

Barataria-Terrebonne National Estuary Program

2005 TIDAL GRAPH CALENDAR



Oil & Produced Water Spill Prevention Measures

common sense measures that really save money
and protect the environment!



TIDE CORRECTIONS

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To find the best time to fish your favorite locations, find a location that is closest to your area and add or subtract the time from the corresponding daily prediction.

AREA	LOW (Hours:Minutes)	HIGH (Hours:Minutes)
Shell Beach, Lake Borgne	+ 5:10	+ 4:01
Chandeleur Lighthouse	+ :38	+ :05
Venice, Grand Pass	+ 1:28	+ 1:06
Southwest Pass, Delta	- :29	- 1:29
Empire Jetty	- 1:35	- 2:03
Bastian Island	+ :22	- :19
Quatre Bayou Pass	+ :27	+ 1:18
Independence Island	+ 2:09	+ 1:29
Caminada Pass	+ 1:44	+ 1:14
Timbalier Island	+ :33	- :41
Cocodrie, Terrebonne Bay	+ 2:50	+ 1:10
Wine Island	+ 1:12	+ :08
Raccoon Point	- :10	- 1:03
Ship Shoal Light	- 1:40	- 2:54

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FISHING RODEOS



MAY:

Grand Isle Speckled Trout Rodeo
May 27, 28 & 29
Bridgeside Marina
985-787-2419

JUNE:

St. Rita's Dad's Club Rodeo
June 3 & 4
Bridgeside Marina
985-787-2419

Creole Classic Fishing Rodeo
June 23, 24 & 25
Bridgeside Marina
985-787-2419

Cut Off Youth Center Fishing Rodeo
June 25 & 26
985-632-7616

Golden Meadow Tarpon Rodeo
June 30, July 1 & 2
Port Fourchon
985-475-5610

JULY:

Fireworks Show
July 2
Bridgeside Marina
985-787-2419

Grand Isle Tarpon Rodeo
July 28, 29 & 30
Sandollar Marina
985-787-2500

AUGUST:

SLHS Hooks & Leaders
August 6
Bridgeside Marina
985-787-2419

ISA Redfish Tour
August 13
Bridgeside Marina
985-787-2419

SEPTEMBER:

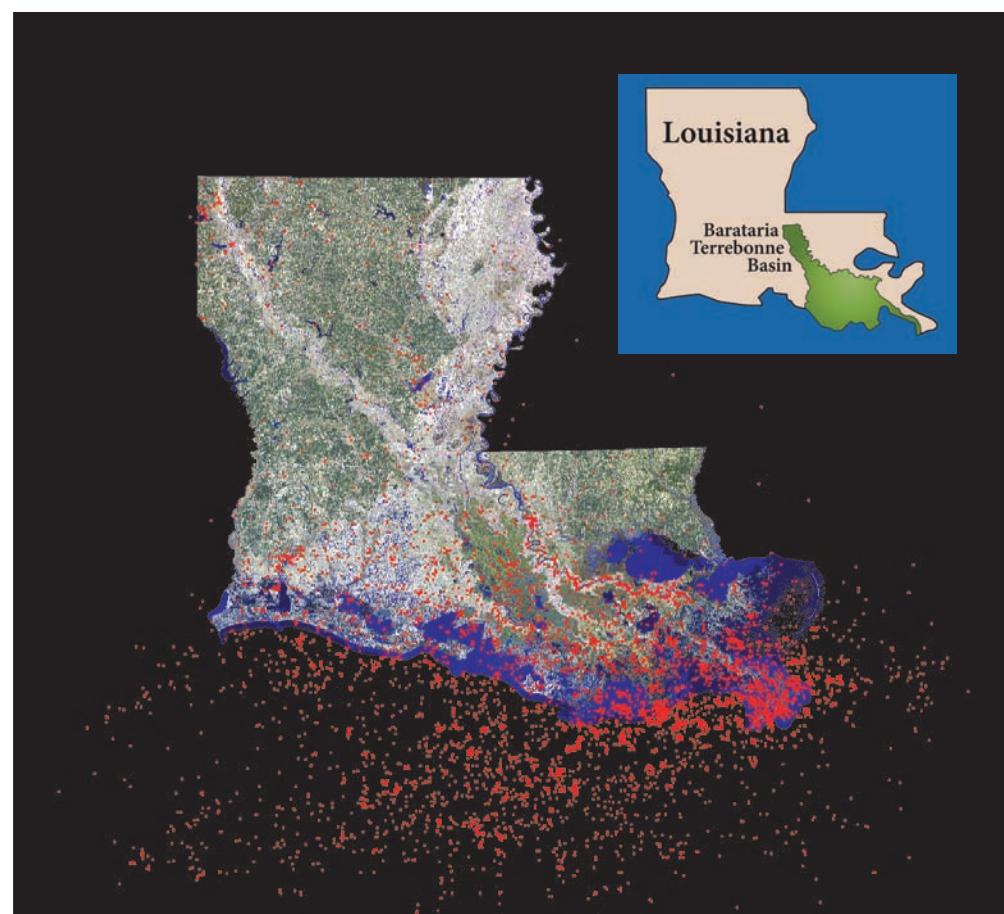
Grand Isle Redfish Rodeo
September 2, 3 & 4
Bridgeside Marina
985-787-2419

WHY SPILL PREVENTION MEASURES?

LOUISIANA OIL SPILLS 1991-2001

(Source: USCG Spill Response Compendum • www.uscg.mil/hg/g-m/nmc/response/stats/aa.htm)

YEAR	LA SPILL #	U.S. SPILL #	LA SPILL VOLUME (gallons)	U.S. SPILL VOLUME (gallons)
2001	1,487	7,559	147,740	854,520
2000	1,704	8,354	701,995	1,431,370
1999	1,595	8,539	309,515	1,172,449
1998	1,985	8,315	311,714	885,303
1997	2,034	8,624	505,526	942,574
1996	2,468	9,335	342,533	3,117,831
1995	1,848	9,038	439,502	2,638,229
1994	1,594	8,960	146,110	2,489,273
1993	1,255	8,972	411,125	2,067,388
1992	1,218	9,491	542,871	1,875,668
1991	744	8,569	191,839	1,875,953



Location of oil spills within the State of Louisiana and the Barataria-Terrebonne National Estuary System.

■ Barataria-Terrebonne Estuary

■ Reported Releases

Take a look at the following examples of actual cleanup costs incurred for spills in the Barataria-Terrebonne estuary area:

A spill of 2 barrels (84 gallons) costs the company \$6,094 for labor and equipment. That equates to \$72.55 per gallon.

A spill of 8 gallons costs \$41,717, or more than \$5,000 per gallon.

A spill of 5 barrels (210 gallons) of oil costs \$29,921 to cleanup (\$142.48 per gallon).

A spill of 6/10 gallon of oil cost the company \$8,672.

Factors that can drive up the costs of clean-up efforts include:

- Degree of environmental impact
- Chosen cleanup methods
- Wildlife impact and rehabilitation
- Disposal

If you see spilled oil, the law requires that you make two (toll-free) calls.

* Call the 24-hour Louisiana Emergency Hazardous Materials Hotline at (877) 925-6595.

* Call the National Response Center at (800) 424-8802.

Implementing voluntary "common sense" preventative measures can be very cost-effective in comparison to the cost and potential negative public image associated with having a spill.

Actually, many of the suggested measures in this calendar can be implemented with a relatively low budgetary operating expense with advance planning. Take a look and see if these suggestions can be incorporated into your company's environmental program!

PLANS OF ACTION



While a paper document may not prevent an oil or produced water spill, it can serve as a beneficial tool for appropriate quick actions, timely responses, and proper notifications. Oil & natural gas production, storage, and transfer facilities are required to have a plan of action.

HELPFUL WEBSITES

- www.ecfr.gpoaccess.gov
- www.uscg.mil/vrp
- www.deq.state.la.us/
- www.nrc.uscg.mil/hq/nsfweb/index.html
- www.epa.gov/ebtpages/pollutionprevention.html
- www.loesco.statela.us

SOME REQUIRED PLANS ARE:

Operations Manual

This manual is required by the U.S. Coast Guard for Marine Transfer Related Facilities. This manual specifically describes how company personnel will conduct transfers of oil and/or hazardous materials at a facility.

Spill Prevention, Control & Countermeasures Plan (SPCC)

This plan is required by the U.S. Environmental Protection Agency and Louisiana Department of Environmental Quality as described in 40 CFR Part 112. This plan details the systems and contingencies at the facility designed to reduce the likelihood of a spill occurring.

Department of Transportation (DOT) Pipeline Manual

This manual is required for pipelines that are governed under 49 CFR 195. This manual describes the operation & maintenance procedures of a company's pipeline.

Facility Response Plan (FRP)

This plan is required by the United States Coast Guard for Marine Transfer Facilities and the U.S. Environmental Protection Agency for facilities that pose a substantial harm to the environment. This plan dictates how company personnel are to respond to an incident while transferring product over a navigable waterway. It contains pertinent response information such as agency notifications, trajectory information and impact analysis.

Stormwater Pollution Prevention Plan (SWP3)

This plan is governed by 40 CFR Parts 122-133 and is designed to ensure that best management practices are in place to control the flow of potential pollutants into storm water discharges.

PIPELINE & FLOWLINE MAINTENANCE



Operators of U.S. Department of Transportation (DOT) regulated pipelines are subject to an extensive set of regulations designed for the safety of company employees, safety of the public, and for the prevention of pipeline failures and spills. Within the last several years, a new set of regulations now requires an Operator Qualification (OQ) Program for all company employees and contractors performing regulated tasks on the pipeline. If required, insure your OQ program is compliant and in place!

One key measure in the detection of corroded pipelines or flowlines is conducting annual hydrostatic tests. When done properly, these tests are a valuable tool in identifying potential lines capable of causing costly spills. By all means, operators must insure that all products are appropriately flushed from these lines prior to conducting the tests! Failure to do so could result in a costly spill. Federal and state regulations normally require the lines to be tested to 1½ times the normal operating pressure of the line. Check your specific regulatory requirements to insure your tests are being conducted correctly.

TIPS IN PREVENTING PIPELINE AND FLOWLINE SPILLS:

- Implement Operations and Maintenance Procedures
- Inspect and Grease Key Valves
- Inspect Above-Ground Piping and Supports for Atmospheric Corrosion
- Inspect Coupons and Pipe Segments
- Document the Testing of Pressure Limiting Devices
- Pipeline Markings
- Use LA One Call: 1-800-272-3020
- Train Personnel Properly
- Conduct Hydrostatic Testing of Flowlines



TRAINING, DRILLS & EXERCISES



The National Preparedness for Response Exercise Program (PREP) Guidelines were designed to prepare operators to adequately manage spill events in order to reduce the overall impact to the environment when spill events do occur. These guidelines include:

PRACTICE! PRACTICE! PRACTICE!

Quarterly Qualified Individual Drills:

Verbal drills designed to ensure adequate communications during a spill event.

Semi-annual Equipment Deployment Exercises:

Physical drills designed to test the readiness of facility and contractor response equipment.

Annual Table-top Exercises:

Real-time exercises conducted with a company's Spill Management Team designed to exercise the company's response plans and procedures in the event of an incident.

Proper training of personnel with emergency response duties is a necessary step to ensure that appropriate company procedures are followed. Common training courses include:

Person-in Charge (PIC) Training

Designed to ensure facility persons-in-charge understand their roles and responsibilities associated with the proper transfer of oil over navigable waters. Proper training and adherence to the topics discussed in this course have been shown to reduce the occurrence of spills.

HAZWOPER Training

Designed to ensure personnel working in emergency response "Hot Zones" like oil spills are adequately prepared to deal with the potential hazards associated with the site. HAZWOPER is mandated by OSHA and includes several levels of training.

Qualified Individual Training (QI)

Designed to adequately prepare the company Qualified Individual to assume the duties of primary company representation responsibility in the event of a release of oil.

Spill Management Team Training

Designed to adequately prepare the company Spill Management Team to assume the responsibility of incident management in the event of a release of oil. This course draws heavily on the NIIMS (National Interagency Incident Management System) Incident Command System.

SECONDARY CONTAINMENT



Secondary containment structures are required for both land-based and offshore over-water oil and gas facilities. Even though required only to have enough secondary containment to sufficiently hold the capacity of the largest container and to allow for precipitation, facilities benefit from installing additional structures beyond what is required.

Unfortunately, from time to time, preventable spills occur from facilities that have adequate secondary containment measures due to operator error – please remember to inspect your facility's containment structures on a regular basis! Once the proactive expenditure is made on secondary containment to comply with pertinent regulations, it is crucial that proper operation of these structures is implemented by facility personnel. For example, daily inspections to ensure drainage devices, affixed to these structures are kept in the closed, locked position, except under permitted, supervised discharge conditions, are important in ensuring accidental, costly releases do not occur.

Some Secondary Containment Structures Include:

- Dikes, berms, curbing, or retaining walls sufficiently impervious to contain a spill
- Culverting, gutters or other drainage systems
- Weirs, booms, or other barriers
- Spill diversion emergency tanks or ponds
- Drip pans
- Sumps and collection systems
- Impervious decking required if over water

FACILITY INSPECTIONS



Facilities are required to be inspected by various agencies such as the U.S. Coast Guard, U.S. Environmental Protection Agency, the Louisiana Department of Natural Resources and the Louisiana Department of Environmental Quality; however, operators should routinely inspect their facilities and pipelines in order to ensure safety, security, and spill prevention measures are in place. The implementation of in-house company specific routine inspection programs, required in most cases by the specific regulatory authority, is a proven method of reducing costly unpermitted releases.

U.S. Coast Guard's Top 10 Facility Inspection Discrepancies:

1. Hoses not stenciled properly as required by 33 CFR 154.500
2. Facility required exercises are not conducted within the proper timeframe as required by 33 CFR 154.1055
3. No locks on tank valves as required by 33 CFR 154.735(t)
4. Low quality Area Sensitivity Maps within the Facility Response Plans as required by 33 CFR 154.1035(b)(4)
5. Insufficient number or improper positioning of warning signs as required by 33 CFR 154.735(v)
6. Coast Guard Approval Stamp lacking on Operations Manual or on the Letter of Intent on-scene as required by 33 CFR 154.300(f)
7. Fire extinguishers not inspected within the past year as required by 33 CFR 154.735(d)
8. No Facility Response Plan Approval Letter on-scene as required by 33 CFR 154.1060(h)
9. No Persons-In-Charge List as required by 33 CFR 154.730
10. Hoses needing to be taken out of service due to poor condition as required by 33 CFR 156.120(i)

Common items inspected for by LDEQ, LDNR, and U.S. EPA include:

- All secondary containment structures sealed and free of leaks
- Locked, closed stormwater discharge valves from the containment areas
- Properly designed sump system to handle both oil and stormwater
- Operational sump pumps
- All drums properly labeled and stored within secondary containment areas
- All wellheads free of leaks
- Visible well placards containing accurate information
- Facility copy of the LDEQ Water Discharge permit available for inspection
- Current facility MSDS binder

INCLEMENT WEATHER



Inclement weather conditions are very familiar to South Louisiana. When these weather systems approach, it is best to be prepared. Preparedness in times of severe weather can save money, reduce damage to the environment, and most of all prevent serious injuries.

Lightning is known to strike the tallest object around. Typically on oil & gas facilities, storage tanks are the tallest objects. Crude oil and produced water are stored either in metal or fiberglass tanks, with both materials having high electrical conductivity. Fiberglass produced water tanks are extremely vulnerable to severe lightning strikes. It is important to ground all tanks so that when lightning does strike, the tank does not rupture or ignite. Strong winds and high tides can also be serious threats to oil & gas facilities. If not properly secured, tanks can be toppled over, blown apart, or during high tides could be lifted from their location, carried away, and entire contents spilled. This is especially true during hurricanes and tropical storms!

If you are the operator of an oil and gas facility and a tropical storm is threatening, the following shut down measures are suggested to aid in the prevention of a major environmental incident:

- Empty all major crude oil tanks and vessels by moving stored product via pipeline or barge transfer. Remember: tug and barge availability substantially decreases as a weather system nears the shore – don't wait until it is too late!
- Fill all major storage tanks and vessels with ambient water to aid in the prevention of tank and vessel movement due to storm surge and high winds.
- Properly shut in all producing wells and insure well safety systems are in working order.

Timely Operational Implementation of a Company's Hurricane Emergency Shutdown & Evacuation Plan Prevents Significant Releases – Review Your Plan on a Regular Basis!

Each spark of lightning can reach over five miles in length, soar to temperatures of approximately 50,000 degrees Fahrenheit, and contain 100 million electrical volts!

Lightning hits somewhere on the earth about 100 times every second!

PRODUCED WATER



Many geologic formations within the region produce oilfield brine or "saltwater" as a byproduct of the production of crude oil and natural gas. Please remember that discharges of produced water are not permitted within state waters and in some cases require verbal and written notification if a Reportable Quantity (RQ) has been exceeded.

Depending on the environment, produced water releases in some cases can cause more costly environmental damage than a crude oil release!

Reminder: Sump Systems Are Not Capable of Treating Produced Water!

Discharges to agricultural lands and wetlands can result in severe long-lasting economic and environmental impacts!

Petroleum is a complex mixture of chemicals known as hydrocarbons, which can be quite toxic to the plants and animals impacted from a spill. Oilfield brine (produced water) is highly saline, and also contains petroleum hydrocarbons. In oil-bearing geologic formations found in the Barataria-Terrebonne System, produced water usually has high concentrations of radionuclides such as radium 226. Produced water spills can be far more damaging to the environment than crude oil spills. Fresh, brackish, and even saltwater marsh plants can be destroyed by spills of produced water. Too often, produced water leaks go undetected until the vegetation over a buried pipeline has died.

FACILITY SUMP SYSTEMS



Proper platform sump system design and maintenance are crucial in the prevention of minor and major releases of crude oil and produced water that can be caused by operational upsets, piping or vessel leaks, or tank and vessel failures. Typical platform sump systems are usually designed to be a final treatment point for platform generated stormwater prior to overboard permitted discharge under supervised conditions. Release data suggests that improperly designed and maintained sump systems are a leading cause of unpermitted releases originating from exploration & production platforms located in the Barataria-Terrebonne Estuary System. The expenditure of properly budgeted funds for the maintenance of these systems has been proven to have a high dollar value benefit in comparison to the documented costs associated with the remediation of crude oil and produced water releases in the estuary system. It should be noted that most sump systems operate utilizing gravitational flow of platform stormwater, routed via deck drainage piping, to a sump tank usually equipped with a series of internal baffles and/or retention tanks.

If your sump tank is located at an elevation below the height of the platform impervious deck, the following operational suggestions are offered:

- Insure that a manual valve has been installed immediately upstream of sump system to be kept in the closed position except during supervised operation of the sump system
• or insure open end of sump vent pipe is raised to an elevation equal to or greater than the height of the platform secondary containment structure.
- Insure sump system inspection hatches are properly sealed to prevent leaks.
- Insure sump system water leg discharge pipe is equipped with a manual valve to be kept in the closed position except during periods of supervised discharge.

MAINTAINED RESPONSE EQUIPMENT



A crucial element to ensuring a rapid and effective response to an oil spill event is the presence of Facility Maintained Response Equipment. Properly maintained and utilized response equipment can drastically reduce the total area impacted during a spill event and thereby significantly decrease the overall impact and cost associated with the release. Equipment commonly maintained by facility operators includes:

1. **Containment Boom** – 10" to 18" and between 500 and 1,000 feet depending upon the area to be contained.
2. **Absorbent Boom** – 5" boom made of oil absorbent material utilized to recover free floating oil in small quantities.
3. **Absorbent Pads** – 2 foot square pads made of oil absorbent material utilized to recover free floating oil in small quantities.

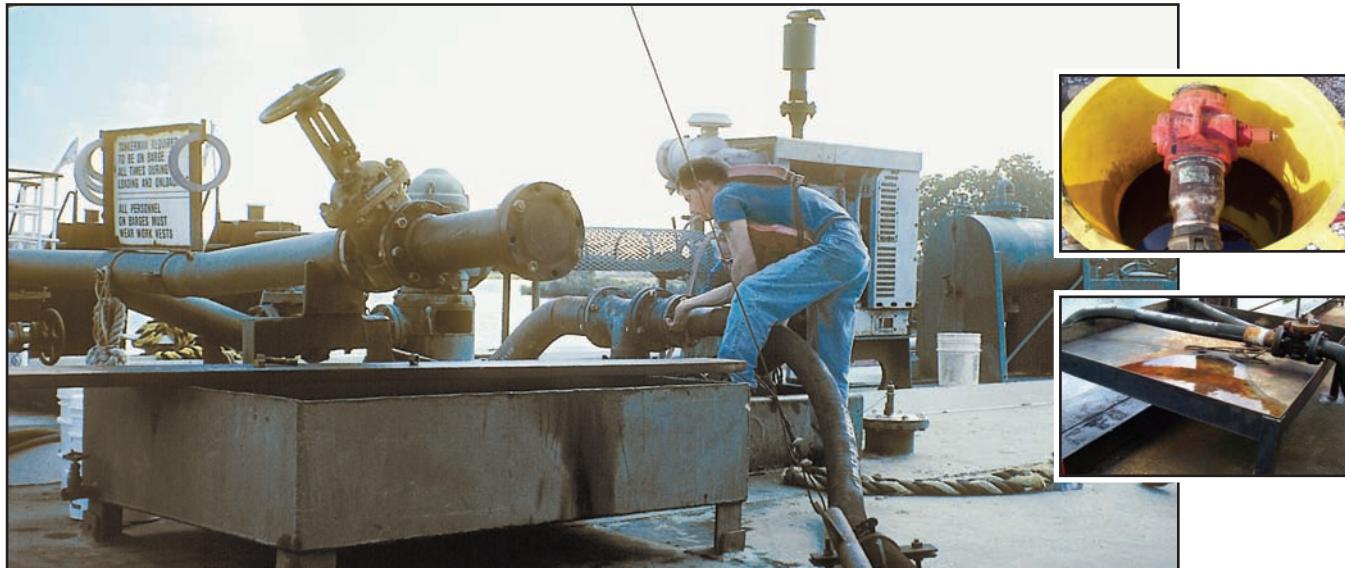
LIMITING THE IMPACTED AREA SAVES MONEY AND THE ENVIRONMENT!

If the proactive purchase of facility response equipment is made, it is crucial that the equipment is stored properly and inspected on a regular basis to insure it is in proper working order if needed during an emergency. The following are a few storage tips for the proper storage of expensive containment boom:

- Insure containment boom is covered to prevent UV exposure. Ultraviolet rays greatly reduce the lifespan of containment boom.
- Insure the boom storage containers are sealed to prevent the nesting of field mice and rats. These animals are capable of chewing damaging holes in the containment boom rendering the boom ineffective.

Reminder: Facility Personnel must be trained to the appropriate HAZWOPER Level to allow for the Deployment & Use of Facility-Owned Equipment

PRODUCT TRANSFERS



Products such as crude oil and brine oilfield (produced water) can be transferred over water via flexible rubber transfer hose, transferred over water and or land via pipeline, or can be transferred via facility hard piping to a tanker truck.

Be sure to check with the USCG Office with jurisdiction over your facility's area to determine if a 4-Hour Notice of Transfer is required! This notice is required by some USCG Offices in order to make them aware of the activities, which have the potential to pose a security threat, happening within their area of operation.

Some common sense ways to reduce the number and amount of spills from oil and gas facilities are:

- Be sure operator and tankerman both understand transfer operation. Completely fill out and sign Declaration of Inspection.
- Pressure test hoses annually or as warranted.
- Make sure hoses are free of kinks or other damage.
- Replace worn hoses; don't try to patch.
- Place hose(s) within an adequate drip pan immediately following all transfers.
- Empty drip pan once hose has been flanged and is free of drips.
- Cathodically protect pipelines from corrosion.
- Inspect and test all pipelines regularly.
- Make sure all tank valves are closed and locked when not transferring product.
- Make sure to have proper cleanup equipment easily accessible.
- Facility operator and tankerman should remain in constant visual contact and in communication for the duration of transfer.

GEOGRAPHICAL AWARENESS



Whether working near a pristine National Forest or within the swamps of South Louisiana, incidents happen that dictate personnel to take immediate, initial actions. By knowing the immediate and surrounding areas of your location, you will be more likely to make better decisions in a more timely manner. For example, with an oil spill, the quick and proper placement of containment boom could prevent and or lessen the impact to a sensitive area such as an oyster bed or could prevent oil from reaching a marsh area that serves a critical habitat to a number of animals.

Some areas of high importance to note near your facility include:

- Federal & State Wildlife Refuges
- Oyster Reefs
- Bird Rookeries
- Endangered or Threatened Species Habitat
- Critical Fish Habitat
- Marsh or Swamp Areas
- Areas Affected by Strong Tides
- Private Lands
- Agricultural Lands

AGENCY RELATIONS



Although spill cleanup operations are directed and supervised by federal, state, and local agencies, those agency personnel can be valuable and willing sources of knowledge, physical resources, and expertise. Agency interaction can be one of the most valuable ways of preventing spills. Government agencies (Local, State, & Federal) not only regulate oil & gas facilities, but can be great sources of information. For example, see on the right how these agencies can provide assistance for the prevention and remediation of spills. Positive agency relations lead to beneficial results! Make a point to proactively meet your regulatory partners for your company's area of operation!

These agencies can provide assistance for the prevention and remediation of spills:

USCG - Invite your local Marine Safety Office personnel to take part in required drills and exercises. During these exercises, these personnel can give real-time "common sense" suggestions that can aid in the prevention of spills.

NOAA – Provides expertise on releases to environmentally sensitive areas, such as marine resources and habitats.

LOSCO – ensures effective coordination and representation of the state interests in all matters related to spill response and prevention.

LDEQ – Provides technical knowledge on permits, spills and spill prevention, and field investigations.

USFW & LDWF – Provides biological and technical expertise on fish and wildlife.

U.S. EPA – Conducts facility inspections, reviews facility response plans and conducts spill response activities.

LDNR – Conducts inspections responsible for well and pipeline permitting and regulates exploration, production and transportation.