

**NPDES PERMIT NO. TX0074012  
STATEMENT OF BASIS**

FOR THE DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM  
(NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES

**I. APPLICANT:**

U.S. Department of Energy  
Strategic Petroleum Reserve  
Bryan Mound Oil Storage  
1900 County Road 242 A  
Freeport TX 77541

**II. ISSUING OFFICE:**

U.S. Environmental Protection Agency  
Region 6  
1445 Ross Avenue  
Dallas, Texas 75202-2733

**III. PREPARED BY:**

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**IV. DATE PREPARED:**

July 11, 2008

**V. PERMIT ACTION:**

The Environmental Protection Agency (EPA) has made a tentative determination, after consultation with the Railroad Commission of Texas (RRC), to issue a permit to the applicant for the activities described.

40 CFR CITATIONS: Unless otherwise stated, citations to 40 CFR refer to promulgated regulations listed at Title 40, Code of Federal Regulations, revised as of July 03, 2008.

FINAL DETERMINATION: The public notice describes the procedures for the formulation of final determinations.

## VI. PROPOSED CHANGES FROM PREVIOUS PERMIT

1. The monitoring frequency for BOD and TSS is reduced from twice a month to once a month due to good compliance history and for consistency with other Texas SPR site.

## VII. APPLICANT ACTIVITY

Under the Standard Industrial Classification (SIC) Code 5171, Petroleum Bulk Stations and Terminals, the applicant stores and maintains, in ready access, crude oil reserves to be used in the event of national energy crisis.

The Strategic Petroleum Reserve (SPR) stores crude oil in caverns leached deep underground into naturally occurring salt (dome) formations. The facility is currently filled to capacity and is being maintained in a stand-by or operational readiness mode, ready for drawdown. The operational readiness mode requires continual maintenance of systems and equipment and results in the routine discharges of treated site.

## VIII. DISCHARGE LOCATION

As described in the application, the facility is located 2 miles south of Freeport on state highway 288, Freeport, Brazoria County, Texas.

The effluent from the crude oil reserves facility is discharged as follows:

| Outfall Reference Number | Discharge Coordinates<br>Latitude Deg° Min' Sec''<br>Longitude Deg° Min' Sec'' | Type of Discharge   | Discharge Volume MGD | Receiving Water                             | Water Body Segment |
|--------------------------|--|---|----------------------|---|--------------------|
| 001                      | 28° 50' 28" N<br>095° 19' 33" W  | Brine diffuser for saltwater from cavern depressuring, through tank to offshore | 4.45                 | Gulf of Mexico (approx. 3.5 miles offshore) | N/A*               |
| 002                      | 28° 54' 58" N<br>095° 22' 29" W  | Sewage Treatment Effluent from Package Treatment Plant                          | 0.011                | Gordon's Lake                               | Unclassified       |
| 003                      | 28° 55' 00" N<br>095° 22' 30" W  | Stormwater from well pads and other secondary containments                      | 0.09                 | Blue lake or Mud Lake                       | Unclassified       |
| 004                      | 28° 55' 02" N<br>095° 22' 33" W  | Stormwater from high pressure and transfer pump pads                            | 0.0055               | Blue Lake                                   | Unclassified       |
| 005                      | 28° 55' 02" N<br>095° 22' 32" W  | Stormwater from tank farm area (includes brine tank & 3 crude oil tanks)        | 0.0033               | Blue Lake                                   | Unclassified       |
| 006                      | 28° 54' 55" N  | Recirculated (once-through,   | 3.706                | 1201  | Brazos             |

| Outfall Reference Number | Discharge Coordinates<br>Latitude Deg° Min' Sec''<br>Longitude Deg° Min' Sec'' | Type of Discharge                | Discharge Volume MGD | Receiving Water | Water Body Segment      |
|--------------------------|--|----------------------------------|----------------------|-----------------|-------------------------|
|                          | 95° 23' 13" W  | non-contact) ambient river water |                      |                 | River Diversion Channel |

\* Outside the jurisdictional waters of the state of Texas. Discharge is 3.5 miles offshore, which is beyond the 3 mile limit

**IX. STREAM STANDARDS**

The general criteria and numerical criteria which make up the stream standards are provided in the 2000 EPA-approved Texas Water Quality Standards, Texas Administrative Code (TAC), 30 TAC Sections 307.1 - 307.10.

The Brazos River Diversion Channel of the Brazos River Basin in Segment No. 1201 is identified by the Texas Commission on Environmental Quality (TCEQ) as a water body with the following designated uses:

- Contact Recreation
- High Aquatic Life
- Public Water Supply

The pollutant pH is limited to 6.5-9.0 standard units (su's.)

The Gulf of Mexico in Segment 2501 is identified by the Texas Commission on Environmental Quality (TCEQ) as a water body with the following designated uses:

- Contact Recreation
- Exceptional Aquatic Life
- Oyster Waters

The pollutant pH is limited to 6.5-9.0 standard units (su's.)

The Gordon's lake, Blue lake, Blue lake/Mud lake are not classified by the Texas Commission on Environmental Quality.

**X. DISCHARGE DESCRIPTION**

The facility discharges brine and associated salt-containing wastewaters (mainly from cavern creep and incidental receipts and movements of crude oil) into the Gulf of Mexico through a diffuser section located at the end of a cement –lined brine disposal pipeline. The salty wastewaters are first collected in an aboveground storage tank with oil skimming capability and then pumped through the diffuser located approximately 3.5 miles offshore. The receiving water for outfall 001 is the Gulf of Mexico.

Outfall 002 is the treated sanitary wastewater discharge. The outfall discharge position is to a large manmade excavation/pond with no outlet, known locally as Gordon's Lake, non-water of the U.S.

Outfalls 003, 004, and 005 are stormwater from various secondary containments located around the facility. The receiving water for Outfall 003 is the Blue Lake/Mud Lake, while the receiving water for Outfalls 004 and 005 is the Blue Lake.

A sparging system which runs continuously with the Raw Water Pumps, discharges silt-laden Brazos River water from in front of the Raw Water Pump bays to a point below the Raw Water Intake Structure. Outfall 006, the sparging system discharge, is designed to aid in keeping river silt from accumulating and fouling the Raw Water Intake System at start-up and also recirculates river water in periodic preventive maintenance pump tests. The receiving water for outfall 006 is the Brazos River Diversion Channel. The permittee had requested that the current outfall (006) be maintained as well as the conditions for the raw water recirculation loop located at the RWIS.

## **XI. SOLID WASTE PRACTICES**

Sludge from the sanitary sewage treatment is shipped off-site at the following location:

Freeport Sewage Treatment Plant  
931 E. Floodgate Rd.  
Freeport, TX 77541

and hauled by Phillips Services Corporation, Deer Park, Texas office.

## **XII. TENTATIVE DETERMINATION**

The Environmental Protection Agency (EPA) has made a tentative determination, after consultation with the Railroad Commission of Texas (RRC), to re-issue a permit to the applicant for the activities described.

## **XIII. DRAFT PERMIT RATIONALE**

The proposed effluent limitations for those pollutants proposed to be limited are based on regulations promulgated at 40 CFR 122.44. The draft permit limits are based on either technology-based effluent limits pursuant to 40 CFR 122.44(a), on best professional judgment (BPJ) in the absence of guidelines, and/or requirements pursuant to 40 CFR 122.44(d), whichever are more stringent.

### **A. REASON FOR PERMIT ISSUANCE**

An NPDES Application for a Permit to Discharge (Form 1 & 2C) was received on April 25, 2008, and was deemed administratively complete on June 18, 2008.

## B. OPERATION AND REPORTING

The permittee must submit Discharge Monitoring Report's (DMR's) quarterly, beginning on the effective date of the permit, lasting through the expiration date of the permit or termination of the permit, to report on all limitations and monitoring requirements in the permit.

## C. TECHNOLOGY-BASED EFFLUENT LIMITATIONS/CONDITIONS

Regulations promulgated at 40 CFR122.44 (a) require technology-based effluent limitations to be placed in NPDES permits based on effluent limitations guidelines (ELG's) where applicable, on BPJ in the absence of guidelines, or on a combination of the two. Limitations on maximum and minimum pH are in accordance with the Best Available Technology Economically Achievable for this industry, and is a function of the Texas Administrative Code (TAC), Title 30, Chapter 307, Environmental Quality: Texas Commission on Environmental Quality, Texas Surface Water Quality Standards. Limitations for Oil & Grease, Total Dissolved Solids (TDS), Total Suspended Solids (TSS), and Biochemical Oxygen Demand (BOD<sub>5</sub>) are proposed in the permit and are expressed in terms of concentration. The proposed limitations for Oil & Grease is 15 mg/l maximum, BOD<sub>5</sub> & TSS are each 45 mg/l maximum, 20 mg/l average, and a pH range of 6.0 to 9.0 standard units. The draft permit will not propose mass limits since the flow is variable and intermittent. Concentration limits will be protective of the stream uses. These limitations are based on the Best Professional Judgment of the permit writer and are consistent with the RRCT discharge permit No. UHS-004. However, BOD<sub>5</sub> and TSS limitations are consistent with the limitations for a secondary treatment facility.

## D. WATER QUALITY SCREENING

### 1. General Comments

The Clean Water Act in Section 301 (b) requires that effluent limitations for point sources include any limitations necessary to meet water quality standards. Federal regulations found at 40 CFR 122.44(d) state that if a discharge poses the reasonable potential to cause an in-stream excursion above a water quality criterion, the permit must contain an effluent limit for that pollutant. If the discharge poses the reasonable potential to cause an in-stream violation of narrative standards, the permit must contain prohibitions to protect that standard. Additionally, the Texas Surface Water Quality Standards (TWQS) found at 30 TAC Chapter 307 states that "surface waters will not be toxic to man from ingestion of water, consumption of aquatic organisms, or contact with the skin, or to terrestrial or aquatic life." The methodology outlined in the "Procedures to implement the Texas Surface Water Quality Standards" (IP) is designed to ensure compliance with 30 TAC Chapter 307. Specifically, the methodology is designed to ensure that no source will be allowed to discharge any wastewater which: (1) results in instream aquatic toxicity; (2) causes a violation of an applicable narrative or numerical state water quality standard; (3) results in the endangerment of a drinking water supply; or (4) results in aquatic bioaccumulation which threatens human health.

The IP document is not a state water quality standard, but rather, a non-binding, non-regulatory guidance document. See IP at page 2 stating that "this is a guidance document and should not be interpreted as a replacement to the rules. The Texas Surface Water Quality Standards (WQS) may be found in 30 Texas Administrative Code (TAC) Sections (§§) 307.1-10."). EPA does not consider the IP to be a new or revised water quality standard and has never approved it as such. EPA did comment on and conditionally "approve" the IP as part of the Continuing Planning Process (CPP) required under 40 CFR §130.5(c) and the Memorandum of Agreement between TCEQ and EPA, but this does not constitute approval of the IP as a water quality standard under CWA section 303(c). Therefore, EPA is not bound by the IP in establishing limits in this permit – but rather, must ensure that the limits are consistent with the EPA-approved state WQS. However, EPA has made an effort, where we believe the IP procedures are consistent with all applicable State and Federal regulations, to use those procedures.

State Water Standards do not apply to outfall 001 because the discharge occurs in federal waters, Gulf of Mexico. Effluent limitations and/or conditions in the draft permit, however, must comply with Ocean Discharge Criteria at 40 CFR Part 125 Subpart M. For outfalls that discharge to intracoastal waters which may affect state waters, a review of the application and updated information revealed that almost all priority pollutants were believed absent. In addition, Bryan Mound Strategic Petroleum reserve is a minor facility with intermittent discharges in all of its outfalls. Since this is a minor facility with intermittent discharge, water quality based effluents limits are not included in the permit.

## 2. Reasonable Potential

EPA develops draft permits to comply with State WQS, and for consistency, attempts to follow the IP where appropriate. However, EPA is bound by the State's WQS, not State guidance, including the IP, in determining permit decisions. EPA performs its own technical and legal review for permit issuance, to assure compliance with all applicable State and Federal requirements, including State WQS, and makes its determination based on that review.

Waste load allocations (WLA's) are calculated using estimated effluent dilutions, criteria outlined in the TWQS, and partitioning coefficients for metals (when appropriate and designated in the implementation procedures). The WLA is the end-of-pipe effluent concentrations that can be discharged and still meet instream criteria after mixing with the receiving stream. From the WLA, a long term average (LTA) is calculated, for both chronic and acute toxicity, using a log normal probability distribution, a given coefficient of variation (0.6), and either a 90th or a 99th percentile confidence level. The 90th percentile confidence level is for discharges to rivers, freshwater streams and narrow tidal rivers with upstream flow data, and the 99th percentile confidence level is for the remainder of cases. For facilities that discharge into receiving streams that have human health standards, a separate LTA will be calculated. The implementation procedures for determining the human health LTA use a 99th percentile confidence level, along with a given coefficient of variation (0.6). The lowest of the calculated LTA; acute, chronic and/or human health, is used to calculate the daily average and daily maximum permit limits.

Procedures found in the IP for determining significant potential are to compare the reported analytical data either from the DMR history and/or the application information, against percentages of the calculated daily average water quality-based effluent limitation. The more stringent of the calculated water quality based effluent limitations are compared against analytical data included with the permit application.

Procedures found in the IP require review of the immediate receiving stream and effected downstream receiving waters. Further, if the discharge reaches a perennial stream or an intermittent stream with perennial pools within three-miles, chronic toxicity criteria apply at that confluence.

### 3. Reasonable Potential-Calculations

#### a. pH

The limitation of pH for Outfalls 001, 002, 003, 004, and 005 shall be limited to the range 6.0 to 9.0 su's.

#### b. Narrative Limitations

Narrative protection for aesthetic standards will propose that surface waters shall be maintained so that oil, grease, or related residue will not produce a visible film or globules of grease on the surface or coat the banks or bottoms of the watercourse; or cause toxicity to man, aquatic life, or terrestrial life.

### C. WHOLE EFFLUENT TOXICITY LIMITATIONS

Biomonitoring requirement is continued in the draft permit. Biomonitoring of the effluent is, therefore, required as a condition of this permit to assess potential toxicity. The facility had requested that the frequency of WET testing for the two species be changed to an annual requirement based on process stability, current Region 6 General Permit for offshore discharges of produced water requires annual WET testing, chemical additives not being used in the process, and the salt water discharge from a mining process associated with transportation related business is not in the same category of "produced water" associated with exploration and production. As with other facilities of this type, quarterly testing is required with a reduction option if there is no lethal or sublethal toxicity during the first year. Accordingly, this permit requires that discharge to outfall 001 be monitored by a 7-day chronic toxicity test, with quarterly monitoring according to the provisions indicated in Parts I and II of this permit.

The minimum nozzle exit velocity of the brine diffuser is 30 feet per second (fps). The EPA, Region 6, utilized the CORMIX2 model to evaluate dilution for effluent discharges. The model result calculates a 2.298 % CDF at the edge of the 100-meter regulatory mixing zone edge. The critical dilution is rounded to 2.5% in order to simplify the results of biomonitoring. The dilution series and the CDF based on a 0.75 series are 1.0%, 1.5%, 2.0%, 2.5%, and 3.0%. A 7-day chronic No Observed Effect Concentration (NOEC) marine criterion applies at the point of

discharge. A jet velocity of greater than or equal to 30 fps permit limit is continued in the proposed permit.

The permittee had requested that the approval to use corrosion inhibitors in the raw water during Presidential drawdown be removed. EPA notes that this request is granted in this renewal and will however, not have any effect on those permit conditions proposed to be continued in the proposed permit.

#### D. FINAL EFFLUENT LIMITATIONS

See the draft permit for limitations.

#### H. MONITORING FREQUENCY

Regulations require permits to establish monitoring requirements to yield data representative of the monitored activity 40 CFR 122.48(b) and to assure compliance with permit limitations 40 CFR 122.44(i)(1). The monitoring frequencies are based on BPJ, taking into account the nature of the discharge.

The permittee had requested that Outfalls 003 through 005, i.e. all stormwater discharges be tested annually based on the long compliance history, current trend towards limiting this type of discharges, current EPA's multi-sector general permit coverage maintained for this site's non-process stormwaters associated with industrial coverage, maintenance of a current storm water pollution prevention plan (SWPPP), and facility's continued enrollment in the EPA's performance Track Program.

A review of the Discharge Monitoring Results reveals that two non compliances separated by three years of perfect compliance, with one being of retained stormwater and the other of a questionable test result on a BOD sample from the small package sewage treatment unit. The permittee is commended on achieving an overall annual site compliance rate of about 99.942% based upon the number of test measurements made and reported against limitations on the DMRs. However, EPA believes that quarterly monitoring of stormwater discharges is more representative of the discharges from this facility and is also consistent with the Railroad commission permit. As a result quarterly monitoring frequency is not changed in the proposed permit.

In addition, the permittee is commended on completing five years of successful WET testing. However, monitoring frequency reduction will not be granted during this permit renewal phase. However, the permittee may apply for a testing frequency reduction upon successful completion of the first four consecutive quarters of testing for one or both test species, with no lethal or sub-lethal effects demonstrated at or below the critical dilution. The quarterly Biomonitoring frequency is proposed based on biomonitoring frequency policy.

The monitoring frequency of the flow-based integrity test is to be performed annually consistent with the current permit. The monitoring frequency for BOD and TSS is reduced from twice a month to once a month based on good compliance history and consistency with other Texas SPR.

#### **XIV. IMPAIRED WATER - 303(d) LIST AND TMDL**

The Brazos River Diversion Channel in Segment No. 1201 of the Brazos River Basin is not listed on the Texas 2006 Clean Water Act Section 303(d) List (June 27, 2007).

#### **XV. ANTIDEGRADATION**

The Texas Commission on Environmental Quality, Texas Surface Water Quality Standards, Antidegradation, Title 30, Part 1, Chapter 307, Rule §307.5 sets forth the requirements to protect designated uses through implementation of the State WQS. The limitations and monitoring requirements set forth in the proposed permit are developed from the State WQS and are protective of those designated uses. Furthermore, the policy sets forth the intent to protect the existing quality of those waters, whose quality exceeds their designated use. The permit requirements are protective of the assimilative capacity of the receiving waters, which is protective of the designated uses of that water. There are no increases of pollutants being discharged to the receiving waters authorized in the proposed permit.

#### **XVI. ANTIBACKSLIDING**

The proposed permit is consistent with the requirements and exemption to meet Antibacksliding provisions of the Clean Water Act, Section 402(o) and 40 CFR Part 122.44(i)(B), which state in part that interim or final effluent limitations must be as stringent as those in the previous permit, unless information is available which was not available at the time of permit issuance.

#### **XVII. ENDANGERED SPECIES**

According to the most recent county listing available at US Fish and Wildlife Service (USFWS), Southwest Region 2 website, <http://www.fws.gov/southwest/es/EndangeredSpecies/lists/>, eight species in Brazoria County are listed as Endangered or Threatened. The listed species are the Green sea turtle *Chelonia mydas*, the Hawksbill sea turtle *Eretmochelys imbricata*, Kemp's ridley sea turtle *Lepidochelys kempii*, Leatherback sea turtle *Dermochelys coriacea*, Loggerhead sea turtle *Caretta caretta*, whooping crane *Grus Americana*, brown pelican *Pelecanus occidentalis*, and the Piping Plover *Charadrius melodus*.

Five marine mammals, five turtles, two fish and two invertebrates are listed as endangered or threatened in the Gulf of Mexico according to the National Marine Fisheries Service website at <http://sero.nmfs.noaa.gov/pr/pdf/Gulf%20of%20Mexico.pdf>. The marine mammals are Blue whale, Finback whale, Humpback whale, Sei whale and Sperm whale. All the turtles found in the Brazoria County are also in the Gulf of Mexico. The threatened fish in the Gulf of Mexico is the Gulf Sturgeon and Smalltooth sawfish. Since the last permit issuance, Right whale has been dropped while two threatened invertebrates and a fish were added to list. These species are

Smalltooth sawfish, Elkhorn coral and Staghorn coral invertebrates. Information obtained from NMFS reveals that the Smalltooth sawfish, Elkhorn and Staghorn coral species are not present in the area covered under this permit. Since their range is outside the scope of this permit, no further discussion of the species is included in this Biological Evaluation.

### **Description of Federally Listed Threatened and Endangered Species**

#### **GREEN SEA TURTLE (*Chelonia mydas*)**

Sea turtles are graceful saltwater reptiles, well adapted to life in their marine world. With streamlined bodies and flipper-like limbs, they are graceful swimmers able to navigate across the oceans. When they are active, sea turtles must swim to the ocean surface to breathe every few minutes. When they are resting, they can remain underwater for much longer periods of time. Although sea turtles live most of their lives in the ocean, adult females must return to land in order to lay their eggs. Sea turtles often travel long distances from their feeding grounds to their nesting beaches. Human threats include: oil spills, live bottom smothering with sediments and drilling fluids, dredging, coastal development, agricultural and industrial pollution, seagrass bed degradation, shrimp trawling and other fisheries, boat collisions, under water explosions, ingestion of marine debris, entanglement in marine debris, and poaching.

#### **HAWKSBILL SEA TURTLE (*Eretmochelys imbricata*)**

The hawksbill is a small to medium-sized sea turtle averaging approximately 2.8 feet in curved carapace length with a weight of approximately 176 pounds. Hawksbills reenter coastal waters when they reach approximately 20-25 cm carapace length. Coral reefs are widely recognized as the resident foraging habitat of juveniles, subadults and adults. This habitat association is undoubtedly related to their diet of sponges, which need solid substrate for attachment. The ledges and caves of the reef provide shelter for resting both during the day and night. Hawksbills are also found around rocky outcrops and high energy shoals, which are also optimum sites for sponge growth. Hawksbills are also known to inhabit mangrove-fringed bays and estuaries, particularly along the eastern shore of continents where coral reefs are absent. In Texas, juvenile hawksbills are associated with stone jetties. Hawksbills utilize both low- and high-energy nesting beaches in tropical oceans of the world. Both insular and mainland nesting sites are known. Hawksbills will nest on small pocket beaches and, because of their small body size and great agility can traverse fringing reefs that limit access by other species. They exhibit a wide tolerance for nesting substrate type. Nests are typically placed under vegetation. Threats to this species include: poaching, oil spills, vessel anchoring and groundings, artificial lighting at nesting sites, mechanical beach cleaning, increased human presence, beach vehicular driving, entanglement at sea, ingestion of marine debris, commercial and recreational fisheries, water craft collisions, sedimentation and siltation, and agricultural and industrial pollution.

#### **KEMP'S RIDLEY SEA TURTLE (*Lepidochelys kempii*)**

The Kemp's ridley sea turtles are the smallest of all extant sea turtles. Adult Kemp's ridleys' shells are almost as wide as long. Neonatal Kemp's ridleys feed on the available sargassum and associated infauna or other epipelagic species found in the Gulf of Mexico. In post-pelagic stages, the ridley is largely a crab-eater, with a preference for portunid crabs. Age at sexual maturity is not known, but is believed to be approximately 7-15 years, although other estimates of age at maturity range as high as 35 years. The major nesting beach for Kemp's ridleys is on

the northeastern coast of Mexico. This location is near Rancho Nuevo in southern Tamaulipas. The species occurs mainly in coastal areas of the Gulf of Mexico and the northwestern Atlantic Ocean. Hunting of both turtles and eggs contributed to the decline of this species. Existing threats include: development and human encroachment of nesting beaches, erosion of beaches, vehicular traffic on beaches, fisheries, oil spills, floating debris, dredging, and explosive removal of old oil and gas platforms.

### **LEATHERBACK SEA TURTLE (*Dermochelys coriacea*)**

The leatherback is the largest living turtle, and is so distinctive as to be placed in a separate taxonomic family, Dermochelyidae. The carapace is distinguished by a rubber-like texture, about 4 cm thick, and made primarily of tough, oil-saturated connective tissue. No sharp angle is formed between the carapace and the plastron, resulting in the animal being somewhat barrel-shaped. The front flippers are proportionally longer than in any other sea turtle. Nesting occurs from February - July with sites located from Georgia to the U.S. Virgin Islands. During the summer, leatherbacks tend to be found along the east coast of the U.S. from the Gulf of Maine south to the middle of Florida.

Leatherbacks become entangled in longlines, fish traps, buoy anchor lines and other ropes and cables. This can lead to serious injuries and/or death by drowning. Leatherback turtles eat a wide variety of marine debris such as plastic bags, plastic and styrofoam pieces, tar balls, balloons and plastic pellets. Effects of consumption include interference in metabolism or gut function, even at low levels of ingestion, as well as absorption of toxic byproducts. Leatherbacks are vulnerable to boat collisions and strikes, particularly when in waters near shore. Marine turtles are at risk when encountering an oil spill. Respiration, skin, blood chemistry and salt gland functions are affected.

### **LOGGERHEAD SEA TURTLE (*Caretta caretta*)**

Loggerheads are the most abundant species in U.S. coastal waters, and are often captured incidental to shrimp trawling. Shrimping is thought to have played a significant role in the population declines observed for the loggerhead. Maturity is reached at between 16-40 years. Mating takes place in late March-early June, and eggs are laid throughout the summer. Loggerheads are circumglobal, inhabiting continental shelves, bays, estuaries, and lagoons in temperate, subtropical, and tropical waters. In the United States, killing of nesting loggerheads is infrequent. However, in a number of areas, egg poaching is common. Erosion of nesting beaches can result in loss of nesting habitat. Loggerhead turtles eat a wide variety of marine debris such as plastic bags, plastic and styrofoam pieces, tar balls, balloons and raw plastic pellets. Effects of consumption include interference in metabolism or gut function, even at low levels of ingestion, as well as absorption of toxic byproducts. Turtles are taken by gillnet fisheries in the Atlantic and Gulf of Mexico. Several thousand vessels are involved in hook and line fishing for various coastal species. Sea turtles are at risk when encountering an oil spill. Respiration, skin, blood chemistry and salt gland functions are affected. Pesticides, heavy metals and PCB's have been detected in turtles and eggs, but the effect on them is unknown. Turtles have been caught in saltwater intake systems of coastal power plants. The mortality rate is estimated at 2%. Underwater explosions can kill or injure turtles, and may destroy or damage habitat. The effects of offshore lights are not known. They may attract hatchlings and interfere

with proper offshore orientation, increasing the risk from predators. Turtles get caught in discarded fishing gear. The number affected is unknown, but potentially significant.

### **WHOOPING CRANE (*Grus americana*)**

The tallest bird in North America, the Whooping Crane breeds in the wetlands of Wood Buffalo National Park in northern Canada and spends the winter on the Texas coast at Arkansas National Wildlife Refuge near Rockport. Cranes live in family groups made up of the parents and 1 or 2 offspring. In the spring, Whooping Cranes perform courtship displays (loud calling, wing flapping, leaps in the air) as they get ready to migrate to their breeding grounds. Whooping Cranes are endangered because much of their wetland habitat has been drained for farmland and pasture. Whooping Cranes are nearly 5 feet tall. They eat Blue crabs, clams, frogs, minnows, rodents, small birds, and berries. They are found in large wetland areas. Cranes are considered sacred in many parts of the world. In China, they are a symbol of long life.

### **BROWN PELICAN (*Pelecanus occidentalis*)**

The adult brown pelican is a large dark gray-brown water bird with white about the head and neck. Immatures are gray-brown above and on the neck, with white underparts. Brown pelicans nest in colonies mostly on small coastal islands. The nests are usually built in mangrove trees of similar size vegetation, but ground nesting may also occur.

The brown pelican is found along the coast in California and from North Carolina to Texas, Mexico, the West Indies and many Caribbean Islands, and to Guyana and Venezuela in South America. Although brown pelicans were extirpated from the Louisiana coast during the 1960's, a small number have since been reintroduced. Nesting for the eastern brown pelican, in the Southeast Region, is generally confined to the Carolinas, Florida, Louisiana, and the Caribbean. Brown pelicans are also known to occur along the Coast of Mississippi, and in the Barrier Islands, although population numbers are unknown.

The eastern population's decline was primarily caused by a collapse of thin-shelled eggs or another impairment of reproductive success. These problems were caused by ingestion of pesticide residues in the food fishes. The principal residues are DDT compounds (including DDE and DDD), and polychlorinated biphenyls (PCB's, dieldrin, and endrin. Between 1957 and 1961, pesticides drastically reduced the Texas population and completely eliminated the original Louisiana population, with lesser impacts occurring in other Southeastern states. Because of the known declines and potential threats, the brown pelican was listed as endangered throughout its United States range on October 13, 1970, and in its foreign range on June 2, 1970. In 1972, the Environmental Protection Agency placed a ban on the use of DDT in the United States and since that time has also sharply curtailed the use of endrin. As a result, the environmental residue levels of these persistent compounds have steadily decreased in most areas.

Other factors affecting the eastern subspecies include human disturbance of nesting colonies and mortalities that result from the birds being caught on fish hooks and subsequently entangled in monofilament line. Oil or chemical spills, erosion, plant succession, hurricanes, storms, heavy thick infestations, and unpredictable food availability are other threats.

**PIPING PLOVER (*Charadrius melodus*)**

A small plover has wings approximately 117 mm; tail 51 mm; weight 46-64 g (average 55 g); length averages about 17-18 cm. Inland birds have more complete breast band than Atlantic coast birds. The nonbreeding plovers lose the dark bands. In Laguna Madre, Texas, non-breeding home ranges were larger in winter than in fall or spring. The breeding season begins when the adults reach the breeding grounds in mid- to late-April or in mid-May in northern parts of the range. The adult males arrive earliest, select beach habitats, and defend established territories against other males. When adult females arrive at the breeding grounds several weeks later, the males conduct elaborate courtship rituals including aerial displays of circles and figure eights, whistling song, posturing with spread tail and wings, and rapid drumming of feet. The plovers defend territory during breeding season and at some winter sites. Nesting territory may or may not contain the foraging area. Home range during the breeding season generally is confined to the vicinity of the nest. Plovers are usually found in sandy beaches, especially where scattered grass tufts are present, and sparsely vegetated shores and islands of shallow lakes, ponds, rivers, and impoundments.

Food consists of worms, fly larvae, beetles, crustaceans, mollusks, and other invertebrates. The plovers prefer open shoreline areas, and vegetated beaches are avoided. It also eats various small invertebrates. It obtains food from surface of substrate, or occasionally probes into sand or mud.

Strong threats related primarily to human activity; disturbance by humans, predation, and development pressure are pervasive threats along the Atlantic coast.

**SPECIES FOUND IN THE GULF OF MEXICO****BLUE WHALE (*Balaenoptera musculus*)**

The blue whale is the largest of the whales and, in the North Atlantic, can grow to 89 feet in length and weigh nearly 300,000 pounds. Krill is the main food of this species. They range from the subtropics to Baffin Bay and the Greenland Sea, but are rarely seen in continental shelf waters along the eastern coast of the United States. Blue whales have been known to occasionally stray into the Gulf of Mexico. The historic decline in this species is thought to be the result of hunting, which has since ceased. On-going human impacts include: collisions with ships, disturbance by vessels, entrapment and entanglement in fishing gear, acoustic and chemical pollution, and military operations.

**FINBACK WHALE (*Balaenoptera physalus*)**

The finback whale is the second largest whale species, growing to more than 75 feet in length and 150,000 pounds. This species is found throughout the North Atlantic from the Gulf of Mexico northward to the edges of the polar ice cap and tend to occur over the continental shelf and slope in greater than 650 feet of water. Fin whales are thought to migrate seasonally and feed in more northerly latitudes while fasting in southerly latitudes. Their diet consists of krill, capelin, herring, and sand lance. Like the other endangered whale species, the reason for decline of the finback whale is historic hunting. Existing human impacts include: collisions with ships, disturbance of vessels, entrapment and entanglement in fishing gear, habitat degradation, and military operations. Presently, hunting in the North Atlantic only occurs in Greenland. Under the International Whaling Commission's aboriginal subsistent whaling authorization 20 are allowed to be taken each year.

**HUMPBACK WHALE (*Megaptera novaeangliae*)**

The humpback whale grows in length up to 59 feet and can weigh up to 97,000 pounds. Diet of the humpback whale consists of krill, other large zooplankton, and small schooling fish. This species is known to occur in all ocean basins worldwide and it generally inhabits areas over the continental shelves, their slopes, and near some oceanic islands. Humpback whales are migratory, summering in higher latitudes (35 to 65 degrees) and wintering in tropical or temperate latitudes (10 to 23 degrees). Feeding is thought to mainly occur in the more productive summer range. They are not thought to normally inhabit the Gulf of Mexico. The only known observations in the Gulf were off the Cuban coast in 1918 and Tampa Bay in 1962 and 1989. Historic hunting led to the decline of the species. Existing causes of human impact are: entrapment and entanglement in fishing gear, collisions with ships, and acoustic disturbance from ships, and aircraft.

**Sei Whale (*Balaenoptera borealis*)**

In the western North Atlantic, sei whales are known to occur from western Greenland to the southeastern United States. Like other whales, they tend to spend the summer in the northern latitudes and winter farther south. They tend to prefer deep water and can be found over the continental slope, basins between banks, and submarine canyons. Sei whales do not normally enter semi-enclosed waters such as the Gulf of Mexico or the Gulf of Saint Lawrence. However, there are recorded strandings along the northern coast of the Gulf of Mexico. Their preferred food consists of calanoid copepods and krill. Major human impacts to the species include: collisions with ships, disturbance from vessels, entrapment and entanglement in fishing gear, and military operations.

**Sperm whale (*Physeter macrocephalus*)**

The sperm whale is the largest of the toothed whales average 62 feet in length and can weigh as much as 120,000 pounds. They feed on a large deep water squid and a variety of fish. This species occurs throughout most of the oceans from the tropics to the polar ice caps. Sperm whales generally occupy deep waters and are rarely seen over the continental shelf. Like the other whale species, historic hunting resulted in their decline. Existing human impacts are: entrapment and entanglement in fishing gear, collisions with ships, and acoustic disturbance from ships, and aircraft.

**Gulf Sturgeon (*Acipenser oxyrinchus desotoi*)**

The gulf sturgeon, an anadromous fish, is found in riverine environments during the summer months and migrates to warmer water in estuaries and the near shore Gulf of Mexico during winter. Adult Gulf sturgeon usually spends approximately three quarters of the year in rivers and one quarter (cooler months) in estuaries or Gulf of Mexico waters. Younger Gulf sturgeon does not tend to migrate to open waters of the Gulf, but remain in riverine and estuarine environments. The fish has a sub-cylindrical body and a snout extending from the lower surface of the head which is blade-like in shape. Adult Gulf sturgeon generally grows to 227 centimeters in length. This sub-species is a bottom feeder tending to consume amphipods, crustaceans, oligochaetes, polychaetes and chironomid and ceratopogonid larvae. They have been found to eat during the three to four months they are in the marine environment and fast the remainder of the year while in the freshwater environment. Commercial fishing and habitat destruction are the main causes for the decline of this species. Means of habitat destruction include construction of dams which interfere with migration, dredging, and decreased ground water flows.

The mammals are usually found near shores, bays, lagoons, river mouth/tidal rivers and shallow water. Shallow coastal waters, estuaries, bays, rivers, and lakes; throughout most of the range, appears to prefer rivers and estuaries to marine habitats.

The mammal is primarily dependent upon submerging, emerging, and floating vegetation; diet varies according to plant availability; may opportunistically eat other foods (e.g., acorns in early winter in Florida, fishes caught in gill nets in Jamaica).

It is threatened by high mortality often associated with human activity (especially collisions with boats in Florida), in conjunction with low reproductive rate and habitat loss. It is vulnerable to catastrophic mortality when gathered in large numbers at winter aggregation sites in Florida. Some die when caught in water control structures. Hunting is responsible for the decline throughout much of the range. Low tolerance of human disturbance in calving areas, but moderately tolerant of swimmers in wintering sites. It has potential as weed/plant consumer in clogged waterways; benefits from some human disturbances, such as thermal pollution.

### **Potential Effects of Discharges Authorized by this Permit Renewal**

#### **Turtles**

Many of the threats to listed threatened or endangered turtle species are related to activities in coastal areas and will not be affected by the proposed discharges. Those threats include: poaching of turtles and eggs, development and human encroachment of nesting beaches, erosion of beaches, vehicular traffic on beaches, beach armoring, artificial lighting, mechanical beach cleaning, marina and dock development, coastal development, increased human presence, dredging, non-native vegetation, seagrass bed degradation, and agricultural pollution. Other threats which may occur in the area covered under the permit, which are not related to the proposed discharges are: entanglement at sea, commercial and recreational fisheries, and shrimp trawling. The discharges proposed to be authorized by the permit renewal will not affect those threats to threatened or endangered turtle species.

Threats to turtle species which could be related to Petroleum Bulk Stations and Terminals in the area covered under this permit include: oil spill during brine discharge, industrial pollution, and boat collisions. Of those potential threats, only oil spill during brine discharge is directly relevant to the proposed discharges. The proposed renewal contains controls to limit the quantity of pollutants which are discharged and prevent toxic effects in the receiving waters. The proposed permit has limits for Oil & Grease, Total Suspended Solids, Total Dissolved Solids, Biochemical Oxygen Demand, flow and pH. The proposed permit is written to include limitations and monitoring requirements on those parameters as a continuation of the conditions in the current permit.

#### **Whales**

The reason for decline in numbers of most of the whale species is historic hunting. Hunting has ceased in the Gulf of Mexico and North Atlantic with the exception of a small amount of subsistence hunting for fin whales near Greenland.

The existing threats to the endangered or threatened whale species include: entrapment or entanglement in fishing gear, collision with ships, habitat destruction such as dredging or sewer

discharges, disturbance by vessels, acoustic and chemical pollution, military operations, and acoustic disturbance from ships, and aircraft. Reissuance of the proposed permit will have no effect on the threats of entrapment or entanglement in fishing gear or military operations. Authorization of the proposed discharges will not increase or decrease the potential effects of entanglement or entrapment in fishing gear or military operations. The other threats, which include: collision with ships, acoustic disturbance, habitat destruction, disturbance by vessels, and chemical pollution, can be indirectly associated with Bulk Petroleum Storage and Terminals.

Chemical pollution is noted by the recovery plan for the blue whale as a threat to that species. It is not listed in the recovery plans for other whale species as a threat to those species. Although the discharges which are proposed to be authorized will contain pollutants, sufficient controls will be required to protect the environment and mitigate potential effects on listed threatened or endangered whales.

The threat to listed whale species from collision with or disturbance from vessels is indirectly related to the proposed authorization of the discharges.

Habitat destruction is a potential threat to several of the listed threatened or endangered whale species. The proposed permit will not affect the habitat of the listed threatened or endangered species.

### **Fish**

Discharges proposed to be authorized by this permit renewal will not affect the main human induced threats to the Gulf sturgeon of habitat destruction or commercial fishing. Causes of habitat degradation are: construction of dams which interfere with migration, ground water usage which diminish the natural flow to rivers, and dredging. Those factors occur in inland waters and not in the area of the Gulf of Mexico covered under this permit. Commercial fishing is also not expected to change as a result of the discharges proposed to be authorized by this renewal.

Adult sturgeon may occasionally occur, during the winter months. However, those discharges are highly intermittent and short term in nature. The proposed permit contains requirements for both of the new discharges to limit potential toxic effects to aquatic species, including the Gulf sturgeon.

## Determination

The permit renewal reflected here does not change the nature or volume of the pollutants from the current. EPA is unaware, at this time, of any service concerns regarding this discharge and believes that the change in compliance period will have no effect on listed species and designated critical habitat. The permit has retained the limitations and conditions of the expiring permit. EPA believes these limitations are adequate to protect the listed species for Brazoria County and the Gulf of Mexico.

Based on information described above, EPA Region 6 has determined that discharges proposed to be authorized by this permit renewal may effect but are not likely to adversely effect the Gulf sturgeon (*Acipenser oxyrinchus desotoi*), blue whale (*Balaenoptera musculus*), finback whale (*Balaenoptera physalus*), sei whale (*Balaenoptera borealis*) humpback whale (*Megaptera novaeangliae*) and sperm whale (*Physeter macrocephalus*), Kemps ridley turtle (*Lepidochelys kempii*), loggerhead turtle (*Caretta caretta*), leatherback turtle (*Dermochelys coriacea*), hawksbill turtle (*Eretmochelys imbricata*), green turtle (*Chelonia mydas*), nor is the proposed action likely to result in destruction or adverse modification of designated critical habitat.

In accordance with 50 CFR 402, EPA shall meet its obligation to ensure its actions are not likely to jeopardize the continued existence of any listed species or will result in the destruction or adverse modification of critical habitat. EPA will consult on this determination with the National Marine Fisheries Service and Fish and Wildlife Service and will not proceed with final issuance of this permit prior to fulfilling its obligations under the Endangered Species Act.

The standard reopener clause in the permit will allow EPA to reopen the permit and impose additional limitations if it is determined that changes in species or knowledge of the discharge would require different permit conditions.

## **XVIII. OCEAN DISCHARGE CRITERIA EVALUATION (40 CFR PART 125)**

The permittee had previously prepared an Ocean Discharge Criteria document (see *Ocean Discharge Criteria Document for Bryan Mound Salt Dome, Brazoria County, Texas*, November, 1990) and addressed each of the ten factors considered in the determination of unreasonable degradation of marine environment. These factors include: (1) Potential for bioaccumulation or persistence of the pollutants to be discharged; (2) The potential transport of such pollutants by biological, physical or chemical processes; (3) The composition and vulnerability of the biological communities which may be exposed to such pollutants including the presence of unique species or communities of species, the presence of species identified as endangered or threatened pursuant to the Endangered Species Act or the presence of those species critical to the structure or function of the ecosystem such as those important for the food chain; (4) The importance of the receiving water area to the surrounding biological community, including the presence of spawning sites, nursery/forage areas, migratory pathways or areas necessary for other functions or critical states in the life cycle of an organism; (5) The existence of special aquatic sites including but not limited to marine sanctuaries and refuges, parks, national and historic monuments, national seashores, wilderness areas and coral reefs; (6) The potential impacts on human health through direct and indirect pathways; (7) Existing or potential recreational and commercial fishing, including fin fishing and shell fishing; (8) Any applicable requirements of an approved Coastal Zone Management Plan; (9) Such other factors relating to

the effects of the discharge as may be appropriate, and (10) marine water quality criteria developed pursuant to Section 304 (a)(1).

Since the proposed permit contains limitations which will protect water quality and in general reduce the discharge of toxic pollutants to the marine environment, the Region finds that discharges proposed to be authorized by the permit will not cause unreasonable degradation of the marine environment. In addition, based on the Ocean Discharge Criteria document as well as the results of the latest DMR, Bryan Mound brine discharge, operating in compliance with the permit, will not cause unreasonable degradation of the marine environment. However, the permit shall be modified or revoked at any time if, on the basis of any new data, the director determines that continued discharges may cause unreasonable degradation of the marine environment.

#### **XIX. MAGNUSON-STEVENSON FISHERIES CONSERVATION & MANAGEMENT ACT**

The Magnuson-Stevens Fisheries Conservation and Management Act require federal agencies proposing to authorize actions that may adversely affect essential fish habitat to consult with National Marine Fisheries Service (NMFS). The entire Gulf of Mexico has been designated Essential Fish Habitat. EPA has determined that this permit issuance will not adversely affect essential fish habitat. The Agency will seek concurrence from NMFS before the final permit is issued.

#### **XX. COASTAL ZONE MANAGEMENT ACT**

EPA has determined that the activities which are proposed to be authorized by this permit reissuance are consistent with the local and state Coastal Zone Management Plans. The proposed permit and consistency determination was made by EPA.

The proposed permit limits are consistent with the TCEQ's Water Quality Management Plan for Segment No. 1201 (Brazos River Basin) and 2501 (Gulf of Mexico).

#### **XXI. MONITORING FREQUENCY REDUCTION**

Monitoring frequency reduction was considered. Copies of the Discharge Monitoring Report (DMR) reviewed indicated that this facility has two non compliances separated by three years of perfect compliance during the last permit cycle. BOD5 and TSS monitoring frequency is reduced from twice a month to once a month due to the good compliance history for both parameters.

#### **XXII. CERTIFICATION**

The permit is in the process of certification by the Railroad Commission of Texas following regulations promulgated at 40 CFR 124.53. A draft permit and draft public notice will be sent to the District Engineer, Corps of Engineers; to the Regional Director of the U.S. Fish and Wildlife Service and to the National Marine Fisheries Service prior to the publication of that notice.

### **XXIII. ADMINISTRATIVE RECORD**

The following information was used to develop the proposed permit:

#### **A. APPLICATION**

NPDES Application for Permit to Discharge, Form 1 & 2C, dated April 22, 2008.

#### **B. REFERENCES**

The State of Texas Water Quality Inventory, 13th Edition, Publication No. SFR-50, Texas Commission on Environmental Quality, December 1996.

"Implementation of the Texas Commission on Environmental Quality Standards via Permitting," Texas Commission on Environmental Quality, August 1995.

Texas Surface Water Quality Standards, 30 TAC Sections 307.1 - 307.10 (21 TexReg 9765, April 30, 1997).

<http://www.nmfs.noaa.gov/pr/species/fish/smalltoothsawfish.htm>

NatureServe explorer website at

<http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Pristis+pectinata>

[www.nmfs.noaa.gov/.../staghorncoral\\_keysnms.jpg](http://www.nmfs.noaa.gov/.../staghorncoral_keysnms.jpg)

<http://www.nmfs.noaa.gov/pr/species/invertebrates/elkhorncoral.htm>

#### **C. 40 CFR CITATIONS**

Sections 122, 124, 125, 133, and 136

NPDES Permit TX0074012, issued on 9/26/03, effective November 1, 2003, modified December 21, 2004, and expires October 31, 2008.

#### **D. MISCELLANEOUS CORRESPONDENCE**

E-mails from Thomas Westbrook, at DynMcDermott Petroleum, contractor to Bryan Mound Strategic Petroleum Reserve, to Maria Okpala, EPA, 6/11/08, 6/18/08, 6/30/08, 7/8/08, & 7/9/08 Bryan Mound Topographic maps, copies of Discharge Monitoring Results and other additional facility information.