X	X	X	X
6	Commo accoo			6 TO 4 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	Mi k			TO 1 9 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	M sk a			6 TO 1 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	No e i e o e			0 6 TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	N ia			TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
6 6	Commo accoo			TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	Mi k			9 TO 0 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	M sk a			99 TO 6 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	No e i e o e			1 TO 4 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	N ia			6 TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
6	Commo accoo			6 TO 4 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	Mi k			466 TO 1 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	M sk a			9 TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	No e i e o e			TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	N ia			TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
6	Commo accoo			TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	Mi k			96 TO 6 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	M sk a			196 TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	No e i e o e			TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	N ia			1 TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X

Biologi al i fo ma io show o he maps ep ese s k ow o e a io a eas o o u e es, bu does o e essa ily ep ese he full dis ibu io o a ge of ea h spe ies. This is pa i ula ly impo a o e og i e whe o side i g po e ial impa s o p o e ed spe ies.

Louisiana ESI: ESIMAP 95 (cont.)

BIOLOGICAL RESOURCES: (cont.)

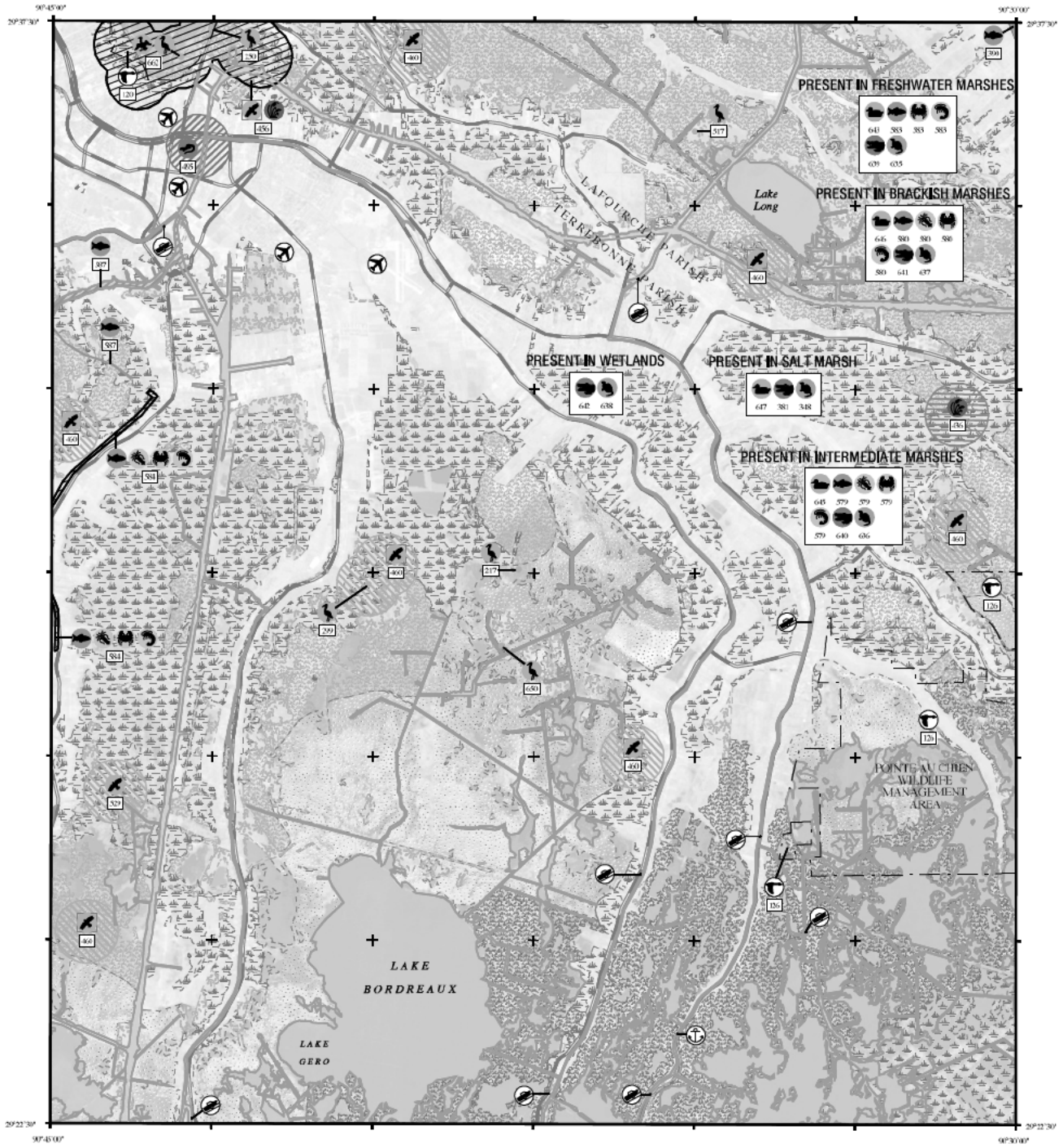
HUMAN USE RESOURCES:

WILDLIFE REFUGE:

HUN	Name	Owner	Contact	Phone
1 6	POINTE AU CHEIN WMA		DWF	

Biologi al i fo ma io show o he maps ep ese s k ow o e a io a eas o o u e es, bu does o e essa ily ep ese he full dis ibu io o a ge of ea h spe ies. This is pa i ula ly impo a o e og i e whe o side i g po e ial impa s o p o e ed spe ies.

ENVIRONMENTAL SENSITIVITY INDEX MAP



SHORELINE

1988 SHORELINE

2001 SHORELINE

NOTE FOR COASTAL MAPS:
Due to the dynamic nature of the Louisiana coastline, biological resources may represent historical locations that do not correspond with the depicted shoreline.

SHORELINE HABITATS (ESI)
2001 ESI Shoreline Classification

- 1B EXPOSED, SOLID MAN-MADE STRUCTURES
- 2A EXPOSED WAVE-CUT PLATFORMS IN CLAY
  2B EXPOSED SCARPS AND STEEP SLOPES IN CLAY
- 3A FINE- TO MEDIUM-GRAINED SAND BEACHES
  3B SCARPS AND STEEP SLOPES IN SAND
- 4 COARSE-GRAINED SAND BEACHES
- 5 MIXED SAND AND GRAVEL BEACHES
- 6A GRAVEL BEACHES
- 6B RIPRAP
- 7 EXPOSED TIDAL FLATS
- 8A SHELTERED ROCKY SHORES AND SHELTERED SCARPS IN MUD OR CLAY
- 8B SHELTERED, MAN-MADE STRUCTURES
- 8C SHELTERED RIPRAP
- 9A SHELTERED TIDAL FLATS
  9B SHELTERED, VEGETATED LOW BANKS
- 10A SALT- AND BRACKISH-WATER MARSHES
- 10B FRESHWATER MARSHES
- 10C FRESHWATER SWAMPS
- 10D SCRUB-SHRUB WETLANDS

COASTAL HABITATS
Based on 1988 Digital Shoreline

- 10A SALT MARSH
- 10A BRACKISH MARSH
- 10A INTERMEDIATE MARSH
- 10B FRESHWATER MARSH
- 10C FORESTED WETLAND
- 10D SCRUB- SHRUB WETLAND
- SEAGRASS

SCALE 1:100000

Not For Navigation

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National Ocean Service
Office of Response and Restoration
Hazardous Materials Response Division

NEW ORLEANS LA-104

Louisiana ESI: ESIMAP 104

BIOLOGICAL RESOURCES:

BIRD:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Migrating	Molting
1	Ca le eg e			16 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG	-	-
	G ea bl e e o			14 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	FEB-JU	-	-
	G ea eg e			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	FEB-JU	-	-
	i le bl e e o			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	S owy eg e			40 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	T icolo ed e o			96 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	W i e ibis			16 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG	-	-
	W i e- aced o Glossy ibis			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG	-	-
0	Ca le eg e			0 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG	-	-
	i le bl e e o			6 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	S owy eg e			6 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	T icolo ed e o			0 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	W i e ibis			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG	-	-
	W i e- aced o Glossy ibis			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG	-	-
99	Ca le eg e			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG	-	-
	G ea eg e			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	FEB-JU	-	-
	i le bl e e o			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	S owy eg e			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	W i e- aced o Glossy ibis			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG	-	-
4 6	T ea e ed ap o	T			X	X	X	X	X	X	X	X	X	X	X	X	OCT-MAY	-	-
460	T ea e ed ap o	T			X	X	X	X	X	X	X	X	X	X	X	X	OCT-MAY	-	-
1	Ca le eg e			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG	-	-
	i le bl e e o			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	S owy eg e			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	W i e ibis			IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG	-	-
9	Ra e ap o				X	X	X	X	X	X	X	X	X	X	X	X	APR-JU	-	-
64	Ame ica coo			TO 1 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Ame ica wigeo			1 TO 116 IND/SQ MI	X	X	X	X						X	X	X	-	-	-
	Bl e-wi ged eal			TO 0 IND/SQ MI	X	X	X	X	X				X	X	X	X	-	-	-
	Ca asback			UP TO 1 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Gadwall			10 TO 4 IND/SQ MI	X	X	X	X						X	X	X	-	-	-
	G ee -wi ged eal			6 TO 6 IND/SQ MI	X	X	X	X					X	X	X	X	-	-	-
	Hooded me ga se			PRESENT	X	X	X							X	X	X	-	-	-
	esse sca p			UP TO 41 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Malla d			0 TO 99 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Mo led d ck			TO 1 IND/SQ MI	X	X	X	X	X	X	X	X	X	X	X	X	MAR-SEP	-	-
	No e pi ail			TO 0 IND/SQ MI	X	X	X						X	X	X	X	-	-	-
	No e s o ele			UP TO 4 IND/SQ MI	X	X	X	X					X	X	X	X	-	-	-
	Ri g- ecked d ck			UP TO 6 IND/SQ MI	X	X	X							X	X	X	-	-	-
64	Ame ica coo			TO 16 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Ame ica wigeo			TO IND/SQ MI	X	X	X	X						X	X	X	-	-	-
	Bl e-wi ged eal			9 TO 4 IND/SQ MI	X	X	X	X	X				X	X	X	X	-	-	-
	Ca asback			UP TO 6 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Gadwall			6 TO 40 IND/SQ MI	X	X	X	X						X	X	X	-	-	-
	G ee -wi ged eal			9 TO 144 IND/SQ MI	X	X	X	X					X	X	X	X	-	-	-
	Hooded me ga se			PRESENT	X	X	X							X	X	X	-	-	-
	esse sca p			TO IND/SQ MI	X	X	X							X	X	X	-	-	-
	Malla d			4 TO 66 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Mo led d ck			TO 1 IND/SQ MI	X	X	X	X	X	X	X	X	X	X	X	X	MAR-SEP	-	-
	No e pi ail			UP TO 9 IND/SQ MI	X	X	X						X	X	X	X	-	-	-
	No e s o ele			4 TO 4 IND/SQ MI	X	X	X	X					X	X	X	X	-	-	-
	Ri g- ecked d ck			TO 6 IND/SQ MI	X	X	X							X	X	X	-	-	-
646	Ame ica coo			4 TO 4 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Ame ica wigeo			TO 9 IND/SQ MI	X	X	X	X						X	X	X	-	-	-
	Bl e-wi ged eal			9 TO 1 IND/SQ MI	X	X	X	X	X				X	X	X	X	-	-	-
	Ca asback			UP TO IND/SQ MI	X	X	X							X	X	X	-	-	-
	Gadwall			46 TO 16 IND/SQ MI	X	X	X	X						X	X	X	-	-	-
	G ee -wi ged eal			TO 0 IND/SQ MI	X	X	X	X					X	X	X	X	-	-	-
	Hooded me ga se			UP TO 1 IND/SQ MI	X	X	X							X	X	X	-	-	-
	esse sca p			TO 10 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Malla d			TO 19 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Mo led d ck			TO 1 IND/SQ MI	X	X	X	X	X	X	X	X	X	X	X	X	MAR-SEP	-	-
	No e pi ail			1 TO 6 IND/SQ MI	X	X	X						X	X	X	X	-	-	-
	No e s o ele			6 TO 1 IND/SQ MI	X	X	X	X					X	X	X	X	-	-	-
	Ri g- ecked d ck			UP TO 14 IND/SQ MI	X	X	X							X	X	X	-	-	-
64	Ame ica coo			UP TO 0 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Ame ica wigeo			UP TO IND/SQ MI	X	X	X	X						X	X	X	-	-	-
	Bl e-wi ged eal			UP TO 10 IND/SQ MI	X	X	X	X	X				X	X	X	X	-	-	-
	Ca asback			PRESENT	X	X	X							X	X	X	-	-	-
	Gadwall			1 TO 1 IND/SQ MI	X	X	X	X						X	X	X	-	-	-
	G ee -wi ged eal			UP TO 46 IND/SQ MI	X	X	X	X					X	X	X	X	-	-	-
	Hooded me ga se			UP TO IND/SQ MI	X	X	X							X	X	X	-	-	-
	esse sca p			UP TO 6 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Malla d			UP TO IND/SQ MI	X	X	X							X	X	X	-	-	-
	Mo led d ck			TO 16 IND/SQ MI	X	X	X	X	X	X	X	X	X	X	X	X	MAR-SEP	-	-
	No e pi ail			UP TO 19 IND/SQ MI	X	X	X						X	X	X	X	-	-	-
	No e s o ele			1 TO 1 IND/SQ MI	X	X	X	X					X	X	X	X	-	-	-
	Ri g- ecked d ck			UP TO 4 IND/SQ MI	X	X	X							X	X	X	-	-	-
6 0	Ca le eg e			0 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG	-	-
	G ea eg e			4 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	FEB-JU	-	-
	S owy eg e			49 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	T icolo ed e o			4 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	W i e- aced o Glossy ibis			11 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG	-	-
66	A i ga			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JUN	-	-
	Ca le eg e			6 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG	-	-
	G ea eg e			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	FEB-JU	-	-
	i le bl e e o			4 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	Rosea e spoo bill			0 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-JU	-	-
	S owy eg e			0 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	T icolo ed e o			6 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	MAR-JU	-	-
	W i e ibis			1 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG	-	-
	W i e- aced o Glossy ibis			9 IND 90-99AV)	X	X	X	X	X	X	X	X	X	X	X	X	APR-AUG	-	-

FISH:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Eggs	Larvae	Juveniles	Adults
90	a gemo bass			MED	X	X	X	X	X	X	X	X	X	X	X	X	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
9	A la ic c oake											4	4	4	4		-	-	AUG-APR	JAN-DEC	-
	Bay a c o y																JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	Black d m																-	-	JAN-APR	JAN-DEC	-
	C e alle ack																-	-	-	JAN-DEC	-
	Gizza d s ad																MAR-SEP	MAR-SEP	MAR-SEP	JAN-DEC	-
	G l me ade																-	-	-	JAN-DEC	-
	Red d m																-	-	AUG-MAR	JAN-DEC	-

Biologi al i fo ma io show o he maps ep ese s k ow o e a io a eas o o u e es, bu does o e essa ily ep ese he full dis ibu io o a ge of ea h spe ies. This is pa i ula ly impo a o e og i e whe o side i g po e ial impa s o p o e ed spe ies.

Louisiana ESI: ESIMAP 104 (cont.)

BIOLOGICAL RESOURCES: (cont.)

FISH:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Eggs	Larvae	Juveniles	Adults
9	Sa d sea o			4					4	4	4	4	4	4			-	-	-	JAN-DEC	-
	S eeps ead																-	-	-	JAN-DEC	-
	Sil e pe c			4					4								-	-	-	JAN-DEC	-
	So e lo de																-	-	-	JAN-DEC	-
	Spa is macke el																-	-	-	JAN-DEC	-
	Spo																-	-	-	JAN-DEC	-
	Spo ed sea o																-	-	-	JAN-DEC	-
	S iped m lle			4	4	4	4	4	4	4	4	4	4	4		4	-	-	-	JAN-DEC	-
	Ta po																-	-	-	JAN-DEC	-
0	A la ic c oake											4	4	4			MAR-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	Bay a c o y																JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	Black d m																JAN-MAY	JAN-MAY	JAN-MAY	JAN-DEC	-
	C e alle ack																-	-	-	JAN-DEC	-
	Flo ida pompa o																MAY-AUG	MAY-AUG	MAY-AUG	JAN-DEC	-
	Gizza d s ad			4				4	4	4							MAR-SEP	MAR-SEP	MAR-SEP	JAN-DEC	-
	G ay s appe																-	-	-	JAN-DEC	-
	G l me ade																-	AUG-APR	AUG-APR	JAN-DEC	-
	Red d m			4						4	4	4					AUG-MAR	AUG-MAR	AUG-MAR	JAN-DEC	-
	Sa d sea o			4					4	4	4	4	4	4			FEB-OCT	FEB-OCT	FEB-OCT	JAN-DEC	-
	S eeps ead			4	4	4	4	4	4	4	4	4	4	4	4		-	-	JAN-JU	JAN-DEC	-
	Sil e pe c			4					4								MAR-OCT	MAR-OCT	MAR-OCT	JAN-DEC	-
	So e lo de			4					4	4	4	4	4	4			-	-	SEP-APR	JAN-DEC	-
	Spa is macke el																-	-	-	JAN-DEC	-
	Spo																OCT-APR	OCT-APR	OCT-APR	JAN-DEC	-
	Spo ed sea o			4					4	4	4	4		4			MAR-OCT	MAR-OCT	MAR-OCT	JAN-DEC	-
	S iped m lle			4	4	4	4	4	4	4	4	4	4	4	4		-	NOV-FEB	OCT-MAY	JAN-DEC	-
	Ta po																-	-	MAY-NOV	JAN-DEC	-
	A la ic c oake			4	4	4	4	4	4	4	4	4	4	4	4		-	-	-	JAN-DEC	-
	Bay a c o y			4	4	4	4	4	4	4	4	4	4	4	4		-	APR-OCT	APR-OCT	JAN-DEC	-
	Black d m																-	-	-	JAN-DEC	-
	C e alle ack																-	-	-	JAN-DEC	-
	Gizza d s ad																MAR-SEP	MAR-SEP	MAR-SEP	JAN-DEC	-
	G l me ade				4	4	4	4		4	4	4	4	4	4		-	-	-	JAN-DEC	-
	Red d m																-	-	-	JAN-DEC	-
	Sa d sea o			4					4	4	4	4	4	4			-	-	-	JAN-DEC	-
	S eeps ead																-	-	-	JAN-DEC	-
	Sil e pe c																-	-	-	JAN-DEC	-
	So e lo de																-	-	-	JAN-DEC	-
	Spo			4	4	4	4	4	4	4	4	4	4	4	4		-	-	-	JAN-DEC	-
	Spo ed sea o																-	-	-	JAN-DEC	-
	S iped m lle																-	-	-	JAN-DEC	-
	Ta po																-	-	-	JAN-DEC	-
4	A la ic c oake											4	4	4			MAR-DEC	MAR-DEC	JAN-DEC	JAN-DEC	-
	Bay a c o y																JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	Black d m																FEB-APR	-	FEB-APR	JAN-DEC	-
	C e alle ack																-	-	-	JAN-DEC	-
	Gizza d s ad			4				4	4	4							MAR-SEP	MAR-SEP	MAR-SEP	JAN-DEC	-
	G ay s appe																-	-	-	JAN-DEC	-
	G l me ade																-	-	-	JAN-DEC	-
	Red d m																AUG-DEC	-	AUG-MAR	JAN-DEC	-
	Sa d sea o			4					4	4	4	4	4	4			-	-	-	JAN-DEC	-
	S eeps ead			4				4	4	4	4	4	4	4	4		-	-	-	JAN-DEC	-
	Sil e pe c																MAY-SEP	MAY-SEP	MAY-SEP	JAN-DEC	-
	So e lo de			4					4	4	4	4	4	4	4		-	-	-	JAN-DEC	-
	Spa is macke el																-	-	-	JAN-DEC	-
	Spo																-	-	-	JAN-DEC	-
	Spo ed sea o																MAR-OCT	MAR-OCT	MAR-OCT	JAN-DEC	-
	S iped m lle			4	4	4	4	4	4	4	4	4	4	4	4	4	-	-	-	JAN-DEC	-
	Ta po																-	-	-	JAN-DEC	-
	Bay a c o y																-	APR-OCT	APR-OCT	-	-
	Gizza d s ad																MAR-SEP	MAR-SEP	MAR-SEP	JAN-DEC	-
	G l me ade			4	4	4	4	4	4	4	4	4	4	4	4	4	-	-	-	JAN-DEC	-
	So e lo de																-	-	-	JAN-DEC	-
	S iped m lle																-	-	-	JAN-DEC	-

HABITAT:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D
4 6	Ra e pla				X	X	X	X	X	X	X	X	X	X	X	X
4 6	Ra e pla				X	X	X	X	X	X	X	X	X	X	X	X

INVERTEBRATE:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Eggs	Larvae	Juveniles	Adults
9	Bay sq id																MAR-NOV	MAR-NOV	MAR-NOV	JAN-DEC	-
	Bl e c ab				4	4	4	4	4					4	4	4	-	JAN-DEC	JAN-DEC	JAN-DEC	-
	B ow s imp					4	4			4	4	4	4				-	-	JAN-DEC	JAN-DEC	-
	G l s o e c ab																-	-	-	JAN-DEC	-
	Pi k s imp																-	-	APR-OCT	JAN-DEC	-
	W i e s imp			4						4	4	4	4	4	4		-	-	MAY-DEC	JAN-DEC	-
0	Bay sq id			4	4	4	4	4	4	4	4	4	4	4	4	4	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	Bl e c ab				4	4									4		-	JAN-DEC	JAN-DEC	JAN-DEC	-
	B ow s imp				4							4	4				JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	G l s o e c ab																-	MAR-NOV	MAR-DEC	JAN-DEC	-
	Pi k s imp																-	-	APR-OCT	JAN-DEC	-
	W i e s imp															4	APR-NOV	APR-NOV	MAR-DEC	JAN-DEC	-
	Bl e c ab			4	4	4									4		-	-	-	JAN-DEC	-
	B ow s imp					4		4	4	4	4						-	-	-	JAN-DEC	-
	Pi k s imp																-	-	-	JAN-DEC	-
	W i e s imp			4					4	4	4						-	-	-	JAN-DEC	-
4	Bay sq id																MAR-DEC	MAR-DEC	MAR-DEC	JAN-DEC	-
	Bl e c ab				4	4									4		-	JAN-DEC	JAN-DEC	JAN-DEC	-
	B ow s imp					4							4	4			-	-	JAN-DEC	JAN-DEC	-
	G l s o e c ab																-	-	-	JAN-DEC	-
	Pi k s imp																-	-	APR-SEP	JAN-DEC	-
	W i e s imp					4									4		-	-	APR-DEC	JAN-DEC	-

REPTILE:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Hatching	Internesting	Juveniles	Adults
1	Ame ica alliga o			TRANSIENT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
49	Ra e liza d				X	X	X	X	X	X	X	X	X	X	X	X	-	-	JAN-DEC	-	-
6 9	Ame ica alliga o			661 TO 9 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X	JUN-AUG	AUG-SEP	-	JAN-DEC	JAN-DEC

Biologi al i fo ma io show o he maps ep ese s k ow o e a io a eas o o u e es, bu does o e essa ily ep ese he full dis ibu io o a ge of ea h spe ies. This is pa i ula ly impo a o e og i e whe o side i g po e ial impa s o p o e ed spe ies.

Louisiana ESI: ESIMAP 104 (cont.)

BIOLOGICAL RESOURCES: (cont.)

REPTILE:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Hatching	Internesting	Juveniles	Adults
640	Ame ica alliga o			9 TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X	JUN-AUG	AUG-SEP	-	JAN-DEC	JAN-DEC
641	Ame ica alliga o			TO 6 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X	JUN-AUG	AUG-SEP	-	JAN-DEC	JAN-DEC
64	Ame ica alliga o			1000 TO 0 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X	JUN-AUG	AUG-SEP	-	JAN-DEC	JAN-DEC

TERRESTRIAL MAMMAL:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D
4	Commo accoo			RESIDENT	X	X	X	X	X	X	X	X	X	X	X	X
	Mi k			RESIDENT	X	X	X	X	X	X	X	X	X	X	X	X
	M sk a			RESIDENT	X	X	X	X	X	X	X	X	X	X	X	X
	No e i e o e			RESIDENT	X	X	X	X	X	X	X	X	X	X	X	X
	N ia			TRANSIENT	X	X	X	X	X	X	X	X	X	X	X	X
6	Commo accoo			6 TO 4 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	Mi k			TO 1 9 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	M sk a			6 TO 1 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	No e i e o e			0 6 TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	N ia			TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
6 6	Commo accoo			TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	Mi k			9 TO 0 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	M sk a			99 TO 6 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	No e i e o e			1 TO 4 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	N ia			6 TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
6	Commo accoo			6 TO 4 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	Mi k			466 TO 1 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	M sk a			9 TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	No e i e o e			TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	N ia			TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
6	Commo accoo			TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	Mi k			96 TO 6 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	M sk a			196 TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	No e i e o e			TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	N ia			1 TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X

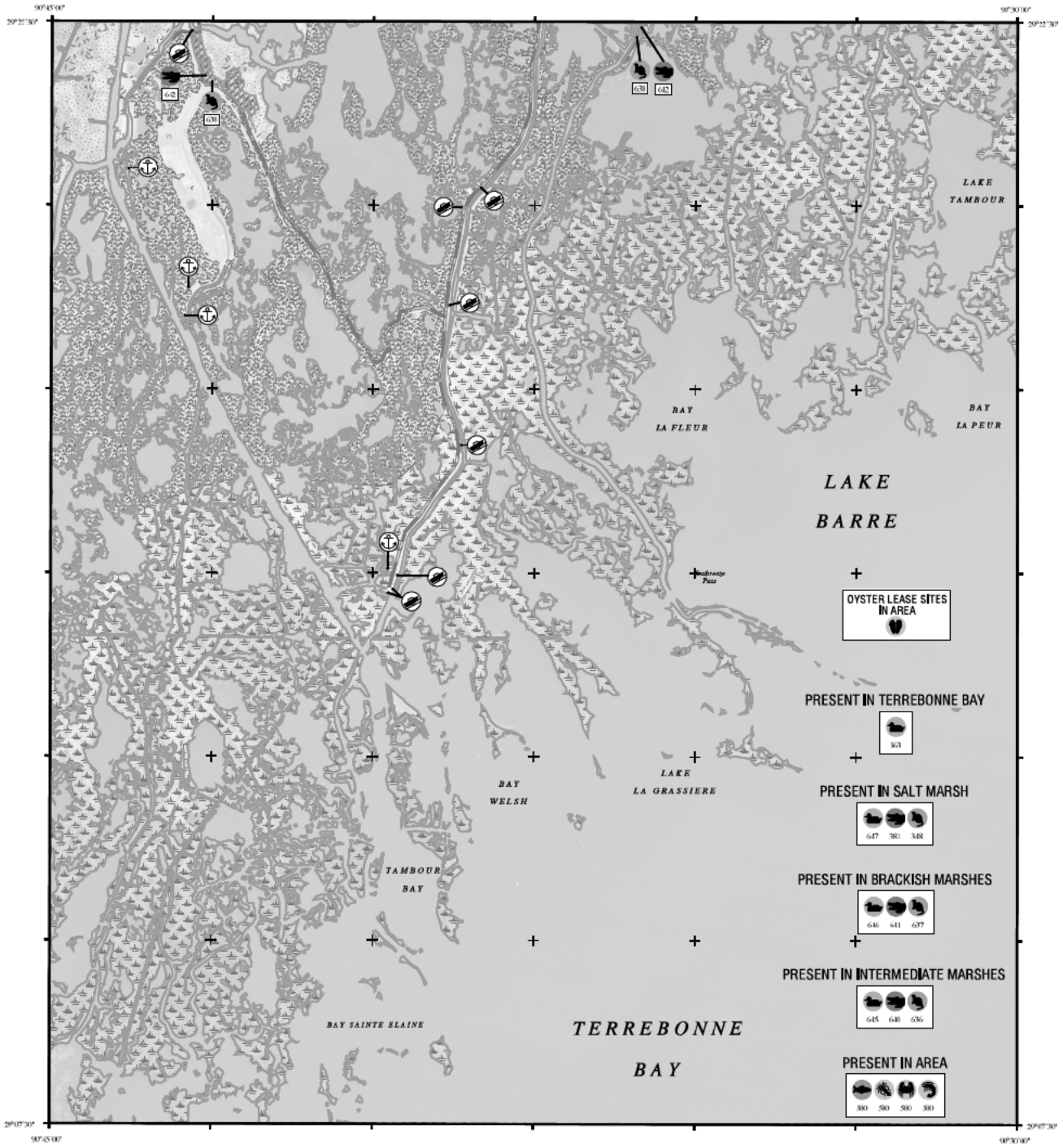
HUMAN USE RESOURCES:

WILDLIFE REFUGE:

HUN	Name	Owner	Contact	Phone
1 0	MANDA AY NWR		USFWS	
1 6	POINTE AU CHEIN WMA		DWF	

Biologi al i fo ma io show o he maps ep ese s k ow o e a io a eas o o u e es, bu does o e essa ily ep ese he full dis ibu io o a ge of ea h spe ies. This is pa i ula ly impo a o e og i e whe o side i g po e ial impa s o p o e ed spe ies.

ENVIRONMENTAL SENSITIVITY INDEX MAP



SHORELINE

1988 SHORELINE
2001 SHORELINE

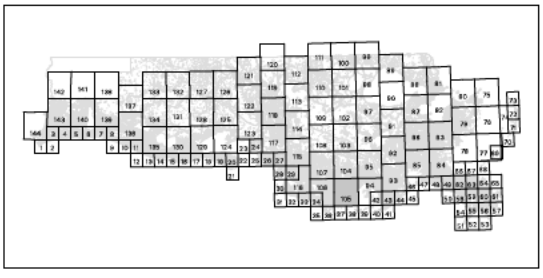
NOTE FOR COASTAL MAPS:
Due to the dynamic nature of the Louisiana coastline, biological resources may represent historical locations that do not correspond with the depicted shoreline.

SHORELINE HABITATS (ESI)
2001 ESI Shoreline Classification

- 1B EXPOSED, SOLID MAN-MADE STRUCTURES
- 2A EXPOSED WAVE-CUT PLATFORMS IN CLAY
  2B EXPOSED SCARPS AND STEEP SLOPES IN CLAY
- 3A FINE- TO MEDIUM-GRAINED SAND BEACHES
  3B SCARPS AND STEEP SLOPES IN SAND
- 4 COARSE-GRAINED SAND BEACHES
- 5 MIXED SAND AND GRAVEL BEACHES
- 6A GRAVEL BEACHES
- 6B RIPRAP
- 7 EXPOSED TIDAL FLATS
- 8A SHELTERED ROCKY SHORES AND SHELTERED SCARPS IN MUD OR CLAY
- 8B SHELTERED, MAN-MADE STRUCTURES
- 8C SHELTERED RIPRAP
- 9A SHELTERED TIDAL FLATS
  9B SHELTERED, VEGETATED LOW BANKS
- 10A SALT- AND BRACKISH-WATER MARSHES
- 10B FRESHWATER MARSHES
- 10C FRESHWATER SWAMPS
- 10D SCRUB-SHRUB WETLANDS

COASTAL HABITATS
Based on 1988 Digital Shoreline

- 10A SALT MARSH
- 10A BRACKISH MARSH
- 10A INTERMEDIATE MARSH
- 10B FRESHWATER MARSH
- 10C FORESTED WETLAND
- 10D SCRUB- SHRUB WETLAND
- SEAGRASS



SCALE 1:100000

Not For Navigation

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National Ocean Service
Office of Response and Restoration
Hazardous Materials Response Division

TERREBONNE BAY **LA-105**

Louisiana ESI: ESIMAP 105

BIOLOGICAL RESOURCES:

BIRD:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Migrating	Molting
6	esse sca p			94 IND/SQ MI	X	X	X							X	X	X	-	-	-
64	Ame ica coo			TO 16 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Ame ica wigeo			TO IND/SQ MI	X	X	X	X						X	X	X	-	-	-
	Bl e-wi ged eal			9 TO 4 IND/SQ MI	X	X	X	X	X				X	X	X	X	-	-	-
	Ca asback			UP TO 6 IND/SQ MI	X	X	X								X	X	-	-	-
	Gadwall			6 TO 40 IND/SQ MI	X	X	X	X						X	X	X	-	-	-
	G ee -wi ged eal			9 TO 144 IND/SQ MI	X	X	X	X					X	X	X	X	-	-	-
	Hooded me ga se			PRESENT	X	X	X								X	X	-	-	-
	esse sca p			TO IND/SQ MI	X	X	X							X	X	X	-	-	-
	Malla d			4 TO 66 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Mo led d ck			TO 1 IND/SQ MI	X	X	X	X	X	X	X	X	X	X	X	X	MAR-SEP	-	-
	No e pi ail			UP TO 9 IND/SQ MI	X	X	X						X	X	X	X	-	-	-
	No e s o ele			4 TO 4 IND/SQ MI	X	X	X	X					X	X	X	X	-	-	-
	Ri g- ecked d ck			TO 6 IND/SQ MI	X	X	X							X	X	X	-	-	-
646	Ame ica coo			4 TO 4 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Ame ica wigeo			TO 9 IND/SQ MI	X	X	X	X						X	X	X	-	-	-
	Bl e-wi ged eal			9 TO 1 IND/SQ MI	X	X	X	X	X				X	X	X	X	-	-	-
	Ca asback			UP TO IND/SQ MI	X	X	X								X	X	-	-	-
	Gadwall			46 TO 16 IND/SQ MI	X	X	X	X						X	X	X	-	-	-
	G ee -wi ged eal			TO 0 IND/SQ MI	X	X	X	X					X	X	X	X	-	-	-
	Hooded me ga se			UP TO 1 IND/SQ MI	X	X	X								X	X	-	-	-
	esse sca p			TO 10 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Malla d			TO 19 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Mo led d ck			TO 1 IND/SQ MI	X	X	X	X	X	X	X	X	X	X	X	X	MAR-SEP	-	-
	No e pi ail			1 TO 6 IND/SQ MI	X	X	X						X	X	X	X	-	-	-
	No e s o ele			6 TO 1 IND/SQ MI	X	X	X	X					X	X	X	X	-	-	-
	Ri g- ecked d ck			UP TO 14 IND/SQ MI	X	X	X							X	X	X	-	-	-
64	Ame ica coo			UP TO 0 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Ame ica wigeo			UP TO IND/SQ MI	X	X	X	X						X	X	X	-	-	-
	Bl e-wi ged eal			UP TO 10 IND/SQ MI	X	X	X	X	X				X	X	X	X	-	-	-
	Ca asback			PRESENT	X	X	X								X	X	-	-	-
	Gadwall			1 TO 1 IND/SQ MI	X	X	X	X						X	X	X	-	-	-
	G ee -wi ged eal			UP TO 46 IND/SQ MI	X	X	X	X					X	X	X	X	-	-	-
	Hooded me ga se			UP TO IND/SQ MI	X	X	X								X	X	-	-	-
	esse sca p			UP TO 6 IND/SQ MI	X	X	X							X	X	X	-	-	-
	Malla d			UP TO IND/SQ MI	X	X	X							X	X	X	-	-	-
	Mo led d ck			TO 16 IND/SQ MI	X	X	X	X	X	X	X	X	X	X	X	X	MAR-SEP	-	-
	No e pi ail			UP TO 19 IND/SQ MI	X	X	X						X	X	X	X	-	-	-
	No e s o ele			1 TO 1 IND/SQ MI	X	X	X	X					X	X	X	X	-	-	-
	Ri g- ecked d ck			UP TO 4 IND/SQ MI	X	X	X							X	X	X	-	-	-

FISH:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Eggs	Larvae	Juveniles	Adults
0	A la ic c oake											4	4	4			MAR-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	Bay a c o y																JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	Black d m																JAN-MAY	JAN-MAY	JAN-MAY	JAN-DEC	-
	C e alle ack																-	-	-	JAN-DEC	-
	Flo ida pompa o																MAY-AUG	MAY-AUG	MAY-AUG	JAN-DEC	-
	Gizza d s ad			4				4	4	4							MAR-SEP	MAR-SEP	MAR-SEP	JAN-DEC	-
	G ay s appe																-	-	-	JAN-DEC	-
	G l me ade																-	AUG-APR	AUG-APR	JAN-DEC	-
	Red d m			4						4	4	4					AUG-MAR	AUG-MAR	AUG-MAR	JAN-DEC	-
	Sa d sea o			4					4	4	4	4	4	4			FEB-OCT	FEB-OCT	FEB-OCT	JAN-DEC	-
	S eeps ead			4	4	4	4	4	4	4	4	4	4	4	4	4	-	-	JAN-JU	JAN-DEC	-
	Sil e pe c			4					4								MAR-OCT	MAR-OCT	MAR-OCT	JAN-DEC	-
	So e lo de			4					4	4	4	4	4	4	4		-	-	SEP-APR	JAN-DEC	-
	Spa is macke el																-	-	-	JAN-DEC	-
	Spo																OCT-APR	OCT-APR	OCT-APR	JAN-DEC	-
	Spo ed sea o			4					4	4	4	4		4			MAR-OCT	MAR-OCT	MAR-OCT	JAN-DEC	-
	S iped m lle			4	4	4	4	4	4	4	4	4	4	4	4	4	-	NOV-FEB	OCT-MAY	JAN-DEC	-
	Ta po																-	-	MAY-NOV	JAN-DEC	-

INVERTEBRATE:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Eggs	Larvae	Juveniles	Adults
0	Bay sq id			4	4	4	4	4	4	4	4	4	4	4	4	4	JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	Bl e c ab				4	4									4		-	JAN-DEC	JAN-DEC	JAN-DEC	-
	B ow s imp				4									4	4		JAN-DEC	JAN-DEC	JAN-DEC	JAN-DEC	-
	G l s o e c ab																-	MAR-NOV	MAR-DEC	JAN-DEC	-
	Pi k s imp																-	-	APR-OCT	JAN-DEC	-
	W i e s imp															4	APR-NOV	APR-NOV	MAR-DEC	JAN-DEC	-

REPTILE:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Hatching	Internesting	Juveniles	Adults
1	Ame ica alliga o			TRANSIENT	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	JAN-DEC	JAN-DEC
640	Ame ica alliga o			9 TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X	JUN-AUG	AUG-SEP	-	JAN-DEC	JAN-DEC
641	Ame ica alliga o			TO 6 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X	JUN-AUG	AUG-SEP	-	JAN-DEC	JAN-DEC
64	Ame ica alliga o			1000 TO 0 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X	JUN-AUG	AUG-SEP	-	JAN-DEC	JAN-DEC

TERRESTRIAL MAMMAL:

RAR	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D
4	Commo accoo			RESIDENT	X	X	X	X	X	X	X	X	X	X	X	X
	Mi k			RESIDENT	X	X	X	X	X	X	X	X	X	X	X	X
	M sk a			RESIDENT	X	X	X	X	X	X	X	X	X	X	X	X
	No e i e o e			RESIDENT	X	X	X	X	X	X	X	X	X	X	X	X
	N ia			TRANSIENT	X	X	X	X	X	X	X	X	X	X	X	X
6 6	Commo accoo			TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	Mi k			9 TO 0 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	M sk a			99 TO 6 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	No e i e o e			1 TO 4 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	N ia			6 TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
6	Commo accoo			6 TO 4 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	Mi k			466 TO 1 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	M sk a			9 TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	No e i e o e			TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	N ia			TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
6	Commo accoo			TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	Mi k			96 TO 6 AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	M sk a			196 TO AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X

Biologi al i fo ma io show o he maps ep ese s k ow o e a io a eas o o u e es, bu does o e essa ily ep ese he full dis ibu io o a ge of ea h spe ies. This is pa i ula ly impo a o e og i e whe o side i g po e ial impa s o p o e ed spe ies.

Louisiana ESI: ESIMAP 105 (cont.)

BIOLOGICAL RESOURCES: (cont.)

TERRESTRIAL MAMMAL:

RAR	Species	S	F	Conc.		J	F	M	A	M	J	J	A	S	O	N	D
6	No e i e o e			TO	AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X
	N ia		1	TO	AC/NEST	X	X	X	X	X	X	X	X	X	X	X	X

Biologi al i fo ma io show o he maps ep ese s k ow o e a io a eas o o u e es, bu does o e essa ily ep ese he full dis ibu io o a ge of ea h spe ies. This is pa i ula ly impo a o e og i e whe o side i g po e ial impa s o p o e ed spe ies.

Appendix B Contact Lists

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1.0 Company Contacts

Facility	Owner and Operator
Cameron Highway and Poseidon Pipelines	Enterprise Field Services, LLC
Cameron Highway: Chambers, Galveston, Jefferson, and Orange Counties, Texas Poseidon: Terrebonne Parish, Louisiana	2727 North Loop West Houston, TX 77008
Phone: (985) 857-8002	**Phone:** (713) 381-6500 **Fax:** (713) 880-6660

Qualified Individuals

Name	Office	Mobile	Home
Cameron Highway			
Tom Mears	(409) 984-1284	(409) 781-9186	(b) (6)
Mike McNeer	(409) 984-1201	(409) 781-9188	
Poseidon Pipeline			
Tom Mears	(409) 984-1284	(409) 781-9186	
Norman Gibson	(985) 858-6023	(985) 790-5571	
Mike McNeer	(409) 984-1201	(409) 781-9188	

2.0 Federal Contacts

USCG National Response Center, Washington, DC	(800) 424-8802
USCG Sector Houston/Galveston	(713) 671-5100
USCG—MSU Galveston	(409) 978-2700
U.S. EPA (Region VI-Dallas, TX)	(866) 372-7745
U.S. EPA On-Scene Coordinator	(800) 533-3508
OSHA	(800) 321-6742
U.S. Fish and Wildlife Service	(281) 286-8282
U.S. Army Corps of Engineers (Galveston District)	(409) 766-3176
Wildlife Rehab & Education	(281) 731-8826
Wildlife Response Services LLC	(713) 705-5897 (281) 266-0054-pager

3.0 State Contacts

Texas	
Texas Commission on Environmental Quality	(800) 832-8224
State Emergency Response Commission (SERC)—Austin (Department of Public Safety, Emergency Response Center)	(800) 832-8224
Texas General Land Office	(800) 832-8224

Texas	
TXGLO, Region 1—Nederland	(409) 727-7481
TXGLO, Region 2—La Porte	(281) 470-6597
TXGLO, Region 3—Corpus Christi	(361) 825-3300
TXGLO, Region 4—Brownsville	(956) 504-1417
TXGLO, Region 5—Port Lavaca	(361) 552-8081
Railroad Commission of Texas	(512) 463-6788
Railroad Commission of Texas (District 1&2)—San Antonio	(210) 227-1313
Railroad Commission of Texas (District 3)—Houston	(713) 869-5001
Railroad Commission of Texas (District 4)—Corpus Christi	(361) 242-3113
Railroad Commission of Texas (District 8)—Midland	(432) 687-6005
Texas Department of Public Safety-Houston	(281) 517-1300
Texas Department of Public Safety-Corpus Christi	(361) 698-5500
Texas Parks and Wildlife	(800) 792-1112
UT Marine Science Institute – Animal Rehab Keep (ARK)	(361) 749-6720

Louisiana	
Louisiana One-Call (State Police)	(225) 925-6113
Louisiana Department of Environmental Quality	(866) 896-5337
Louisiana Oil Spill Coordinator	(225) 925-6606
Louisiana Department of Natural Resources	(225) 342-4500
Louisiana Department of Wildlife and Fisheries	(225) 765-2800
Louisiana Department of Public Safety	(337) 491-2511

4.0 Local Contacts

Texas – 911	
Orange County	
Orange County Sheriff's Office	(409) 883-2612
Bridge City Fire Department	(409) 735-2419
Bridge City Police Department	(409) 735-5028
Orange Fire and Police Departments - Dispatch	(409) 883-1026
West Orange Fire Department	(409) 886-0944
West Orange Police Department	(409) 883-7574
Vidor Police Department	(409) 769-4561
Brazoria County	
Local Emergency Planning Commissions-Brazoria County	(281) 756-1801
Alvin Police Department	(281) 388-4370
Brazoria County Sheriff's Office	(979) 849-2441
Alvin Volunteer Fire Department	(281) 585-8536
Liverpool Volunteer Fire Department	(281) 581-9565
Galveston County	
DPS Highway Patrol	(409) 933-1100
Galveston County Sheriff's Department	(409) 766-2300 (888) 384-2000
Galveston County Emergency Management	(281) 309-5002
Dickinson VFD	(281) 534-3031
Dickinson Police Department	(281) 337-4700
Hitchcock VFD	(409) 986-7131

Texas – 911	
Hitchcock Police Department	(409) 986-5559
Santa Fe Fire/Rescue	(409) 925-7333
Santa Fe Police Department	(409) 925-2000
Chambers County	
Chambers County Sheriff's Department	(409) 267-8318
Chambers County Emergency Management	(409) 267-8343
Anahuac VFD	(409) 267-8318
Anahuac EMS	(409) 267-6080
Beach City VFD	(281) 573-9484
Cove Fire and Rescue	(281) 573-9193
Mont Belvieu VFD	(281) 576-2021
Old River-Winfree VFD	(281) 385-5132
Winnie Stowell Fire Department	(409) 296-4133
Winnie Stowell EMS	(409) 296-9627
Jefferson County	
Jefferson County Emergency Management Office	(409) 835-8757
Port Arthur Police Department	(409) 983-8600
Port Arthur Fire Department	(409) 983-8700
Beaumont Police Department	(409) 880-3801
Beaumont Fire Department	(409) 880-3901
Port Neches Police Department	(409) 722-1424
Port Neches Fire Department	(409) 722-5885
Groves Police Department	(409) 727-1614
Groves Fire Department	(409) 962-4469
Nederland Police Department	(409) 723-1516
Nederland Fire Department	(409) 723-1531
Harris County	
Harris County Sheriff's Department	(713) 221-6000
Harris County Office of Homeland Security and Emergency Management	(713) 881-3100
Harris County Constable Precinct 1	(713) 755-5200
Harris County Constable Precinct 4	(281) 376-3472
Harris County Constable Precinct 5	(281) 492-3600
Baytown Fire Department	(281) 422-2311
Baytown Police Department	(281) 422-8371
Bellaire Fire Department	(713) 662-8202
Bellaire Police Department	(713) 662-8102
Deer Park Fire Department	(281) 478-7281
Deer Park Police Department	(281) 478-2000
Galena Park Fire Department	(713) 674-5311
Galena Park Police Department	(713) 675-3471
Houston Fire Department	(713) 247-5000
Houston Police Department	(713) 247-4400
Humble Fire Department	(281) 446-2212
Jacinto City Fire Department	(713) 674-1841
Jacinto City Police Department	(713) 672-2455
Jersey Village Fire Department	(713) 466-2132
Jersey Village Police Department	(713) 466-5824
Katy Fire Department	(281) 391-3500
Katy Police Department	(281) 391-4848
La Porte Fire Department	(281) 471-3607
La Porte Police Department	(281) 842-0405

Texas – 911	
Nassau Bay Volunteer Fire Department	(281) 333-2677
Nassau Bay Police Department	(281) 333-2212
Pasadena Fire Department	(713) 477-1122
Pasadena Police Department	(713) 477-1221
Seabrook Volunteer Fire Department	(281) 474-3434
Seabrook Police Department	(281) 291-5610
South Houston Fire Department	(713) 944-1910
Southside Place Fire Department	(713) 668-2341
Spring Valley Police Department	(713) 465-8323
Tomball Fire Department	(281) 255-2411
Tomball Police Department	(281) 351-5451
Waller Fire Department	(936) 372-9512
Waller Police Department	(936) 372-2525
Webster Fire Department	(281) 333-5829
Webster Police Department	(281) 332-2426

Louisiana – 911	
Louisiana Poison Control	**(800) 222-1222**
Lafourche Parish	
Lafourche Parish Office of Homeland Security (OHS) & Emergency Preparedness	(985) 532-8174
Lafourche Parish Sheriff's Office-Thibodaux	(985) 446-2255
Lafourche Fire District No. 1	(985) 537-5000
Golden Meadow Police Department	(985) 475-5213
Thibodaux Police Department	(985) 446-5021
Thibodaux Fire Department	(985) 447-1986
Lockport Police Department	(985) 532-9799
Lockport Volunteer Fire Department	(985) 532-3876
Terrebonne Parish	
Terrebonne Parish Sheriff's Office-Houma	(985) 876-2500
Terrebonne Parish Office of Homeland Security (OHS) & Emergency Preparedness	(985) 873-6357
Houma Police Department	(504) 873-6306
Houma Fire Department	(985) 873-6391

5.0 Oil Spill Response Organizations

O'Brien Response Management (O'Brien's)	(985) 781-0804
Garner Environmental Services, Inc.	(800) 424-1716
NRC Corporation	(800) 899-4672
Clean Gulf Associates (CGA) / MSRC	(888) 242-2007
Ampol	(800) 482-6765
Oil Mop, LLC	(800) 645-6671

6.0 Spill Tracking/Trajectories

Miros AS – Asker, Norway	+011 47 66 98 75 00
O'Brien's Response Management, Inc. – Slidell, LA	(985) 781-0804
Sea–Hawk Navigation AS – Bergen, Norway	+011 47 56 11 23 11
The Response Group – Houston, TX	(281) 880-5000
Eagle Information Mapping – Houston, TX	(281) 398-6001 ext. 240

7.0 Spill Management Team

SPILL MANAGEMENT TEAM—Enterprise Field Services, LLC Command Post–O'Brien Response Management Inc. (O'Brien's) 2000 Old Spanish Trail, Suite 210, Slidell, Louisiana 70458 (985) 781-0804 (24 Hour Number) / (985) 781-0580 (Fax)						
#	*Name/Position*	*Loc #*	*Office*	*Email*	*Home*	*Cellular*
	Qualified Individual				(b) (6)	
	Tom Mears	10	(409) 984-1284	tmears@eprod.com		(409) 781-9286
	Norman Gibson	7	(985) 858-6023	ngibson@eprod.com		(985) 790-5571
	Mike McNeer	10	(409) 984-1201	mmcneer@eprod.com		(409) 781-9188
1	Incident Commander					
	Ed Stanton – O'Brien's	2	(985) 781-0804	ed.stanton@obrienserm.com		(985) 285-5508
	Bud Kline– O'Brien's	2	(985) 781-0804	calvin.kline@obriensrm.com		(985) 960-0585
	Ed Turner – O'Brien's	2	(985) 781-0804	ed.turner@obriensrm.com		(985) 960-0127
	Paul Frederick– O'Brien's	2	(985) 781-0804	paul.frederick@obriensrm.com		(985) 960-3843
	Josh Dubach– O'Brien's	2	(985) 781-0804	josh.dubach@obriensrm.com		(281) 330-9930
	Nick Benson– O'Brien's	3	(281) 320-9796	nick.benson@obriensrm.com		(985) 960-0253
	Scott Hess – O'Brien's	2	(985) 781-0804	scott.hess@obriensrm.com		(985) 960-3848
	Gil Berkins – O'Brien's	2	(985) 781-0804	gil.berkins@obriensrm.com		(985) 285-8646
2	Safety Officer					
	Josh Dubach– O'Brien's	2	(985) 781-0804	josh.dubach@obriensrm.com		(281) 330-9930
	Gil Berkins – O'Brien's	2	(985) 781-0804	gil.berkins@obriensrm.com		(985) 285-8646
	Scott Hess – O'Brien's	2	(985) 781-0804	scott.hess@obriensrm.com		(985) 960-3848
	Aaron Holton – O'Brien's	2	(985) 781-0804	aaron.holton@obriensrm.com		(985) 290-6634
	Bud Kline– O'Brien's	2	(985) 781-0804	calvin.kline@obriensrm.com		(985) 960-0585
	Jesse Gregorie – Enterprise		(985) 369-5008	jgregorie@eprod.com		(985) 209-0454
3	Liaison Officer					
	Rory Hebert – Enterprise	9	(225) 381-3459	rjhebert@eprod.com		(225) 278-5496
4	Information Officer					
	Tim O'Leary – O'Brien's	3	(281) 320-9796	tim.oleary@obriensrm.com		(281) 352-7740
	Rick Rainey – Enterprise		(713) 381-3635	rrainey@eprod.com		(713) 259-9214
5	Legal Officer					
	John Smith – Enterprise	8	(713) 880-6562			(713) 410-2782
6	Human Resources					
	Theresa Roy – Enterprise		(985) 493-4602	troy@eprod.com		(504) 858-4403

SPILL MANAGEMENT TEAM—Enterprise Field Services, LLC Command Post–O'Brien Response Management Inc. (O'Brien's) 2000 Old Spanish Trail, Suite 210, Slidell, Louisiana 70458 (985) 781-0804 (24 Hour Number) / (985) 781-0580 (Fax)						
#	*Name/Position*	*Loc #*	*Office*	*Email*	*Home*	*Cellular*
7	Source Control Group Supv.					
	Pipeline Control – Enterprise	8	(713) 880-6500		(b) (6)	
8	Operations Section Chief					
	Ed Turner – O'Brien's	2	(985) 781-0804	ed.turner@obriensrm.com		(985) 960-0127
	Bud Kline– O'Brien's	2	(985) 781-0804	calvin.kline@obriensrm.com		(985) 960-0585
	Gil Berkins – O'Brien's	2	(985) 781-0804	gil.berkins@obriensrm.com		(985) 285-8646
	Paul Frederick– O'Brien's	2	(985) 781-0804	paul.frederick@obriensrm.com		(985) 640-1482
	Ryan Reed – O'Brien's	2	(985) 781-0804			(985) 788-5412
	Josh Dubach– O'Brien's	2	(985) 781-0804	josh.dubach@obriensrm.com		(281) 330-9930
	Nick Benson– O'Brien's	3	(281) 320-9796	nick.benson@obriensrm.com		(985) 960-0253
	Scott Hess – O'Brien's	2	(985) 781-0804	scott.hess@obriensrm.com		(985) 960-3848
9	Recovery & Prot. Branch Dir.					
	TBD by O'Brien's					
10	Staging Area Manager					
	TBD by O'Brien's					
11	Disposal Group					
	TBD by O'Brien's					
12	Wildlife Branch Director					
	Texas Wildlife Center	5	(713) 861-9453	sharonschmalz@wrande.org		(281) 731-8826
	Wildlife Response Services LLC	6	(713) 705-5897	Rhonda.Murgatroyd@wildliferesponse.net		
13	Planning Section Chief					
	Bud Kline– O'Brien's	2	(985) 781-0804	calvin.kline@obriensrm.com		(985) 960-0585
	Ed Turner – O'Brien's	2	(985) 781-0804	ed.turner@obriensrm.com		(985) 960-0127
	Paul Frederick– O'Brien's	2	(985) 781-0804	paul.frederick@obriensrm.com		(985) 640-1482
	Josh Dubach– O'Brien's	2	(985) 781-0804	josh.dubach@obriensrm.com		(281) 330-9930
	Gil Berkins – O'Brien's	2	(985) 781-0804	gil.berkins@obriensrm.com		(985) 285-8646
	Scott Hess – O'Brien's	2	(985) 781-0804	scott.hess@obriensrm.com		(985) 960-3848
	Ryan Reed – O'Brien's	2	(985) 781-0804			(985) 788-5412
14	Situation Unit Leader					
	TBD by O'Brien's					
15	Resource Unit Leader					
	TBD by O'Brien's					

SPILL MANAGEMENT TEAM—Enterprise Field Services, LLC
Command Post–O'Brien Response Management Inc. (O'Brien's)
2000 Old Spanish Trail, Suite 210, Slidell, Louisiana 70458
(985) 781-0804 (24 Hour Number) / (985) 781-0580 (Fax)

#	Name/Position	Loc #	Office	Email	Home	Cellular
16	Documentation Unit Leader TBD by O'Brien's				(b) (6)	
17	Technical Specialists Josh Dubach – O'Brien's	2	(985) 781-0804	josh.dubach@obriensrm.com		(281) 330-9930
18	Logistics Section Chief Ed Turner – O'Brien's Josh Dubach– O'Brien's Scott Hess – O'Brien's Gil Berkins – O'Brien's Nick Benson– O'Brien's Paul Frederick– O'Brien's Ian Hernandez – O'Brien's Ryan Reed – O'Brien's Aaron Holton	 2 2 2 2 3 2 3 2 2	 (985) 781-0804 (985) 781-0804 (985) 781-0804 (985) 781-0804 (281) 320-9796 (985) 781-0804 (281) 320-9796 (985) 781-0804 (985) 781-0804	 ed.turner@obriensrm.com josh.dubach@obriensrm.com scott.hess@obriensrm.com gil.berkins@obriensrm.com nick.benson@obriensrm.com paul.frederick@obriensrm.com ian.hernandez@obriensrm.com aaron.holton@obriensrm.com		 (985) 960-0127 (281) 330-9930 (985) 960-3848 (985) 285-8646 (985) 960-0253 (985) 640-1482 (832) 414-4089 (985) 788-5412 (985) 290-6634
19	Service Branch Director TBD by O'Brien's	2	(985) 781-0804			
20	Support Branch Director TBD by O'Brien's					
21	Communications Unit Leader TBD by O'Brien's					
22	Finance Section Chief Keith Towler–O'Brien's Don Costanzo–O'Brien's	 2 3	 (985) 781-0804 (281) 320-9796	 keith.towler@obriensrm.com don.costanzo@obriensrm.com		 (985) 502-0030 (713) 503-6367
23	Procurement Unit Leader TBD by O'Brien's					
24	Comp./Claims Unit Leader MR & Associates, LLC	4	(281) 359-5900	wamclellan@mra21.com		
25	Cost Unit Leader TBD by O'Brien's					

SPILL MANAGEMENT TEAM – These locations correspond with numbers listed above.		
#1	#2	#3
O'Brien's–West Coast Office 2929 E. Imperial Highway, Suite 290 Brea, CA 92821	O'Brien's – Incident Command Post 2000 Old Spanish Trail, Suite 210 Slidell, LA 70458	O'Brien's – GOM Regional Office CityCentre Two 818 Town & Country Blvd., Suite 200 Houston, Texas 77024
#4	#5	#6
MR & Associates, LLC 900 Rockmead Dr, Suite 150 Kingwood, TX 77339	Texas Wildlife Center Wildlife Center 7007 Katy Road Houston, TX, 77024	Wildlife Response Services LLC P. O. Box 842 Seabrook, TX 77586
#7	#8	#9
Enterprise Field Services, LLC 1953 Grand Caillou Road Houma, LA 70363	Enterprise Field Services, LLC 1100 Louisiana Street Houston, TX 77002	Enterprise Field Services, LLC 2220 North River Road Port Allen, LA 70767
#10	#11	
Enterprise Field Services, LLC 7912 S. 1st Avenue Sabine Pass, TX 77655	Enterprise Field Services, LLC 1234 Rosenbaum Port Lavaca, TX 77979	

8.0 Support and Supply Organizations

Texas – Helicopters	
Air Logistics (Brazoria County)	(979) 849-8637
Petroleum Helicopters, Inc. – PHI (Galveston)	(409) 740-3964
Petroleum Helicopters, Inc.-PHI (Lake Charles)	(337) 479-0610
Petroleum Helicopters, Inc.-Scheduling	(800) 235-2452
Petroleum Helicopters, Inc. PHI (Rockport)	(361) 729-1559
Petroleum Helicopters, Inc. PHI (Port O'Connor)	(361) 983-2942
Petroleum Helicopters, Inc. PHI (Sabine)	(409) 971-2455
Flap-Air Helicopter Service (Canadian)	(806) 323-8255
Air Ag incorporated	(940) 658-3744

Louisiana – Helicopters	
Petroleum Helicopters, Inc. – Houma	(985) 868-1705
Tex-Air Helicopters – Houma	(985) 534-4191
Air Logistics – Houma	(985) 851-6232
Air Logistics-Venice	(985) 534-7481
ERA Helicopters – Houma	(985) 868-0817
ERA Helicopters-Abbeville	(337) 898-2386
ERA Helicopters-Cameron	(337) 775-5574
ERA Helicopters-Fourchon	(985) 396-2285
ERA Helicopters-Morgan City	(985) 702-1360
PHI, Gulf of Mexico Scheduling-Lafayette	(800) 235-2452
Petroleum Helicopters, Inc. – Boothville	(985) 534-2631
Petroleum Helicopters, Inc. – Cameron	(337) 775-7157
Petroleum Helicopters, Inc. – Fourchon	(985) 396-2350
Petroleum Helicopters, Inc. – Houma	(985) 868-1705
Petroleum Helicopters, Inc. – Intracoastal City	(337) 893-1428
Petroleum Helicopters, Inc. – Lafayette	(337) 272-4210
Petroleum Helicopters, Inc. – Lake Charles	(337) 479-0610
Petroleum Helicopters, Inc. – Morgan City	(985) 631-2131
Petroleum Helicopters, Inc. – New Orleans/Harahan	(504) 733-7673

Texas – Medical Services	
Galveston County	
John Sealy Hospital-Galveston, TX **(Burn Center)**	(409) 772-1011
UTMB Galveston	(409) 722-1011
Brazoria County	
Alvin Diagnostic and Urgent Care Center	(281) 331-6141
Angleton Danbury General Hospital-Angleton	(979) 849-7721
Memorial Hermann Southeast Hospital-Houston	(281) 929-6100
Clear Lake Regional Medical Center-Webster	(281) 332-2511
Mainland Medical Center-Texas City	(409) 938-5000
Brazosport Memorial Hospital-Lake Jackson	(979) 285-1105
Greater Beaumont Area	
Christus St. Elizabeth Hospital-Beaumont, TX	(409) 892-7171
Memorial Hermann Baptist-Beaumont	(409) 212-5000
Christus St. Mary Hospital-Port Arthur	(409) 985-7431
The Medical Center of Southeast Texas-Port Arthur	(409) 724-7389
Doctors Hospital-Groves	(409) 962-5733
Mid-Jefferson Hospital-Nederland	(409) 727-2321

Louisiana – Medical Services	
Louisiana Poison Control	**(800) 222-1222**
Terrebonne Parish	
Leonard J. Chabert Medical Center-Houma	(985) 873-2200
Terrebonne General Hospital-Houma	(985) 873-4141

Texas – Media	
Greater Houston Area	
KULM-98.3 Radio (Columbus)	(979) 732-5766
KPRC 950 AM	(713) 212-8590
KPRC-Channel 2	(713) 222-2222
KTRK-Channel 13	(713) 666-0713
KHOU-Channel 11	(713) 526-1111
KRIV Fox-Channel 26	(713) 479-2600
KHCW-Channel 39	(713) 781-3939
KTXH-Channel 20	(713) 479-2600
Beaumont/Port Arthur	
KBTV—TV 4 (NBC)	(409) 840-4444
KFDM—TV 6 (CBS)	(409) 892-6622
KBMT—TV 12 (ABC)	(409) 833-7512

Louisiana – Media	
Lafayette	
KADN TV 15 (FOX)	(337) 237-1500
KATC TV 3 (ABC)	(337) 253-3333
KLFY TV 10 (CBS)	(337) 981-4823
KLAF TV 17 (UPN)	(337) 237-1500
Baton Rouge	
WAFB TV 9 (CBS)	(225) 383-9999
WBRZ TV 2 (ABC)	(225) 387-2222
WBXH TV 39 (UPN)	(225) 383-9999
WGMB TV 44 (FOX)	(225) 766-3233
WVLA TV 33 (NBC)	(225) 766-3233
Lake Charles	
KPLC TV 7 (NBC)	(337) 437-7568
KVPH TV 29 (FOX)	(337) 474-1316
New Orleans	
WWL TV 4 (CBS)	(504) 529-4444
WDSU TV 6 (NBC)	(504) 679-0600
WVUE TV 8 (FOX)	(504) 483-1540
WGNO TV 26 (ABC)	(504) 525-3838
WNOL TV 38 (WB)	(504) 525-8141
National Weather Service	(504) 522-7330
WWL (870 AM) Radio–New Orleans	(504) 593-6376

Lodging	
Best Western	(800) 528-1234
Courtyard (Marriot)	(800) 321-2211
Comfort Suites	(800) 424-6423
Days Inn	(800) 325-2525
Embassy Suites	(800) 362-2779
Hilton Hotels	(800) 445-8667

Lodging	
Holiday Inns	(800) 465-4329
Hyatt Hotels	(800) 228-9000
Marriott Hotels	(800) 228-9290
La Quinta Inn	(800) 531-5900
Quality Inns	(800) 228-5151
Ramada Inns	(800) 272-6232
Sheraton Hotels	(800) 325-3535

NATIONAL RESPONSE CORPORATION

SPILL RESPONSE CONTRACT CERTIFICATION

National Response Corporation (NRC) certifies that has **Enterprise Field Services, LLC** "ensured, by contract or other approved means, the availability of private personnel and equipment necessary to respond, to the maximum extent practicable, to a worst case or medium case discharge" for the below named Facilities. NRC agrees that the Client has the right to name NRC and its resources, including those within its Independent Contractor Network (ICN) for Oil Pollution Act of 1990 (OPA) coverage for the below named Facilities. NRC has filed its Spill Response Plan Appendix with the U.S. Coast Guard, and that the Client is authorized to reference this Appendix in their Facility Response Plan. This Appendix presently covers all ports in the U.S. East, West and Gulf Coasts, Great Lakes and the U.S. Caribbean. NRC reserves the right to rescind this authorization in the event of termination of its contractual arrangements with the Facilities.

Entered Facilities:

CAMERON HIGHWAY SYSTEM
CAMERON HIGHWAY SYSTEM (Onshore Asset)
CORPUS AREA PIPELINE SYSTEM
HIGH ISLAND OPERATING SYSTEM
HOUSTON PIPELINE SYSTEM
MATAGORDA ISLAND SYSTEM
MUSTANG ISLAND SYSTEM
PASADENA / TEXAS CITY SYSTEM
POSEIDON SYSTEM
POSEIDON SYSTEM (Onshore Asset)
VIOSCA KNOLL SYSTEM

Acknowledged by: Date: **March 29, 2006**

National Response Corporation

President

CORPORATE HEADQUARTERS
3500 SUNRISE HIGHWAY, T103
GREAT RIVER, NEW YORK 11739
(631) 224-9141 · FAX (631) 224-9082

REGIONAL OFFICES
NEW YORK, NEW YORK HOUSTON, TEXAS
TAMPA, FLORIDA MEMPHIS, TENNESSEE
SEATTLE, WA OLD SAN JUAN, PUERTO RICO

GARNER

GARNER ENVIRONMENTAL SERVICES, INC.
HOUSTON CORPORATE OFFICE: 1717 W. 13TH STREET, DEER PARK, TX 77536 • 281-930-1200 • 800-424-1716
ISO 9001-2000 CERTIFIED

March 30, 2006

EMERGENCY RESPONSE

PLANT SERVICE

WASTE MANAGEMENT

REMEDIATION

HEALTH/SAFETY TRAINING

EQUIPMENT SALES

TRANSPORTATION

SEWER CLEANING

DEWATERING

Roy Hebert
Enterprise Field Services
2727 N. Loop West
Houston, TX 77008

Re: Letter of Intent to Respond

Mr. Hebert:

Thank you for your recent inquiry concerning Garner Environmental Services, Inc. emergency response capabilities. Per your request, Garner Environmental Services is pleased to offer Enterprise Field Services our response services to respond in the event of an accidental release on an as needed, first come first served basis, from our Deer Park, Texas facility, as a first responder for the facility(ies) listed in Attachment 1. Per 33 CFR §154.1045(c)(1) and (c)(2) and 33 CFR §155, Appendix B, Para. 2.2.6, all time and equipment requirements will be met for AMPD coverage. Response time to this facility is based on a 35 mph rate of travel over land routes and 5 kph over water routes. Refer to Attachment 1 for Response Tier and Time Levels.

Should a response effort be required, please contact the 24-hour Emergency Response Telephone number listed on Attachment 1.

Attached are Garner Environmental Services, Inc.'s U.S. Coast Guard OSRO classification letter and the Texas General Land Office DCO certificate for incorporation in your facility plan.

Sincerely,

Otis Chambers /fl

Otis Chambers
Executive Vice President

OC/fl

Enclosure

cc: J. Connors Consulting
c/o Shannon Stilwell
16225 Park Ten Place, Suite 700
Houston, TX 77084
Ph# 281-578-3388
Fax 281-578-1288

MSDSMATERIAL SAFETY DATA SHEET

CRUDE OIL - FLAMMABLE; SWEET (FLASH POINT 0.7 NOT AVAILABLE
MELTING POINT (DEG F): SOLUBILITY IN WATER: VAPOR DENSITY (AIR = 1):
NOT AVAILABLE SLIGHT NOT AVAILABLE
EVAPORATION RATE (NORMAL BUTYL ACETATE = 1):NOT AVAILABLE
APPEARANCE AND ODOR:BLACK LIQUID; STRONG HYDROCARBON ODOR.
PHYS/CHEM PROPERTIES: SEE ABOVE FOR DETAILS

SECTION VIII FIRE AND EXPLOSION HAZARDS

FLASH POINT AND METHOD: <100 DEG F (PMCC)
FLAMMABLE LIMITS/PERCENT VOLUME IN AIR: LOWER: N/AV HIGHER: N/AV
EXTINGUISHING MEDIA:
USE WATER FOG, FOAM, DRY CHEMICAL OR CO2. DO NOT USE A DIRECT STREAM OF WATER. PRODUCT WILL FLOAT AND CAN BE REIGNITED ON SUFACE OF WATER.
SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS:
WARNING. FLAMMABLE. CLEAR FIRE AREA OF UNPROTECTED PERSONNEL. DO NOT ENTER CONFINED FIRE SPACE WITHOUT FULL BUNKER GEAR (HELMET WITH FACE SHIELD, BUNKER COATS, GLOVES AND RUBBER BOOTS), INCLUDING A POSITIVE PRESSURE NIOSH APPROVED SELF-CONTAINED BREATHING APPARATUS. COOL FIRE EXPOSED CONTAINERS WITH WATER.
UNUSUAL FIRE AND EXPLOSION HAZARDS:
CONTAINERS EXPOSED TO INTENSE HEAT FROM FIRES SHOULD BE COOLED WITH WATER TO PREVENT VAPOR PRESSURE BUILDUP WHICH COULD RESULT IN CONTAINER RUPTURE. CONTAINER AREAS EXPOSED TO DIRECT FLAME CONTACT SHOULD BE COOLED WITH LARGE QUANTITIES OF WATER AS NEEDED TO PREVENT WEAKENING OF CONTAINER STRUCTURE.

SECTION IX REACTIVITY

STABLITY: STABLE HAZARDOUS POLYMERIZATION WILL NOT OCCUR
CONDITIONS AND MATERIALS TO AVOID:
AVOID HEAT, SPARKS, FLAME AND CONTACT WITH STRONG OXIDIZING AGENTS.
HAZARDOUS DECOMPOSITION PRODUCTS:
THERMAL DECOMPOSITION PRODUCTS ARE HIGHLY DEPENDENT ON THE COMBUSTION CONDITIONS. A COMPLEX MIXTURE OF AIRBORNE SOLID, LIQUID, PARTICULATES AND GASES WILL EVOLVE WHEN THIS MATERIAL UNDERGOES PYROLYSIS OR COMBUSTION. CARBON MONOXIDE AND OTHER UNIDENTIFIED ORGANIC COMPOUNDS MAY BE FORMED UPON COMBUSTION.

SECTION X EMPLOYEE PROTECTION

RESPIRATORY PROTECTION:
USE NIOSH APPROVED RESPIRATORY PROTECTION AS REQUIRED TO PREVENT OVEREXPOSURE TO OIL MIST, VAPOR OR FUMES. DO NOT ENTER STORAGE COMPARTMENTS UNLESS EQUIPPED WITH A NIOSH APPROVED SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN A POSITIVE PRESSURE MODE. AVOID PROLONGED AND REPEATED EXPOSURE.
PROTECTIVE CLOTHING
WEAR CHEMICAL RESISTANT GLOVES AND OTHER PROTECTIVE CLOTHING AS REQUIRED TO MINIMIZE SKIN CONTACT. NO SPECIAL EYE PROTECTION IS ROUTINELY NECESSARY. TEST DATA FROM PUBLISHED LITERATURE AND/OR GLOVE AND CLOTHING MANUFACTURERS INDICATE THE BEST PROTECTION IS PROVIDED BY NITRILE GLOVES.
ADDITIONAL PROTECTIVE MEASURES:
USE VENTILATION AS REQUIRED TO CONTROL VAPOR CONCENTRATIONS.

SECTION XI ENVIRONMENTAL PROTECTION

SPILL OR LEAK PROCEDURES:
WARNING. FLAMMABLE. ELIMINATE ALL IGNITION SOURCES. HANDLING EQUIPMENT MUST BE GROUNDED TO PREVENT SPARKING. *** LARGE SPILLS *** EVACUATE THE HAZARD AREA OF UNPROTECTED PERSONNEL. WEAR APPROPRIATE RESPIRATOR AND PROTECTIVE CLOTHING. SHUT OFF SOURCE OF LEAK ONLY IF SAFE TO DO SO. DIKE

AND CONTAIN. IF VAPOR CLOUD FORMS, WATER FOG MAY BE USED TO SUPPRESS; CONTAIN RUN-OFF. REMOVE WITH VACUUM TRUCKS OR PUMP TO STORAGE/SALVAGE VESSELS. SOAK UP RESIDUE WITH AN ABSORBENT SUCH AS CLAY, SAND OR OTHER SUITABLE MATERIAL; PLACE IN NON-LEAKING CONTAINERS FOR PROPER DISPOSAL. FLUSH AREA WITH WATER TO REMOVE TRACE RESIDUE; DISPOSE OF FLUSH SOLUTIONS AS ABOVE. *** SMALL SPILLS *** TAKE UP WITH AN ABSORBENT MATERIAL AND PLACE IN NON-LEAKING CONTAINERS; SEAL TIGHTLY FOR PROPER DISPOSAL.

SECTION XII SPECIAL PRECAUTIONS

KEEP LIQUID AND VAPOR AWAY FROM HEAT, SPARKS AND FLAME. SURFACES THAT ARE SUFFICIENTLY HOT MAY IGNITE EVEN LIQUID PRODUCT IN THE ABSENCE OF SPARKS OR FLAME. EXTINGUISH PILOT LIGHTS, CIGARETTES AND TURN OFF OTHER SOURCES OF IGNITION PRIOR TO USE AND UNTIL ALL VAPORS ARE GONE. CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, CAN CONTAIN EXPLOSIVE VAPORS. DO NOT CUT, DRILL, GRIND, WELD OR PERFORM SIMILAR OPERATIONS ON OR NEAR CONTAINERS. STATIC ELECTRICITY MAY ACCUMULATE AND CREATE A FIRE HAZARD. GROUND FIXED EQUIPMENT. BOND AND GROUND TRANSFER CONTAINERS AND EQUIPMENT. WASH WITH SOAP AND WATER BEFORE EATING, DRINKING, SMOKING OR USING TOILET FACILITIES. LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.
DISPOSE OF OIL-SOAKED LEATHER ARTICLES INCLUDING SHOES WHICH CANNOT BE DECONTAMINATED.

SECTION XIII TRANSPORTATION REQUIREMENTS

DEPARTMENT OF TRANSPORTATION CLASSIFICATION:
CLASS 3 (FLAMMABLE LIQUID), PACKING GROUP MUST BE DETERMINED ON A CASE-BY-CASE BASIS
DOT PROPER SHIPPING NAME:PETROLEUM CRUDE OIL
OTHER REQUIREMENTS:UN1267, GUIDE 128

SECTION XIV OTHER REGULATORY CONTROLS

THIS PRODUCT IS LISTED ON THE EPA/TSCA INVENTORY OF CHEMICAL SUBSTANCES.
PROTECTION OF STRATOSPHERIC OZONE (PURSUANT TO SECTION 611 OF THE CLEAN AIR ACT AMENDMENTS OF 1990): PER 40 CFR PART 82, THIS PRODUCT DOES NOT CONTAIN NOR WAS IT DIRECTLY MANUFACTURED WITH ANY CLASS I OR CLASS II OZONE DEPLETING SUBSTANCES.
IN ACCORDANCE WITH SARA TITLE III, SECTION 313, THE ATTACHED ENVIRONMENTAL DATA SHEET (EDS) SHOULD ALWAYS BE COPIED AND SENT WITH THE MSDS.

SECTION XV STATE REGULATORY INFORMATION

THE FOLLOWING CHEMICALS ARE SPECIFICALLY LISTED BY INDIVIDUAL STATES; OTHER PRODUCT SPECIFIC HEALTH AND SAFETY DATA IN OTHER SECTIONS OF THE MSDS MAY ALSO BE APPLICABLE FOR STATE REQUIREMENTS. FOR DETAILS ON YOUR REGULATORY REQUIREMENTS YOU SHOULD CONTACT THE APPROPRIATE AGENCY IN YOUR STATE.

STATE LISTED COMPONENT	CAS NO	PERCENT	STATE CODE
CRUDE OIL	8002-05-6	100	CA, CT, FL, IL, LA, MA, ME, MN, NJ, PA, RI
NATURAL GAS	8006-14-2	VARIABLE	MA, PA
BENZENE	71-43-2	VARIABLE	CA, CT, FL, IL, LA, MA, ME, MN, NJ, PA, RI, CA65C/R
N-HEXANE	110-54-3	VARIABLE	CA, CT, FL, IL, LA, MA, ME, MN, NJ, PA, RI

CA = CALIFORNIA HAZ. SUBST. LIST; CA65C, CA65R, CA65C/R = CALIFORNIA SAFE DRINKING WATER AND TOXICS ENFORCEMENT ACT OF 1986 OR PROPOSITION 65 LIST; CT =

CONNECTICUT TOXIC. SUBST. LIST; FL = FLORIDA SUBST. LIST; IL = ILLINOIS TOX. SUBST. LIST; LA = LOUISIANA HAZ. SUBST. LIST; MA = MASSACHUSETTS SUBST. LIST; ME = MAINE HAZ. SUBST. LIST; MN = MINNESOTA HAZ. SUBST. LIST; NJ = NEW JERSEY HAZ. SUBST. LIST; PA = PENNSYLVANIA HAZ. SUBST. LIST; RI = RHODE ISLAND HAZ. SUBST. LIST.
CALIFORNIA PROPOSITION 65 FOOTNOTE: CA65C = THE CHEMICAL IDENTIFIED WITH THIS CODE IS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER. CA65R = THE CHEMICAL IDENTIFIED WITH THIS CODE IS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM. CA65C/R = THE CHEMICAL IDENTIFIED WITH THIS CODE IS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BOTH CANCER AND BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

SECTION XVI SPECIAL NOTES

MSDS REVISED IN SECTION XV - STATE REGULATORY INFORMATION.

THE INFORMATION CONTAINED IN THIS DATA SHEET IS BASED ON THE DATA AVAILABLE TO US AT THIS TIME, AND IS BELIEVED TO BE ACCURATE BASED UPON THAT DATA. IT IS PROVIDED INDEPENDENTLY OF ANY SALE OF THE PRODUCT, FOR PURPOSE OF HAZARD COMMUNICATION. IT IS NOT INTENDED TO CONSTITUTE PRODUCT PERFORMANCE INFORMATION, AND NO EXPRESS OR IMPLIED WARRANTY OF ANY KIND IS MADE WITH RESPECT TO THE PRODUCT, UNDERLYING DATA OR THE INFORMATION CONTAINED HEREIN. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL PRODUCTS YOU BUY, PROCESS, USE OR DISTRIBUTE, AND ARE ENCOURAGED TO ADVISE THOSE WHO MAY COME IN CONTACT WITH SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

TO DETERMINE THE APPLICABILITY OR EFFECT OF ANY LAW OR REGULATION WITH RESPECT TO THE PRODUCT, YOU SHOULD CONSULT WITH YOUR LEGAL ADVISOR OR THE APPROPRIATE GOVERNMENT AGENCY.

ENVIRONMENTAL DATA SHEET

CRUDE OIL - FLAMMABLE; SWEET (FLASH POINT < or = 100 DEG. F BY CC METHOD; SULFUR < or =0.5% WT.)
TELEPHONE NUMBER:

SECTION I PRODUCT COMPOSITION

NO.	COMPOSITION	CAS	PERCENT
P	CRUDE OIL - FLAMMABLE; SWEET		
1	CRUDE OIL *	8002-05-9	100
A	NATURAL GAS	8006-14-2	VARIABLE
B	BENZENE	71-43-2	VARIABLE
C	N-HEXANE	110-54-3	VARIABLE

THIS IS 1 OF 8 MSDS' FOR CRUDE OIL BASED ON FLASHPOINT AND SULFUR CONTENT. THE LABEL CODE FOR THIS MSDS IS 0009295.
* THIS CHEMICAL IS A COMPLEX SUBSTANCE WHICH MAY CONTAIN CONSTITUENTS IDENTIFIED AS A, B, C, ABOVE, THAT ARE NOT INTENTIONALLY ADDED TO THE PRODUCT.

SECTION II SARA TITLE III INFORMATION

NO.	EHS RQ (*1)	EHS TPQ (*2)	SEC-313 (*3)	313 CATEGORY (*4)	311/312 CATEGORY (*5)
1					H-1, H-2, P-3
B			YES		

*1 = REPORTABLE QUANTITY OF EXTREMELY HAZARDOUS SUBSTANCE, SEC 302
*2 = THRESHOLD PLANNING QUANTITY, EXTREMELY HAZARDOUS SUBSTANCE, SEC 302
*3 = TOXIC CHEMICAL, SEC 313
*4 = CATEGORY AS REQUIRED BY SEC 313 (40 CFR 372.65 C), MUST BE USED ON TOXIC RELEASE INVENTORY FORM

*5 = CATEGORY (FOR AGGREGATE REPORTING REQUIREMENTS UNDER SARA 311, 312)
HEALTH: H-1 = IMMEDIATE (ACUTE) HEALTH HAZARD
H-2 = DELAYED (CHRONIC) HEALTH HAZARD
PHYSICAL: P-3 = FIRE HAZARD
P-4 = SUDDEN RELEASE OF PRESSURE HAZARD
P-5 = REACTIVE HAZARD

SECTION III ENVIRONMENTAL RELEASE INFORMATION

UNDER EPA-CWA, THIS PRODUCT IS CLASSIFIED AS AN OIL UNDER SECTION 311.
SPILLS INTO OR LEADING TO SURFACE WATERS THAT CAUSE A SHEEN MUST BE REPORTED TO THE NATIONAL RESPONSE CENTER, 800-424-8802.
THIS MATERIAL IS COVERED BY CERCLA'S PETROLEUM EXCLUSION, THEREFORE, RELEASES TO AIR, LAND OR WATER ARE NOT REPORTABLE UNDER EPA-CERCLA ("SUPERFUND").

SECTION IV RCRA INFORMATION

UNDER EPA - RCRA (40 CFR 261.21), IF THIS PRODUCT BECOMES A WASTE MATERIAL, IT WOULD BE IGNITABLE HAZARDOUS WASTE, HAZARDOUS WASTE NUMBER D001. REFER TO LATEST EPA OR STATE REGULATIONS REGARDING PROPER DISPOSAL.

Equiva Services - MSDS MATERIAL SAFETY DATA SHEET
EQUILON MSDS: 55277E-04 11/16/98
CONDENSATE (NATURAL GAS) - FLAMMABLE
TELEPHONE NUMBER:
24 HOUR EMERGENCY ASSISTANCE GENERAL MSDS ASSISTANCE
EQUIVA SERVICES: 877-276-7283 877-276-7285
CHEMTREC: 800-424-9300
NAME AND ADDRESS
EQUILON ENTERPRISES LLC
PRODUCT STEWARDSHIP
P.O. BOX 674414
HOUSTON, TX 77267-4414

SECTION I NAME

PRODUCT: CONDENSATE (NATURAL GAS) - FLAMMABLE
CHEM NAME: NATURAL GAS CONDENSATE
CHEM FAMILY: PETROLEUM HYDROCARBON
SHELL CODE: 87879 82966 82977 80491 87594 87596 87597 87598
87599 87605 87606 87755 89433 89726 89870
HEALTH HAZARD: 2 FIRE HAZARD: 3 REACTIVITY: 0

SECTION II-A PRODUCT/INGREDIENT

NO.	COMPOSITION	CAS NO.	PERCENT
P	CONDENSATE (NATURAL GAS) - FLAMMABLE		
1	CONDENSATE*	64741-47-5	100
A	NATURAL GAS	8006-14-2	VARIABLE
B	BENZENE	71-43-2	VARIABLE
C	N-HEXANE	110-54-3	VARIABLE

THIS IS 1 OF 8 MSDS'S BASED ON FLASHPOINT AND SULFUR CONTENT. LABEL CODE IS 0008695.
*THIS CHEMICAL IS A COMPLEX SUBSTANCE WHICH MAY CONTAIN CONSTITUENTS IDENTIFIED AS A, B, C, ABOVE THAT ARE NOT INTENTIONALLY ADDED TO THE PRODUCT.

SECTION II-B ACUTE TOXICITY DATA

NO.	ACUTE ORAL LD50	ACUTE DERMAL LD50	ACUTE INHALATION LC50
P	NOT AVAILABLE		

SECTION III HEALTH INFORMATION

THE HEALTH EFFECTS NOTED BELOW ARE CONSISTENT WITH REQUIREMENTS UNDER THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200).

EYE CONTACT: BASED ON SIMILAR PRODUCT TESTING PRODUCT IS MINIMALLY IRRITATING TO THE EYES.

SKIN CONTACT: PROLONGED AND REPEATED LIQUID CONTACT CAN CAUSE DEFATTING AND DRYING OF THE SKIN RESULTING IN SKIN IRRITATION AND DERMATITIS.

INHALATION: WARNING. NATURAL GAS, AND OTHER HAZARDOUS VAPORS MAY EVOLVE AND COLLECT IN THE HEADSPACE OF STORAGE TANKS OR OTHER ENCLOSED VESSELS. NATURAL GAS IS EXTREMELY FLAMMABLE AND A SIMPLE ASPHYXIANT. INHALATION OF OTHER LIGHT HYDROCARBONS MAY CAUSE PULMONARY IRRITATION AND RESULT IN CNS DEPRESSION. PROLONGED AND REPEATED INHALATION OF N-HEXANE MAY PRODUCE PERIPHERAL NEUROPATHY. PRODUCT MAY BE IRRITATING TO THE NOSE, THROAT AND RESPIRATORY TRACT. PROLONGED AND REPEATED EXPOSURE TO BENZENE MAY CAUSE SERIOUS INJURY TO BLOOD FORMING ORGANS AND IS LINKED TO LATER DEVELOPMENT OF ACUTE MYELOGENOUS LEUKEMIA.

INGESTION: THIS PRODUCT MAY BE HARMFUL OR FATAL IF SWALLOWED. INGESTION OF PRODUCT MAY RESULT IN VOMITING; ASPIRATION (BREATHING) OF VOMITUS INTO THE LUNGS MUST BE AVOIDED AS EVEN SMALL QUANTITIES MAY RESULT IN ASPIRATION PNEUMONITIS.

SIGNS AND SYMPTOMS: IRRITATION AS NOTED ABOVE. EARLY TO MODERATE CNS (CENTRAL NERVOUS SYSTEM) DEPRESSION MAY BE EVIDENCED BY GIDDINESS, HEADACHE, DIZZINESS AND NAUSEA; IN EXTREME CASES, UNCONCIOUSNESS AND DEATH MAY OCCUR. ASPHYXIATION AND H2S TOXICITY MAY BE NOTED BY A SUDDEN LOSS OF CONSCIOUSNESS; DEATH MAY QUICKLY FOLLOW. ASPIRATION PNEUMONITIS MAY BE EVIDENCED BY COUGHING, LABORED BREATHING AND CYANOSIS (BLUISH SKIN); IN SEVERE CASES DEATH MAY OCCUR. PERIPHERAL NERVE DAMAGE MAY BE EVIDENCED BY MUSCULAR WEAKNESS AND LOSS OF SENSATION IN THE ARMS AND LEGS. DAMAGE TO BLOOD FORMING ORGANS MAY BE EVIDENCED BY EASY FATIGABILITY AND PALLOR (RBC EFFECT), DECREASED RESISTANCE TO INFECTION (WBC EFFECT) AND EXCESSIVE BRUISING AND BLEEDING (PLATELET EFFECT).

AGGRAVATED MEDICAL CONDITIONS:

PREEXISTING EYE, SKIN, AND RESPIRATORY DISORDERS OR PREEXISTING IMPAIRED BLOOD FORMING FUNCTIONS MAY BE AGGRAVATED BY EXPOSURE TO THIS PRODUCT.

OTHER HEALTH EFFECTS:

BENZENE IS LISTED BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, AND OSHA AS A CHEMICAL CAUSALLY ASSOCIATED WITH CANCER (ACUTE MYELOGENOUS LEUKEMIA) IN HUMANS.

SEE SECTION VI FOR ADDITIONAL HEALTH INFORMATION.

SECTION IV OCCUPATIONAL EXPOSURE LIMITS

COMP	OSHA		ACGIH		
NO.	PEL/TWA	PEL/CEILING	TLV/TWA	TLV/STEL	OTHER
P*	300 PPM		300 PPM	500 PPM	500 PPM**
B	1 PPM		10 PPM***		5 PPM**
C	50 PPM		50 PPM		

*GASOLINE **OSHA PEL/STEL ***CLASSIFIED BY ACGIH AS A "SUSPECTED HUMAN CARCINOGEN" (A2)

SECTION V EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT: FLUSH WITH WATER FOR 15 MINUTES WHILE HOLDING EYELIDS OPEN. GET MEDICAL ATTENTION.

SKIN CONTACT: FLUSH WITH WATER WHILE REMOVING CONTAMINATED CLOTHING AND SHOES. FOLLOW BY WASHING WITH SOAP AND WATER. DO NOT REUSE CLOTHING OR SHOES UNTIL CLEANED. IF IRRITATION PERSISTS, GET MEDICAL ATTENTION.

INHALATION: REMOVE VICTIM TO FRESH AIR AND PROVIDE OXYGEN IF BREATHING IS DIFFICULT. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET MEDICAL ATTENTION.

INGESTION: DO NOT INDUCE VOMITING. IF VOMITING OCCURS SPONTANEOUSLY KEEP HEAD BELOW HIPS TO PREVENT ASPIRATION OF LIQUID INTO THE LUNGS. GET MEDICAL ATTENTION.*

NOTE TO PHYSICIAN: *IF MORE THAN 2.0 ML PER KG HAS BEEN INGESTED AND VOMITING HAS NOT OCCURRED, EMESIS SHOULD BE INDUCED WITH MEDICAL SUPERVISION. KEEP VICTIM'S HEAD BELOW HIPS TO PREVENT ASPIRATION. IF SYMPTOMS SUCH AS LOSS OF GAG REFLEX, CONVULSIONS OR UNCONSCIOUSNESS OCCUR BEFORE EMESIS, GASTRIC LAVAGE USING A CUFFED ENDOTRACHEAL TUBE SHOULD BE CONSIDERED.

SECTION VI SUPPLEMENTAL HEALTH INFORMATION

WHILE THERE IS NO EVIDENCE THAT EXPOSURE TO INDUSTRIALLY ACCEPTABLE LEVELS OF HYDROCARBON HAVE PRODUCED CARDIAC EFFECTS IN HUMANS, ANIMAL STUDIES HAVE SHOWN THAT INHALATION OF HIGH LEVELS OF NATURAL GAS VAPORS PRODUCED CARDIAC SENSITIZATION. SUCH SENSITIZATION MAY CAUSE FATAL CHANGES IN HEART RHYTHMS. THIS LATTER EFFECT WAS SHOWN TO BE ENHANCED BY HYPOXIA OR THE INJECTION OF ADRENALIN-LIKE AGENTS.

ANIMAL STUDIES ON BENZENE HAVE DEMONSTRATED IMMUNOTOXICITY, TESTICULAR EFFECTS AND ALTERATIONS IN REPRODUCTIVE CYCLES, EVIDENCE OF CHROMOSOMAL DAMAGER OR OTHER CHROMOSOMAL CHANGES, AND EMBRYO/FETOTOXICITY BUT NOT TERATOGENICITY. STUDIES ON N-HEXANE IN LABORATORY ANIMALS HAVE SHOWN MILD, TRANSITORY EFFECTS ON THE SPLEEN AND BLOOD (WHITE BLOOD CELLS), AND EVIDENCE OF LUNG DAMAGE. IN ADDITION, FETOTOXICITY HAS BEEN DEMONSTRATED AT LEVELS PRODUCING MATERNAL TOXICITY. AT HIGH LEVELS, INHALATION EXPOSURE HAS RESULTED IN TESTICULAR AND EPIDIDYMAL ATROPHY.

SECTION VII PHYSICAL DATA

BOILING POINT (DEG F):	SPECFIC GRAVITY (H2O = 1):	VAPOR PRESSURE (MM HG):
-4 TO 356 APPROX.	>0.7	7-14.5 PSI (REID)
MELTING POINT (DEG F):	SOLUBILITY IN WATER:	VAPOR DENSITY (AIR = 1):
NOT AVAILABLE	NEGLIGIBLE	>1
		% VOLATILE BY VOL= 100 (@ 415 DEG. F)

EVAPORATION RATE (NORMAL BUTYL ACETATE = 1):NOT AVAILABLE
APPEARANCE AND ODOR:AMBER TO DARK COLORED LIQUID. HYDROCARBON ODOR.
PHYS/CHEM PROPERTIES: SEE ABOVE FOR DETAILS

SECTION VIII FIRE AND EXPLOSION HAZARDS

FLASH POINT AND METHOD: <100 DEG F (PMCC)
FLAMMABLE LIMITS/PERCENT VOLUME IN AIR: LOWER: N/AV HIGHER: N/AV
EXTINGUISHING MEDIA:
USE WATER FOG, FOAM, DRY CHEMICAL OR CO2. DO NOT USE A DIRECT STREAM OF WATER. PRODUCT WILL FLOAT AND CAN BE REIGNITED ON SURFACE OF WATER.
SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS:
WARNING. FLAMMABLE. CLEAR FIRE AREA OF UNPROTECTED PERSONNEL. DO NOT ENTER CONFINED FIRE SPACE WITHOUT FULL BUNKER GEAR (HELMET WITH FACE SHIELD, BUNKER COATS, GLOVES AND RUBBER BOOTS), INCLUDING A POSITIVE PRESSURE NIOSH APPROVED SELF-CONTAINED BREATHING APPARATUS. COOL FIRE EXPOSED CONTAINERS WITH WATER.
UNUSUAL FIRE AND EXPLOSION HAZARDS:
VAPORS ARE HEAVIER THAN AIR ACCUMULATING IN LOW AREAS AND TRAVELING ALONG THE GROUND AWAY FROM THE HANDLING SITE. DO NOT WELD, HEAT OR DRILL ON OR NEAR CONTAINER. HOWEVER, IF EMERGENCY SITUATIONS REQUIRE DRILLING, ONLY TRAINED EMERGENCY PERSONNEL SHOULD DRILL.

SECTION IX REACTIVITY

STABLITY: STABLE HAZARDOUS POLYMERIZATION WILL NOT OCCUR
CONDITIONS AND MATERIALS TO AVOID:
AVOID HEAT, SPARKS, OPEN FLAMES AND STRONG OXIDIZING AGENTS. PREVENT VAPOR ACCUMULATION.
HAZARDOUS DECOMPOSITION PRODUCTS:
THERMAL DECOMPOSITION PRODUCTS ARE HIGHLY DEPENDENT ON THE COMBUSTION CONDITIONS. A COMPLEX MIXTURE OF AIRBORNE SOLID, LIQUID, PARTICULATES AND GASES WILL EVOLVE WHEN THIS MATERIAL UNDERGOES PYROLYSIS OR COMBUSTION. CARBON MONOXIDE AND OTHER UNIDENTIFIED ORGANIC COMPOUNDS MAY BE FORMED UPON COMBUSTION.

SECTION X EMPLOYEE PROTECTION

RESPIRATORY PROTECTION:
AVOID BREATHING VAPOR. IF EXPOSURE MAY OR DOES EXCEED OCCUPATIONAL EXPOSURE LIMITS (SEC. IV) USE A NIOSH-APPROVED RESPIRATOR TO PREVENT OVEREXPOSURE. IN ACCORD WITH 29 CFR 1910.134 AND 1910.1028 USE EITHER AN ATMOSPHERE-SUPPLYING RESPIRATOR OR AN AIR-PURIFYING RESPIRATOR FOR ORGANIC VAPORS.
PROTECTIVE CLOTHING
AVOID CONTACT WITH EYES. WEAR CHEMICAL GOGGLES IF THERE IS LIKELIHOOD OF CONTACT WITH EYES. AVOID CONTACT WITH SKIN AND CLOTHING. WEAR CHEMICAL-RESISTANT GLOVES AND PROTECTIVE CLOTHING.

ADDITIONAL PROTECTIVE MEASURES:
USE EXPLOSION-PROOF VENTILATION AS REQUIRED TO CONTROL VAPOR CONCENTRATIONS.

SECTION XI ENVIRONMENTAL PROTECTION

SPILL OR LEAK PROCEDURES:
WARNING. FLAMMABLE. ELIMINATE ALL IGNITION SOURCES. HANDLING EQUIPMENT MUST BE GROUNDED TO PREVENT SPARKING. *** LARGE SPILLS *** EVACUATE THE HAZARD AREA OF UNPROTECTED PERSONNEL. WEAR APPROPRIATE RESPIRATOR AND PROTECTIVE CLOTHING. SHUT OFF SOURCE OF LEAK ONLY IF SAFE TO DO SO. DIKE AND CONTAIN. IF VAPOR CLOUD FORMS, WATER FOG MAY BE USED TO SUPPRESS; CONTAIN RUN-OFF. REMOVE WITH VACUUM TRUCKS OR PUMP TO STORAGE/SALVAGE VESSELS. SOAK UP RESIDUE WITH AN ABSORBENT SUCH AS CLAY, SAND OR OTHER SUITABLE MATERIAL; PLACE IN NON-LEAKING CONTAINERS FOR PROPER DISPOSAL. FLUSH AREA WITH WATER TO REMOVE TRACE RESIDUE; DISPOSE OF FLUSH SOLUTIONS AS ABOVE. *** SMALL SPILLS *** TAKE UP WITH AN ABSORBENT MATERIAL AND PLACE IN NON-LEAKING CONTAINERS; SEAL TIGHTLY FOR PROPER DISPOSAL.

SECTION XII SPECIAL PRECAUTIONS

KEEP LIQUID AND VAPOR AWAY FROM HEAT, SPARKS AND FLAME. SURFACES THAT ARE SUFFICIENTLY HOT MAY IGNITE EVEN LIQUID PRODUCT IN THE ABSENCE OF SPARKS OR FLAME. EXTINGUISH PILOT LIGHTS, CIGARETTES AND TURN OFF OTHER SOURCES OF IGNITION PRIOR TO USE AND UNTIL ALL VAPORS ARE GONE.
VAPORS MAY ACCUMULATE AND TRAVEL TO IGNITION SOURCES DISTANT FROM THE HANDLING SITE; FLASH-FIRE CAN RESULT. KEEP CONTAINERS CLOSED WHEN NOT IN USE. USE WITH ADEQUATE VENTILATION.
CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, CAN CONTAIN EXPLOSIVE VAPORS.
DO NOT CUT, DRILL, GRIND, WELD OR PERFORM SIMILAR OPERATIONS ON OR NEAR CONTAINERS.
STATIC ELECTRICITY MAY ACCUMULATE AND CREATE A FIRE HAZARD. GROUND FIXED EQUIPMENT. BOND AND GROUND TRANSFER CONTAINERS AND EQUIPMENT. WASH WITH SOAP AND WATER BEFORE EATING, DRINKING, SMOKING, APPLYING COSMETICS, OR USING TOILET FACILITIES. LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.

SECTION XIII TRANSPORTATION REQUIREMENTS

DEPARTMENT OF TRANSPORTATION CLASSIFICATION:
CLASS 3 (FLAMMABLE LIQUID), PACKING GROUP MUST BE DETERMINED ON A CASE-BY-CASE BASIS.
DOT PROPER SHIPPING NAME:FLAMMABLE LIQUID, N.O.S. (PETROLEUM CONDENSATE)
OTHER REQUIREMENTS:UN1993, GUIDE 128

SECTION XIV OTHER REGULATORY CONTROLS

THIS PRODUCT IS LISTED ON THE EPA/TSCA INVENTORY OF CHEMICAL SUBSTANCES.
IN ACCORDANCE WITH SARA TITLE III, SECTION 313, THE ENVIRONMENTAL DATA SHEET (EDS) SHOULD ALWAYS BE COPIED AND SENT WITH THE MSDS.

SECTION XV STATE REGULATORY INFORMATION

THE FOLLOWING CHEMICALS ARE SPECIFICALLY LISTED BY INDIVIDUAL STATES; OTHER PRODUCT SPECIFIC HEALTH AND SAFETY DATA IN OTHER SECTIONS OF THE MSDS MAY ALSO BE APPLICABLE FOR STATE REQUIREMENTS. FOR DETAILS ON YOUR REGULATORY REQUIREMENTS YOU SHOULD CONTACT THE APPROPRIATE AGENCY IN YOUR STATE.

STATE LISTED COMPONENT	CAS NO	PERCENT	STATE CODE
NATURAL GAS	8006-14-2	VARIABLE	MA, PA
BENZENE	71-43-2	VARIABLE	CA, CT, FL, IL, LA, MA, ME, MN, NJ, PA, RI, CA65C/R
N-HEXANE	110-54-3	VARIABLE	CA, CT, FL, IL, LA, MA, ME, MN,

PA, RI
CA = CALIFORNIA HAZ. SUBST. LIST; CA65C, CA65R, CA65C/R = CALIFORNIA SAFE DRINKING WATER AND TOXICS ENFORCEMENT ACT OF 1986 OR PROPOSITION 65 LIST; CT = CONNECTICUT TOXIC. SUBST. LIST; FL = FLORIDA SUBST. LIST; IL = ILLINOIS TOX. SUBST. LIST; LA = LOUISIANA HAZ. SUBST. LIST; MA = MASSACHUSETTS SUBST. LIST; ME = MAINE HAZ. SUBST. LIST; MN = MINNESOTA HAZ. SUBST. LIST; NJ = NEW JERSEY HAZ. SUBST. LIST; PA = PENNSYLVANIA HAZ. SUBST. LIST; RI = RHODE ISLAND HAZ. SUBST. LIST.
CALIFORNIA PROPOSITION 65 FOOTNOTE: CA65C = THE CHEMICAL IDENTIFIED WITH THIS CODE IS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER. CA65R = THE CHEMICAL IDENTIFIED WITH THIS CODE IS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM. CA65C/R = THE CHEMICAL IDENTIFIED WITH THIS CODE IS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BOTH CANCER AND BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

SECTION XVI SPECIAL NOTES

MSDS REVISED IN SECTION XV - STATE REGULATORY INFORMATION.

THE INFORMATION CONTAINED IN THIS DATA SHEET IS BASED ON THE DATA AVAILABLE TO US AT THIS TIME, AND IS BELIEVED TO BE ACCURATE BASED UPON THAT DATA. IT IS PROVIDED INDEPENDENTLY OF ANY SALE OF THE PRODUCT, FOR PURPOSE OF HAZARD COMMUNICATION. IT IS NOT INTENDED TO CONSTITUTE PRODUCT PERFORMANCE INFORMATION, AND NO EXPRESS OR IMPLIED WARRANTY OF ANY KIND IS MADE WITH RESPECT TO THE PRODUCT, UNDERLYING DATA OR THE INFORMATION CONTAINED HEREIN. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL PRODUCTS YOU BUY, PROCESS, USE OR DISTRIBUTE, AND ARE ENCOURAGED TO ADVISE THOSE WHO MAY COME IN CONTACT WITH SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

TO DETERMINE THE APPLICABILITY OR EFFECT OF ANY LAW OR REGULATION WITH RESPECT TO THE PRODUCT, YOU SHOULD CONSULT WITH YOUR LEGAL ADVISOR OR THE APPROPRIATE GOVERNMENT AGENCY. WE WILL NOT PROVIDE ADVICE ON SUCH MATTERS, OR BE RESPONSIBLE FOR ANY INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN. THE UNDERLYING DATA, AND THE INFORMATION PROVIDED HEREIN AS A RESULT OF THAT DATA, IS THE PROPERTY OF EQUIVA SERVICES, LLC AND IS NOT TO BE THE SUBJECT OF SALE OR EXCHANGE WITHOUT THE EXPRESS WRITTEN CONSENT OF EQUIVA SERVICES, LLC.

ENVIRONMENTAL DATA SHEET
EQUILON EDS: 55277E
CONDENSATE (NATURAL GAS) - FLAMMABLE
TELEPHONE NUMBER:
24 HOUR EMERGENCY ASSISTANCE
EQUIVA SERVICES: 877-276-7283
CHEMTREC: 800-424-9300
GENERAL MSDS ASSISTANCE
877-276-7285
NAME AND ADDRESS
EQUILON ENTERPRISES
PRODUCT STEWARDSHIP
P.O. BOX 674414
HOUSTON, TX 77267-4414
PRODUCT CODE: 89870

SECTION I PRODUCT COMPOSITION

NO.	COMPOSITION	CAS	PERCENT
P	CONDENSATE (NATURAL GAS) - FLAMMABLE		
1	CONDENSATE*	64741-47-5	100
A	NATURAL GAS	8006-14-2	VARIABLE
B	BENZENE	71-43-2	VARIABLE
C	N-HEXANE	110-54-3	VARIABLE

*THIS CHEMICAL IS A COMPLEX SUBSTANCE WHICH MAY CONTAIN CONSTITUENTS IDENTIFIED AS A, B, C, ABOVE THAT ARE NOT INTENTIONALLY ADDED TO THE PRODUCT.

SECTION II SARA TITLE III INFORMATION

NO.	EHS RQ (*1)	EHS TPQ (*2)	SEC-313 (*3)	313 CATEGORY (*4)	311/312 CATEGORY (*5)
P					H-1, H-2, P-3
B			YES		

*1 = REPORTABLE QUANTITY OF EXTREMELY HAZARDOUS SUBSTANCE, SEC 302
*2 = THRESHOLD PLANNING QUANTITY, EXTREMELY HAZARDOUS SUBSTANCE, SEC 302
*3 = TOXIC CHEMICAL, SEC 313
*4 = CATEGORY AS REQUIRED BY SEC 313 (40 CFR 372.65 C), MUST BE USED ON TOXIC RELEASE INVENTORY FORM
*5 = CATEGORY (FOR AGGREGATE REPORTING REQUIREMENTS UNDER SARA 311, 312)
HEALTH: H-1 = IMMEDIATE (ACUTE) HEALTH HAZARD
H-2 = DELAYED (CHRONIC) HEALTH HAZARD
PHYSICAL: P-3 = FIRE HAZARD
P-4 = SUDDEN RELEASE OF PRESSURE HAZARD
P-5 = REACTIVE HAZARD

SECTION III ENVIRONMENTAL RELEASE INFORMATION

UNDER EPA-CWA, THIS PRODUCT IS CLASSIFIED AS AN OIL UNDER SECTION 311. SPILLS INTO OR LEADING TO SURFACE WATERS THAT CAUSE A SHEEN MUST BE REPORTED TO THE NATIONAL RESPONSE CENTER, 800-424-8802.
THIS MATERIAL IS COVERED BY CERCLA'S PETROLEUM EXCLUSION, THEREFORE, RELEASES TO AIR, LAND OR WATER ARE NOT REPORTABLE UNDER EPA-CERCLA ("SUPERFUND").

SECTION IV RCRA INFORMATION

UNDER EPA - RCRA (40 CFR 261.21), IF THIS PRODUCT BECOMES A WASTE MATERIAL, IT WOULD BE IGNITABLE HAZARDOUS WASTE, HAZARDOUS WASTE NUMBER D001. REFER TO LATEST EPA OR STATE REGULATIONS REGARDING PROPER DISPOSAL.

THE INFORMATION CONTAINED HEREIN IS BASED ON THE DATA AVAILABLE TO US AND IS BELIEVED TO BE CORRECT. HOWEVER, SHELL MAKES NO WARRANTY, EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. SHELL ASSUMES NO RESPONSIBILITY FOR INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN.

SHELL OIL COMPANY
P.O. BOX 4320
HOUSTON, TX 77210

FOR ADDITIONAL INFORMATION ON THIS ENVIRONMENTAL DATA PLEASE CALL
(713) 241-2252
FOR EMERGENCY ASSISTANCE PLEASE CALL
SHELL: (713) 473-9461
CHEMTREC: (800) 424-9300

}

Appendix E
Oil Spill Removal Techniques

Method	Description	When to use
1. NO ACTION	No action is taken. Monitoring continues.	Extremely remote or inaccessible shorelines. When natural removal rates are very fast.
2. MANUAL REMOVAL	Remove surface oil manually (hands, rakes, shovels, etc.). No mechanized equipment.	Light to moderate oiling conditions.
3. PASSIVE COLLECTION (SORBENTS)	Remove oil by absorption onto oleophilic material placed in the intertidal zone.	As a secondary treatment method after gross oil removal, and along sensitive shorelines where access is restricted.
4. DEBRIS REMOVAL	Manual or mechanical removal of debris from the upper beach face and the zone above high tide beyond the normal wash of waves. Can include cutting and removal of oiled logs.	When driftwood and debris is heavily contaminated and either a potential source of chronic oil release, an aesthetic problem, or a source of contamination for other organisms on the shoreline.
5. TRENCHING	Remove subsurface oil from permeable substrates by digging trenches to the depth of the oil and remove oil floating on the water table by vacuum pump or super sucker. Water flooding or high-pressure spraying at ambient temperatures can be used to flush oil to the trench.	When large quantities of oil penetrate deeply into permeable sediments and cannot be removed by surface flooding. The oil must be liquid enough to flow at ambient temperatures.
6. SEDIMENT REMOVAL	Oiled sediments are removed by either manual use of hand tools or mechanical use of various kinds of motorized equipment. The oiled material must be transported and disposed of off-site.	When only very limited amounts of oiled sediments have to be removed. Should not be considered where beach erosion may result. Remove the sediments only to the depth of oil penetration, which can be difficult with heavy equipment.
7. AMBIENT – WATER FLOODING (DELUGE)	Ambient seawater is pumped through holes in header pipes and flows down the beach face to the water. On porous beaches, water flows through the substrate pushing loose oil ahead of it. Oil is trapped by booms and picked up with a skimmer or other suitable equipment.	On heavily oiled shorelines when the oil is stiff fluid and loosely adhering to the substrate; and where oil has penetrated into cobble or boulder beaches.

	Method	Description	When to use
8.	AMBIENT – WATER / LOW - PRESSURE WASHING	Low-pressure washing (<50 psi) is used to flush oil to the water's edge for pickup with skimmers or sorbents. It can be used with a deluge system to prevent released oil from re-adhering to the substrate.	Where adhered oil is still fresh and must be removed due to continued release of oil.
9.	AMBIENT-WATER / HIGH - PRESSURE WASHING	Similar to low-pressure washing except water pressure is up to 100 psi. Remove oil that has adhered to rocks or man-made structures. May require placement of sorbents directly below treatment areas.	When low-pressure washing is not effective for removal of oil. When directed water jet can remove oil from hard to reach sites. To remove oil from man-made structures for aesthetic reasons.
10.	WARM WATER MODERATE TO HIGH-PRESSURE WASHING	Heated seawater (ambient to 90F) is applied at moderate to high. If not effective, "deluge" flooding and additional low or high-pressure washing can be used to float the oil to the water's edge for pickup. Oil is trapped by booms and picked up with skimmers or sorbents.	When oil has weathered to the point that low pressure washing with ambient water is not effective for removal of adhered oil, which must be recovered due to continued release of oil. To remove oil from man-made structures for aesthetic reasons.
11.	HOT-WATER/ HIGH-PRESSURE WASHING	Water heaters mounted offshore on barges or small land-based units, heat water to temperatures from 90°F to 170°F, which is usually sprayed by hand with high-pressure wands. Requires immediate use of vacuum trucks to remove the oil/water runoff or collection with skimmers or sorbents.	When the oil has weathered to the point that even warm water at high pressure is not effective for removal of adhered oil. To remove oil from man-made structures for aesthetic reasons.
12.	SLURRY SAND BLASTING	Use sandblasting equipment to remove oil from the substrate. May include recovery of used (oiled) sand in some cases.	When heavy oil residue is remaining on the shoreline, which needs to be cleaned for aesthetic reasons, and even hot-water wash is not effective.
13.	VACUUM	Use of a vacuum unit with a suction head to recover free oil. Equipment ranges from small portable units to large super-suckers. Can be used with water spray systems to flush oil towards the suction head.	When free, liquid oil is stranded on the shoreline (usually along the high tide line) or trapped in vegetation that is readily accessible.

Method	Description	When to use
14. SEDIMENT REWORKING	Sediments are roto-tilled or otherwise mechanically mixed with the use of heavy equipment on gravel beds. The oiled sediments in the upper area may be relocated lower to enhance natural cleanup during reworking by wave activity (berm relocation).	On shorelines with significant amounts of subsurface oil, where sediment removal is infeasible (due to erosion concerns or disposal problems); also where surface oil deposits have started to form pavements or crusts.
15. SEDIMENT REMOVAL, CLEANSING AND REPLACEMENT	Oiled sediments are excavated using heavy equipment at low tide. The sediments are loaded into a container for cleansing process. Rinsed materials are returned to the original area. Cleaning equipment must be placed close to areas to reduce transportation problems.	Applicable on surfaces with large amounts of subsurface oil, where permanent removal of sediment is undesired and other cleanup techniques are likely to be ineffective.
16. CUTTING VEGETATION	Manual cutting of oiled vegetation using weed eater, and removal of cut vegetation with rakes. The cut vegetation is bagged immediately for disposal.	Use when the risk of oiled vegetation contaminating wildlife is greater that the value of the vegetation that is to be cut, and there is no less destructive method to remove or reduce the risk to acceptable levels.
17. CHEMICAL OIL STABILIZATION WITH ELASTOMERS	The primary purpose is to stabilize the oil, keeping it from spreading or escaping, causing oiling elsewhere. May reduce the solubility of the light (and more toxic) fractions, by locking them into the polymer. This reduces both air and water exposure. Depending on the beach type and equipment used, recovery may be enhanced.	When heavy concentrations of liquid oil are on the substrate and adjacent water body, and physical removal cannot be completed prior to the next tide so that the oil is likely to move to a more sensitive shoreline type. Should be used in conjunction with booming or other physical containment.
18. IN-SITU BURNING OF SHORELINES	Oil on the shoreline is burned, usually when it is on a combustible substrate such as vegetation, logs, and other debris. Oil can be burned off of nonflammable substrates with the aid of a burn promoter.	Early in the spill event, after ensuring that the product is ignitable.

Method	Description	When to use
19. NUTRIENT ENHANCEMENT	Nutrients are applied to the shoreline in one of several methods: soluble inorganic formulations that are dissolved in water and applied as a spray at low tide, requiring frequent applications; slow release formulations that are applied as a solid to the intertidal zone and designed to slowly dissolve; and oleophilic formulations that adhere to the oil itself, thus they are sprayed directly on the oiled areas.	On moderate to heavily oiled shorelines, after other techniques have been used to remove as much oil as possible; on lightly oiled shorelines where other techniques are not effective; and where nutrients are a limiting factor in natural degradation. Potentially for the treatment of subsurface oil.
20. MICROBIAL ADDITION	Formulations containing hydrocarbon-degrading microbes and fertilizers are added to the oiled area. To date, microbial addition has not been shown to work better than fertilizer alone in field tests.	N/A in shallow water, poorly flushed, restricted embayments, or where toxicity of nutrients (ammonia) is of concern. Use should be restricted adjacent to stream mouths, tide pool communities, etc. Other chemicals in the formulation could be toxic to aquatic organisms.

Appendix E-2
Shallow Water/Inland Response Strategies

SMALL LAKES AND PONDS

Habitat Description	Lakes and ponds are standing bodies of water of variable size and water depth. Waves and currents are generally very low, although the water surface can become choppy. Water levels can fluctuate widely over time, particularly on manmade lakes. Smaller ponds can completely freeze over in winter. The bottom sediments close to shore can be soft and muddy, and the surrounding land can include wet meadows and marshes. Floating vegetation can be common. The rate of water exchange is highly variable within this group, ranging from days to years. These water bodies can include sections of a river with low flow rates (e.g., behind diversion dams) or that are somewhat isolated from regular flow (e.g., backwater lakes or oxbow lakes). Isolated water bodies, such as kettle lakes, are unique members of this category because they have no surface water outflow, and therefore have very low flushing rates. In shallow water, boat operations would be limited and most response operations would be conducted from shore.
Sensitivity	Small lakes and ponds have medium to high sensitivity to oil spill impact because of low physical removal rates, limited dilution and flushing of oil mixed into the water column, and high biological and human use. They provide valuable habitat for migrating and nesting birds and mammals, and support important fisheries. Small lakes can be the focus of local recreational activities. Wind will control the distribution of slicks, holding the oil against a lee shore or spreading it along shore and into catchment areas. Wind shifts can completely change the location of slicks, contaminating previously clean areas. Thus, early protection of sensitive areas is important. The inlet and outlet are key areas for focusing protection efforts. Oil impacts on floating vegetation depend to a large degree on dose, with possible elimination of plants at high doses. Section 5 addresses sinking oils and response under ice conditions.

Environmental impact from response methods for SMALL LAKE & POND environments.

The following categories are used to compare the relative environmental impact of each response method for the specific environment or habitat for each oil type, using the following definitions: A = May cause the least adverse habitat impact. B = May cause some adverse habitat impact. C = May cause significant adverse habitat impact. D = May cause the most adverse habitat impact. I = Insufficient Information - impact or effectiveness of the method could not be evaluated at this time. "-" = Not applicable for this oil type.

Response Method	*Gasoline Products*	*Diesel Products*	*Medium Oils*	*Heavy Oils*
Booming - Deflection/Exclusion	A	A	A	A
Booming - Containment	-	A	A	A
Skimming/Vacuum	-	A	A	A
Sorbents	-	A	A	A
Natural Recovery	A	B	C	C
In-Situ Burning	B	B	B	B
Herding Agents	B	B	B	-
Debris Removal	-	B	B	B
Vegetation Removal	-	B	B	B
Physical Herding	C	B	B	B
Visco-Elastic Agents/Solidifiers	-	B	B	-
Manual Oil Removal/Cleaning	-	C	C	B
Mechanical Oil Removal	-	C	C	C
Dispersants	D	D	D	-
Emulsion Treating Agents	-	I	I	I
Nutrient Enrichment	-	I	I	I
Natural Microbe Seeding	-	I	I	I

RESPONSE METHODS: SMALL LAKE AND POND ENVIRONMENTS	
Least Adverse Habitat Impact	*Booming* • Use containment booms to keep oil from spreading • Safety concerns limit the containment of gasoline spills; however, booms can be used to exclude or deflect the spill away from sensitive resources *Skimming/Vacuum* • Not applicable to gasoline spills because of safety concerns • Land-based operations need site-specific restrictions and monitoring to minimize physical destruction *Sorbents* • Overuse results in excess waste generation • Inhibit the evaporation of gasoline spills
Some Adverse Habitat Impact	*Natural Recovery* • Low impact for light oils but may have significant impact for medium crudes and heavier fuel oils because they persist and affect shoreline habitats *In-Situ Burning* • Less environmental impact in winter when snow and ice provide some protection, plants are dormant, and fewer animals are present • Safety concerns limit containment of gasoline, but may be safely used with natural containment, such as gasoline trapped in ice *Herding Agents* • Most effective under calm conditions • Should be coupled with recovery when used to protect sensitive habitats • Not effective on heavy oils because oil must be fluid *Debris Removal* • Debris may be associated with nests or living areas (e.g., beaver lodges), so impacts on resident animal habitat may need consideration • Operate from small boats to minimize substrate disruption *Vegetation Removal* • If oil is trapped in floating vegetation, may be only way to recover the oil in the absence of water currents • May be appropriate to prevent secondary oiling of wildlife *Physical Herding* • Care should be taken not to drive oil into the water column or sediment *Visco-Elastic Agents/Solidifiers* • Visco-elastic agents, by improving overall oil recovery from the water surface, reduce secondary shoreline oiling • Not applicable to gasoline spills because of safety concerns during application and inhibition of evaporation • Not effective on heavy oils, which are too viscous to allow the product to mix into the oil
Probable Adverse Habitat Impact	*Manual Oil Removal/Cleaning* • Inherent inefficiency of manual removal of fluid oils would require large crews or repeated entries, resulting in disruption to substrate and wildlife • Not applicable for gasoline spills because of safety concerns *Mechanical Oil Removal* • May be needed where oil has heavily contaminated bottom sediments • May require very intrusive recovery techniques
Most Adverse Habitat Impact	*Dispersants* • Inhibit the evaporation of gasoline spills • Shallow water depths and low dilution rates may result in high aquatic toxicity from oil/dispersant mixtures
Insufficient Information	*Emulsion-Treating Agents* • Not applicable to oils that do not form emulsions, such as gasoline • Insufficient toxicity data to evaluate environmental impact of shallow freshwater environment use *Nutrient Enrichment and Natural Microbe Seeding* • Not applicable to gasoline spills because they rapidly evaporate

	• There is insufficient information on impact and effectiveness for other oil types • There are special concerns about nutrient overloading in small, restricted water bodies

SMALL RIVERS AND STREAMS

Habitat Description	Small rivers and streams are characterized by shallow water (generally 1-2 meters) and narrow channels. Water flow can be highly variable, both throughout the seasons and with distance downstream. This grouping includes a wide range of water bodies, from fast-flowing streams with low falls and numerous rapids over bedrock and gravel, to slow-moving bayous bordered by low muddy banks and fringed with vegetation. Sections of the channel may be choked with log jams and debris, and mid-channel bars and islands can divide water flow into multiple channels. Both boat and vehicular access can be very limited; often the only access will be at bridge crossings. Ice may further complicate response measures in this habitat.
Sensitivity	Small rivers and streams have medium to high sensitivity to oil spill impact. Oil spills may have more of an impact on small rivers and streams than on large rivers due to a variety of conditions, such as lower flow conditions, lower dilution rates, lower overall energy, and greater range of natural habitats. Fish spawn in streams and the tributaries of larger rivers; thus, the most sensitive, early life stages can be present. Fringing wetlands and adjacent floodplains are closely connected to small rivers and streams, and they are areas of high biological use and low natural removal rates. Slicks usually contaminate both banks, and non-viscous oils are readily mixed into the entire water column in shallow streams, potentially exposing both aquatic and benthic organisms to oil. Initial weathering rates may be slower because spreading and evaporation are restricted in narrow channels and heavy vegetation cover. Fish kills are possible for spills ranging from gasoline to medium crude oils. Many different kinds of mammals, birds, reptiles, and amphibians use the stream bank habitats, and there can be localized high mortality rates of these animals. Spills can cause closure of water intakes for drinking water, irrigation, or industrial use along small rivers. A more aggressive response may be appropriate to prevent contamination of downstream habitat, particularly if water intakes, populated areas, or special habitat resources are present.

Environmental impact from response methods for SMALL RIVER & STREAM environments.

The following categories are used to compare the relative environmental impact of each response method for the specific environment or habitat for each oil type, using the following definitions: A = May cause the least adverse habitat impact. B = May cause some adverse habitat impact. C = May cause significant adverse habitat impact. D = May cause the most adverse habitat impact. I = Insufficient Information - impact or effectiveness of the method could not be evaluated at this time. "-" = Not applicable for this oil type.

Response Method	*Gasoline Products*	*Diesel Products*	*Medium Oils*	*Heavy Oils*
Booming - Deflection/Exclusion	A	A	A	A
Skimming	A	A	A	A
Booming - Containment	-	A	A	A
Vacuum	-	A	A	A
Sorbents	-	A	A	A
Barriers/Berms	B	A	A	A
Physical Herding	B	B	B	B
Natural Recovery	A	B	C	C
Debris Removal	-	B	B	B
Visco-Elastic Agents/Solidifiers	B	B	B	-
Vegetation Removal	-	B	B	B
In-Situ Burning	C	B	B	B
Manual Oil Removal/Cleaning	-	C	C	B
Mechanical Oil Removal	-	C	C	C
Dispersants	D	D	D	-
Herding Agents	D	D	D	-
Emulsion Treating Agents	-	I	I	I
Nutrient Enrichment	-	I	I	I
Natural Microbe Seeding	-	I	I	I

RESPONSE METHODS: SMALL RIVER AND STREAM ENVIRONMENTS	
Least Adverse Habitat Impact	*Booming* • Used primarily to divert slicks towards collection points in low-current areas • Safety concerns limit the containment of gasoline spills; however, booms can exclude or deflect the spill away from sensitive resources • Expect low effectiveness with fast currents, shallow water, and steep banks *Skimming/Vacuum* • To protect public health and downstream resources where spreading is limited, recovery of large gasoline spills could be attempted with firefighting foam to suppress vapors and respiratory protection for workers *Sorbents* • Deploy in booms to recover sheens in low-current areas and along shore • Trampling of stream bank and bed habitats during deployment and recovery of sorbents can disrupt streamside vegetation and drive oil into the sediment • Overuse results in excess waste generation *Barriers/Berms* • Potential for physical disruption and sediment contamination in immediate area of the barrier/berm • If all or most of the flow is diverted, may need to monitor water requirements to habitats downstream of the barrier to mitigate potential impacts • Safety concerns limit actions at gasoline spills, although berms built ahead of the slick could be used to exclude oil from sensitive areas, such as side channels
Some Adverse Habitat Impact	*Physical Herding* • May be only means to flush oil trapped in log jams, beaver dams, behind rocks, and in vegetation/debris along banks to downstream collection areas • Spraying of gasoline spills can mix the oil into the water column *Natural Recovery* • For small gasoline and diesel-like oil spills, evaporation and natural dispersion would rapidly remove surface slicks • For all other types and sizes of spills, recovery of free or pooled oil and/or protection of sensitive resources should be attempted *Debris Removal* • Will release trapped oil and speed natural flushing rates *Visco-Elastic Agents/Solidifiers* • Visco-elastic agents may speed recovery of contained oil when time is critical • Solidifiers may immobilize even gasoline spills, preventing their transport downstream and further impact • Ineffective on heavy oils, which are too viscous to allow the product to mix into the oil *Vegetation Removal* • May be needed to remove oil trapped in floating and fringing vegetation • Remove oiled vegetation to prevent chronic sheening in sensitive areas or secondary oiling of wildlife • Monitor crews to minimize physical disturbance, which can be severe *In-Situ Burning* • May be difficult to protect stream-side vegetation • Safety concerns limit containment of gasoline, but may be safely used if natural containment is present • Less impact in winter when snow/ice provide some protection, plants are dormant, and fewer animals are present • May not be practical in fast flowing streams where containment and maintenance of minimum slick thickness (1-3 millimeters) may be difficult
Probable Adverse Habitat Impact	*Manual Oil Removal/Cleaning* • Viable for heavy oils that have solidified versus fluid oils that have spread • Stream bank disruption likely from movement of work crews *Mechanical Oil Removal* • Only consider when large amounts of solidified oil have accumulated in the stream channel and need to be removed quickly
Most Adverse Habitat	*Dispersants* • Enhanced mixing of oil into the water column with restricted dilution will increase acute toxicity to aquatic organisms *Herding Agents*

Impact	• Toxicity concerns when early life stages are present • May not be practical due to fast currents and rough water surface • Oil must be fluid, so not appropriate to heavy oils
Insufficient Information	*Emulsion-Treating Agents* • Insufficient toxicity data to evaluate environmental impact of shallow freshwater environment use • Not applicable to oils that do not form emulsions, such as gasoline *Nutrient Enrichment and Natural Microbe Seeding* • Not applicable to gasoline spills because they rapidly evaporate • There is insufficient information on impact and effectiveness, particularly for applications in small rivers and streams

MANMADE STRUCTURES (ESI = 1B, 6B, 8B)	
Habitat Description	Manmade structures include vertical shore protection structures such as seawalls, piers, and bulkheads, as well as riprap revetments and groins, breakwaters, and jetties. Vertical structures can be constructed of concrete, wood, and corrugated metal. They usually extend below the water surface, although seawalls can have beaches or riprap in front of them. Riprap revetments are constructed of boulder-sized pieces of rock, rubble, or formed concrete pieces (e.g., tetrapods), placed parallel to the shoreline for shore protection. Riprap groins are oriented perpendicular to shore to trap sediment; jetties are designed to protect and maintain channels; and breakwaters are offshore structures constructed to protect an area from wave attack. Riprap structures have very large void spaces and are permeable, while seawalls and bulkheads have impermeable, solid substrates. These structures are very common along developed shores, particularly in harbors, marinas, and residential areas. The range in degree of exposure to waves and currents varies widely, from very low in dead-end canals, to very high on offshore breakwaters. Boat wakes can generate wave energy in otherwise sheltered areas.
Sensitivity	Manmade structures have a range of sensitivities to oil spills, depending on the degree of exposure to natural removal processes. Biological communities and use are sparse. Often, there are sources of pollutants or habitat degradation nearby, such as urban runoff, chronic small oil spills in marinas, poor water quality, and limited water circulation. More intrusive cleanup techniques are often conducted due to their lower biological use, higher public demand for oil removal for aesthetic reasons, and need to minimize human exposure to oil in populated areas. It is acknowledged that manmade structures can vary in permeability, cohesion, and mobility and, in turn, how they are affected by oiling. In this document, however, manmade structures have been grouped together so that the higher degree of cleanup often required can be adequately addressed. Vertical structures are generally impermeable to oil penetration, but oil can heavily coat rough surfaces, forming a band at the water line. During storms, oil can splash over the top and contaminate terrestrial habitats. Riprap poses significant cleanup problems because of large void spaces between the riprap and heavy accumulations of debris. Large amounts of oil can become trapped in the riprap, where it is difficult to remove and a potential source of sheening.

Environmental impact from response methods for MANMADE structures(ESI = 1B, 6B, 8B).

The following categories are used to compare the relative environmental impact of each response method for the specific environment or habitat for each oil type, using the following definitions: A = May cause the least adverse habitat impact. B = May cause some adverse habitat impact. C = May cause significant adverse habitat impact. D = May cause the most adverse habitat impact. I = Insufficient Information - impact or effectiveness of the method could not be evaluated at this time. "-" = Not applicable for this oil type.

Response Method	*Gasoline Products*	*Diesel Products*	*Medium Oils*	*Heavy Oils*
Manual Oil Removal/Cleaning	-	A	A	A
Debris Removal	-	A	A	A
High-Pressure, Cold-Water Flushing	B	A	A	B
Sorbents	B	A	A	B
Vacuum	-	B	A	A
Natural Recovery	A	A	B	B
Flooding	B	A	A	C
Low-Pressure, Cold-Water Flushing	B	A	A	C
Low-Pressure, Hot-Water Flushing	-	B	B	B
High-Pressure, Hot-Water Flushing	-	B	B	B
Shoreline Cleaning Agents	-	B	B	B
Solidifiers	B	B	B	-
In-Situ Burning	-	B	B	B
Nutrient Enrichment	-	C	C	D
Steam Cleaning	-	C	C	C
Chemical Shoreline Pretreatment	-	I	I	I

SAND HABITATS (ESI = 4)

Habitat Description	Sand habitats have a substrate composed of sediments that are predominantly finer than 2 millimeters but greater than silt or clay-sized material. The shoreline may consist of well-sorted sands of one principal size, or of poorly sorted mixtures of muddy sand, gravelly sand, or a combination of these two. When the sediments are fine-grained sand, beaches may be wide and flat; where the sediments are coarse-grained sand, they usually are steeper and narrower. Sandy shorelines may be naturally eroding, accreting, or stable, and groins or breakwaters may be placed to trap sand and maintain some beaches. Exposed sand beaches can undergo rapid erosional or depositional changes during storms. In developed areas, sand beaches can be artificially created by man and are commonly used for recreation. Sand bars and banks along rivers are also included in this habitat.
Sensitivity	Sand habitats have low to medium sensitivity to oil spills. They generally do not have sizable biological communities except where the habitat tends to be protected and consists of poorly sorted muddy sediments. Thus, ecological effects are likely to be of limited extent because of the low natural biological productivity. In developed areas, sand beaches are considered sensitive because of their high recreational use. During small spills, oil will concentrate in a band along the swash line. Maximum penetration into fine-grained sand will be less than 15 centimeters; penetration in coarse sand can reach 25 centimeters or greater. Clean sand can bury oiled layers quickly, creating more difficult cleanup issues. On heavily used recreational beaches, extensive cleanup is usually required to remove as much of the oil as possible. When large amounts of sediment must be removed, it may be necessary to replace these sediments with clean material. Traffic on sand can push oil deeper.

Environmental impact from response methods for SAND habitats (ESI = 4).

The following categories are used to compare the relative environmental impact of each response method for the specific environment or habitat for each oil type, using the following definitions: A = May cause the least adverse habitat impact. B = May cause some adverse habitat impact. C = May cause significant adverse habitat impact. D = May cause the most adverse habitat impact. I = Insufficient Information - impact or effectiveness of the method could not be evaluated at this time. "-" = Not applicable for this oil type.

Response Method	*Gasoline Products*	*Diesel Products*	*Medium Oils*	*Heavy Oils*
Debris Removal	-	A	A	A
Natural Recovery	A	A	B	B
Flooding	B	A	A	B
Sorbents	-	A	A	B
Manual Oil Removal/Cleaning	D	B	A	A
Mechanical Oil Removal	D	B	B	A
Low-Pressure, Cold-Water Flushing	B	B	B	B
Vacuum	-	B	B	B
Sediment Reworking	D	B	B	B
Nutrient Enrichment	-	B	B	C
Shoreline Cleaning Agents	-	-	B	B
Solidifiers	-	B	B	-
In-Situ Burning	-	-	B	B
Low-Pressure, Hot-Water Flushing	D	C	C	B
High-Pressure Hot-Water Flushing	D	D	D	D
High-Pressure, Cold-Water Flushing	D	D	D	D
Chemical Shoreline Pretreatment	-	I	I	I
Natural Microbe Seeding	-	I	I	I

RESPONSE METHODS: SAND HABITATS	
Least Adverse Habitat Impact	*Debris Removal* • Degree of oiling that warrants debris removal and disposal depends on use by humans and sensitive resources *Natural Recovery* • Lower impact for small spills, lighter oil types, and remote areas *Flooding* • Only effective when the oil is fluid and on the sand surface, rather than penetrated or buried • Use on heavy oils is likely to leave large amounts of residual oil in the environment • Use on gasoline spills may transport the oil to more sensitive habitats *Sorbents* • Not applicable to gasoline spills because they rapidly evaporate • Physical removal rates of heavy oils will be slow, so less oil will be mobilized for recovery by sorbents • Overuse results in excess waste generation
Some Adverse Habitat Impact	*Manual Oil Removal/Cleaning* • Minimizes sediment removal and problems of erosion and waste disposal • Effective when oil is mostly on the surface, not buried beneath clean sand • Gasoline tends to quickly evaporate; therefore habitat disruption, worker safety concerns, and waste generated by manual cleanup are not balanced by benefits in removing oil *Mechanical Oil Removal* • Tends to remove large amounts of clean sand with the oiled sand • Use on high-use beaches where rapid removal of oil is required and where long stretches of shoreline are heavily oiled • Gasoline tends to quickly evaporate; therefore habitat disruption, worker safety concerns, and waste generated from mechanical cleanup are not balanced by benefits in removing oil *Low-Pressure, Cold-Water Flushing* • Only effective when the oil is fluid and adheres loosely to the sediments • Optimize pressure to minimize the amount of sand washed downslope *Vacuum* • Early use of vacuum on pooled, liquid oil can prevent deeper penetration • Will minimize amount of sorbent waste when used with flushing efforts • Can vacuum heavy, non-sticky oil from sand substrates completely, but slowly *Sediment Reworking* • Appropriate for lightly oiled and stained sediments, to speed removal rates, and as a final step to polish recreational beaches • Because gasoline tends to quickly evaporate, habitat disruption, worker safety concerns, and waste generated from sediment reworking are not balanced by benefits in removing oil *Nutrient Enrichment* • Potentially effective for lighter oils that leave thin residues; less effective for thick, weathered oil residues • May be concern about nutrient overloading in poorly flushed areas • Not applicable to gasoline spills because they rapidly evaporate *Shoreline Cleaning Agents* • May be only technique to remove viscous oils without removing sediment • Individual products vary in their toxicity and ability to recover the treated oil *Solidifiers* • Not applicable to gasoline spills because they rapidly evaporate • Early use may prevent pooled oil from penetrating deeper • Not effective on heavy oils, which are too viscous to allow the product to mix into the oil *In-Situ Burning* • Can effectively remove pooled surface oil accumulations • Concerns about air pollution, physical nature of the residue, and thermal impact on biota • May have to dig trenches to accumulate oil in pools • Lighter oils will penetrate the sand, leaving insufficient surface concentrations to burn
Probable Adverse Habitat	*Low-Pressure, Hot-Water Flushing* • May be needed to soften and lift sticky oil off the sand surface • Any organisms present will be adversely affected by hot water

Impact	
Most Adverse Habitat Impact	*High-Pressure, Cold-Water Flushing And High-Pressure, Hot-Water Flushing* • High-pressure water jets will fluidize sand-sized sediments, erode the beach, and wash the oiled sediment into nearshore habitats
Insufficient Information	*Chemical Shoreline Pretreatment* • More information needed on available products, their effectiveness, and impact *Natural Microbe Seeding* • There is insufficient information on impact and effectiveness in freshwater habitats

MIXED SAND AND GRAVEL HABITATS (ESI = 3, 5)

Habitat Description	Mixed sand and gravel habitats are characterized by a substrate that is composed predominantly of a mixture of sand- to cobble-sized sediments. These habitats may vary from a well-sorted cobble layer overlying finer-grained (sand-sized) sediments to mixtures of sand, pebble, and cobble. Typically, well-sorted beaches are exposed to some wave or current action that separates and transports finer-grained sediments; however, the sediment distribution does not necessarily indicate the energy at a particular shoreline. On depositional beaches multiple berms can be formed at the different water levels generated during storms. In glaciated areas, the gravel component can include very large boulders. Natural replenishment rates are very slow for gravel, compared to sand. Mixed sand and gravel habitats occur as beaches along the Great Lakes and as point bars along rivers and streams.
Sensitivity	Mixed sand and gravel habitats have medium sensitivity to oil spills. Biological communities are very sparse because of sediment mobility, desiccation, and low organic matter. Most invertebrates living in this habitat are deep burrowers, such as some oligochaete worms and insect larvae. Characteristic insects are mayflies, stoneflies, caddisflies, and midges, although mayflies and stoneflies are scarce or absent where silt is present. The nearshore habitat is used by fish for spawning and protects fry and larvae. There are also limited numbers of birds and mammals. Viscous oils reaching these habitats may not penetrate into the sediments because the pore spaces between sediments are filled with sand. Therefore, deep oil penetration and long-term persistence are lower than on gravel substrates. However, oil can still occur at depths below those of annual reworking, particularly if the oil is deposited high on the beach out of the reach of normal wave activity or is rapidly buried. Erosion can be a concern when large quantities of sediment are physically removed. In more sheltered areas, asphalt pavements can form if heavy surface oil deposits are not removed. Once formed, these pavements are very stable and can persist for years.

Environmental impact from response methods for MIXED SAND and GRAVEL habitats (ESI = 3, 5).

The following categories are used to compare the relative environmental impact of each response method for the specific environment or habitat for each oil type, using the following definitions: A = May cause the least adverse habitat impact. B = May cause some adverse habitat impact. C = May cause significant adverse habitat impact. D = May cause the most adverse habitat impact. I = Insufficient Information - impact or effectiveness of the method could not be evaluated at this time. "-" = Not applicable for this oil type.

Response Method	*Gasoline Products*	*Diesel Products*	*Medium Oils*	*Heavy Oils*
Debris Removal	-	A	A	A
Flooding	A	A	A	C
Natural Recovery	A	A	B	B
Low-Pressure, Cold-Water Flushing	B	A	A	B
Sorbents	-	A	A	B
Vacuum	-	B	B	B
Manual Oil Removal/Cleaning	D	B	A	A
Sediment Reworking	D	B	B	B
Mechanical Oil Removal	D	C	B	B
Shoreline Cleaning Agents	-	-	B	B
Nutrient Enrichment	-	B	B	C
In-Situ Burning	-	-	B	B
Solidifiers	-	-	B	-
High-Pressure, Cold-Water Flushing	C	C	C	C
Low-Pressure, Hot-Water Flushing	D	C	C	B
High-Pressure, Hot-Water Flushing	D	C	C	C
Steam Cleaning	-	D	D	D
Chemical Shoreline Pretreatment	-	I	I	I
Natural Microbe Seeding	-	I	I	I

RESPONSE METHODS: MIXED SAND AND GRAVEL HABITATS	
Least Adverse Habitat Impact	*Debris Removal* • Degree of oiling that warrants debris removal and disposal depends on amount of use by humans and sensitive resources *Flooding* • Most effective when the oil is fluid and adheres loosely to the sediments • Use on heavy oils is likely to leave large amounts of residual oil in the environment *Natural Recovery* • Least impact for small spills, lighter oil types, and remote areas *Low-Pressure, Cold-Water Flushing* • Most effective when the oil is fluid and adheres loosely to the sediments • Excessive pressures can cause erosion • Use on heavy oils is likely to leave large amounts of residual oil in the environment • Use on gasoline spills may transport the oil to more sensitive habitats *Sorbents* • Overuse generates excess waste • Useful for recovering sheens, even for gasoline spills • Physical removal rates of heavy oils will be slow, so less oil will be mobilized for recovery by sorbents
Some Adverse Habitat Impact	*Vacuum* • Early use of vacuum on pooled, liquid oil can prevent deeper penetration *Manual Oil Removal/Cleaning* • Gasoline tends to evaporate quickly; therefore manual cleanup causes habitat disruption, worker safety concerns, and generates waste with no benefits due to removing oil • Minimizes sediment removal and problems of erosion and waste disposal • Preferable when oil is mostly on the surface, not deeply penetrated or buried *Sediment Reworking* • Use to break up heavy surface oil or expose persistent subsurface oil deposits, particularly where sediment removal will cause erosion • Use where there is sufficient exposure to waves to rework the sediments into their original profile and distribution • Gasoline tends to evaporate quickly; therefore sediment reworking causes habitat disruption, worker safety concerns, and generates waste with no benefits due to removing oil *Mechanical Oil Removal* • Tends to remove large amounts of sediment with the oil • Applicable for heavier oil types, which are difficult to remove otherwise • Gasoline tends to evaporate quickly; therefore mechanical cleanup causes habitat disruption, worker safety concerns, and generates waste with no benefits from removing oil *Shoreline Cleaning Agents* • May be only technique to remove viscous oils without removing sediment • Individual products vary in their toxicity and ability to recover the treated oil *Nutrient Enrichment* • Not applicable to gasoline spills because they rapidly evaporate • Potentially effective for lighter oils that leave thin residues; less effective for thick, weathered oil residues • Most applicable as a secondary technique after gross oil removal • Concerns about nutrient overloading in poorly flushed areas *In-Situ Burning* • Can effectively remove pooled surface oil accumulations • Concerns about air pollution, physical nature of the residue, and thermal impact on biota • May have to dig trenches to accumulate oil in pools • Lighter oils will not remain on the sediment surface *Solidifiers* • Early use may prevent pooled oil from penetrating deeper • Not applicable to gasoline spills because they rapidly evaporate • May be useful in recovering sheens when deployed as booms and pillows • Not effective on heavy oils, which are too viscous to allow the product to mix into the oil.

Probable Adverse Habitat Impact	*High-Pressure, Cold-Water Flushing* • High-pressure water jets will flush oiled sediments into nearshore habitats • Excessive pressures can cause erosion if large amounts of sand are present *Low-Pressure, Hot-Water Flushing* • Any organisms present will be affected by hot water • Use on gasoline spills may transport the oil to more sensitive habitats
Most Adverse Habitat Impact	*High-Pressure, Hot-Water Flushing* • Will flush oiled sand into nearshore zone and affect any organisms present *Steam Cleaning* • Highly intrusive technique; will kill any organisms present • Potential for released oil to penetrate deeper into the sediments
Insufficient Information	*Chemical Shoreline Pretreatment* • Need more information on available products, their effectiveness, and impact *Natural Microbe Seeding* • There is insufficient information on impact and effectiveness in freshwater habitats

GRAVEL HABITATS (ESI = 6A)

Habitat Description	Gravel habitats are characterized by a substrate that is composed predominantly of gravel-sized sediments. By definition, gravel includes sediments ranging in size from granules (greater than 2 millimeters) to boulders (greater than 256 millimeters). The sand fraction on the surface is usually less than ten percent, although the sand content can increase to 20 percent with depth. These sediments are highly permeable because there are few sand-sized sediments to fill the pore spaces between the individual gravel particles. Gravel substrates may also have low bearing capacity and, consequently, may not support vehicular traffic. Typically, well-sorted beaches are exposed to some wave or current action that reworks the sediments and removes the finer-grained sediments. However, the sediment distribution does not necessarily indicate the energy setting at a particular shoreline; sheltered beaches can still have a large gravel source. In glaciated areas, the gravel can include very large boulders. On depositional beaches, zones of pure pebbles or cobbles can form into multiple berms at the different water levels generated during storms. Gravel shorelines tend to be steeper than those composed of sand or mud. Natural replenishment rates are very slow for gravel compared to sand. Gravel habitats occur as beaches along the Great Lakes and as bars along rivers and streams.
Sensitivity	Gravel habitats have medium sensitivity to oil spills. Biological communities are very sparse because of sediment mobility, desiccation, and low organic matter. Characteristic insects are mayflies, stoneflies, caddisflies, and midges, all with larvae living among the sediments. Flatworms, leeches, and crustaceans may be found on the gravel undersides. The nearshore habitat is used by fish for spawning and provides protection for fry and larvae. Gravel habitats are ranked higher in sensitivity than sand and gravel habitats because deep penetration of stranded oil into the permeable substrate is likely. Oil can penetrate to depths below those of annual reworking, resulting in long-term persistence of the oil. The slow replenishment rate makes removing oiled gravel highly undesirable. Also, formation of persistent asphalt pavements is likely where there is high accumulation of persistent oils.

Environmental impact from response methods for GRAVEL habitats (ESI = 6A).

The following categories are used to compare the relative environmental impact of each response method for the specific environment or habitat for each oil type, using the following definitions: A = May cause the least adverse habitat impact. B = May cause some adverse habitat impact. C = May cause significant adverse habitat impact. D = May cause the most adverse habitat impact. I = Insufficient Information - impact or effectiveness of the method could not be evaluated at this time. "-" = Not applicable for this oil type.

Response Method	*Gasoline Products*	*Diesel Products*	*Medium Oils*	*Heavy Oils*
Debris Removal	-	A	A	A
Low-Pressure, Cold-Water Flushing	A	A	A	B
Flooding	A	A	A	C
Natural Recovery	A	A	B	B
Sorbents	-	A	A	B
Vacuum	-	B	B	B
High-Pressure, Cold-Water Flushing	C	B	B	B
Nutrient Enrichment	-	B	B	C
Manual Oil Removal/Cleaning	D	B	B	A
Sediment Reworking	D	B	B	B
Shoreline Cleaning Agents	-	-	B	B
In-Situ Burning	-	-	B	B
Solidifiers	-	-	B	-
Low-Pressure, Hot-Water Flushing	D	C	C	B
Mechanical Oil Removal	D	D	C	C
Steam Cleaning	-	D	D	D
Chemical Shoreline Pretreatment	-	I	I	I
Natural Microbe Seeding	-	I	I	I

RESPONSE METHODS: GRAVEL HABITATS	
Least Adverse Habitat Impact	*Debris Removal* • Degree of oiling that warrants debris removal and disposal depends on use by humans and sensitive resources *Low-Pressure, Cold-Water Flushing* • Only effective when the oil is fluid and loosely adheres to the sediments • Usually used in conjunction with vacuum and sorbents • Use on heavy oils is likely to leave large amounts of residual oil in the environment *Flooding* • Only effective when the oil is fluid and adheres loosely to the sediments • Usually used with various flushing techniques • Use on heavy oils is likely to leave large amounts of residual oil in the environment *Natural Recovery* • Least impact for small spills, lighter oil types, remote areas, and eroding areas *Sorbents* • Overuse generates excess waste • Useful for recovering sheens, even for gasoline spills • Physical removal rates of heavy oils will be slow, so less oil will be mobilized for recovery by sorbents
Some Adverse Habitat Impact	*Vacuum* • Early use of vacuum on pooled, liquid oil can prevent deeper penetration *High-Pressure, Cold-Water Flushing* • High-pressure water jet is likely to flush finer sediments into nearshore submerged habitats • Very viscous oils will require extremely high pressure to mobilize them *Nutrient Enrichment* • Not applicable to gasoline spills because they rapidly evaporate • Concerns about nutrient overloading in poorly flushed areas or where nutrient toxicity, especially ammonia, might be significant • Potentially effective for lighter oils that leave thin residues; less effective for thick, weathered oil residues *Manual Oil Removal/Cleaning* • Gasoline tends to quickly evaporate; therefore manual cleanup causes habitat disruption, worker safety concerns, and generates waste with no benefits from removing oil • Minimizes sediment removal and problems of erosion and waste disposal • Deep penetration of oil in porous gravel reduces effectiveness *Sediment Reworking* • Used where gravel removal is not feasible because of erosion concerns • Sufficient exposure to waves is required to rework the sediments into their original profile and distribution • Gasoline tends to evaporate quickly; therefore sediment reworking causes habitat disruption, worker safety concerns, and generates waste with no benefits from removing oil *Shoreline Cleaning Agents* • May be only technique to remove viscous oils without removing sediment or using hot-water flushing • Individual products vary in their toxicity and ability to recover the treated oil *In-Situ Burning* • Can effectively remove pooled surface oil accumulations • May have to dig trenches to accumulate oil in pools • Lighter oils will not remain on the sediment surface • Concerns about air pollution, physical nature of the residue, and thermal impact on biota *Solidifiers* • Early use may prevent pooled oil from penetrating deeper • Not effective on heavy oils, which are too viscous to allow the product to mix into the oil • May be useful in recovering sheens when deployed as booms and pillows

Probable Adverse Habitat Impact	*Low-Pressure, Hot-Water Flushing* • May be needed to flush viscous or deeply penetrated oil • Any organisms present will be adversely affected by hot water *Mechanical Oil Removal* • Likely to remove large amounts of gravel with the oil • Foot and vehicular traffic on gravel could mix oil deeper into the sediments
Most Adverse Habitat Impact	*High-Pressure, Hot-Water Flushing* • High-pressure water jets are likely to flush oiled sediments into nearshore submerged habitats • Any organisms present will be adversely affected by hot water and high pressure *Steam Cleaning* • Highly intrusive technique; will kill any organisms present • Potential for released oil to penetrate deeper into the porous sediments
Insufficient Information	*Chemical Shoreline Pretreatment* • Need more information on available products, their effectiveness, and impact *Natural Microbe Seeding* • There is insufficient information on impact and effectiveness in freshwater habitats

VEGETATED SHORELINE HABITATS (ESI = 9A)

Habitat Description	Vegetated shoreline habitats consist of the non-wetland vegetated banks that are common features of river systems and lakes. Bank slopes may be gentle or steep, and the vegetation consists of grasses, bushes, or trees common to the adjacent terrestrial habitats. The substrate is not water-saturated and can range from clay to gravel. The banks may flood seasonally and are exposed to relatively high-energy removal processes, at least periodically. Along undeveloped shorelines, there can be leafy litter and woody debris trapped among the vegetation. In developed areas, yards and gardens may abut the lake or river.
Sensitivity	Vegetated shoreline habitats are considered to have medium to high sensitivity to oil spills. They are not particularly important habitats for sensitive animals and plants, although many animals use vegetated banks for drinking, washing food, crossing bodies of water, and feeding. Bank plants oiled during a flood period could be susceptible, especially if the flood rapidly subsides, allowing oil to penetrate into bank sediments and to contact root systems. Small plants, particularly annuals, are likely to be most damaged. Stranded oil could remain in the habitat until another flood reaches the same level and provides a mechanism for natural flushing. On steep banks, the oil is likely to form a band, or multiple bands, at the waterline. On gentle banks, there is a greater potential for oil to accumulate in pools, penetrate the substrate, and coat large areas of vegetation, thus raising the issue of shoreline cleanup. In developed urban and suburban areas, human use and aesthetics would be the main reasons for cleanup.

Environmental impact from response methods for VEGETATED SHORELINE habitats (ESI = 9A).

The following categories are used to compare the relative environmental impact of each response method for the specific environment or habitat for each oil type, using the following definitions: A = May cause the least adverse habitat impact. B = May cause some adverse habitat impact. C = May cause significant adverse habitat impact. D = May cause the most adverse habitat impact. I = Insufficient Information - impact or effectiveness of the method could not be evaluated at this time. "-" = Not applicable for this oil type.

Response Method	*Gasoline Products*	*Diesel Products*	*Medium Oils*	*Heavy Oils*
Natural Recovery	A	A	B	B
Flooding	B	A	A	B
Low-Pressure, Cold-Water Flushing	B	A	A	B
Sorbents	-	A	B	B
Manual Oil Removal/Cleaning	D	B	B	B
Debris Removal	-	B	B	B
Vacuum	-	B	B	B
Vegetation Removal	D	B	B	B
Nutrient Enrichment	-	B	B	B
In-Situ Burning	-	B	B	B
High-Pressure, Cold-Water Flushing	D	C	C	D
Mechanical Oil Removal	D	C	C	C
Low-Pressure, Hot-Water Flushing	D	D	D	D
High-Pressure, Hot-Water Flushing	D	D	D	D
Sediment Reworking	D	D	D	D
Sorbents	-	B	B	B
Chemical Shoreline Pretreatment	-	I	I	I
Shoreline Cleaners	-	I	I	I
Natural Microbe Seeding	-	I	I	I

RESPONSE METHODS: VEGETATED SHORELINE HABITATS	
Least Adverse Habitat Impact	*Natural Recovery* • Low impact for small or moderate-size spills and lighter oils • More impact for large spills of medium- or high-viscosity oils *Flooding* • Operationally difficult and marginally effective for steep banks • Appropriate for gentle banks where persistent oil has pooled, assuming that the released oil can be directed towards recovery devices or sorbents • Use on heavy oils is likely to leave large amounts of residual oil in the environment • Use on gasoline spills may transport the oil to more sensitive habitats *Low-Pressure, Cold-Water Flushing* • Effective for washing oil stranded on the banks into the water for recovery • Vegetation cover minimizes the potential for sediment erosion from flushing • Use on heavy oils is likely to leave large amounts of residual oil in the environment • Use on gasoline spills may transport the oil to more sensitive habitats
Some Adverse Habitat Impact	*Sorbents* • Useful for recovering sheens, even for gasoline spills • Physical removal rates of medium and heavy oils will be slow, so less oil will be mobilized for recovery by sorbents • Overuse generates excess waste *Manual Oil Removal/Cleaning* • Some mixing of oil into the substrate and trampling of vegetation is unavoidable with foot traffic in oiled areas • Gasoline tends to quickly evaporate; therefore habitat disruption, worker safety concerns, and waste generated by manual cleanup are not balanced by benefits in removing oil *Debris Removal* • Degree of oiling that warrants debris removal and disposal depends on use by humans and sensitive resources • Minimal concerns where substrate is firm or work is conducted from boats *Vacuum* • Potential damage where substrate will not support vehicular traffic • Most effective where access is good and substrate can support vehicles • Only useful when oil is pooled *Vegetation Removal* • Usually not necessary to reduce oil impact on vegetation • May be required in areas used by sensitive animals *Nutrient Enrichment* • Applicable where nutrients are a limiting factor for oil degradation • More effective after gross oil removal is completed • Not applicable to gasoline spills because they rapidly evaporate *In-Situ Burning* • May be the least physically damaging means of oil removal from the banks • Least impact for grassy areas versus banks covered with trees and shrubs
Probable Adverse Habitat Impact	*High-Pressure, Cold-Water Flushing* • High-pressure water spray will disturb plants and erode sediments • Use on heavy oils is likely to leave large amounts of residual oil in the environment • Use on gasoline spills may transport the oil to more sensitive habitats *Mechanical Oil Removal* • Excessive physical disruption likely from use of equipment

Most Adverse Habitat Impact	*Low-Pressure, Hot-Water Flushing* • Hot water could kill plants and potentially erode and degrade habitat *High-Pressure, Hot-Water Flushing* • Combination of high pressure and hot water poses high risk of sediment and vegetation loss *Sediment Reworking* • Will result in extensive habitat disruption *Solidifiers* • Not applicable to gasoline spills because they rapidly evaporate • Application of loose particulates may impede removal of oil mixed with, and adhered to, vegetation, litter, and debris • May be useful in recovering sheens when deployed as booms and pillows • Not effective on heavy oils, which are too viscous to allow the product to mix into the oil or penetrate netting or fabric encasing the loose particulates
Insufficient Information	*Chemical Shoreline Pretreatment* • There is insufficient information on impact and effectiveness in freshwater vegetation *Shoreline Cleaning Agents* • More information needed on available products, their effectiveness, and impact of use on vegetated bank habitats • Individual products vary in their toxicity and ability to recover the treated oil *Natural Microbe Seeding* • There is insufficient information on impact and effectiveness in freshwater vegetated shorelines

MUD HABITATS (ESI = 9B)	
Habitat Description	Mud habitats are characterized by a substrate composed predominantly of silt and clay sediments, although they may be mixed with varying amounts of sand or gravel. The sediments are mostly water saturated and have low bearing strength. In general, mud shorelines have a low gradient, although some steep banks also may consist of mud. The mud habitats generally are low energy and sheltered from wave action and high currents. Adjacent nearshore areas are usually shallow with muddy sediments. These fine-grained habitats often are associated with wetland. Bare or sparsely vegetated mud substrates are rare along Great Lake shorelines. However, they commonly occur along river floodplains and lake bottoms, where they can be exposed during seasonal low water levels.
Sensitivity	Mud habitats are highly sensitive to oil spills and subsequent response activities. Shoreline sediments are likely to be rich in organic matter and support an abundance of infauna. Muddy habitats are important feeding grounds for birds and rearing areas for fish. Oil will not penetrate muddy sediments because of their low permeability and high water content, except through decaying root and stem holes or animal burrows. There can be high concentrations and pools of oil on the surface. Natural removal rates can be very slow, chronically exposing sensitive resources to the oil. The low bearing capacity of these shorelines means that response actions can easily leave long-lasting imprints, cause significant erosion, and mix the oil deeper into the sediments. When subsurface sediments are contaminated, oil will weather slowly and may persist for years. Response methods may be hampered by limited access, wide areas of shallow water, fringing vegetation, and soft substrate.

Environmental impact from response methods for MUD habitats (ESI= 9B).

The following categories are used to compare the relative environmental impact of each response method for the specific environment or habitat for each oil type, using the following definitions: A = May cause the least adverse habitat impact. B = May cause some adverse habitat impact. C = May cause significant adverse habitat impact. D = May cause the most adverse habitat impact. I = Insufficient Information - impact or effectiveness of the method could not be evaluated at this time. "-" = Not applicable for this oil type.

Response Method	*Gasoline Products*	*Diesel Products*	*Medium Oils*	*Heavy Oils*
Natural Recovery	A	A	A	B
Flooding	B	A	A	A
Sorbents	B	A	A	B
Debris Removal	-	B	B	B
Vacuum	-	C	B	B
In-Situ Burning	C	C	C	C
Low-Pressure, Cold-Water Flushing	D	C	C	C
Manual Oil Removal/Cleaning	D	D	C	C
Low-Pressure, Hot-Water Flushing	D	D	C	C
Solidifiers	D	D	C	-
Mechanical Oil Removal	D	D	D	D
High-Pressure, Cold-Water Flushing	D	D	D	D
High-Pressure, Hot-Water Flushing	D	D	D	D
Sediment Reworking	D	D	D	D
Shoreline Cleaning Agents	-	D	D	D
Natural Microbe Seeding	-	I	I	I
Nutrient Enrichment	-	I	I	I
Chemical Shoreline Pretreatment	I	I	I	I

RESPONSE METHODS: MUD HABITATS	
Least Adverse Habitat Impact	*Natural Recovery* • Least impact for small spills and lighter oils, to prevent disruptions associated with cleanup efforts • For large spills or heavy oils, expect long-term persistence in low-energy settings *Flooding* • Effective only for fresh, fluid oils • Local topography may limit the ability to control where the water and released oil flow and effectiveness of recovery • Use on gasoline spills may transport the oil to more sensitive habitats *Sorbents* • Useful as long as the oil is mobilized and recovered by the sorbent • Overuse generates excess waste • Careful placement and recovery is necessary to minimize substrate disruption
Some Adverse Habitat Impact	*Debris Removal* • Degree of oiling that warrants debris removal and disposal depends on use by sensitive resources • Extensive disruption of soft substrate likely *Vacuum* • Not applicable to gasoline spills because of safety concerns • Use to remove oil pooled on the surface • Avoid digging trenches to collect oil because they can introduce oil deeper into the sediment • Disruption of soft substrates can be limited by placing boards on the surface and controlling access routes
Probable Adverse Habitat Impact	*In-Situ Burning* • Heat may impact biological productivity of habitat, especially where there is no standing water to act as a heat sink on top of the mud *Low-Pressure, Cold-Water Flushing* • Mud is readily suspended if substrate is not firm • Not effective for higher-viscosity oils that will not move with low pressure • Local topography may limit the ability to control where the water and released oil flow and effectiveness of recovery • Use on gasoline spills may transport the oil to more sensitive habitats *Manual Oil Removal/Cleaning* • Use where persistent oil occurs in moderate to heavy amounts, or where sensitive resources must be protected • Response crews may trample soft substrates, mix oil deeper into the sediments, and contaminate clean areas *Low-Pressure, Hot-Water Flushing* • Physical and thermal impacts to habitat likely

Most Adverse Habitat Impact	*Solidifiers* • High likelihood of disruption and mixing of oil deeper into the substrate during application and retrieval • Not effective on heavy oils, which are too viscous to allow the product to mix into the oil *Mechanical Oil Removal* • Soft substrate will not support vehicular traffic • Will probably cause extensive physical habitat disruption *High-Pressure, Cold-Water Flushing and High-Pressure, Hot-Water Flushing* • High-pressure water will cause extensive sediment suspension and erosion • Potential for burial of oiled sediments and transport of oil to adjacent areas *Sediment Reworking* • Will extensively disrupt physical habitat • Increases oil penetration, burial, and persistence *Shoreline Cleaning Agents* • Current products are designed for use with high-pressure flushing; since used with flushing, water pressure needs to be considered • Individual products vary in their toxicity and ability to recover the treated oil
Insufficient Information	*Natural Microbe Seeding and Nutrient Enrichment* • Not applicable to gasoline spills because they rapidly evaporate • There is insufficient information on impact and effectiveness in mud habitats *Chemical Shoreline Pretreatment* • There is insufficient information about direct toxicity of the products, disturbances resulting from application and retrieval, effectiveness, and net benefit

WETLAND HABITATS (ESI = 10A, 10B)

Habitat Description	Wetlands are characterized by water, unique soils that differ from adjacent upland areas, and vegetation adapted to wet conditions. Wetlands include a range of habitats such as marshes, bogs, bottomland hardwood forests, fens, playas, prairie potholes, and swamps. Substrate, vegetation, hydrology, seasonality, and biological use of inland wetlands are highly variable, making characterization difficult. The surfaces of wetlands usually have a low gradient and vegetated areas are typically at or under the water level. There can be distinct channels or drainages with flowing water, except at the exposed outer fringe; however, natural physical processes are minimal. Water levels may vary seasonally, and the wetland may be simply a zone of water-saturated soils during the dry season.
Sensitivity	Wetlands are highly sensitive to oil spills. The biological diversity in these habitats is significant and they provide critical habitat for many types of animals and plants. Oil spills affect both the habitat (vegetation and sediments) and the organisms that directly and indirectly rely on the habitat. Surprisingly little is known about oil impact on freshwater plants, although there are likely differences between robust perennials with substantial underground systems and cycles of winter die-back, and annuals that lack underground nutrient reserves. Detritus-based food webs are fundamentally important in wetlands; oil could possibly affect these by slowing decomposition rates of plant material. Wetlands support populations of fish, amphibians, reptiles, birds, and mammals, with many species reliant upon wetlands for their reproduction and early life stages when they are most sensitive to oil. Many endangered animals and plants occur only in wetlands, and spills in such areas would be of particular conservation concern. Migratory waterbirds depend heavily on wetlands as summer breeding locations, migration stopovers, and winter habitats. The threat of direct oiling of animals using the wetland often drives efforts to remove the oil. If oil and/or cleanup efforts causes a loss of the more sensitive plants or modifies the ecosystem structure, then feeding and breeding of dependent wildlife may be affected.

Environmental impact from response methods for WETLAND habitats (ESI = 10A, 10B).

The following categories are used to compare the relative environmental impact of each response method for the specific environment or habitat for each oil type, using the following definitions: A = May cause the least adverse habitat impact. B = May cause some adverse habitat impact. C = May cause significant adverse habitat impact. D = May cause the most adverse habitat impact. I = Insufficient Information - impact or effectiveness of the method could not be evaluated at this time. "-" = Not applicable for this oil type.

Response Method	*Gasoline Products*	*Diesel Products*	*Medium Oils*	*Heavy Oils*
Natural Recovery	A	A	A	B
Sorbents	C	A	A	A
Flooding	B	A	A	B
Low-Pressure, Cold-Water Flushing	B	A	A	B
In-Situ Burning	B	B	B	B
Vacuum	-	B	B	B
Debris Removal	-	B	B	B
Vegetation Removal	D	C	C	C
Manual Oil Removal/Cleaning	D	D	C	C
High-Pressure, Cold-Water Flushing	D	D	D	D
Low-Pressure, Hot-Water Flushing	D	D	D	D
High-Pressure, Hot-Water Flushing	D	D	D	D
Mechanical Oil Removal	D	D	D	D
Sediment Reworking	D	D	D	D
Solidifiers	D	D	D	-
Shoreline Cleaning Agents	-	I	I	I
Nutrient Enrichment	-	I	I	I
Natural Microbe Seeding	-	I	I	I
Chemical Shoreline Pretreatment	-	I	I	I

RESPONSE METHODS: WETLAND HABITATS	
Least Adverse Habitat Impact	*Natural Recovery* • Least impact for small to moderate spills and lighter oils; avoids damage often associated with cleanup activities • Some cleanup may be warranted where large numbers of animals are likely to become oiled during wetland use *Sorbents* • Care is necessary during placement and recovery to minimize disturbance of substrate and vegetation • Overuse generates excess waste *Flooding* • Erosion of substrate and vegetation may be a problem • Can be used selectively to remove localized heavy oiling • Can be difficult to direct water and oil flow towards recovery devices • Use on heavy oils is likely to leave large amounts of residual oil in the environment • Use on gasoline spills may transport the oil to more sensitive habitats *Low-Pressure, Cold-Water Flushing* • If water pressures are too high, the substrate and vegetation may be disturbed • Use on heavy oils is likely to leave large amounts of residual oil in the environment • Use on gasoline spills may transport the oil to more sensitive habitats
Some Adverse Habitat Impact	*In-Situ Burning* • May be one of the least physically damaging means of heavy oil removal • Presence of a water layer on marsh surface can protect roots • Time of year (vegetation growth stage) is important consideration • May be appropriate for gasoline spills trapped in ice *Vacuum* • Can be effective in removal of pooled oil from the marsh surface • Trampling of vegetation and substrate can be limited by placing boards on the surface and limiting traffic *Debris Removal* • The removal of heavily oiled and mobile debris may reduce the tracking of oil off-site and contamination of wildlife
Probable Adverse Habitat Impact	*Vegetation Removal* • Used to prevent oiling of sensitive animals using the wetland • Most appropriate for oils that form a thick, sticky coating on the vegetation, such as medium and heavy oils • May delay recovery of the vegetation due to both oil impact and physical destruction by cleanup crews • Trampling of vegetation may be reduced by controlling access routes, using boards placed on surface, or conducting operations from boats *Manual Oil Removal/Cleaning* • Used where persistent oil occurs in heavy amounts and where sensitive resources using the wetlands are likely to be oiled • Response crews may trample roots and mix oil deeper into the sediments
Most Adverse Habitat Impact	*High-Pressure, Cold-Water Flushing* • High-pressure spray will disrupt sediments, root systems, and animals *Low-Pressure, Hot-Water Flushing and High-Pressure, Hot-Water Flushing* • Hot water will likely kill the vegetation *Mechanical Oil Removal* • Using vehicles in soft substrate will probably cause extensive physical disruption • Can completely alter the marsh substrate, hydrology, and vegetation patterns for many years • Use in heavily oiled wetlands when all other techniques have failed and there is an overriding reason for oil removal *Sediment Reworking* • No benefit from mixing oil deeper into fine-grained and organic soils *Solidifiers* • Not applicable to gasoline spills because they rapidly evaporate

	• Use likely to increase adherence to vegetation and slow weathering/removal rates of residual oil • Not effective on heavy oils, which are too viscous to allow the product to mix into the oil
Insufficient Information	*Shoreline Cleaning Agents* • More information needed on available products, their effectiveness, and impact of use on vegetated bank habitats • Individual products vary in their toxicity and recoverability of the treated oil *Nutrient Enrichment and Natural Microbe Seeding* • Not applicable to gasoline spills because they rapidly evaporate • Concerns include eutrophication and acute toxicity, particularly from ammonia, because of shallow waters and low mixing rates • There is insufficient information on impact and effectiveness in wetlands *Chemical Shoreline Pretreatment* • There is insufficient information about product toxicity, disturbances resulting from application and retrieval, effectiveness, and net benefit

Appendix F
SMT Activity Checklists

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1. Incident Commander

The Incident Commander is responsible for the overall management of the incident. The Incident Commander directs incident activities, including development and implementation of strategic decisions and approves ordering and releasing of resources.

.

? A. Call Incident Management Team (IMT) Section Chiefs to Incident Command Post.

___ 1. Distribute Incident Report and brief IMT regarding the incident.

___ 2. Ensure Command Staff and Section Chief positions are filled.

? B. Assess/discuss the situation. Establish immediate priorities.

___ 1. Safety of personnel (field, responders, surrounding population) and Site Safety Plan development

___ 2. Source control

___ 3. Agency notifications

___ 4. Off-site impact

___ 5. Identification and protection of sensitive areas

___ 6. Continued surveillance of the situation

___ 7. Determine response strategies.

? C. Initiate internal/external notification process

? D. Conduct Planning/Assessment meetings on a regular basis.

___ 1. Evaluate and adjust strategic and tactical objectives, as well as response priorities based upon input from IMT and Government agencies.

___ 2. Relay critical information to appropriate Sections and IMT.

? E. Coordinate IAP development based upon objectives and priorities identified.

? F. Implement a Unified Command System with agency responders, if requested.

___ 1. Determine location of the Incident Command Post and which IMT members need to mobilize if necessary.

? G. Approve requests for additional resources and for release of resources.

? H. Decide on the use of trainees, volunteers, and auxiliary personnel.

? I. Review the accuracy of information prior to release to the public. Be available for technical, incident-related questions, if necessary.

? J. Review and approve written reports prior to submittal to regulatory agencies.

? K. Coordinate with Finance Section Chief to:

___ 1. Develop and review delegations of authority and expenditure approval limits.

1. Incident Commander	
___ 2. Provide effective accounting, cost control and office support functions for the response operation. ? L. Provide relief personnel for essential IMT assignments. ? M. Seek appropriate legal counsel. ? N. Order the demobilization of the incident when appropriate.	

2. Safety Officer

The Safety Officer is responsible for monitoring and assessing hazardous and unsafe situations, in addition to developing measures for assurance of personnel safety.

? A. Obtain briefing from Incident Commander.
- ___ 1. Coordinate Search and Rescue Operations.
- ___ 2. Follow up on evacuated personnel until they reach safe harbor. Consider:
  - ___ a. Debrief Team
  - ___ b. Drug testing, if appropriate
- ___ 3. Contact contractor for safety support, if necessary.

? B. Consider safety of personnel at site, responders and surrounding population.
- ___ 1. Establish Safety Zone as necessary.
- ___ 2. Evaluate and monitor the following:
  - ___ a. Oxygen levels
  - ___ b. Explosive character
  - ___ c. Toxicity of the air on scene
  - ___ d. Splash and ingestion hazards
- ___ 3. Determine if offset operators or public could be affected by the incident.

? C. Ensure the preparation and implementation of a Site Safety Plan.
- ___ 1. Establish First Aid Posts.
- ___ 2. Conduct Safety Inspections.
- ___ 3. Verify personnel have correct PPE.
- ___ 4. Monitor personnel for conformance with Site Safety Plan.

? D. Assist Service Branch Director (Logistics) with Medical Plan, if requested.

? E. Ensure response operations are conducted in compliance with safety requirements.

? F. Exercise emergency authority to stop and prevent unsafe acts, if necessary.

? G. Develop and issue safety bulletins, alerts, etc. on issues affecting or likely to affect worker safety.

? H. Investigate, report and record safety-related accidents that occur during response operations. Develop remedial actions to avoid future occurrences.

? I. Demobilize as ordered.

? J. Assist with investigation of cause of incident.

3. Liaison Officer

The Liaison Officer notifies Government agencies of incident and remains the point of contact for personnel assigned to the incident from assisting or cooperating agencies.

? A. Obtain briefing from Incident Commander.

? B. Notify Government Agencies as outlined.

___ 1. Record names of agency personnel notified

___ 2. Record time/date of each call, and appropriate incident # assigned to the incident. (**ICS Notification Status Report**)

___ 3. Advise each agency that you will be the Responsible Party Contact.

___ 4. Respectfully request review of all public statements prior to issuance by agencies, in order to ensure accuracy of data.

? C. Request agencies issue the following:

___ 1. One mile Safety Zone in water

___ 2. Five mile Safety Zone in air

___ 3. Notice to Mariners (if offshore)

? D. Identify representatives from each agency, including communications link and location.

? E. If requested by Planning Section Chief, contact Government agencies for response approval.

? F. Participate in planning meetings. Provide current agency resource status information.

? G. Prepare "Initial" written reports to agencies as required. Obtain approval from Legal Officer and Incident Commander prior to submittal to agencies.

? H. Work with Logistics Section Chief to arrange tours and briefings for elected officials, if appropriate.

? I. After response operations cease, obtain composite log from Documentation Unit Leader and prepare final written reports to agencies as required. Obtain approval from Incident Commander and Legal Officer prior to submittal to agencies.

4. Information Officer

The Information Officer is responsible for developing and releasing information about the incident to the news media, incident personnel, as well as other appropriate agencies and organizations.

? A. Obtain briefing and special instructions from Incident Commander

? B. Establish procedures for handling media relations and distribute guidelines to the Incident Management Team.

? C. Notify joint partners of incident.

___ 1. Update partners on regular basis.

? D. Establish a single information center with agencies. This may be called the Joint Information Center (JIC).

___ 1. Gather information.

___ 2. Resolve conflicting information

___ 3. Staff telephone banks to accept and respond to media queries.

___ 4. Prepare staff for walk-in questions and contacts.

? E. Arrange for necessary work space, materials, telephones, and staffing.

? F. Obtain copies of current incident reports.

? G. Counsel the Incident Commander on expected media interest, how media may perceive data.

? H. Identify community concerns.

___ 1. Prepare for response to phoned in citizens' questions

___ 2. Provide speakers to citizen groups as necessary and/or requested.

___ 3. Hold informational public meetings as deemed necessary.

___ 4. Track community attitudes. Advise Incident Commander and address problems as needed.

? I. Prepare public statements, press releases and information on the incident. Obtain approval from Incident Commander before releasing information.

___ 1. Prepare Incident Commander for his role as chief spokesman.

___ 2. Observe constraints on the release of information imposed by Incident Command.

? J. Prepare and disseminate news releases and Fact Sheets.

___ 1. Use recording devices when talking to media.

? K. Attend planning and briefing meetings to update information releases.

? L. Plan and execute news conferences between media and incident personnel.

? M. Work with Logistics Section Chief to organize media visits to operational sites, if necessary (or appropriate).

___ 1. Provide escort service and ensure media personnel / VIPs

4. Information Officer	
have proper PPE. ? N. Select, retain and supervise public relations specialists as needed. ? O. Respond to special requests for information. ? P. Maintain a record of newspaper articles, radio and television broadcasts, press conferences and briefings. Submit the record to Documentation Unit Leader. ? Q. Ensure conflicting information is resolved, and bring media concerns to Incident Commander ? R. Demobilize as ordered.	

5. Legal Officer

The Legal Officer is responsible for reviewing and advising the Incident Commander regarding matters pertinent to any liability, admission, or actions assumed or taken during incident response.

? A. Obtain briefing and special instructions from Incident Commander. ? B. Determine applicability of laws, legal exposures and appropriate legal defense strategies. ? C. Ensure that representatives of the Legal Department are available to de-brief field personnel on events leading up to incident. ? D. Determine company's legal relationship with all involved parties. ? E. Advise Documentation Unit Leader regarding data gathered and preserved relevant to defense or settlement of future claims or litigation. ? F. Determine photographic recording requirements. ? G. Assist the Information Officer and the Finance Section Chief. ? H. Prepare responses to inquiries, claims and other legal matters. ? I. Assist Finance with issuance of public advertisements, if required. ? J. Prepare summary reports examining legal situation, key issues associated with the incident. Determine options and courses of action to be followed. ? K. Review contracts prior to execution as required. ? L. Provide the Incident Commander with legal advice on response and mitigation techniques, as appropriate. ? M. Ensure contract response personnel are cognizant of communications restriction to outside agencies, the media, environmental groups and the general public.	

6. Human Resources Officer

The Human Resources Officer is responsible for reviewing and advising the Incident Commander regarding matters pertinent to any personnel issue during an incident response.

? A. Obtain briefing and special instructions from Incident Commander

? B. In the event of personnel injuries or fatalities:

___ 1. If it is a company employee, initiate and maintain contact with the injured person(s) and their family.

___ 2. If it is Contractor personnel, initiate and maintain contact with their employer.

___ 3. Ensure that the name(s) of the injured or deceased WILL NOT BE released until families have been notified.

? C. Coordinate volunteer requests and activities.

___ 1. Support of volunteers (coordinate with Logistics):

___ a. Berthing

___ b. Food while at work location

___ c. Personal protective equipment

___ d. Medical assistance

___ e. Transportation

___ f. Training

___ 2. Maintain a record of all volunteers:

___ a. Names

___ b. Addresses and phone numbers

___ c. Assignments

___ d. Training received

? D. Coordinate Drug and Alcohol testing, if instructed to do so by the Incident Commander.

? E. Evaluate temporary personnel requirements.

? F. Coordinate establishing a “Spouse” hotline for responders.

7. Operations Section Chief

The Operations Section Chief activates and supervises tactical response operations in the field. He activates and executes the Site Safety Plan.

? A. Obtain briefing and special instructions from Incident Commander, regarding:

___ 1. Status of incident

___ a. Assist with personnel safety.

___ b. Notify offset operators.

___ c. Notify affected pipeline companies.

___ 2. Objectives

___ 3. Resources already called out

? B. Send representative to field.

? C. Establish surveillance program.

___ 1. Track incident by use of small aircraft, helicopter, crew boat and/or supply vessels.

___ 2. Work with Logistics Section Chief to obtain resources necessary to support surveillance ops, including aircraft, maps, and communications equipment.

___ 3. Advise Planning Section of status as appropriate.

? D. Contact response organizations to discuss strategy, availability and location of equipment. Mobilize equipment and personnel. Advise contract personnel of the following:

___ 1. Type of product involved; health/safety hazards associated with product

___ 2. Location of the MSDS(s); details of the Site Safety Plan

___ 3. Location of the first aid station

___ 4. Personal protection equipment required

___ 5. Potential environmental and physical hazards

___ 6. Job tasks and objectives

? E. Contact response contractors to discuss mobilization of resources if required.

? F. Obtain samples of spilled material if requested.

? G. Work with Consultants to develop and implement response strategies.

? H. Request resources needed to implement the Operations tactics as part of the Incident Action Plan development.

? I. Identify shoreline sites for immediate pre-cleaning. Requisition personnel to conduct pre-cleaning operations.

? J. Participate in planning meetings as required.

? K. Supervise the execution of the Incident Action Plan for Operations.

? L. Coordinate operations with those conducted by Government agencies.

7. Operations Section Chief

? M. Make or approve expedient changes to the Incident Action Plan during the operational period as necessary. ? N. Submit daily summary for each location to Situation Unit Leader. ? O. Work with Planning to de-mobilize equipment not in use. ? P. Assist in investigating the cause of the incident and the effectiveness of the incident response operations. ? Q. Provide relief for essential employee assignments. ? R. Do not use collecting agent or dispersant without express approval from the Incident Commander.	

8. Staging Area Manager

The Staging Area Manager is responsible for managing all activities within the designated staging areas.

? A. Obtain briefing from Operations Section Chief.

? B. Identify appropriate sites for staging areas:

___ 1. Offshore equipment

___ 2. Well control equipment

___ 3. Shoreline / Inland equipment

___ 4. Dispersant operations

___ 5. Wildlife rehab center

___ 6. Decontamination area

? C. Work with Logistics to identify appropriate facilities for Staging Areas.

? D. As requested by Incident Commander, provide information on Staging Area(s) (i.e., sq. footage, parking, access to public, etc.).

? E. Post signs, prepare maps for identification.

? F. Establish check-in/check-out function as appropriate.

___ 1. Maintain a record of equipment, materials and supplies received/assigned.

___ 2. Maintain a record of persons checking in/checking out at Staging Area. (**ICS 211**)

? G. Demobilize or reposition staging areas as needed.

9. Planning Section Chief

The Planning Section Chief is responsible for the collection, evaluation, dissemination and use of information about the development of the incident and use of resources. Information is needed to 1) understand the current situation, 2) predict probable course of incident events, and 3) determine available strategies for the incident.

? A. Obtain briefing from Incident Commander.

? B. Activate Planning Section Units as necessary to support planning needs.

___ 1. Request trajectories from J. Connor Consulting.

___ 2. Determine sensitive areas.

___ 3. Consider available strategies.

___ 4. Gather/display incident information.

? C. Consider submission for dispersant approval.

? D. Collect and process situation information about the incident.

___ 1. Monitor Situation Status Report prepared by Situation Unit Leader.

? E. Prepare **ICS 201/202**.

? F. Supervise preparation of the Incident Action Plan, if required.

? G. Develop short range and long range tactical plans.

? H. Participate in Planning and other meetings as required.

? I. Establish information requirements and reporting schedules for all ICS organizational elements for use in preparing the Incident Action Plan.

? J. Call out and assign Technical Specialists where needed.

___ 1. Legal Specialist

___ 2. Resources at Risk (RAR) Technical Specialists

___ 3. Trajectory Analysis Specialist

___ 4. Sampling Specialist

___ 5. Responder Training Specialist

___ 6. Disposal (Waste Management Specialist)

___ 7. Alternative Response Technologies (ART) Specialist

? K. Assemble information on available strategies.

? L. Provide periodic predictions on incident potential.

? M. Prepare and distribute orders from Incident Command.

? N. Instruct Planning Section Units in distribution and routing of incident information.

? O. Ensure that information collection and reporting requirements are being met.

? P. Prepare recommendations for release of resources for submission to members of Incident Command.

? Q. Maintain Section records.

? R. Demobilize in accordance with the Demobilization Plan.

10. Situation Unit Leader

The Situation Unit Leader is responsible for the collection and evaluation of information about the current and possible future status of the incident and the incident response operations.

? A. Obtain briefing and special instructions from the Planning Section Chief

? B. Collect, maintain and display data for duration of incident.

___ 1. Weather, surveillance, trajectory.

___ 2. Maps depicting incident area, spill trajectories.

___ 3. Provide updated incident surveillance data to trajectory Specialist as necessary.

? C. Collect, maintain and display incident response data including:

___ 1. Incident Report.

___ 2. Frequently used phone numbers.

___ 3. Maps depicting response operations, staging areas, and other information as necessary.

___ 4. Coordinate with appropriate Response Team Personnel to gather information for Incident Status Reports and Equipment Status Board.

___ a. Status of manpower and equipment resources currently assigned, available and/or out of service.

___ b. Maps showing environmentally sensitive areas, protection strategies

___ c. Status of oily waste management operations, including quantity of oil spilled and quantity of oil, oily water, and debris recovered

___ d. Status of shoreline impacts

? D. Prepare the Incident Status Summary (ICS 209).

? E. Provide status reports to appropriate requesters.

11. Resource Unit Leader

The Resource Unit Leader is responsible for maintaining the status of all resources (primary and support) at an incident. This unit is also responsible for preparing parts of the Incident Action Plan (ICS 203, 204), compiling the entire plan in conjunction with other members of the ICS, (e.g. Situation Unit, Operations, Logistics) and determining the availability of resources.

? A. Obtain briefing and special instructions from the Planning Section Chief. ? B. Establish check-in function for equipment and personnel at incident locations. ? C. Prepare and maintain the Command Post display organization chart and resource allocation and deployment sections of display) ? D. Establish contacts with incident facilities by telephone, electronic means or fax and begin maintenance of resource status. ? E. Gather, post, and maintain incident resource status. ? F. Maintain master roster of all resources checked in at the incident. ? G. Prepare Organization Assignment List (**ICS 203**) and ICS Organization Chart. ? H. Prepare appropriate parts of assignment lists (**ICS 204**). ? I. Provide status reports to appropriate requesters.	

12. Documentation Unit Leader

The Documentation Unit Leader is responsible for the maintenance of accurate, up-to date incident files. The Documentation Unit also provides duplication and copying services.

? A. Obtain briefing and special instructions from the Planning Section Chief.

? B. Work with the Financial Section Chief, Planning Section Chief, Command Staff and Incident Commander to develop special documentation guidelines for use by appropriate response personnel. Distribute guidelines.

? C. Assist Incident Commander in maintaining accurate records of incident response decisions and actions.

? D. Record the incident as it develops and identify, in detail, the actions taken, resources committed, and any problems encountered. The format of this report shall be as follows:

___ 1. Summary of Events – A chronological narrative of all events, including:

- ___ a. The location of the incident.
- ___ b. The cause of the incident.
- ___ c. The initial situation.
- ___ d. Efforts to initiate response.
- ___ e. The organization of the response, including Government participation.
- ___ f. The resources committed.
- ___ g. Treatment/disposal/alternative technology approaches pursued and followed.
- ___ h. Public information/community relations activities.
- ___ i. All directives or major actions instituted by Incident Commander.

___ 2. Effectiveness of Mediation Actions by:

- ___ a. Company
- ___ b. Government and local forces
- ___ c. Government agencies and special teams
- ___ d. Contractors, private groups, and volunteers

___ 3. Difficulties encountered – A list of problems affecting response.

___ 4. Recommendations:

- ___ a. Means to prevent a recurrence of the incident.
- ___ b. Improvement of response actions.
- ___ c. Any recommended changes in the Emergency Response Plan.

___ 5. The following will be included as enclosures to the report:

- ___ a. Maps, charts, photographs, or diagrams of the

12. Documentation Unit Leader

areas affected by the incident.

___ b. Radio, telephone, and other applicable logs.

___ c. Photographic documentation of the response, arranged chronologically.

___ d. Any other documentation necessary to supplement information in the report.

___ 6. A copy of this report shall be forwarded to the Incident Commander.

? E. Establish and organize incident files.

? F. Establish duplication service and respond to requests.

? G. File copies of all official forms, reports and news articles.

? H. Maintain a file for newspaper articles, radio and television broadcasts, press conferences and briefings as provided by Information Officer.

? I. Provide incident documentation to appropriate requesters. Obtain approval from Incident Commander before release of information.

13. Technical Specialists

Technical Specialists are advisors with special skills needed to support the incident and may be assigned anywhere in the ICS organization. If necessary, Technical Specialists may be formed into a separate unit. The Planning Section will maintain a list of available specialists and will assign them where needed.

The following are example position descriptions for Technical Specialists that might be utilized during an oil spill response.

? A. Resources at Risk (RAR) Technical Specialists are responsible for the identification of resources thought to be at risk from exposure to the spilled oil through the analysis of known and anticipated oil movement and the location of natural, cultural, and economic resources. The RAR Technical Specialists consider the relative importance of the resources and the relative risk to develop a priority list for protection.

? B. The Trajectory Analysis Specialist is responsible for providing to the Unified Command projections and estimates of the movement and behavior of the spill. The specialist will combine visual observations, remote sensing information, computer modeling as well as observed and predicted tidal, current and weather data to form these analyses. Additionally, the specialist is responsible for interfacing with local experts (weather service, academia, researchers, etc.) in formulating these analyses. Trajectory maps, overflight maps, tides and current data, and weather forecasts will be supplied by the specialist to the Situation Unit for dissemination throughout the Command Post.

? C. The Natural Resource Damage Assessment (NRDA) Representative is responsible for coordinating NRDA needs and activities as they relate to ICS spill response operations. This includes close coordination with the trustee team for advising timely information on the spill and injuries to natural resources. Consult with Legal Specialist(s) and contact the trustees for possible coordination of NRDA or injury determination activities.

? D. The Sampling Specialist(s) are responsible for sampling plans for the coordinated collection, documentation, storage, transportation and submittal to appropriate laboratories for analysis or storage as is appropriate of samples collected at spill sites.

? E. The Responder Training Specialist(s) ensures implementation of training assignments, monitors operational procedures, and evaluates training needs.

? F. The Disposal (Waste Management) Specialist is responsible for providing the Planning Section Chief with a Disposal Plan that details the collection, sampling, monitoring, temporary storage, transportation, and disposal of all anticipated response wastes.

? G. The Alternative Response Technologies (ART) Specialist(s) is responsible for evaluating the opportunities to use ART, including dispersant or other chemical counter measures, in-situ burning, and bioremediation. The specialist(s) will conduct the consultation and planning required to deploy a specific ART, and articulate the

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Fax: (281) 578-1288

13. Technical Specialists	
environmental tradeoffs of using or not using a specific ART.	

14. Logistics Section Chief

The Logistics Section Chief is responsible for all of the services and support needs of an incident, including obtaining and maintaining essential personnel, facilities, equipment and supplies as requested by, or in support of Incident Commander, Operations and/or Planning.

? A. Obtain briefing from Incident Commander.

? B. Locate and mobilize equipment, personnel and transportation as requisitioned by IMT.

? C. Identify service and support requirement for planned and expected operations.

___ 1. Advise Operations of types and capabilities of on-site equipment, personnel, and material assets.

___ 2. Advise Operations of characteristics and capabilities of available equipment, personnel, and material assets.

___ 3. Inform Operations of logistics shortfalls.

___ 4. Inform Operations of assets received into/released out of operating area.

___ 5. Communicate directly with contractors in the field to identify and resolve logistics requirements.

___ 6. Support decontamination, reconstitution, and redeployment of equipment resources.

? D. Provide input to and review Communications Plan (**ICS 205**), and Medical Plan (**ICS 206**).

? E. Review Incident Action Plan and estimate Section needs for next operational period.

? F. Ensure Incident Communications Plan is prepared.

? G. Prepare service and support elements of the Incident Action Plan.

? H. Receive Demobilization Plan from Planning Section.

? I. Recommend release of unit resources in conformance with Demobilization Plan.

15. Service Branch Director

The Service Branch Director, when activated, is under the supervision of the Logistics Section Chief, and is responsible for the management of all service activities at the incident including Communication, Medical, Food, Housing, Fueling, Water, Sanitation facilities, and Security.

? A. Obtain briefing from Logistics Section Chief.

? B. Determine level of service required to support operations.

___ 1. Prepare Medical Emergency Plan (ICS 206).

___ 2. Personnel

___ a. Provide field personnel with food and drink.

___ b. Secure lodging.

___ c. Assure sufficient potable water.

___ d. Stock additional clothing.

___ e. Provide restrooms, decontamination

(b) (7)(F)

[redacted]

? C. Assign work locations and preliminary work tasks to Section personnel.

? D. Provide input to and review Communications Plan, Medical Plan, Traffic Plan and Vessel Routing Plan.

? E. Coordinate and process requests for additional resources.

? F. Review Incident Action Plan and estimate Section needs for next operational period.

? G. Advise on current service and support capabilities.

? H. Prepare service and support elements of the Incident Action Plan.

? I. Estimate future service and support requirements.

? J. Receive Demobilization Plan (ICS 221) from Planning Section.

? K. Recommend release of unit resources in conformance with Demobilization Plan.

16. Support Branch Director

The Support Branch Director, when activated, is under the direction of the Logistics Section Chief, and is responsible for development and implementation of logistics plans in support of the Incident Action Plan, including providing personnel, equipment, facilities, and supplies to support incident operations.

? A. Obtain briefing from Logistics Section Chief.

? B. Determine initial support operations in coordination with Logistics Section Chief and Service Branch Director.

? C. Source and mobilize response equipment as requisitioned. OPS Section Chief may have made an initial call out of equipment – Do not duplicate.

? D. Source and mobilize trained personnel.

___ 1. Only trained personnel are authorized to perform containment and cleanup operations.

___ 2. Determine:

___ a. Number of personnel available

___ b. Where are they coming from

___ c. Estimated time to arrive at staging area

___ d. Transportation necessary to get to staging area

___ 3. Maintain information on all contract personnel:

___ a. Date contracted

___ b. Work performed

___ c. Work location

___ d. Training records

___ e. Compensation rate/amount

___ f. Date released

? E. Source and mobilize transportation.

___ 1. Motor vessels

___ 2. Utility boats

___ 3. Crew boats

___ 4. Tug boats

___ 5. Jackup boats for housing

___ 6. Storage barges for temporary disposal

___ 7. Aircraft for transporting IMT cleanup personnel, surveillance and spotter.

? F. Provide transportation for moving personnel and equipment from the staging area to the incident site. This may include:

___ 1. Helicopters

___ 2. Airplanes, amphibious aircraft

___ 3. Vessels

___ 4. Cars, vans, trucks

? G. As needed, provide transportation services at the spill site for

16. Support Branch Director

operations such as wildlife rescue, surveillance, salvage, waste disposal, etc.

? H. Track movement of equipment, personnel, and material resources deploying to, operating within, and deploying from staging area. Maintain Equipment Status Board and provide as required to Situation Unit Leader.

? I. Manage equipment maintenance (scheduled/unscheduled) capability including spare parts inventory, mechanics.

? J. Coordinate availability of remote sensing capability.

? K. Maintain ready access to load limit information for aircraft and airfields. Ensure that adequate and appropriate loading/ unloading equipment is available.

? L. Locate and activate Staging Areas, Field Command Posts, Incident Command Center, Wildlife Rehab Centers with Staging Area Manager (Ops).

___ 1. Set up Command Center considering the following:

- ___ a. Telephones and service
- ___ b. Radios
- ___ c. Sewage / wastewater
- ___ d. Catering
- ___ e. Video equipment
- ___ f. Computers
- ___ g. Tables / Chairs
- ___ h. Consider Media Room separate from main Command Center
- ___ i. Consider Mobile Offices
- ___ j. Parking
- ___ k. Electrical service
- ___ l. Security
- ___ m. Helicopter landing pad
- ___ n. Documentation forms
- ___ o. Case logbooks
- ___ p. Status board
- ___ q. Charts / maps / reference publications
- ___ r. Briefing area

___ 2. Provide services, i.e. lighting, portable generators, heaters.

___ 3. Advise IMT of the following:

- ___ a. Name of facility
- ___ b. Address
- ___ c. Phone number
- ___ d. Description
- ___ e. Written directions to location.

? M. If requested, arrange for video and photographic documentation of area before, during and post response. Obtain a helicopter for photographer and coordinate with Operations Section Chief.

? N. Determine if assigned Branch resources are sufficient.

16. Support Branch Director	
? O. Maintain surveillance of assigned unit work progress and inform Logistics Section Chief of activities.	

17. Communications Unit Leader

The Communications Unit Leader is responsible for developing plans for the effective use of incident communications equipment and facilities; installing and testing of communications equipment; supervision of the incident communications equipment; distribution of communications equipment to incident personnel; and the maintenance and repair of communications equipment.

? A. Obtain briefing from Service Branch Director or Logistics Section Chief.

? B. Determine level of service required to support operations. Source and mobilize as necessary:

___ 1. Setup field communications.

___ 2. Establish Incident Communications Center and Message Center.

___ 3. Setup phone system in Command Center.

___ 4. Maintain radio logs.

___ 5. Ensure accountability for communications equipment (log).

? C. Advise communications capabilities/limitations.

? D. Prepare and implement the incident Communications Plan (**ICS 205**).

? E. Prepare telephone directory.

? F. Initiate request to FCC for temporary radio frequencies.

? G. Determine requirements and provide communications equipment for Security personnel.

? H. Implement request to establish 800 number access for Claims and Public Relations.

? I. Establish appropriate communications distribution/maintenance locations.

? J. Ensure communications systems are installed and tested.

? K. Ensure an equipment accountability system is established.

? L. Distribute communications plans to field personnel.

? M. Ensure personal portable radio equipment is distributed per radio plan.

? N. Recover equipment from relieved or released units and decon as necessary.

18. Finance Section Chief

The Finance Section Chief is responsible for all financial and cost analysis aspects of the incident and for supervising members of the Finance Section.

? A. Obtain briefing from Incident Commander.

? B. Attend planning meeting to gather information on overall strategy.

? C. Establish AFE # for response.

? D. Identify and order supply and support needs for Finance

? E. Develop and operating plan for the Finance Section

___ 1. Ensure that a system is in place to properly manage the financial aspects of equipment acquisition and to account for expenditures.

___ 2. Coordinate invoice verification, appropriate charge coding and system input for complete processing and payment.

___ 3. Work with the Logistics Section Chief to coordinate needs for purchase orders, verification of receipts, invoices, and special payments.

___ 4. Establish a cash working fund and activate a special checking account for required manual payments and local requirements.

? F. Prepare work objectives for subordinates, brief staff, make assignments, and evaluate performance.

? G. Inform members of the Unified Command and General Staff when Section is fully operational.

? H. Meet with assisting cooperating agency representatives as required.

? I. Provide input in all planning sessions on financial and cost analysis matters.

? J. Participate in all demobilization planning.

19. Procurement Unit Leader

The Procurement Unit Leader is responsible for administering all financial matters pertaining to vendor contracts.

- ? A. Obtain briefing from Finance Section Chief.
- ? B. Contact appropriate unit leaders on incident needs and any special procedures.
- ? C. Coordinate with local jurisdictions on plans and supply sources.
- ? D. Develop Incident Procurement Plan.
- ? E. Prepare and sign contracts and land use agreements as needed.
- ? F. Establish contracts with supply vendors as required.
- ? G. Interpret contracts/agreements and resolve claims or disputes within delegated authority.
- ? H. Coordinate with Compensation/Claims Unit on procedures for handling claims.
- ? I. Finalize all agreements and contracts.
- ? J. Coordinate use of cash funds as required.
- ? K. Complete final processing of invoices and send documents for payment.
- ? L. Coordinate cost data in contracts with Cost Unit Leader.

20. Compensation/Claims Unit Leader

The Compensation/Claims Unit Leader is responsible for the overall management and direction of all Compensation for Injury Specialist and Claims Specialists assigned to the incident.

- ? A. Obtain briefing from Finance Section Chief.
- ? B. Establish contact with incident Safety Officer and Liaison Officer or Agency Representatives if no Liaison Officer is assigned.
- ? C. Prepare responses to inquiries, claims and other legal matters.
- ? D. Issue Public Advertisements as required.
- ? E. Determine the need for Compensation for Injury and Claims Specialists and other personnel if needed.
- ? F. Obtain a copy of the Incident Medical Plan.
- ? G. Periodically review all logs and forms produced by Compensation/Claims Specialists to ensure that entries are thorough, accurate, timely, and in compliance with requirements and policies.
- ? H. Keep Finance Section Chief briefed on unit status and activity.
- ? I. Demobilize unit in accordance with Demobilization Plan.
- ? J. Coordinate insurance claims processing.
- ? K. Notify appropriate insurance underwriters.
  - ___ 1. Determine insurance coverage limits and estimated insurance recovery of incident response costs.
  - ___ 2. Supervise processing and investigation activities for claims.
  - ___ 3. Determine documentation requirements with underwriters.
- ? L. Maintain claims data to include settlement costs, number of claims, and potential future indemnities.
- ? M. Establish claims office and hotline if necessary.

21. Cost Unit Leader

The Cost Unit Leader is responsible for collecting all cost data, performing cost effectiveness analyses, and providing cost estimates and cost saving recommendations for the incident.

? A. Obtain briefing from Finance Section Chief. ? B. Obtain and record all cost data. ? C. Prepare incident cost summaries. ? D. Prepare resources-use cost estimates for Planning. ? E. Make recommendations for cost savings to Finance Section Chief. ? F. Maintain cumulative incident cost records. ? G. Ensure that all costs documents are accurately prepared. ? H. Complete all records prior to demobilization. ? I. Provide reports to Finance Section Chief.	

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Abnormal Incident Report
(To Be Completed By Operator)

Name	Social Security Number	Age	Incident Date	Time		AM / PM

Description of incident: Describe work being done prior to incident and how the incident happened.

Describe all facts, conditions, or other factors which you think caused the incident.

In your opinion, what can you do to prevent this type of accident in the future?

Signature	Job classification	Date

To Be Completed by Supervisor

Name	Date		AM / PM

Date you were notified	Time you were notified		AM / PM	Investigation: Did incident result in shutdown?

Was operations at time of incident normal?	Was special task being done?

What mechanical, physical, or environmental conditions were present at the time of the incident?

List persons in or near area at the time of the incident.

What action of operator contributed to incident?

How did the incident occur?

List any loss of production.

List action taken to prevent recurrence of similar incident.

Operator's full name	Field location	Date

Length of company service	Length of time in present job	Number of previous incidents

How many of the previous incidents resulted in:

No lost production:	Lost Production:

Incident location	Incident date	Day of week	Time		AM / PM

Reviewed by Manager

Signature	Date

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Cameron Highway and Poseidon Pipelines
Spill Report Form
(Page 1 of 2)

☐ Drill ☐ Actual Spill NRC Number: _____

Responsible Party

Reporting party:
Name: _____
Phone: _____
Company: _____
Address: _____

Suspected responsible party:
Company: _____
Phone: _____
Address: _____

Time and Location

Date/time incident occurred: _____
Date/time incident reported to QI/IC: _____
Facility/Source: _____
Latitude _____ Longitude: _____
Nearest city and distance _____
Reason of discharge: _____
Capacity of tank(s) involved: _____

Materials Discharged

Quantity: _____ gals/bbls Material: _____ API Gravity: _____
Quantity in Water: _____ gals/bbls Length: _____ ft/mi Width: _____ ft/mi
Estimated percentage of area covered by slick = _____

Color of slick (that is,.20% brightly colored; 80% dull; to total 100%)
Appearance %
☐ barely visible ☐ silvery ☐ slightly colored
☐ brightly colored ☐ dull ☐ dark

Weather

Air temp: _____ °F Water temp: _____ °F
Ceiling: _____ ft Visibility: _____ mi Seas: _____ ft
Wind direction/velocity: From: _____ @ _____ kts/mph
Current direction/velocity: To: _____ @ _____ kts/mph

Response Action

Actions taken to correct/mitigate incident:

Additional Information

Injuries _____ Fatalities: _____
Evacuated: _____
Damage: _____

DO NOT DELAY REPORTING PENDING ADDITIONAL INFORMATION—CALL THE NRC AT (800) 424-8802.

Enterprise Field Services, LLC
Cameron Highway and Poseidon Pipelines
Spill Report Form
(Page 2 of 2)

☐ Drill ☐ Actual Spill NRC Number: _____

Notifications Within the Company:

Reported by	Reported to	Reported to (position)	Time	Date

Notifications to Agencies:

Reported by (Name)	Reported to (Name)	Agency	Incident Number	Time	Date

DO NOT DELAY REPORTING PENDING ADDITIONAL INFORMATION—CALL THE NRC AT (800) 424-8802.

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Cameron Highway and Poseidon Pipelines
Initial Media Release Form

(Approved for use by Designated Spokesperson to handle media inquiries)

I am _____ representing
(name and title)
_____. At approximately _____
(company name) (time and date)
we had a (characterize incident) _____
(characterize incident)
_____

at _____. Cleanup and containment personnel have been dispatched to the site
(location)
and are working to bring the incident under control. (Note: If the incident is under control, say it is under control.) The cause of the incident has not yet been determined, and an investigation will be initiated as soon as practical. (Note: If you have confirmation of injuries, say "There are no injuries associated with the incident" (OR) "There have been _____ injuries and the injured are (being treated on-scene, en
(number)
route to _____ Hospital) at this time." ***DO NOT IDENTIFY INJURED***.) At this time, our primary concern is for the safety and welfare of employees, personnel, the community, and the environment. Our number one objective is to contain and control this incident. That is all the information I have at this time. We will provide you updated information as it becomes available.

(Note: Do not speculate. If you do not know the answer to a question, say “I do not know.” Refer requests for additional information to the designated contact.)

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Site Safety Assessment
(Page 1 of 3)

Applies to Site:

Date: | **Incident:**

Products: (Attach MSDS)

Site Characterization ☐ Marine vessel ☐ Pipeline ☐ Storage facility ☐ Truck/railcar ☐ Other _____

Water ☐ Shoreline ☐ Wetlands ☐ Other _____
☐ Rocky ☐ Sandy ☐ Muddy ☐ Other _____
☐ River ☐ Creek ☐ Canal ☐ Bay ☐ Ocean

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

☐ Chemical hazards	☐ Boats
☐ Slips, trips, falls	☐ Helicopters
☐ Heat stress	☐ Noise
☐ Cold stress	☐ Pumps, hoses
☐ Weather	☐ Steam, hot water
☐ Drowning	☐ Fire/explosion
☐ Heavy equipment	☐ Poor visibility
☐ Drum handling	☐ Motor vehicles
☐ Wildlife/plants	☐ Confined spaces
☐ Hand/power tools	☐ Ionizing radiation
☐ Lifting	☐ Other: _____

Air Monitoring

%LEL _____ %O2 _____ PPM Benzene _____ PPM H_2S _____

Other (specify) _____

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Site Safety Assessment
(Page 2 of 3)

Control Measures

Engineering Controls

☐ Source of release secured ☐ Valve(s) closed ☐ Facility shut down

☐ Site secured ☐ Energy sources locked/tagged out

☐ Other _____

Personal Protective Equipment (PPE)

☐ PVC suits ☐ PE/TYVEK suits ☐ Respirator _____

☐ Nitrile gloves ☐ PVC gloves ☐ Other

☐ Rubber boots ☐ Hardhats ☐ Eye protection

Decontamination

Stations established

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(f).

Work Plan (Buddy system must be used.)

☐ Booming ☐ Skimming ☐ Vacuum trucks ☐ Pumping ☐ Excavation

☐ Heavy equipment ☐ Sorbent pads ☐ Patching ☐ Hot work ☐ Shoring

☐ Appropriate permits issued

☐ Other (describe): _____

Training

Verified site workers trained per OSHA 1910.120.

Organization

Incident Commander: (D) _____ Radio/telephone: _____

(N) _____

Deputy IC: (D) _____ Radio/telephone: _____

(N) _____

Safety Officer: (D) _____ Radio/telephone: _____

(N) _____

Public Affairs Officer: _____ Radio/telephone: _____

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Cameron Highway and Poseidon Pipelines
Site Safety Assessment
(Page 3 of 3)

Emergency Plan

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:

❑ Date/time completed: _____ By: _____
❑ Hazards discussed (attach training documentation): _____
❑ Other topics: _____

Date/Time Plan Completed: _____ By: _____

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Cameron Highway and Poseidon Pipelines
Waste Management Form
(Page 1 of 5)

- Always work safely in an environmentally sound manner.
- Minimize waste.
- Consider waste management and generation in all actions.
- Never mix waste; always segregate.
- Report any accident or incident to your supervisor immediately.
- Reference the Waste Management Plan for specific process required for each waste type.

A. Introduction

Incident Name: _____

Date of Incident: _____

Time of Incident: _____

Individual in Charge of Site: _____

B. Site Description

Location of Site: _____

Description of Site Including Surrounding Area (shoreline, marsh, etc. – attach maps): _____

Access/Limitations (highway/bridge limitations, boat/shallow water, etc. - attach maps): _____

Any Additional Information / Considerations: _____

Present Weather Conditions: _____

12-Hour Forecast: _____

24-Hour Forecast: _____

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Waste Management Form
(Page 2 of 5)

C. Site Specific Safety Plan

This plan must be completed and attached before starting any physical work. One plan must be completed for each waste handling/storage area.

D. Type of Waste Generated from Response Operations

Wastes generated by oil spill cleanup fall into several different types. Use the following to identify your wastes. Remember—never mix wastes!

Waste Stream	**Sources**
<u>Non-Hazardous</u>	
Oily Liquid	Recovery operations; vessels, vehicle, aircraft and equipment operations; personnel and equipment decontamination operations; waste storage and disposal area storm water runoff control operations; wildlife washing operations; equipment demobilization operations.
Non-Oily Liquid	Sewage collection operations; gray water collection operations; laundry operations; oil/water separation operations; wildlife rehabilitation operations.
Oil Solids	Recovery operations; debris removal operations; in-situ burning operations; site restoration operations; personnel and equipment decontamination operations; equipment demobilization operations; wildlife capture, cleaning and rehabilitation operations.
Non-Oily Solids	Recovery operations; debris removal operations; garbage collection operations; construction operations; site restoration operations; wildlife capture, cleaning and rehabilitation operations; equipment demobilization operations.
<u>Hazardous</u>	
	Vessels, vehicle, aircraft and equipment operations; dispersant use operations; wildlife rehabilitation operations.

E. Containerized and Stored=Waste

Waste accumulated at spill cleanup sites will have to be containerized and stored. Note that each waste stream will have to be classified as to its hazardous nature. Additionally, each container will have to be properly identified and marked for hazard communications as well as properly marked and labeled to meet Department of Transportation requirements before shipment. All hazardous waste must be transported immediately to the nearest shore base for continued storage.

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Waste Management Form
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F. Temporary waste sites will have to be identified and established. These sites will need to be in close proximity to the cleanup site. Security requirements must be considered along with the access to outside transportation. These storage areas should be established with the following being considered: distance to living/working areas (cleanup operations as well as the general public), local wildlife impact, security, cleanup of spilled product and rainwater runoff. The following section should be completed for each temporary storage site. To establish security, contact the Logistics Section Chief.

Site Location	Security	Access

G. Company-approved treatment, recycling and disposal facilities are listed below. Prior contact must be made with the facility as soon as the waste is identified and an estimated volume is established.

Company Name, Address, Phone Number	Contact (Complete When Called)	Type Waste Approved For

H. Company-approved waste transporters should be used to haul all waste. The following is a list of transporters presently being used to transport wastes. The shipper must ensure that all Department of Transportation requirements are met. Additionally, all waste must be accompanied by a properly completed manifest or shipping paper. All containers must be secure and strong. All dump trucks or rolloff bins should be lined to prevent spillage or contamination of other areas.

Company Name, Address, Phone Number	Contact (Complete When Called)	Type Waste Approved For

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Cameron Highway and Poseidon Pipelines
Waste Management Form
(Page 4 of 5)

I. Waste material must be controlled when entering and leaving the storage area. The following can be used to accomplish this task.

Waste Type	Type/ Number Containers	Control Number	Date In	Date Out	Transporter	Disposer	Type of/ Manifest Number

J. If additional help or assistance is required, immediately contact your on-scene safety or environmental representative or contact the Disposal Group, the Operations Section Chief or the Safety Officer.

Enterprise Field Services, LLC
Cameron Highway and Poseidon Pipelines
Waste Management Form
(Page 5 of 5)

K. Equipment, manpower, and expenditures must be controlled and documented. The following can be used for this purpose. If additional assistance is required in cost control, contact the Finance Section Chief. If additional assistance is required in purchasing or locating equipment or supplies, contact the Logistics Section Chief.

Equipment					
Waste Handling Equipment	**Vendor**	**S.O. Number**	**Days Used**	**Cost Per Day**	**Total Cost**

Manpower					
Waste Handling Equipment	**Vendor**	**S.O. Number**	**Days Used**	**Cost Per Day**	**Total Cost**

Other costs (Fuel, Tools, Repair, Container Rental/Purchase)					
Waste Handling Equipment	**Vendor**	**S.O. Number**	**Days Used**	**Cost Per Day**	**Total Cost**

Total Cost =

L. Waste management sites are identified in this Section.

M. Report all accidents/incidents immediately to your supervisor. Always work safely and in an environmentally sound manner.

Enterprise Field Services, LLC

Weekly Inspection Log – Page 1 of 2

Field/Facility: Cameron Highway and Poseidon Pipelines		**Inspection Date:**	
Inspection	**Acceptable**	**Unacceptable**	**Not Applicable**
Inspect all vessels for proper operation and condition including:			
Gauges			
Sight glasses			
Level controls			
Pressure controls			
Connection leaks			
Remarks:			
Inspect for leaks on:			
Control valve packing and pumps			
Block valves			
Unions			
Flange connections			
Piping			
Remarks:			
Inspect all traps, drains and sumps for oil accumulation			
Inspect all traps, drains and sumps for proper operation of level controls and pumps			
Remarks:			
Inspect tank seams, tank surfaces and base of tanks for leaks and external corrosion			
Remarks:			
Evaluate field constructed tanks having undergone repair, alteration, reconstruction, or change in service for risk of failure due to brittle fracture			
Remarks:			
Inspect vent system outlets and sump piping or gutters to ensure they are not obstructed			
Remarks:			

Weekly Inspection Log – Page 2 of 2			
Inspection	**Acceptable**	**Unacceptable**	**Not Applicable**
Inspect area surround vessels, piping and facility for oil sheens or accumulations, spilled material, soil discoloration, or stressed vegetation			
Remarks:			
Inspect secondary containment systems for structural integrity and the presence of oil sheens or accumulations			
Remarks:			
Inspect area surrounding containment for presence of spilled material, debris, or stressed vegetation			
Remarks:			
Inspect the components of the saltwater disposal system to detect possible system upsets capable of causing a discharge			
Remarks:			

Signature_____

Daily Visual Inspections

Atmospheric storage tanks are equipped with automatic tank gauging devices and high liquid level sensing devices/alarms, and are gauged both daily and prior to unloading.

Daily visual inspections are conducted to check pumps, piping, and transfer areas for evidence of leaks, spills or corrosion and are in proper working order. Piping, valves, and pumps are located within containment areas or in areas where spillage can be easily collected by facility personnel.

Signature_____

Enterprise Field Services, LLC
Monthly Inspection Log

Field/Facility: Cameron Highway and Poseidon Pipelines		**Inspection Month:**	
Inspection	**Acceptable**	**Unacceptable**	**Not Applicable**
Process Control Devices			
Safety Devices			
Pressure Safety High (PSH)			
Pressure Safety Low (PSL)			
Level Safety High (LSH)			
Level Safety Low (LSH)			
Pressure pilots and safety levels			
Emergency Shut-down (ESD)			
Fire Extinguishers (visual only)			
Remarks			

Signature_____

Enterprise Field Services, LLC

Annual Inspection Log - (Page 1 of 2)

Field/Facility: Cameron Highway and Poseidon Pipelines	**Inspection Date:**		
Inspection	**Acceptable**	**Unacceptable**	**Not Applicable**
Tank Inspection			
Drip Marks			
Discoloration of tanks			
Puddles containing spilled or leaked materials			
Corrosion			
Cracks			
Localized dead vegetation			
Remarks:			
Foundation Inspection			
Cracks			
Discoloration			
Puddles containing spilled or leaked materials			
Settling			
Gaps between tank and foundation			
Damage caused by vegetation roots			
Remarks:			
Appurtenances Inspection			
Thief hatch and vent valves seal properly			
Overflow piping operational and in good condition			
Flame arrestor operational on vent line			
Tank supports, stairways/waterways integrity			
Remarks:			
Secondary containment Inspections			
Visible cracks or seepage in berm or containment			
Erosion or damage to berm or containment			
Spilled material or stressed vegetation surrounding area			
Storm water drain line valves locked			
Remarks:			

Enterprise Field Services, LLC
Annual Inspection Log (Page 2 of 2)

Inspection	Acceptable	Unacceptable	Not Applicable
Piping Inspections			
Droplets of stored materials			
Discoloration			
Corrosion			
Bowing of pipe between supports			
Evidence of stored materials seepage from valves or seals			
Localized dead vegetation			
Remarks:			
Miscellaneous Inspections			
Tankage cathodic protection system operational			
Pipeline cathodic protection system operational			
Storage capacity adequate for anticipated production			
Pressure Safety Valves			
Fire Extinguisher (3rd Party Audit)			
Remarks:			

Signature_____

Enterprise Field Services, LLC
Equipment Inspection/Maintenance Record

Field/Facility/Well: Cameron Highway and Poseidon Pipelines
District/Division:_____

Equipment ID and Condition	Action Taken	Date Completed	Operator Initials

Enterprise Field Services, LLC
Cameron Highway and Poseidon Pipelines
Training Log for Emergency Procedures

Date	Name and Job Title	Method of Training	Method of Training Verification	Remarks	Signature

Enterprise Field Services, LLC
Cameron Highway and Poseidon Pipelines
Drill Log

Date	Description of Drill	Attendees

Enterprise Field Services, LLC
Cameron Highway and Poseidon Pipelines
Safe Operations Meetings Minutes

Date:_____
Time:_____
Location:_____
Chairman:_____

Actual demonstration of the correct method of doing a job makes a lasting impression, and when possible should be made a part of each Loss Control Meeting.

1. Safety Topics Discussed and Items Emphasized:

2. Material Other Than Safety Topics Used:

3. Hazards, Accidents, Near Accidents, Fires or Potential Fires Discussed:

4. Demonstrations Conducted (Describe in Detail):

5. Safety Ideas Suggested – Action Taken Locally:

6. Safety Suggestions Requiring Division or Regional Office Action:

Employees Present:

Name	**Social Security Number**

Contract Employees and Guests:

Name	**Social Security Number**

Employees Absent:	**Reason for Absence:**

Enterprise Field Services, LLC
Cameron Highway and Poseidon Pipelines
Annual Documentation Review Log

In-Field Verification and Review Dates			
In-Field Plan Review	**Inspections, Tests, and Procedures Being Conducted**	**Pollution Training Conducted**	**Signature**

OIL SPILL RESPONSE CHECKLIST: IN-SITU BURNING
Enterprise Field Services, LLC
Cameron Highway and Poseidon Pipelines

1) SPILL DATA
(to be completed by Responsible Party and submitted to FOSC)

A) Name of Incident: _____

B) Date and time of Incident: Mo/Day/Year: _____ Time: _____

C) Incident Type: _____
Transfer Operation _____ Blowout _____
Pipeline Rupture _____ Explosion _____
Storage Tank Failure _____ Other _____

D) Did Spill Source Ignite? Yes: _____ No: _____
Is Source Still Burning? Yes: _____ No: _____

E) Spill Location:
Latitude: _____ Longitude: _____

F) Distance (miles) & Direction to Nearest
Populated Area (Name of City/Town): _____

G) Products Released: _____
_____

H) Product(s) Easily Emulsified? Yes: _____ No: _____
Uncertain: _____

I) Product(s) already Emulsified upon Release? No: _____

Light Emulsion (0-20%) _____ Moderate Emulsion (21-50%) _____
Heavy Emulsion (>5%) _____ Unknown Emulsion _____

J) Estimated Volume(s) of Product Released: _____ Gals/bbls
_____ Gals/bbls

K) Estimated Volume(s) of Product that Could Still be Released:
_____ gals _____ Bbls _____
_____ gals _____ Bbls _____

L) Release Status:
Continuous: _____ Estimated Rate: _____
Intermittent: _____ Estimated Rate: _____
1 time only ("batch" spill); flow now stopped: _____
_____

M) Estimated Area of Spill:
Approx. Date/Time: _____ Surface Area _____ Sq Miles (Stat _____ Naut. _____)
Approx. Date/Time: _____ Surface Area _____ Sq Miles (Stat _____ Naut. _____)

2) WEATHER AND WATER CONDITIONS AT TIME & LOCATION OF SPILL
(To be completed by responding party and submitted to FOSC)

_____ _____

OIL SPILL RESPONSE CHECKLIST: IN-SITU BURNING
Enterprise Field Services, LLC
Cameron Highway and Poseidon Pipelines

A) Temperature: Air _____ (deg F) Water _____ (deg F)

B) Weather: Clear _____ Partly Cloudy _____ Heavy Overcast _____
Rain: Heavy _____ Moderate _____ Light _____
Fog: _____ Type & Amount at Spill Source _____
Type & Amount at Burn Site _____

C) Wind Speed: _____ Knots Wind Direction (from) _____

D) Other Considerations:
General Visibility _____
Flooding Potential _____
Associated Debris _____
Other Hazards _____

NOTE:
See Section 4) of this Checklist for Weather and Water Conditions Forecast (to be completed by NOAA Scientific Support Coordinator). See Section 5) of this Checklist for Predicted Oil Behavior (to be completed by NOAA Scientific Support Coordinator). Responding Party has option of also submitting information on Predicted Oil Behavior to FOSC.

3) PROPOSED BURNING PLAN (To be completed by Party Responding to Spill)

A) Location of Proposed Burn with respect to Spill Source:

_____

B) Location of Proposed Burn with respect to nearest Ignitable Oil Slick(s):

_____

C) Location of Proposed Burn with respect to nearest Land:

_____

D) Location of Proposed Burn with respect to Commercial Fishing Activity, Vessel Traffic Lanes, Drilling Rigs and / or other Marine Activities / Facilities:

_____

_____

E) Risk of Accidental (Secondary) Fires:

_____

F) Risk of Reducing Visibility at Nearby Airstrip(s) or Airport(s):

_____

G) Distance to, location and type of nearest Population Center(s) (e.g. Recreational Site, Town, City, etc.):

_____

H) Methods that will be used (prior to ignition) to Notify Residents in areas where smoke could conceivably drift into or over such areas:

_____

I) Type of Igniter proposed for use:

OIL SPILL RESPONSE CHECKLIST: IN-SITU BURNING
Enterprise Field Services, LLC
Cameron Highway and Poseidon Pipelines

J) Helicopter(s) needed to deploy igniters? Yes _____ No _____
Name of Company and type of Helicopter to be used:

FAA approval already granted to Company for use of Igniter: Yes _____ No _____
Awaiting FAA Approval or Verification of prior approval: Yes _____ No _____

K) Burning Promoters or Wicking Agents proposed for use? Yes _____ No _____
If yes, give type and amount: _____

L) Describe proposed Method of Deployment for Igniter(s):

Burning Promoter(s):

Wicking Agent(s):

M) Describe Method for Containment, if any:

N) Proposed Location of Oil Containment relative to Spill Source:

O) Proposed Burning Strategy:
_____ Immediate Ignition at or near Source
_____ Ignition away from source after Containment and Movement to Safe Location
_____ Ignition of uncontained slick(s) at a Safe Distance
_____ Controlled Burning in Boom or natural collection site at / near Shore
_____ Possible need for Multiple Ignition Attempts

P) Estimated Amount of Oil to be Burned:

Q) Estimated Duration of each Burn: _____
Total Possible Burn Period: _____

R) Estimated Smoke Plume Trajectory:

S) Method for Collecting Burned Oil Residue:

T) Proposed Storage & Disposal of Burned Oil Residue:

OIL SPILL RESPONSE CHECKLIST: IN-SITU BURNING
Enterprise Field Services, LLC
Cameron Highway and Poseidon Pipelines

4) WEATHER AND WATER CONDITION FORECAST FROM TIME OF SPILL

A) Wind Speed (Knots):
24-Hour Projection: _____
48-Hour Projection: _____

B) Wind Direction (from):
24-Hour Projection: _____
48-Hour Projection: _____

5) PREDICTED OIL BEHAVIOR

A) Unburned Oil Forecast:
Estimated spread of unburned product spilled (Attach Sketch if Necessary):

_____

B) Estimation areas of impact for continued spread if not burned:

Location _____ Date / Time _____
Location _____ Date / Time _____

C) Estimated Percent Naturally Dispersed and Evaporated:
Within first 12 Hours: _____
Within first 24 Hours: _____
Within first 48 Hours; _____

6) RESOURCES AT RISK (To be completed with input by resource agencies)

A) Habitats
Sheltered Tidal Flats _____
Coastal Marshes _____
Other _____

B) Biological Resources
Are marine mammals, turtles, or concentrations of birds noted in the burn area? Yes _____ No _____
Endangered / Threatened Species? Yes _____ No _____
Non - Endangered / Threatened Species? Yes _____ No _____

C) Historic and Archaeological Resources? Yes _____ No _____

D) Commercial Harvest Areas? Yes _____ No _____

7) FEDERAL ON-SCENE COORDINATOR'S EVALUATION OF RESPONSE OPTIONS
(To be completed by FOSC)

A) Is In-Situ Burning likely to result in the Elimination of Significant Volumes of Spilled Oil? Yes _____ No _____

OIL SPILL RESPONSE CHECKLIST: IN-SITU BURNING
Enterprise Field Services, LLC
Cameron Highway and Poseidon Pipelines

B) Will the use of In-Situ Burning interfere with (or in any way reduce the effectiveness of) mechanical recovery and / or dispersant application? Yes _____ No _____

If yes, do the potential Benefits of Burning outweigh the potential reductions in effectiveness of mechanical / dispersant use? Yes _____ No _____

C) Can In-Situ Burning be used Safely, and with an anticipated overall Reduction in Environmental Impact (compared with the decision not to burn)? Yes _____ No _____

8) FEDERAL ON-SCENE COORDINATOR'S DECISION REGARDING IN-SITU BURNING
(To be completed by FOSC)

A) _____ Do not Conduct In-Situ Burn

B) _____ In-Situ Burn may be Conducted in Limited or Selected Areas

C) _____ In-Situ Burn may be Conducted as Requested

NOTE:
If the FOSC approved of In-Situ Burning, Local Media and Residents in Areas within the Potential Smoke Plume Trajectory must be Notified Prior to Initiating the Burn.

Signature of FOSC: _____

Printed Name of FOSC: _____

Time / Date of Decision: _____

Enterprise Field Services, LLC
Cameron Highway and Poseidon Pipelines

Request Format for Use of Alternative Response Technology

DATE: _____

TO: Region _____ Regional Response Team Members
SUBJECT: Request for Use of _____ Product(s) on the NCP Product Schedule

The purpose of this letter is to solicit approval from the Region VI Regional Response Team (RRT) for the use of _____ product or technology in treating the oil from the _____ spill in _____. The proposed use of this product or technology is outlined below, including conditions of use:

- Description of the cleanup problem to be addressed by use of the product:
- Outline why the product(s) or technology was selected:
- Summary of any toxicological or environmental data on the product, to assist in evaluation of its toxicity:
- Description of the general areas where the product will be used: [also describe areas where use of the product will be prohibited (attach lists and/or maps with more details on specific areas proposed for product use)]:
- Estimate of the amount of product to be used, either in each area or in total:
- Description of actions to be taken to minimize environmental impact:
- Description of any testing or monitoring programs that will be implemented during product evaluation and use:
- Why it is believed that the use of this product in the environments selected will provide a net environmental benefit over other cleanup strategies?
- Other pertinent information:

Enterprise Field Services, LLC
Cameron Highway and Poseidon Pipelines

PREP INTERNAL EXERCISE DOCUMENTATION FORM

Quarterly

Notification Exercise

1) Date Performed: _____

2) Exercise or Actual Response: EXERCISE

3) Facility Initiating Exercise: _____

4) Name/Position of Facility Personnel Initiating Exercise: _____

5) Name of Person Notified: _____

Is this person identified in your response plan as a Qualified Individual? _____

6) Time initiated: _____

Time at which Qualified Individual responded: _____

7) Method & number used to contact QI:

☐ Telephone: _____ ☐ Pager: _____ ☐ Radio: _____

☐ Other: _____

8) Description of notification procedure and/or comments: _____

_____

_____
Certifying Signature*

Note - Retain this form for a minimum of 3 years.

* Certification - is the act of confirming that an exercise (1) was completed; (2) was conducted in accordance with the PREP guidelines, meeting all objectives listed; and (3) was evaluated using a mechanism that appraised the effectiveness of the response or contingency plan.

Enterprise Field Services, LLC
Cameron Highway and Poseidon Pipelines

Quarterly QI Notification Exercise
Conversation/Action Record

Date: _____ Page _____ of _____
Position: _____
Name: _____

No	Time:	Phone:	x			Person/Telephone #:	Title:	Representing:
		Fax:	□	Incoming:	□	-		
		Other:	□	Outgoing:				

No.	Time:	Phone:	□			Person/Telephone #:	Title:	Representing:
		Fax:	□	Incoming:	□			
		Other:	□	Outgoing:	□			

No.	Time:	Phone:	□			Person/Telephone #:	Title:	Representing:
		Fax:	□	Incoming:	□			
		Other:	□	Outgoing:	□			

U.S. Department of Transportation
Pipeline and Hazardous Materials
Safety Administration

NC DEN RE OR - GAS RANSM SS ON AND GA HER NG SYS EMS

Report Date _____

No. _____
(DOT Use Only)

INSTRUCTIONS

Important: *Please read the separate instructions for completing this form before you begin. They clarify the information requested and provide specific examples. If you do not have a copy of the instructions, you can obtain one from the Office Of Pipeline Safety Web Page at* h p ops do gov.

PART A – GENERAL REPORT INFORMATION

Check one: ☐ **Original Report** ☐ **Supplemental Report** ☐ **Final Report**

Operator Name and Address

a. Operator's 5-digit Identification Number (when known) / / / / / /

b. If Operator does not own the pipeline, enter Owner's 5-digit Identification Number (when known) / / / / / /

c. Name of Operator _____

d. Operator street address _____

e. Operator address _____
City, County or Parrish, State and Zip Code

2. Time and date of the incident

/ / / / / hr. / / / month / / / day / / / year

3. Location of incident

a. _____
Nearest street or road

b. _____
City and County or Parrish

c. _____
State and Zip Code

d. Mile Post/Valve Station _____

e. Survey Station No. _____

f. Latitude: _____ Longitude: _____
(if not available, see instructions for how to provide specific location)

g. Class location description
Onshore: O Class 1 O Class 2 O Class 3 O Class 4

Offshore: O Class 1 *(complete rest of this item)*

Area _____ Block # _____

State / / / or Outer Continental Shelf ☐

h. Incident on Federal Land other than Outer Continental Shelf
O Yes O No

i. Is pipeline Interstate O Yes O No

4. Type of leak or rupture

O Leak: OPinhole OConnection Failure *(complete sec. F5)*

O Puncture, diameter *(inches)* _____

O Rupture: O Circumferential – Separation

O Longitudinal
– Tear/Crack, length *(inches)* _____

- Propagation Leng h, total, bo h sides *(feet)* _____

O N/A

O Other: _____

5. Consequences *(check and complete all that apply)*

a. ☐ Fatality Total number of people: / / / /

Employees: / / / / *General Public:* / / / /

Non-employee Contractors: / / / /

b. ☐ Injury requiring inpatient hospitalization Total number of people: / / / /

Employees: / / / / *General Public:* / / / /

Non-employee Contractors: / / / /

c. ☐ Property damage/loss *(estimated)* Total $_____

Gas loss $_____ Operator damage $_____

Public/private property damage $_____

d. ☐ Release Occurred in a 'High Consequence Area'

e. ☐ Gas ignited – No explosion f. ☐ Explosion

g. ☐ Evacuation *(general public only)* / / / / / people

Reason for Evacuation:
O Emergency worker or public official ordered, precautionary
O Threat to the public O Company policy

6. Elapsed time until area was made safe:

/ / / hr. / / / min.

7. Telephone Report

/ / / / / / / NRC Report Number / / / month / / / day / / / year

8. a. Estimated pressure at point and ime of incident:

_____ *PSIG*

b. Max. allowable operating pressure *(MAOP):* _____ *PSIG*

c. MAOP established by 49 CFR section:
☐ 192.619 (a)(1) ☐ 192. 619 (a)(2) ☐ 192. 619 (a)(3)
☐ 192.619 (a)(4) ☐ 192. 619 (c)

d. Did an overpressurization occur relating to the incident? OYes O No

PART B – PREPARER AND AUTHORIZED SIGNATURE

_____
(type or print) Preparer's Name and Title

_____
Area Code and Telephone Number

_____
Preparer's E-mail Address

_____
Area Code and Facsimile Number

_____ _____ _____
Authorized Signature (type or print) Name and Title Date Area Code and Telephone Number

PART C - ORIGIN OF THE INCIDENT

1. Incident occurred on
   - O Transmission System
   - O Gathering System
   - O Transmission Line of Distribution System

2. Failure occurred on
   - O Body of pipe
   - O Pipe Seam
   - O Joint
   - O Component
   - O Other: _____

3. Material involved *(pipe, fitting, or other component)*
   - O Steel
   - O Plastic (If plastic, complete all items that apply in a-c)
     Plastic failure was: ☐ a.ductile ☐ b.brittle ☐ c.joint failure
   - O Material other than plastic or steel: _____

4. Part of system involved in incident
   - O Pipeline
   - O Regulator/Metering System
   - O Compressor Station
   - O Other: _____

5. Year the pipe or component which failed was installed: /___/___/___/___/

PART D – MATERIAL SPECIFICATION (if applicable)

1. Nominal pipe size *(NPS)* /___/___/___/___/ in.
2. Wall thickness /___/___/___/___/ in.
3. Specification _____ SMYS /___/___/___/___/___/___/
4. Seam type _____
5. Valve type _____
6. Pipe or valve manufactured by _____ in year /___/___/___/___/

PART E – ENVIRONMENT

1. Area of incident
   - O Under pavement
   - O Under ground
   - O Inside/under building
   - O In open ditch
   - O Above ground
   - O Under water
   - O Other: _____

2. Depth of cover: _____ inches

PART F – APPARENT CAUSE

Important: *There are 25 numbered causes in this section. Check the box to the left of the* ***primary*** *cause of the incident. Check one circle in each of the supplemental items to the right of or below the cause you indicate. See the instructions for this form for guidance.*

F1 – CORROSION

If either F1 (1) External Corrosion, or F1 (2) Internal Corrosion is checked, complete all subparts a – e.

1. ☐ External Corrosion

a. Pipe Coating
- O Bare
- O Coated

b. Visual Examina ion
- O Localized Pitting
- O General Corrosion
- O Other: _____

c. Cause of Corrosion
- O Galvanic
- O Stray Current
- O Improper Cathodic Protection
- O Microbiological
- O Stress Corrosion Cracking
- O Other: _____

d. Was corroded part of pipeline considered to be under cathodic protection prior to discovering incident?
O No O Yes, Year Protection Started: /___/___/___/___/

2. ☐ Internal Corrosion

e. Was pipe previously damaged in the area of corrosion?
O No O Yes, How long prior to incident: /___/___/___/ *years* /___/___/ *months*

F2 – NATURAL FORCES

3. ☐ Earth Movement ⇒ O Earthquake O Subsidence O Landslide O Other: _____
4. ☐ Lightning
5. ☐ Heavy Rains/Floods ⇒ O Washouts O Flotation O Mudslide O Scouring O Other: _____
6. ☐ Temperature ⇒ O Thermal stress O Frost heave O Frozen components O Other: _____
7. ☐ High Winds

F3 - EXCAVATION

8. ☐ Operator Excavation Damage *(including their contractors)* / Not Third Party

9. ☐ Third Party Excavation Damage *(complete a-d)*
   a. Excavator group
      O General Public O Government O Excavator other han Operator/subcontractor
   b. Type: O Road Work O Pipeline O Water O Electric O Sewer O Phone/Cable O Landowner O Railroad
      O Other: _____
   c. Did operator get prior notification of excavation activity?
      O No O Yes: Date received: /___/___/ mo. /___/___/ day /___/___/ yr.
      Notification received from: O One Call System O Excavator O Contractor O Landowner
   d. Was pipeline marked?
      O No O Yes *(If Yes, check applicable items i – iv)*
      i. Temporary markings: O Flags O Stakes O Paint
      ii. Permanent markings: O Yes O No
      iii. Marks were *(check one)* O Accurate O Not Accurate
      iv. Were marks made within required time? O Yes O No

F4 – OTHER OUTSIDE FORCE DAMAGE

10. ☐ Fire/Explosion as primary cause of failure ⇒ Fire/Explosion cause: O Man made O Natural
11. ☐ Car, truck or other vehicle not relating to excava ion activity damaging pipe
12. ☐ Rupture of Previously Damaged Pipe
13. ☐ Vandalism

F5 – MATERIAL AND WELDS

Material

14.☐ Body of Pipe	⇒	O Dent	O Gouge	O Wrinkle Bend	O Arc Burn	O Other: _____
15.☐ Component	⇒	O Valve	O Fitting	O Vessel	O Extruded Outlet	O Other: _____
16.☐ Joint	⇒	O Gasket	O O-Ring	O Threads		O Other: _____

Weld

17.☐ Butt	⇒	O Pipe	O Fabrication			O Other: _____
18.☐ Fillet	⇒	O Branch	O Hot Tap	O Fitting	O Repair Sleeve	O Other: _____
19.☐ Pipe Seam	⇒	O LF ERW O HF ERW	O DSAW O SAW	O Seamless O Spiral	O Flash Weld	O Other: _____

*Complete a-g if you indicate **any** cause in part F5.*

a. Type of failure:
☐ Construction Defect ⇒ O Poor Workmanship O Procedure not followed O Poor Construction Procedures
☐ Material Defect

b. Was failure due to pipe damage sustained in transportation to the construction or f [redacted] O Yes O No

c. Was part which leaked pressure tested before incident occurred? O Yes, *complete d-g* O No

d. Date of test: / / / mo. / / / day / / / yr.

e. Test medium: O Water O Natural Gas O Inert Gas O Other: _____

f. Time held at test pressure: / / / hr.

g. Estimated test pressure at point of incident: _____ *PSIG*

F6 – EQUIPMENT AND OPERATIONS

20. ☐ Malfunc ion of Control/Relief Equipment	⇒	O Valve	O Instrumentation O Pressure Regulator	O Other: _____
21. ☐ Threads Stripped, Broken Pipe Coupling	⇒	O Nipples	O Valve Threads O Mechanical Couplings	O Other: _____
22. ☐ Ruptured or Leaking Seal/Pump Packing				

23. ☐ Incorrect Operation

a. Type: O Inadequate Procedures O Inadequate Safety Practices O Failure to Follow Procedures O Other: _____

b. Number of employees involved who failed post-incident drug test: / / / / Alcohol test: / / / /

c. Were most senior employee(s) inv olved qualified? O Yes O No d. Hours on duty: / / /

F7 – OTHER

24. ☐ Miscellaneous, *describe:* _____
25. ☐ Unknown
O Investigation Complete O Still Under Investigation *(submit a supplemental report when investigation is complete)*

PART G – NARRATIVE DESCRIPTION OF FACTORS CONTRIBUTING TO THE EVENT

(Attach additional sheets as necessary)

for each day that such vio ation persists except that the maximum civi pena ty sha not exceed $500,000 as provided in 9 USC 60122 OMB No 2137-00 7

U.S. Department of Transportation
Pipeline and Hazardous Materials
Safety Administration

ACC DEN RE OR – HAZARDOUS L QU D EL NE SYS EMS

Report Date _____

No. _____
(DOT Use Only)

INSTRUCTIONS

Important: *Please read the separate instructions for completing this form before you begin. They clarify the information requested and provide specific examples. If you do not have a copy of the instructions, you can obtain one from the Office Of Pipeline Safety Web Page at http://ops.dot.gov.*

PART A – GENERAL REPORT INFORMATION

Check: ☐ Original Report ☐ Supplemental Report ☐ Final Report

1. a. Operator's OPS 5-digit Identification Number (if known) /___/___/___/___/___/
   b. If Operator does not own the pipeline, enter Owner's OPS 5-digit Identification Number (if known) /___/___/___/___/___/
   c. Name of Operator _____
   d. Operator street address _____
   e. Operator address _____
   City, County, State and Zip Code

M OR AN F HE S LL S SMALL, HA S, HE AMOUN S A LEAS 5 GALLONS BU S LESS HAN 5 BARRELS, COM LE E H S AGE ONLY, UNLESS HE S LL S O WA ER AS DESCR BED N 49 CFR §195 52(A)(4) OR S O HERW SE RE OR ABLE UNDER §195 50 AS REV SED N CY 2001

2. Time and date of the accident

/___/___/___/___/ /___/___/ /___/___/ /___/___/
hr. month day year

3. Loca ion of accident
(If offshore, do not complete a through d. See Part C.1)

a. Latitude: _____ Longitude: _____
(if not available, see instructions for how to provide specific location)

b. _____
City, and County or Parish

c. _____
State and Zip Code

d. Mile post/valve station O or survey station no. O (whichever gives more accurate location)

_____

4. Telephone report

/___/___/___/___/___/___/ /___/___/ /___/___/ /___/___/
NRC Report Number month day year

5. Losses *(Estimated)*

Public/Community Losses reimbursed by operator:

Public/private property damage $_____
Cost of emergency response phase $_____
Cost of environmental remediation $_____
Other Costs $_____
(describe) _____

Operator Losses:

Value of product lost $_____
Value of operator property damage $_____
Other Costs $_____
(describe) _____
Total Costs $_____

6. Commodity Spilled OYes O No
(If Yes, complete Parts a through c where applicable)

a. Name of commodity spilled _____

b. Classification of commodity spilled:
O HVLs /o her flammable or toxic fluid which is a gas at ambient conditions
O CO_2 or other non-flammable, non-toxic fluid which is a gas at ambient conditions
O Gasoline, diesel, fuel oil or other petroleum product which is a liquid at ambient conditions
O Crude oil

c. Estimated amount of commodity involved :
O **Barrels**
O **Gallons (check only if spill is less than one barrel)**

Amounts:
Spilled : _____
Recovered: _____

CAUSES FOR SMALL SPILLS ONLY (5 gallons to under 5 barrels) : *(For large spills [5 barrels or greater] see Part H)*

O **Corrosion** O **Natural Forces** O **Excavation Damage** O **Other Outside Force Damage**
O **Material and/or Weld Failures** O **Equipment** O **Incorrect Operation** O **Other**

PART B – PREPARER AND AUTHORIZED SIGNATURE

_____ _____
(type or print) Preparer's Name and Title Area Code and Telephone Number

_____ _____
Preparer's E-mail Address Area Code and Facsimile Number

_____ _____ _____
Authorized Signature (type or print) Name and Ti le Date Area Code and Telephone Number

PART C – ORIGIN OF THE ACCIDENT (Check all that apply)

1. Additional location information
   a. Line segment name or ID _____
   b. Accident on Federal land o her than Outer Continental Shelf O Yes O No
   c. Is pipeline interstate? O Yes O No

Offshore: O Yes O No *(complete d if offshore)*

d. Area _____ Block # _____

State /___/___/ or Outer Continental Shelf ☐

2. Location of system involved (*check all that apply*)
   ☐ Operator's Property
   ☐ Pipeline Right of Way
   ☐ High Consequence Area (HCA)?
   Describe HCA_____

3. Part of system involved in accident
   O Above Ground Storage Tank
   O Cavern or other below ground storage facility
   O Pump/meter station; terminal/tank farm piping and equipment, including sumps
   O Other *Specify:* _____

   O Onshore **pipeline**, including valve sites
   O Offshore **pipeline**, including platforms

*If failure occurred on **Pipeline**, complete items a - g:*

4. Failure occurred on
   O Body of Pipe O Pipe Seam O Scraper Trap
   O Pump O Sump O Joint
   O Component O Valve O Metering Facility
   O Repair Sleeve O Welded Fitting O Bolted Fitting
   O Girth Weld
   Other *(specify)* _____

Year the component that failed was installed: /___/___/___/___/

5. Maximum operating pressure *(MOP)*
   a. Estimated pressure at point and time of accident: _____ *PSIG*
   b. MOP at time of accident: _____ *PSIG*
   c. Did an overpressurization occur relating to the accident? OYes O No

a. Type of leak or rupture
   OLeak: O Pinhole O Connection Failure *(complete sec. H5)*
   O Puncture, diameter *(inches)* _____
   ORupture: O Circumferential – Separation
   O Longitudinal – Tear/Crack, length *(inches)* _____
   Propagation Length, total, both sides *(feet)* _____
   ON/A
   OOther _____

b. Type of block valve used for isolation of immediate section:
   Upstream: ☐ Manual ☐ Automatic ☐ Remote Control ☐ Check Valve
   Downstream: ☐ Manual ☐ Automatic ☐ Remote Control ☐ Check Valve

c. Length of segment isolated _____ ft

d. Distance between valves _____ ft

e. Is segment configured for internal inspection tools? OYes O No

f. Had there been an in-line inspection device run at the point of failure? O Yes O No O Don't Know
   O Not Possible due to physical constraints in the system

g. If *Yes*, type of device run (*check all that apply*)
   ☐ High Resolution Magnetic Flux tool Year run: _____
   ☐ Low Resolution Magnetic Flux tool Year run: _____
   ☐ UT tool Year run: _____
   ☐ Geometry tool Year run: _____
   ☐ Caliper tool Year run: _____
   ☐ Crack tool Year run: _____
   ☐ Hard Spot tool Year run: _____
   ☐ Other tool Year run: _____

PART D – MATERIAL SPECIFICATION

1. Nominal pipe size *(NPS)* /___/___/___/___/ in.
2. Wall thickness /___/___/___/___/ in.
3. Specification _____ SMYS /___/___/___/___/___/___/
4. Seam type _____
5. Valve type _____
6. Manufactured by _____ in year /___/___/___/___/

PART E – ENVIRONMENT

1. Area of accident
   O In open ditch
   O Under pavement O Above ground
   O Underground O Under water
   O Inside/under building O Other _____

2. Depth of cover: _____ inches

PART F – CONSEQUENCES

1. **Consequences** *(check and complete all that apply)*

a.	Fatalities	Injuries
Number of operator employees:		
Contractor employees working for operator:		
General public:		
Totals:		

c. Product ignited OYes O No d. Explosion OYes O No

e. ☐ Evacuation *(general public only)* /___/___/___/___/ people

Reason for Evacuation:
O Precautionary by company
O Evacuation required or initiated by public official

b. Was pipeline/segment shutdown due to leak? OYes O No

If Yes, how long? _____ days _____ hours _____ minutes

f. Elapsed time until area was made safe:

/___/___/ hr. /___/___/ min.

2. **Environmental Impact**
   a. Wildlife Impact: Fish/aquatic O Yes O No; Birds O Yes O No; Terrestrial O Yes O No
   b. Soil Contamination O Yes O No
   If Yes, estimated number of cubic yards: _____
   c. Long term impact assessment performed: O Yes O No
   d. An icipated remediation O Yes O No
   If Yes, check all that apply: ☐ Surface water ☐ Groundwater ☐ Soil ☐ Vegetation ☐ Wildlife

e. Water Contamination: O Yes O No (*If Yes, provide the following*)
   Amount in water _____ barrels

Ocean/Seawater	O No	O Yes
Surface	O No	O Yes
Groundwater	O No	O Yes
Drinking water	O No	O Yes (*If Yes, check below*)

O Private well O Public water intake

PART G – LEAK DETECTION INFORMATION

1. Computer based leak detection capability in place? O Yes O No

2. Was the release initially detected by? (check one):
O CPM/SCADA-based system with leak detection
O Static shut-in test or other pressure or leak test
O Local operating personnel, procedures or equipment
O Remote operating personnel, including controllers
O Air patrol or ground surveillance
O A third party O Other (specify) _____

3. Estimated leak duration days ____ hours ____

PART H – APPARENT CAUSE

Important: *There are 25 numbered causes in this Part H. Check the box corresponding to the primary cause of the accident. Check one circle in each of the supplemental categories corresponding to the cause you indicate. See the instructions for guidance.*

H1 – CORROSION

1. ☐ External Corrosion

2. ☐ Internal Corrosion

(Complete items a – e where applicable.)

a. Pipe Coating
O Bare
O Coated

b. Visual Examina ion
O Localized Pitting
O General Corrosion
O Other _____

c. Cause of Corrosion
O Galvanic O Atmospheric
O Stray Current O Microbiological
O Cathodic Protection Disrupted
O Stress Corrosion Cracking
O Selective Seam Corrosion
O Other _____

d. Was corroded part of pipeline considered to be under cathodic protection prior to discovering accident?
O No O Yes, Year Protection Started: /___/___/___/___/

e. Was pipe previously damaged in the area of corrosion?
O No O Yes ⇒ Estimated time prior to accident: /___/___/ *years* /___/___/ *months* *Unknown* ☐

H2 – NATURAL FORCES

3. ☐ Earth Movement ⇒ O Earthquake O Subsidence O Landslide O Other _____
4. ☐ Lightning
5. ☐ Heavy Rains/Floods ⇒ O Washouts O Flotation O Mudslide O Scouring O Other _____
6. ☐ Temperature ⇒ O Thermal stress O Frost heave O Frozen components O Other _____
7. ☐ High Winds

H3 – EXCAVATION DAMAGE

8. ☐ Operator Excavation Damage (including their contractors/Not Third Party)
9. ☐ Third Party *(complete a-f)*

a. Excavator group
O General Public O Government O Excavator other than Operator/subcontractor

b. Type: O Road Work O Pipeline O Water O Electric O Sewer O Phone/Cable
O Landowner-not farming related O Farming O Railroad
O Other liquid or gas transmission pipeline operator or their contractor
O Nau ical Operations O Other _____

c. Excavation was: OOpen Trench O Sub-strata (boring, directional drilling, etc...)

d. Excavation was an ongoing activity (Month or longer) OYes O No If Yes, Date of last contact /___/___/___/

e. Did operator get prior notifica ion of excavation activity?
O Yes; Date received: /___/___/ mo. /___/___/ day /___/___/___/___/ yr. O No
Notification received from: O One Call System O Excavator O Contractor O Landowner

f. Was pipeline marked as result of location request for excavation? O No O Yes *(If Yes, check applicable items i - iv)*
i. Temporary markings: O Flags O Stakes O Paint
ii. Permanent markings: O
iii. Marks were (check one) : O Accurate O Not Accurate
iv. Were marks made within required time? O Yes O No

H4 – OTHER OUTSIDE FORCE DAMAGE

10. ☐ Fire/Explosion as primary cause of failure ⇒ Fire/Explosion cause: O Man made O Natural
11. ☐ Car, truck or other vehicle not relating to excavation activity damaging pipe
12. ☐ Rupture of Previously Damaged Pipe
13. ☐ Vandalism

Material

14.☐ Body of Pipe	⇒	O Dent	O Gouge	O Bend	O Arc Burn	O Other _____
15.☐ Component	⇒	O Valve	O Fitting	O Vessel	O Extruded Outlet	O Other _____
16.☐ Joint	⇒	O Gasket	O O-Ring	O Threads		O Other _____

Weld

17.☐ Butt	⇒	O Pipe	O Fabrication			O Other _____
18.☐ Fillet	⇒	O Branch	O Hot Tap	O Fitting	O Repair Sleeve	O Other _____
19.☐ Pipe Seam	⇒	O LF ERW	O DSAW	O Seamless	O Flash Weld	
		O HF ERW	O SAW	O Spiral		O Other _____

*Complete a-g if you indicate **any** cause in part H5.*

a. Type of failure:
O Construc ion Defect ⇒ O Poor Workmanship O Procedure not followed O Pc uction Procedures
O Material Defect

b. Was failure due to pipe damage sustained in transportation to the construction or fabrication site? O Yes O No

c. Was part which leaked pressure tested before accident occurred? O Yes, *complete d-g* O No

d. Date of test: /__/__/__/__/ yr. /__/__/ mo. /__/__/ day

e. Test medium: O Water O Inert Gas O Other _____

f. Time held at test pressure: /__/__/ hr.

g. Estimated test pressure at point of accident: _____ *PSIG*

H6 – EQUIPMENT

20. ☐ Malfunc ion of Control/Relief Equipment	⇒	O Control valve	O Instrumentation	O SCADA	O Communications
		O Block valve	O Relief valve	O Power failure	O Other _____
21. ☐ Threads Stripped, Broken Pipe Coupling	⇒	O Nipples	O Valve Threads	O Dresser Couplings	O Other _____
22. ☐ Seal Failure	⇒	O Gasket	O O-Ring	O Seal/Pump Packing	O Other _____

H7 – INCORRECT OPERATION

23. ☐ Incorrect Operation

a. Type: O Inadequate Procedures O Inadequate Safety Practices O Failure to Follow Procedures
O Other _____

b. Number of employees involved who failed a post-accident test: drug test: /__/__/__/ alcohol test /__/__/__/

H8 – OTHER

24. ☐ Miscellaneous, *describe:* _____
25. ☐ Unknown
O Investigation Complete O Still Under Investigation *(submit a supplemental report when investigation is complete)*

PART I – NARRATIVE DESCRIPTION OF FACTORS CONTRIBUTING TO THE EVENT

(Attach additional sheets as necessary)

(b) (7)(F)