DOE/SPR/EA-1523

Environmental Assessment to Address Proposed Site Modifications at the Strategic Petroleum Reserve's West Hackberry Raw Water Intake Structure Site, Calcasieu Parish, Louisiana

U.S. Department of Energy

Strategic Petroleum Reserve

900 Commerce Road East

New Orleans, Louisiana 70123

November 2005

FINDING OF NO SIGNIFICANT IMPACT
PROPOSED SITE MODIFICATIONS AT THE STRATEGIC PETROLEUM RESERVE'S WEST HACKBERRY RAW WATER INTAKE STRUCTURE SITE, CALCASIEU PARISH, LOUISIANA

AGENCY: Department of Energy

ACTION: Finding of No Significant Impact

SUMMARY: The U.S. Department of Energy (DOE) Strategic Petroleum Reserve (SPR) prepared an Environmental Assessment (EA) (Attachment A) in response to a proposal to modify the West Hackberry (WH) Raw Water Intake Structure (RWIS) located near Hackberry, Louisiana. The EA was prepared in accordance with the Code of Federal Regulations (CFR), 40 CFR 1500-1508 and 10 CFR 1021-1022.

Based on the results of the EA and implementation of mitigation activities, the DOE has determined that the proposed action may result in short-term, direct environmental impacts to wetlands, biological and ecological resources, and water resources, with no potential long-term or permanent direct impacts to facility permits. However, as the EA indicates, there would not be a net increase in long-term, permanent, direct, indirect, secondary, or cumulative impacts to the environment as a result of the implementation of the proposed action as most impacts to the environment are short-term; while other potential impacts are predicated only on the occurrence of a facility accident, should one occur.

In summary, while a number of impacts were identified, the proposed action is not a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act (NEPA). An Environmental Impact Statement (EIS) is not necessary and DOE is issuing this Finding of No Significant Impact (FONSI). The DOE will also implement accident and spill mitigation/response activities within the construction specifications for the project. Implementation will be by the construction subcontractor with direct oversight by the Construction Management contractor and verification by DOE.

PUBLIC AVAILABILITY: The EA, FONSI, and MAP may be reviewed at www.spr.doe.gov/Environmental Safety and Health. Copies of the documents may be obtained from:

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Strategic Petroleum Reserve Project Office
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DESCRIPTION OF THE PROPOSED ACTION: The proposed action is comprised of an overall modification of the WH RWIS site, including expansion of the existing site footprint and several other activities such as:

- Installation of additional perimeter lighting, fencing and adjustment to Closed Circuit Television (CCTV),
- Grading of additional adjoining property acquired for modification to the RWIS site,
- Installation of an additional jib crane at the RWIS to facilitate the handling of RWIS pumps and motors,
- Installation of additional bulkhead and crushed limestone in the westernmost portion of the area to additional property to be acquired adjoining the RWIS site,
- Installation of a process water well for construction and equipment wash down,
- Placement of new sheet pile and fill two feet in front of and parallel to the existing degraded sheet pile to protect south bank of the Gulf Intracoastal Waterway (GIWW) from vessel wake erosion,
- Extension of existing pipes for the installation of a new scraper pig launcher, and
- Placement of new guard pilings to protect the modified piping.

The modification of the WH RWIS site will also be accompanied by land acquisition including fee-simple acquisition of approximately 0.2 hectare (ha) (0.51 acres) consisting of additional perimeter property along the existing fence line [addition of 4.9 m (16 ft) on the east side, addition of 22.3 m (73 ft) on the west side and addition of 3.4 m (11 ft) on the south side], additional frontage on the GIWW [addition of 2.7 m (9 ft)], and acquisition of temporary construction easement near the RWIS site, approximately 4.8 ha (12 acres). The EA has been prepared in accordance with the Code of Federal Regulations (CFR), 40 CFR 1500-1508 and 10 CFR 1021 and includes information required by 10 CFR 1022.

ALTERNATIVES: Under the no action alternative, the WH facility would continue to operate as it is currently configured. The no action alternative does allow the WH facility to continue operations at its current facility capacity and inventory, though with degraded operational and maintenance flexibility.

Other alternatives were considered but dismissed due to their potential of increasing the chances for a spill or release and because they are more dangerous and disruptive activities. They are discussed in section 2.3 of Attachment A.

ENVIRONMENTAL IMPACTS: Short-term, direct environmental impacts to wetlands have been identified and outweigh the long term permanent impacts of the no action alternative. There will be negative short-term impacts without any irreversible affects. The proposed action to modify and upgrade the Raw Water Intake Structure (RWIS) site has potential direct, indirect or secondary, but no cumulative impacts associated with its implementation. These impacts are to wetlands, biological and ecological resources, and water resources. The impacts were analyzed and found to be minor in relation to the overall ongoing WH facility activities and do not represent a significant degradation to the environment. However, as the EA indicates, there would not be a net increase in long-term, permanent, direct, indirect, secondary, or cumulative impacts to the environment as a result of the implementation of the proposed action, as most impacts to the environment are short-term and/or predicated on the potential occurrence of a facility accident. Accident analyses conducted indicate that potential risks associated with implementation of the proposed action are not imminently dangerous to human health or the environment.

MITIGATION: Extensive accident, and spill mitigation and response activities will be defined within the construction specification for the project. Implementation will be by the construction subcontractor with direct oversight by the Construction Management contractor and verification by DOE.

DETERMINATION: Based on the analysis in DOE/SPR/EA-1523, the DOE has determined that the proposed action to modify and upgrade the Raw Water Intake Structure (RWIS) at the SPR West Hackberry facility does not constitute a major Federal action that would significantly affect the quality of the human or natural environment within the meaning of NEPA. Therefore, the preparation of an EIS will not be required, and the DOE is issuing this FONSI.

Issued in New Orleans, this 10th day of November, 2005.

William C. Gibson, Jr.
Project Manager
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Cover Sheet

Proposed Action: Modifications to the West Hackberry Raw Water Intake Structure Site

Type of Statement: Environmental Assessment

Lead Agency: Department of Energy, Strategic Petroleum Reserve Project Management Office

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Abstract:

The U.S. Department of Energy (DOE) Strategic Petroleum Reserve (SPR) prepared this Environmental Assessment (EA) in response to a proposal to modify the Raw Water Intake Structure Site at the West Hackberry (WH) storage facility (facility) located in Hackberry, Louisiana. The EA has been prepared in accordance with the Code of Federal Regulations (CFR), 40 CFR 1500 -1508 and 10 CFR 1021. This EA identified that the proposed action to modify and upgrade the Raw Water Intake Structure (RWIS) site has potential direct, indirect or secondary, but no cumulative impacts associated with its implementation. These impacts are to wetlands, biological and ecological resources, and water resources. The impacts were analyzed and found to be minor and do not represent a significant degradation to the environment.

How to Read This Environmental Assessment

This *Environmental Assessment to address Proposed Site Modifications at the Strategic Petroleum Reserve's West Hackberry Raw Water Intake Structure Site, Calcasieu Parish, Louisiana* has a cover sheet, an Executive Summary, an Acronyms and Terms section, and nine chapters with supporting appendices. The purpose of the cover sheet is to present a brief overview of the entire document and its characteristics. The purpose of the Executive Summary is to present a condensed discussion of the analyses and impacts related to the proposed action and the no action alternative, derived from the descriptions contained in Chapters 2-6 and from comments and responses. The purpose of the Acronyms and Terms section is to facilitate the review of this document by providing an easily accessible list of the technical terms and acronyms utilized in the EA. In developing the outline for this EA, the DOE adapted the EIS outline suggested by the Council on Environmental Quality (40 CFR 1502.10).

Executive Summary

The U.S. Department of Energy (DOE) Strategic Petroleum Reserve (SPR) prepared this Environmental Assessment (EA) in response to a proposal to modify and upgrade the West Hackberry (WH) Raw Water Intake Structure (RWIS) site, located in Calcasieu Parish, Louisiana.

Purpose and Need For the Proposed Action

The RWIS site is currently utilized as an extraction point for raw water from the Gulf Intracoastal Waterway (GIWW), located in Calcasieu Parish. Raw water is then transported via pipeline to the main facility where it is used to displace stored oil. Construction on the existing RWIS site began in 1978 and the RWIS site has been in use to support site operations since completion. Consequently, despite maintenance activities that have been conducted since then, the RWIS site is beginning to show signs of long-term use and currently needs to be modified and upgraded to allow for continued, optimum operations at the main facility.

Description of the Proposed Action and Alternatives

The proposed action is comprised of an overall modification of the WH RWIS site including expansion of the existing site footprint and several other activities such as:

- Installation of additional perimeter lighting, fencing and adjustment to Closed Circuit Television (CCTV),
- Grading of areas acquired for modification to the RWIS site,
- Installation of an additional jib crane at the RWIS to facilitate the handling of the RWIS pumps and motors,
- Installation of additional bulkhead and crushed limestone in the westernmost portion of the area to be acquired at the RWIS site,
- Installation of a process water well for construction and equipment washdown,
- Placement of new sheet pile parallel to existing sheet pile with creation and fill of a 2 foot interstitial space in the GIWW,
- Extension of existing pipes for the installation of a new scraper pig launcher and
- Placement of new guard posts to protect the modified piping.

The modification of the WH RWIS site will also be accompanied by land acquisition including fee-simple acquisition of approximately 0.002 km^2 (0.51 acres) consisting of additional perimeter property along the existing fence line [addition of 4.9 m (16 ft) on the east side, addition of 22.3 m (73 ft) on the west side and addition of 3.4 m (11 ft) on the south side], additional frontage on the GIWW [addition of 2.7 m (9 ft)], and acquisition of temporary construction easement near the RWIS site, approximately 0.05 km^2 (12 acres). The EA has been prepared in accordance with the Code of Federal Regulations (CFR), 40 CFR 1500-1508 and 10 CFR 1021 and includes information required by 10 CFR 1022.

Under the no action alternative, the WH facility would continue to operate as it is currently configured. The no action alternative does allow the WH facility to continue operations at its current facility capacity and inventory, though with degraded operational and maintenance flexibility.

Affected Environment

Potentially affected resources include wetlands, biological and ecological resources, water resources and permitting activities.

Environmental Impacts

This EA identified that the proposed action to modify and upgrade the RWIS site has potential direct, indirect or secondary, but no cumulative resource impacts associated with its implementation. These impacts are to wetlands, biological and ecological resources, and water resources. The impacts were analyzed and found to be minor and do not represent a significant degradation to the environment.

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Acronyms and Terms

bbls – barrels
bgs – below ground surface
CAA – Clean Air Act
CCTV – Closed Circuit Television
CEQ – Council on Environmental Quality
CESQG – conditionally-exempt small-quantity generator
CFR – Code of Federal Regulations
cm - centimeters
CO – carbon monoxide
dB – decibel
DM – DynMcDermott Petroleum Operations Company
DOE – Department of Energy
EA – environmental assessment
EAC – Environmental Advisory Committee
EFH – essential fish habitat
EIS – Environmental Impact Statement
EJ – environmental justice
EMS – Environmental Management System
EPA – Environmental Protection Agency
EPCA – Energy Policy and Conservation Act
facility – storage facility
FONSI – Finding of No Significant Impact
ft – feet
GIWW – Gulf Intracoastal Waterway
gpm – gallons per minute
HCP – Hearing Conservation Program
ID – inside diameter
in - inches
ISO – International Organization for Standardization
kg – kilogram
km - kilometer
km^2 – square kilometers
LA – Louisiana
lb – pounds
LDNR – Louisiana Department of Natural Resources
LDEQ – Louisiana Department of Environment Quality
LPDES – Louisiana Pollution Discharge Elimination System
Leq – daily noise exposure over an 8 hour time period
m – meters
m^3 – cubic meters
mi – miles
minor source – minor source of air emissions
MMB – million barrels

mtons – metric tons
mTPY – metric tons per year
MW – molecular weight
NAAQS – National Ambient Air Quality Standards
NEPA – National Environmental Policy Act
NPDES – National Pollutant Discharge Elimination System
NOx – nitrogen oxides
O_3 - ozone
oil – crude oil
Pb - lead
PM_{10} – particulate matter less than 10 microns (size)
ppt – parts per thousand
psi – pounds per square inch (absolute pressure)
psig - pounds per square inch (gauge pressure)
QA/QC – quality assurance/quality control
RCRA – Resource Conservation and Recovery Act
RWIS – Raw Water Intake Structure
scf/bbl – standard cubic feet per barrel
SIP – state implementation plan
SO_2 – sulfur dioxide
SOP – standard operating procedure
SPR - Strategic Petroleum Reserve
SPRPMO – Strategic Petroleum Reserve Project Management Office
TPY – tons per year
UIC – underground injection control
U.S. – United States
USACE – United States Army Corps of Engineers
USFWS – United States Fish and Wildlife Service
VOC(s) – volatile organic compound(s)
WH – West Hackberry
workovers – cavern/well workovers

1.0 Purpose and Need

This chapter describes the purpose and need for this environmental assessment (EA) and the proposed action to modify and upgrade the Raw Water Intake Structure (RWIS) site at the United States (U.S.) Department of Energy (DOE) Strategic Petroleum Reserve's (SPR) West Hackberry (WH) storage facility.

1.1 Introduction

In the *National Environmental Policy Act of 1969* (NEPA), Congress recognized that technological, social, and economic forces have a profound influence on the quality of the human environment. Thus, implementation of the NEPA requires Federal agencies to consider the environmental consequences of their proposed actions before decisions are made. In complying with the NEPA, the SPR procedure per the *SPRPMO NEPA Implementation Plan* (SPRPMO O 451.1B) is to follow the letter and spirit of NEPA and to comply fully with the Council on Environmental Quality's (CEQ's) regulations [40 Code of Federal Regulations (CFR) 1500-1508] and DOE's own NEPA implementing procedures (10 CFR 1021).

The purpose of this EA is to provide agency decision-makers with sufficient evidence and analysis to select between preparation of an environmental impact statement (EIS) or issuance of a Finding of No Significant Impact (FONSI) for the proposed action to modify and upgrade the RWIS site at the WH facility (Figure 1-1). The objectives of this EA are to (1) describe the purpose and need for the SPR's action; (2) describe the proposed action and the no action alternative; (3) describe baseline environmental conditions at the WH RWIS site; and (4) analyze the potential direct, indirect, and cumulative impacts to the environment that result from implementation of the proposed action or the no action alternative. This EA will also provide information regarding mitigative actions, if necessary, to minimize or avoid adverse effects on the environment associated with the proposed action.

1.2 Background

The creation of the SPR was mandated by Congress through the Energy Policy and Conservation Act (EPCA) on December 22, 1975. The objective of the SPR is to provide the U.S. with crude oil (oil) should a supply disruption occur. Oil is currently stored by the SPR in salt dome caverns along the Louisiana (LA) and Texas (TX) Gulf Coast. There are four SPR facilities in LA and TX, a project management facility in LA, and a warehouse in Mississippi. The proposed action will occur at the WH facility. A general description of the WH facility is provided below.

The WH facility is located in Cameron Parish, Louisiana, approximately 35 kilmeters (km) (22 miles) southwest of Lake Charles, Louisiana. The storage site covers

approximately 2.29 square kilometers (km^2) (565 acres) on top of the WH salt dome. The WH salt dome was selected as a storage site early in the SPR program due to its existing brine caverns, which could be readily converted to oil storage and its proximity to commercial marine and pipeline crude oil distribution facilities. Development of the site was initiated in 1977 and completed in 1988. The facility has 22 underground solution-mined storage caverns with a combined storage capacity of 36.09 million cubic meters (m^3) [227 million barrels (MMB)] of oil. The facility has the capability to drawdown and deliver oil at 0.21 million m^3 [1,300,000 barrels (bbls)] per day.

The RWIS is currently utilized as an extraction point for raw water from the Gulf Intracoastal Waterway (GIWW), located in Calcasieu Parish, southward 6.87 km [4.27 mi or 22,545 feet (ft)]. Raw water is then transported via pipeline to an extraction point at the main facility and used to displace stored oil. Construction on the existing RWIS site began in 1978 and the RWIS has been in use to support site operations since its completion. Consequently, the RWIS is beginning to show signs of long-term use despite maintenance activities that have been conducted since then and currently needs to be modified and upgraded to allow for continued, optimum operations at the main facility. A vicinity map has been provided as Figure 1-2.

1.3 Statement of the Purpose and Need for the Proposed Action

It is anticipated the SPR's 111 million m^3 (700 MMB) capacity will be reached by August 2005. The WH facility was recently authorized to store up to 36 million m^3 (227 MMB) of the total SPR capacity of oil. Consistent with this original maximum storage capacity designation and EPCA, the DOE is proposing activities to support increased storage capacity at the WH facility and to allow the WH RWIS to continue to support the existing operations of the WH facility. The proposed action is necessary to ensure the readiness of the WH facility in the event of a presidentially-ordered drawdown of oil from the SPR. Drawdown readiness of each site is required given the nation's increasing dependence on foreign oil imports and the unpredictable and often unstable international petroleum market.

1.4 Scope of This EA

Analysis of potential environmental and socioeconomic impacts will be conducted using the sliding-scale approach. Key to this EA is the focus of efforts and analysis on significant environmental issues and alternatives as well as discussion of impacts in proportion to their significance. Resources that are anticipated to remain unaffected are appropriately addressed with less detail, but still presented with an explanation for diminished or no consideration in the impacts analysis. Conversely, certain aspects of the proposed action have a greater potential for producing environmental impacts, e.g. activities performed in wetlands. These aspects and affected resources are discussed in greater detail than those that have little potential for impact, e.g. socioeconomic

resources, and are further analyzed in Chapter 4, Environmental Impacts and Wetland Assessment.

1.5 Public Involvement

The SPR provided written notification of its intention to prepare this NEPA analysis to the government agencies and interested parties listed in Chapter 7.0 on March 11, 2005. This notification included project information and provided the opportunity for parties to make scoping comments on this EA. Parties expressing their interest received individual responses, where appropriate. Electronic access to the draft EA for review and comments was made available on July 8, 2005 for a period of 17 days. Concerns and comments received by the close of the comment period were considered in preparation of the final EA. The SPR provided responses to interested parties as presented in Appendix A. Appendix A has copies of the notification letter, the transmittal letters and responses received.

Additionally, the draft EA was presented for review and discussion at the SPR Environmental Advisory Committee's (EAC) quarterly meeting on July 19, 2005. The EAC's purpose is to provide independent assessments, evaluations, advice, and impartial information to the operating management, the public, and media relative to the environment, safety, public perception, programs, and policies of the SPR. The committee consists of a credible group of scientific/technical specialists in the environmental, emergency management, mining, and oil and gas fields, as well as community representatives, deemed through a careful selection process, as competent in evaluating and reporting on such matters and whose opinions would be recognized by the public at large.

2.0 Description of the Proposed Action and Alternatives

This chapter describes the proposed action to modify and upgrade the RWIS site at the WH facility, any alternatives that were considered, but not further analyzed, and the no action alternative as required by 10 CFR 1021.321(c).

2.1 Proposed Action – Modifications and Upgrades to the SPR's WH Raw Water Intake Structure Site

Under the proposed action, the WH RWIS site will be modified relative to size and configuration and upgraded. The proposed action is comprised of an overall modification of the WH RWIS site including expansion of the existing site footprint by approximately 0.002 km^2 (0.51 acres) and several other activities such as upgrades to security, the grading of the RWIS site, the general capacity of the site, and bank stabilization for a new scraper pig launcher and marine crane. The modification of the WH RWIS site will also be accompanied by acquisition of temporary construction easement near the RWIS site, approximately 0.05 km^2 (12 acres).

Thus, the proposed action may be subdivided into two distinct actions, the action to increase the RWIS site footprint and the action to upgrade the RWIS. Under the proposed action, fee simple acquisition of approximately 0.002 km^2 (0.51 acres) of land consisting of additional perimeter property along the existing fence line [addition of 4.9 m (16 ft) on the east side, addition of 22.3 m (73 ft) on the west side and addition of 3.4 m (11 ft) on the south side] and additional frontage on the GIWW [addition of 2.7 m (9 ft)] is required to achieve the additional site footprint. Figure 2-1 depicts the RWIS site footprint and the anticipated RWIS site after implementation of the proposed action.

The final action associated with implementation of the proposed action is the general upgrade of the RWIS. This final action will include installation of additional perimeter lighting, fencing and adjustment to CCTV, grading of areas acquired for modification to the RWIS site, installation of an additional jib crane at the RWIS to facilitate the handling of RWIS pumps and motors, installation of additional bulkhead and crushed limestone in the westernmost portion of the area to be acquired at the RWIS site, installation of a process water well for construction and equipment washdown, placement of new sheet pile in front of and parallel to existing sheet pile in the Gulf Intracoastal Waterway (GIWW) with fill material deposited in between, installation of a new pig launcher and extension of existing pipes to the new launcher, and placement of new guard posts to protect the modified piping. Figure 2-2 illustrates the Details of Sheet Pile Placement, one of the proposed actions to upgrade the RWIS site.

2.2 No Action Alternative

Under the no action alternative, the WH RWIS site would continue to operate as it is currently configured. The SPR would not perform actions to upgrade the site nor would the site footprint increase. This is not an alternative that meets the SPR's purpose and need for action. It also fails to allow WH to assist the SPR in meeting programmatic needs. However, the no action alternative does allow the WH facility to continue operations at its current size and capacity, though with degraded operational and maintenance flexibility.

2.3 Alternatives Considered But Dismissed

The only alternative to the entire proposed action considered was the no action alternative. Alternatives were initially considered, but ultimately dismissed from consideration, for the following two tasks that comprise a portion of the proposed action:

- Installation of an additional jib crane at the RWIS site to facilitate the handling of RWIS pumps and motors; and
- Placement of new sheet pile in the GIWW parallel to existing sheet pile with creation of a two foot interstitial space in which fill material will be deposited.

The alternatives for these that were considered but dismissed are (respectively):

- Relocation of existing crane, which was determined to be infeasible as the existing crane lacked the required capacity and required high implementation costs; and
- Replacement of the sheet pile with a concrete cap, which was also determined to be infeasible given the associated cost, the uncertainty relative to the portions of the sheet pile that are suitable for capping, and additional environmental impacts of development of a concrete cap relative to those associated with the proposed action.

Although these alternatives would both allow the WH facility to assist the SPR in meeting its programmatic needs, greater environmental impacts would result as these alternatives, increase the potential for a spill or release, and are inherently more dangerous and disruptive activities. Therefore, these alternatives are withdrawn from further consideration in this EA analysis.

3.0 Environmental Resources

This chapter describes only the environmental resources that may be affected as a result of implementing the proposed action to increase the facility footprint and capacity. Potentially affected resources are described using the sliding scale approach with more detail provided for those resources likely to be most affected. The following environmental resources were initially analyzed for potential impacts, but, due to the results of the preliminary assessment, have been eliminated from further consideration and analysis:

- Environmental Justice
- Clean Air Act Conformity
- Protection of Children
- Essential Fish Habitat
- Prime Farmland
- Fish and Wildlife Coordination Act
- General Regional and Facility Environment (climate, land use, aesthetics)
- Archeological, Cultural, and Historic Resources
- Socioeconomics and Demographics
- Air Quality
- Waste Management
- Threatened and Endangered Species
- Terrestrial Resources
- Floodplains
- Pollution Prevention

A brief description of these resources, the preliminary assessment and the justification for their elimination from further consideration and analysis has been provided in Appendix B.

3.1 Potentially Affected Resources

Discussion of the affected environment and impacts thereto is limited to existing environmental information that directly relates to the scope of the proposed action and the no action alternative. These resource categories are carried through the environmental impacts analysis presented in Chapter 4.

3.1.1 Wetlands

Although parts of the proposed action occur within the existing facility footprint, other tasks affect wetlands. Thus, the requirement to prepare a wetlands assessment imposed by 10 CFR 1022.11 is applicable to the proposed action as the areas that

would be affected have been identified as jurisdictional wetlands of the U.S., including actual functional wetlands. As preferred by the regulation, DOE has incorporated the required wetlands information into this document with the identification of resources in this Chapter and the impacts assessment in Chapter 4.0. Wetland determination activities have been performed utilizing the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Map, Black Lake quadrangle, presented in Figure 3-1. Based on the NWI map, the RWIPL project area could affect five habitat types. Of these affected habitat types, three are estuarine wetland habitats that comprise the aforementioned jurisdictional wetlands while two are upland habitats.

The habitat directly adjacent to the RWIS site is an upland habitat consisting of Uplands Artificial Substrate (UR). An upland is classified as an area not defined as wetland or deepwater habitat. Artificial substrates are described as consisting of a rock bottom, unconsolidated bottom, rocky shore and/or unconsolidated shore that were placed by man using natural or synthetic materials (USFWS, 2004). Adjacent to the Uplands Artificial Substrate habitat on the spoil bank is an upland habitat consisting of Uplands Scrub-Shrub (spoil) (USSs). It is important to note that these habitats are classified as upland habitats, and are not considered jurisdictional wetlands by the U.S. Army Corps of Engineers (USACE).

The first type of wetland, south of the RWIS, consists of the Estuarine Intertidal Emergent Persistent Irregularly Flooded Diked/Impounded Oligohaline (E2EM1Ph6) wetland area. The Estuarine System describes deepwater tidal habitats and adjacent tidal wetlands with low energy and variable salinity, influenced and often semi- enclosed by land, which includes the area from extreme low water to extreme high water and associated splash zone, characterized by erect, rooted, herbaceous hydrophytes (water- loving plants), excluding mosses and lichens. This vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants (grow year after year) that normally remain standing until at least the beginning of the next growing season. The wetland area is diked or impounded and would have a salinity range of 0.5 - 5.0 ppt.

The second type of wetland, south of the RWIS and adjacent to the fresh water impoundment, consists of the Estuarine, Subtidal, Unconsolidated Bottom Excavated Mesohaline (E1UBL6h) wetland area. These wetlands are described as deepwater tidal habitats and adjacent tidal wetlands with low energy and variable salinity, influenced and often semi- enclosed by land, with a continuously submerged substrate, at least 25% cover of particles smaller than stones [less than 6-7 cm (2.4-2.8 in)], and a vegetative cover less than 30% that is permanently flooded with tidal water. This wetland is created or modified by a man-made barrier or dam which obstructs the inflow or outflow of water and would have a salinity range from 0.5 – 5.0 ppt.

The third type of wetland, north of the RWIS, consists of the Estuarine, Subtidal, Unconsolidated Bottom Excavated Mesohaline (E1UBLx5) wetland area. These wetlands are described as deepwater tidal habitats and adjacent tidal wetlands with low energy and variable salinity, influenced and often semi- enclosed by land, with a

continuously submerged substrate, at least 25% cover of particles smaller than stones [less than 6-7 cm (2.4-2.8 in)], and a vegetative cover less than 30% that is permanently flooded with tidal water. This wetland lies within a basin or channel excavated by man and would have a salinity range from 5.0-18.0 ppt.

These wetland areas would be regulated by Section 404 of the Clean Water Act. In 2001, a jurisdictional determination was issued by the USACE for waters of the U.S., including wetlands, at the main facility. Wetland activities at the main facility and the RWIS have been previously coordinated with the USACE, New Orleans District office. Acreage calculations of potential impacts to waters of the United States, including wetlands, would be identified during permitting activities for this project.

3.1.2 Biological and Ecological Resources

Biological and ecological resources include wildlife and vegetation in areas adjacent to the RWIS site. As the proposed action will be performed both on- and off-site with some disturbance to the land surface on-site and some disturbance to habitat off-site, it is likely that these resources will be affected by the proposed action. A discussion of the potentially affected biological resources is provided below.

3.1.2.1 Vegetation

Vegetation off-site directly adjacent to the RWIS has been characterized as ruderal habitat similar to a scrub/shrub community that includes true shrubs, young trees, and shrubs or trees that are stunted due to environmental conditions. This vegetation provides habitat for wildlife.

The facility is generally located in the Gulf Coastal Prairie vegetation region[1]. Associated natural communities in this vegetation region include: Cypress and Cypress-Tupelo Swamps (*Taxodium distichum – Nyssa aquatica*), Coastal Live Oak-Hackberry Forests (Cheniers) (*Quercus virginiana – Celtis laevigata*) of the southwest coast, Live Oak Natural Levee Forests of the southeast coast, and some Bottomland Hardwood Forests. Also, the Salt Dome Hardwood Forests are unique to the southcentral coast occurring on salt domes in this area[3]. Specifically, the higher elevations of the spoil bank on which the proposed action is to occur are dominated by Chinese tallow (*Sapium sebiferum*), Hackberry (*Celtis laevigata*), Wax myrtle (*Myrica cerifera*), False-willow (*Baccharis spp.*), and upland grasses[7].

3.1.2.2 Wildlife

Numerous terrestrial wildlife species are known to be present within the eco-region adjacent to the WH RWIS site. Although some habitat may exist within the facility boundaries due to sporadic areas of vegetation cover, this habitat has been disturbed

since the site development and does not present sufficient habitat to support wildlife on-site with the exception of random occurrences. Further, the sporadic incidence of wildlife on-site will not be affected as any implementation of the proposed action will occur within the developed portions of the facility, which do not present suitable habitat for wildlife. Adjacent to the RWIS site, existing habitat is suitable for wildlife, which is known to routinely occupy the scrub/shrub community. Wildlife principally present in the Southwest LA region is presented in Appendix C. There are no endangered and/or threatened Species within the project zone. A list of those found in Calcasieu Parish is presented in Appendix D.

3.1.3 Water Resources and Water Quality

Water resources include surface water bodies at the RWIS site and in the adjacent area. As the proposed action will be performed off-site and shall include permanent disturbance to surface water bodies such as the GIWW, impacts to these must be assessed. A description of these resources follows.

3.1.3.1 Water Resources

The principal water body associated with the RWIS site is the GIWW (open water). The RWIS itself is a feature of the southern shoreline of the GIWW and the spoil bank on which the RWIS is constructed is bordered on the south by the Freshwater Impoundment and Black Lake. Thus, the RWIS site is located between the GIWW and the freshwater impoundment on a spoil bank created when the GIWW was constructed (a man-made uplands area). Several other lakes, canals, and water bodies such as Bayou Choupique, Black Bayou, and the Sabine Canal exist within the region, but will be unaffected by the proposed action.

3.1.3.2 Water Quality

Only classified water bodies such as the GIWW (subsegment LA031002) are subject to monitoring by the State of LA for water quality. Relative to classified water bodies, only the GIWW is classified for primary and secondary contact recreation and fish and wildlife propagation[2]. Recent data indicates that the quality of the water fully supports all designated uses that were assessed. Unclassified water bodies such as the Freshwater Impoundment will not be discussed with regard to water quality or support of designated use since these are controlled by the landowners and will be addressed with them individually.

The WH facility wastewater and storm water discharges are permitted by the Louisiana Department of Environmental Quality for point source discharges (LA0053031) and for certain qualified storm water discharges via a multi-sector general permit (LAR05M559). A discharge of retained storm water from a secondary containment surrounding several electrical transformers and recirculated GIWW water is authorized by the current permits for the RWIS site with the GIWW as the receiving water. Monitoring required by

each of these permits is performed to assure discharges do not degrade the receiving water bodies.

3.1.4 Noise

Sources of noise on site are those associated with the facility's operations. As the RWIS is an active industrial facility constructed along a major shipping channel, there are man-made sources of noise on-site as well as off-site and natural sources of noise from the surrounding environment. Noise associated with RWIS site operations and activities was measured at the WH facility in September, 2003[3]. Ambient noise on-site at RWIS was measured for personnel performing operator tasks over an 18-minute period during pump operations. Ambient noise measurements resulted in an average short-term exposure limit (STEL) of 80 decibels (dBA) across the area with a peak of 105 dBA. Sirens associated with the start up of pumps at the RWIS last only three seconds, but have resulted in ambient noise measurements of 143 dBA.

Although the noise levels associated with welding activities were not measured at the RWIS site, they were measured at the WH facility for substantially similar welding activities. The time-weighted average noise associated with welding activities was measured to be approximately 79.1 dBA over an 8-hour duration of the activity. However, should the piping be attached by manual bolting, noise greater than ambient noise is not anticipated. Any clearing of land associated with use of the temporary construction easement will hinge on the use of heavy equipment. The EPA has measured the typical noise levels associated with construction and construction equipment. Tables 3-1 and 3-2 summarize those results, which support that ambient noise associated with general construction is comparable to the existing ambient noise levels associated with the industrial corridor along which the RWIS site and proposed action are located.

3.1.5 Permitting Activities

The WH facility is currently permitted for facility operations through an array of state and Federal agencies for a variety of media. Permits include, but are not limited to air emissions, water discharges, water use, injection of oil, and cavern capacity. The RWIS site, however, is permitted by the USACE for construction and maintenance [LMNOD-SP (LTCS) 26] and has a storm water discharge to which LA0053031 could be applicable. A brief description of the permits potentially affected by the proposed action is provided below for completeness. The RWIS site is currently permitted for construction and maintenance by the USACE. This permit also covers operations including maintenance dredging (WW-19-970-0068-5). Only those permits requiring permitting activities will be addressed further in Chapter 4.0. A listing of noteworthy permits for the WH facility and the RWIS site is presented in Table 3-3.

4.0 Environmental Impacts and Wetland Assessment

This Chapter evaluates the environmental impacts of the proposed action and the no action alternative. Discussion of the environmental impacts pertains to potentially affected environmental resources that directly relates to the scope of the proposed action and the no action alternative. All potential impacts, including direct, secondary or indirect, and cumulative impacts are evaluated. Effects include ecological (such as the effects on natural resources and components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health; whether direct, indirect, or cumulative (40 CFR 1508.8). Included in this section is the wetland assessment information required by 10 CFR 1022.

4.1 Direct Impacts

Direct impacts or effects are defined by the CEQ at 40 CFR 1508.8 as those effects "which are caused by the action and occur at the same time and place." Direct impacts may also include those effects "resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial" (40 CFR 1508.8).

4.1.1 Proposed Action

Under the proposed action, the WH RWIS site will be modified relative to size and configuration and upgraded. The proposed action is comprised of an overall modification of the WH RWIS site including expansion of the existing site footprint by approximately 0.002 km^2 (0.51 acres) and several other activities such as upgrades to security, grading, the crane and general capacity of the site, and bank stabilization for a new scraper trap and marine crane. The modification of the WH RWIS site will also be accompanied by acquisition of temporary construction easement near the RWIS, approximately 0.05 km^2 (12 acres).

Once the proposed action is subdivided into two distinct actions, the action to increase the RWIS site footprint and the action to upgrade the RWIS site, it may be further subdivided for accurate assessment of environmental impacts. The action to increase the RWIS site footprint cannot be subdivided and consists of expansion of the site footprint by fee simple acquisition of approximately 0.002 km^2 (0.51 acres) of land consisting of additional perimeter property along the existing fence line [addition of 4.9 m (16 ft) on the east side, addition of 22.3 m (73 ft) on the west side and addition of 3.4 m (11 ft) on the south side] and additional frontage on the GIWW [addition of 2.7 m (9 ft)] is required to achieve the additional site footprint.

The final action associated with implementation of the proposed action is the general upgrade of the RWIS site. This final action can be subdivided into nine distinct activities:

- Acquisition and use of a temporary construction easement,
- Installation of additional perimeter lighting, fencing and adjustment to CCTV,
- Grading of areas acquired for modification to the RWIS site,
- Installation of an additional jib crane at the RWIS to facilitate the handling of RWIS pumps and motors,
- Installation of additional bulkhead and crushed limestone in the westernmost portion of the area to be acquired at the RWIS site,
- Installation of a process water well for construction and equipment washdown,
- Placement of new sheet pile parallel to existing sheet pile with creation and fill of a 2 foot interstitial space in the Gulf Intracoastal Waterway (GIWW),
- Extension of existing process pipes to accommodate the installation of a new scraper pig launcher and
- Placement of new guard posts to protect the modified piping.

All activities associated with implementation of the proposed action have been reviewed relative to the SPR's Environmental Management System (EMS), which is based on ISO 14001. Activities such as those proposed are comparable to activities identified in the EMS. The review of the proposed activities has not identified any new environmental aspects or impacts and does not impact SPR compliance with Executive Order 13148.

Moreover, not all activities associated with the proposed action will result in direct environmental impacts. The activities associated with the action to increase the RWIS site footprint do not result in any direct impacts to the environment as the administrative activities associated with the land acquisition will simply transfer ownership of land already being maintained by the SPR. Administrative activities to acquire adjacent areas already maintained will not result in any environmental impacts.

All other activities associated with the action to upgrade the RWIS site involve processes and activities that utilize heavy equipment, personnel, procedures, and natural resources. It is anticipated that the direct impacts from implementation of the balance of the tasks that comprise the proposed action will result in impacts to wetlands, biological and ecological resources, and water resources. However, these impacts to environmental resources are task-specific and not all tasks will result in impacts to all potentially affected resources. It is anticipated that impacts will result from noise, construction and permitting activities.

4.1.1.1 Wetlands (Assessment)

Two areas of wetlands are affected by the activities included in this document. The first is a small shoreline in the Southeast corner of the temporary construction easement near the RWIS site. This small shoreline is included in the Right-of-Way of a larger pipeline replacement job addressed within the scope of the previous DOE EA-1497 and

will therefore not be further addressed here. The second area is the narrow section of the water bottom of the GIWW that is to be filled due to the placement of the sheet pile as part of the extension of the footprint of the RWIS. Although this action is permanent, the loss of such a small amount, a two foot strip less than 0.00008 km^2 (0.02 acres) of the GIWW, will not permanently or significantly impact water flow, boat traffic or biological productivity. Due to the twelve foot water depth, there is no impacted vegetation in this area, mobile aquatic organisms would return to the area upon completion of construction activities and sessile organisms would re-populate since the contours and substrates will be the same as the original just extended slightly further out. Construction activities will result in negative direct and indirect, short-term impacts. After completion of the construction there would be no significant negative long-term impacts to the wetlands nor on primary and secondary contact recreation and fish and wildlife propagation in the GIWW.

The area directly adjacent to the site is being acquired to allow for expansion of the RWIS. This area does not constitute a functional wetland area with the flood retention and natural resources value attributed to actual, functional wetlands. It is classified as upland habitat and has, since construction of the RWIS site, been maintained by the SPR free of brush and other environmental resources. Thus, the area has lost all value as upland habitat capable of supporting biological and/or ecological resources. Incorporation of this area to the fenced area that comprises the RWIS does not constitute additional impact to the area and will not, therefore, be further assessed.

The potential for impacts to actual, functional wetlands will, however, result from use of the temporary construction easement to support the aforementioned tasks to upgrade the RWIS site. This area is not calculated to be more than 0.05 km^2 (12 acres). This area consists of both upland habitat and actual, functional wetland habitat. Acreage calculations of potential impacts (if any) to these wetlands would be identified during the wetland delineation activity for the final action/alternative selected for this project.

All effects on wetlands resulting from the implementation of the proposed action are expected to be negative, short-term and without any irreversible effects. The proposed action is limited temporally and spatially; therefore, any effects would be limited to the area comprising the temporary construction easement. The potential for any long-term, irreversible intermittent degradation of biological and ecological resources during implementation of the proposed action is extremely low.

In summary, the impacts to wetlands by the proposed project are summarized in the following table. Impacts are categorized as either temporary or permanent and either positive, negative, direct, indirect (secondary), or cumulative as required by 10 CFR 1022.13 (a) (2).

Wetland Impacts - Proposed Action

	Temporary (Short-Term)	Permanent (Long Term)
Positive	None	Yes - Prevent future sheetpile bulkhead collapse
Negative		Yes - Insignificant Fill of GIWW for sheet pile replacement
Direct	Yes - Construction Activities	
Indirect (Secondary)	Yes - Construction Activities	None
Cumulative	None	None

Wetland Impacts - No Action Alternative

	Temporary (Short-Term)	Permanent (Long Term)
Positive	Yes - Avoids Construction Impacts	None
Negative	None	Yes - Future sheetpile bulkhead collapse
Direct	None	
Indirect (Secondary)	None	Negative Impact to SPR Mission
Cumulative	None	None

4.1.1.2 Biological and Ecological Resources

As many of the tasks that comprise the activity to upgrade the RWIS site will be performed on-site (within an active industrial site that presents little if any sporadic functional habitat for biological and ecological resources), impacts associated with activities performed on-site will not be assessed. Additionally, the area directly adjacent to the RWIS that is being acquired to allow for expansion of the RWIS site has also been disturbed since construction of the RWIS and has been maintained by the SPR free of brush and other environmental resources. The area directly adjacent to the RWIS site on the South, West, and East sides is extremely low value (if any), sporadic habitat. Thus, this area also does not constitute functional habitat with the natural resources value attributed to actual, functional upland habitat and has (essentially) lost value as upland habitat capable of supporting biological and/or ecological resources. Incorporation of this area to the fenced area that comprises the RWIS site does not constitute additional impact to the biological and ecological resources of the surrounding area and will not, therefore, be further assessed.

The potential for impacts to biological and ecological resources will, however, result from use of the temporary construction easement to support the aforementioned tasks to upgrade the RWIS site. This area is calculated to be not more than 0.05 km^2 (12 acres) and consists of both upland habitat and wetland habitat. Both support the aforementioned biological and ecological resources. Acreage calculations of potential impacts (if any) to habitat would not exceed the temporary construction easement acquired for implementation of the proposed action. Wildlife would generally be able to

avoid any construction areas and should return to the area soon after construction is complete. No permanent removal of habitat from the ecosystem is anticipated as use of herbicides, defoliants, cutting or burning activities, which could significantly delay revegetation of the habitat, is not expected to be necessary as clearing of only a small portion of the temporary construction easement is anticipated at this time. Revegetation of the of the upland scrub shrub habitat should occur naturally with the rapidity of re-growth contingent on the post-construction ambient water quality conditions, temperatures and time of year.

All effects on ecological and biological resources resulting from the implementation of the proposed action are expected to be short-term and without any irreversible effects within the ecosystem. The proposed action is limited temporally and spatially; therefore, any effects would dissipate through the natural succession process. Additionally, as the proposed action is comprised of multiple tasks that are also limited temporally, spatially, and in scope, the source of impacts for any one task is not anticipated to be constant, quelling the potential for any long-term, irreversible intermittent degradation of biological and ecological resources during implementation of the proposed action.

4.1.1.3 Water Resources

Construction of additional bulkhead on both sides of the RWIS facility in the GIWW would slightly impact the volume of water in the GIWW, as a small portion less than 0.00008 km^2 (0.02 acres) of the area previously available for water retention will be permanently converted to 'shoreline' as part of the RWIS site. Thus, the implementation of the proposed action would result in a very minor decrease of available water resources in the GIWW at the RWIS site area. Additionally, disturbances of bottom sediment would occur, will likely impact benthic species/vegetation, and will temporarily increase turbidity. Turbidity would gradually decrease after construction is completed and settling occurs, spurring natural regrowth of benthic vegetation and the return of benthic species. Such activities, while permanently altering the physical width of the GIWW by approximately 2 feet, are not expected to permanently alter any chemical or biological parameters of the GIWW. Finally, temporary impacts to navigation of the GIWW are anticipated during implementation of the proposed action, but are not anticipated to result in any permanent impacts.

Effects on the physical properties of the GIWW resulting from the implementation of the proposed action are expected to be permanent as the 'shoreline' in front of the GIWW will be lengthened, expanding the footprint of the RWIS site an additional two feet into the GIWW. Short-term, reversible effects to the water quality of the GIWW and the available habitat for benthic species will result from implementation of the proposed action, but a water quality certification will be required during the permitting process and all activities will be performed in accordance with the requirements set forth by LDNR and as required by the water quality certification.

The proposed action is limited temporally and spatially; therefore, any effects to the GIWW would dissipate over distance from the RWIS site. Additionally, as the proposed action is comprised of multiple tasks that are also limited temporally, spatially, and in scope, the source of impacts for any one task is not anticipated to be constant, quelling the potential for any long-term, irreversible intermittent degradation of the water quality of the GIWW during implementation of the proposed action.

4.1.1.4 Noise

In 29 CFR 1910.95 Appendix G, the requirement for a hearing conservation program is applicable if employees are exposed to average noise levels of 85 dB or greater during an 8 hour workday. Typical noise levels for the type of construction activities anticipated to occur during implementation of the proposed action are clearing and finishing, which have ambient noise less than 85 dBA. Construction equipment anticipated to be utilized in the implementation of the proposed action includes a backhoe, a dozer, and a scraper. Thus, the highest noise level anticipated relative to worker exposure is 88 dBA.

As substantially similar activities occur as part of facility operations and maintenance, such activities will not adversely affect facility personnel because the facility operates under a Hearing Conservation Program (HCP) as outlined in the Accident Prevention Manual (Revised 1/9/2004) and contractors are also required to submit a HCP prior to commencing work. The HCP is intended to prevent hearing impairment and to protect employees/contractors from hazardous noise levels. The HCP identifies what constitutes hazardous noise levels and establishes requirements and responsibilities for implementing feasible engineering controls and administrative procedures to prevent and control high noise levels, such as noise exposure monitoring, audiometric testing, protective equipment, training, and recordkeeping. A HCP will be implemented and administered for all areas in which an employee may be exposed to noise level at an 8-hour time-weighted average of 85 decibels or above, measured on the A-scale weighting (dBA) at "SLOW" response.

A survey of sensitive subpopulations such as residences and schools performed resulted in a determination that the RWIS site was an isolated location on the GIWW and that activities would not affect any of these. The nearest facilities are other industrial activities/facilities located near the RWIS site on the shoreline of the GIWW. Thus, an assessment of the noise levels at the “fence line” is not necessary and was not conducted.

All effects of noise resulting from the proposed action would be short-term and variable, confined to the RWIS site and directly adjacent temporary construction easement and without any irreversible effects on the quality of life at the facility. The proposed action is limited temporally and spatially and, therefore the effects of increased noise on the quality of life at the RWIS site and adjacent habitat would cease upon conclusion of the implementation of the proposed action. No impacts from noise are anticipated off-site

as the level of noise at the fence line resulting from the proposed action is estimated not to be damaging to hearing.

4.1.1.5 Permitting

The RWIS site is currently permitted by the USACE for construction and maintenance as required [LMNOD-SP (LTCS) 26]. As the RWIS site is permitted for a particular configuration, modification of this configuration will require permitting activities such that the post-expansion, upgraded configuration of the RWIS is reflected in the USACE permit. Additionally, given that the proposed action consists of tasks requiring the deposition of fill material into the GIWW (a navigable waterway); permitting activities will likely include application to the USACE for a Section 10 permit. Section 10 permits are utilized by the USACE to regulate fill and construction in open water areas. This authority was vested in the USACE by Section 10 of the Rivers and Harbors Act of 1899. Finally, any fill or other activities anticipated to occur in wetland areas would be regulated by Section 404 of the Clean Water Act. Thus, should fill in areas designated by the USACE to be jurisdictional or actual wetlands be necessary, application for these activities would also be made to the USACE. Water discharge permits would remain in force, unaffected by the proposed action.

USACE permitting activities would be required to accommodate the proposed action. Permitting activities are anticipated to occur over a short time period. However, it is anticipated that the results of any modification of the existing permit [LMNOD-SP (LTCS) 26] will either be permanent or long-term as will construction completed in the GIWW under the authority of a Section 10 permit. Impacts to wetlands occurring in accordance with a 404 permit may be long term, but will more likely be short-term impacts to wetlands located within the temporary construction easement resulting from use of the adjacent land to facilitate the upgrade of the RWIS site. A water quality certification and coastal zone consistency determination will also be required as the RWIS site is located within the Coastal Zone of Louisiana.

Before implementation of the proposed action, DOE will request that the USACE amend the existing permit governing the construction and maintenance of the RWIS site. The DOE will also likely present the USACE with a request for issuance of a Section 10 permit relative to the work to be performed in the GIWW as well as a 404 permit for any work to be performed in wetlands. As part of the permitting process, a water quality certification for fill to be placed within the GIWW and a coastal zone consistency determination will be requested from state agencies (LDEQ and LDNR, respectively).

All activities proposed by DOE will be performed in accordance with water, air, and USACE permit requirements. Only the impacts resulting from the modification of permit LMNOD-SP (LTCS) 26 and the issuance of a Section 10 permit are anticipated to be long-term. The effects on environmental resources will likely be irretrievable as once expansion of the RWIS site has occurred, it is anticipated that these resources will be utilized for the life of the RWIS. Impacts to actual functional wetlands will likely be

short-term impacts that result from the implementation of construction-like activities at the RWIS site.

4.1.2 No Action Alternative

Under the no action alternative, the WH facility would continue to be used as it is currently configured. The SPR would not perform actions to expand the site footprint or upgrade the facility.

4.1.2.1 Wetlands

There would be no impacts to actual, functional wetlands as a result of this alternative. The potential for impacts resulting from the implementation of the activity to upgrade the RWIS site would not be present if the activity was not implemented as no use of the proposed temporary construction easement, on which actual, functional wetlands have been identified, would occur. Thus, the area that comprises the temporary construction easement and, consequently, functional wetlands would not be impacted.

4.1.2.2 Biological and Ecological Resources

There would be no impacts to biological and ecological resources as a result of this alternative. The potential for impacts resulting from the implementation of the activity to upgrade the RWIS site would not be present if the activity was not implemented as no use of the proposed temporary construction easement, in which biological and ecological resources have been identified, would occur. Additionally, no noise pollution such that might disturb biological and ecological resources would be generated. Thus, biological and ecological resources would not be impacted.

4.1.2.3 Water Resources

There would be no impacts to water resources as a result of this alternative as the potential for runoff, erosion, or other construction-related impact associated with activities to upgrade the RWIS site generally would not be present. More specifically, the direct impacts associated with the complete removal of water resources from the GIWW associated with:

- Installation of additional bulkhead and crushed limestone in the westernmost portion of the area to be acquired at the RWIS site, and
- Placement of new sheet pile in the Gulf Intracoastal Waterway (GIWW) parallel to existing sheet pile with fill material deposited in the 2 foot interstitial space

would not occur. However, the adjacent water sources would continue to be affected to the extent associated with current facility operations and eventually the GIWW would be negatively impacted by the sloughing of the bank as the existing sheet pile bulkhead deteriorated to the point of collapse.

4.1.2.4 Noise

There would be no change in noise or noise pollution as a result of this alternative. The current sources of noise associated with operations would remain. Noise levels on-site and off-site would continue unchanged.

4.1.2.5 Permitting Activities

There would be no change in permitting for the facility as a result of this alternative. The current permits associated with facility operations would remain in force and unchanged.

4.2 Secondary or Indirect Impacts

Indirect impacts or effects are defined by the CEQ in regulation 40 CFR 1508.8 as those effects "which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable." Indirect impacts may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems. As well, indirect effects include those effects "resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial" (40 CFR 1508.8).

4.2.1 Proposed Action

The potential for secondary impacts associated with the proposed action were evaluated resulting in a focus on the potential for runoff of silt from the construction area. This will be minimized through physical control measures such as silt barriers and temporary levees implemented by the contractor during construction.

4.2.2 No Action Alternative

Under the no action alternative, the WH facility would continue to be used as it is currently configured. The SPR would not perform actions to expand the footprint and the facility would not be upgraded. There would be no change in facility operations as a result of this alternative. The current sources of noise associated with operations would continue unchanged. No indirect effects are anticipated.

4.3 Cumulative Impacts

Cumulative impacts or effects are defined by the CEQ in regulation at 40 CFR 1508.7 as those effects "which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

4.3.1 Proposed Action

There are no anticipated cumulative impacts from this project. All impacts are short term, construction related as described elsewhere in this document.

4.3.2 No Action Alternative

Under the no action alternative, the RWIS site would continue to be used as it is currently configured. The SPR would not perform actions to expand the footprint and the facility would not be upgraded. There would be no change in facility operations as a result of this alternative. The cumulative effects of the current facility operation have already been addressed in previous NEPA documentation.

5.0 Accident Analysis and Mitigation Activities

Documents prepared under NEPA should inform the decision maker and the public about the possibility that reasonably foreseeable accidents associated with proposed actions and alternatives could occur and what their potential adverse consequences could be. Accident analyses are necessary to facilitate informed, reasonable decision-making and appropriate consideration of mitigation measures. Analyses presented in this Chapter were performed in accordance with CEQ regulations (40 CFR 1502.22) and recent DOE guidance.

5.1 Accident Analysis

Candidate hazards for accident analysis include actions involving personal injury, electricity, pressurized systems, biohazards, radiation, hazardous chemicals, combustible materials, toxic gas leaks, and asphyxiants. These types of hazards are potentially included within site-wide accidents, such as initiated by natural phenomena, operational accidents, or transportation accidents. Hazards have the potential to affect the public or workers, depending on the type of accident that may occur.

The proposed action has two possible accident/hazard scenarios to be analyzed:

- Potential for accidents by workers during the upgrade of the RWIS site portion of the proposed action; and
- Potential for a spill during activities

Each potential accident and/or hazard was assessed relative to the most recent data available. Where site-specific data was available for analysis, it was utilized to enhance the accuracy of the accident analysis. Where site-specific data was not available, only comparable data for the most closely analogous accident and/or hazard was utilized.

5.1.1 Worker Accident Analysis for the Proposed Action

The analysis was conducted to determine the potential for accidents by workers associated with construction activities anticipated by the implementation of the proposed action. During the past year, the prime Construction Management Contractor and their subcontractors logged only one OSHA recordable injury. This analysis was conducted using data regarding recordable accidents logged by construction subcontractors of the prime Construction Management Contractor for all jobs for the past year. It is therefore estimated that less than one recordable accident may occur during implementation of the proposed action.

5.1.2 Spill Potential Assessment for Construction Activities

Spill potential exists from construction equipment leakage during operation, fuel storage and fueling activities. Based on a review of spill events from a similar construction job at the WH main site, it is anticipated that this project has the potential to generate a small reportable oil or fuel spill.

5.2 Mitigation Activities

Extensive accident and spill mitigation/response activities will be defined within the construction specification for the project. Implementation will be by the construction contactor with direct oversight by the Construction Management contractor and verification by DOE.

6.0 Conclusions

This EA identified that the proposed action to modify and upgrade the Raw Water Intake Structure (RWIS) site has potential direct, indirect or secondary, but no cumulative impacts associated with its implementation. These impacts are to wetlands, biological and ecological resources, and water resources. The impacts were analyzed and found to be minor in relation to the overall ongoing WH facility activities and do not represent a significant degradation to the environment.

7.0 List of Agencies Notified

The following list are government agencies that were notified and provided an opportunity to comment on any potential effects of the proposed project that should be considered during the preparation of this Environmental Assessment.

- U.S. Army Corps of Engineers, Regulatory Branch, New Orleans, LA
- U.S. Fish and Wildlife Service, Lafayette, LA
- Louisiana Department of Wildlife and Fisheries
- Louisiana Department of Natural Resources, Office of the Secretary
- Louisiana Department of Natural Resources, Office of Coastal Management
- Louisiana Department of Environmental Quality, Office of the Secretary
- Louisiana State Land Office
- U.S. Department of Transportation, U.S. Maritime Administration
- U.S. Department of Homeland Security, U.S. Coast Guard, Eighth District, New Orleans, LA

The following list are individuals and private organizations that were also notified and provided an opportunity to comment on any potential effects of the proposed project that should be considered during the preparation of this Environmental Assessment.

- Hilcorp Energy, LLC
- Lakes of Gum Cove Land, LLC
- Black Lake Lodge, LLC
- Dr. Alan Hinton, Black Lake Land and Oil Company, LLC
- Mr. Arthur Hollins, III as individual
- Mr. Arthur Hollins, III, as President, PBA Properties, Inc.
- Mr. Arthur Hollins, III, as President, Calcasieu Real Estate & Oil Company, Inc.
- Mr. Joe T. Miller, President, F. Miller & Sons, Inc.
- Ms. Juliet Emily Hardtner
- Blake Brothers, LLC
- Tenneco Oil Company
- Mr. Richard M. McGrew, President, Globe-Texas Company

8.0 List of Preparers

Gabriel Gerard Adams, DynMcDermott Petroleum Operations Company, Environmental Compliance Specialist, and

Christina Villavaso Bigelow, previously of DynMcDermott Petroleum Operations Company, Environmental Program Analyst, and

David Folse, DynMcDermott Petroleum Operations Company, Supervisor – ES&H Compliance,

under the direction of:

- William Bozzo, DynMcDermott Petroleum Operations Company, Environmental Department Manager, and
- Kirkland Jones, DynMcDermott Petroleum Operations Company, Environmental, Safety and Health Director

9.0 References

1. 2004, Louisiana Natural Heritage Program, Terrestrial Wildlife Habitat Types of Louisiana as Identified for the Comprehensive Wildlife Conservation Strategy, LA Dept. of Wildlife & Fisheries http://www.wlf.state.la.us/apps/netgear/clientFiles/lawlf/files/1108651843.pdf
2. Louisiana Department of Environmental Quality, Draft 2004 303(d) List, http://www.deq.state.la.us/planning/305b/2004/IR1_04_appA.pdf.
3. DynMcDermott Petroleum Operations Company, September 16, 2003, SPR Exposure Assessment for WH crude oil pumps at the RWIS.
4. Bolt, Beranek, and Newman, Noise from Construction Equipment and Operations, Building Equipment and Home Appliances, 1971
5. Cunniff, Environmental Noise Pollution, 1977
6. 2004, DOE, *Supplement Analysis of Site-Specific and Programmatic Environmental Impact Statements: Operational and Engineering Modifications, Regulatory Review, and Socioeconomic Variation*, http://www.spr.doe.gov.
7. United States Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, correspondence to K. Batiste dated July 26, 2004.
8. http://www.srh.weather.gov/srh/jetstream/global/climate.htm#map.
9. http://www.srh.weather.gov/srh/jetstream/global/climate_max.htm.
10. http://www.srcc.lsu.edu/southernClimate/atlas/; Hackberry, Louisiana
11. DOE/ EA 1497.
12. State of Louisiana Department of Culture, Recreation, and Tourism, Office of Cultural Development, Division of Archeology, correspondence to K. Batiste dated August 2, 2004.
13. 1993, EPA, The Plain English Guide to the Clean Air Act, http://www.epa.gov/oar/oaqps/peg_caa/pegcaain.html.
14. 2005, Email/Verbal communication with the DynMcDermott Waste Management Specialist, Patty Kuntz on April 14, 2005.
15. U.S. Fish and Wildlife Service, correspondence to K. Batiste dated April 6, 2005.
16. U.S. Geological Survey, http://biology.usgs.gov/s+t/SNT/noframe/se130.htm.
17. 1996, Enecotech, Multisite Hydrogeological Investigation, Strategic Petroleum Reserve Sites, Louisiana and Texas
18. Natural Resources Conservation Service, NSSC Soil Survey Laboratory, Soil Characterization Database, http://ssldata.nrcs.usda.gov/query.asp.

Tables

TABLE 3-1

Typical Construction Noise Levels[4]

Construction Phase	Noise Level (dBA, Leq)
Ground Clearing	84
Excavation	89
Foundations	88
Erection	79
Finishing	84

TABLE 3-2

Typical Noise Levels from Construction Equipment[5]

Construction Equipment	Noise Level (dBA, Leq)
Dump Truck	88
Air Compressor	81
Concrete Mixer	85
Scraper	88
Dozer	87
Paver	89
Generator	76
Backhoe	85

Notes:
Leq = daily exposure over an 8 hour time period.
dBA = decibels on the A scale

Table 3-3

Noteworthy Permits for the West Hackberry Storage Facility

PERMIT NUMBER	ISSUING AGENCY	PERMIT TYPE	EFFECTIVE DATE
0560-00019-02	LDEQ	Air	11/24/97
Exemption for 1-98	LDEQ	Air	11/19/98
LA0053031	LDEQ	LPDES	11/01/04
LAR05M559	LDEQ	NPDES	01/24/01
LAG679016	LDEQ	Hydrostatic Test	02/19/03
SDS-9	LDNR	Injection	08/07/79
Letter of Financial Responsibility	LDNR	Injection	01/11/83
971198-9	LDNR	Injection	09/27/83
LMNOD-SP LTCS 26	USACE	Construct and Maintain	02/08/79
LMNOD-SP Black Lake 31	USACE	Construct and Maintain	10/26/82
LMNOD-SP Black Lake 43	USACE	Construct and Maintain	07/26/84
LMNOD-SP Gulf of Mexico 2574	USACE	Construct and Maintain	08/11/80
LMNOD-SP LTCS 40	USACE	Construct and Maintain	05/25/88
LMNOD-SP Cameron Wetlands 162	USACE	Construct and Maintain	03/09/78
SWGCO-RP-12342	USACE	Construct and Maintain	03/28/78
LMNOD-SP Cameron Wetlands 152	USACE	Construct and Maintain	03/16/78
LMNOD-SP Cameron Wetlands 276	USACE	Construct and Maintain	02/11/80
WO-20-020-3607	USACE	Construct and Maintain	10/23/02
WO-20-020-1136	USACE	Construct and Maintain	01/25/02 02/19/02
WW-20-030-3748	USACE	Construct and Maintain	10/22/03
WW-19-970-0068-5	USACE	Maintenance Dredging	04/20/04
None (WH Wetlands)	USACE	USACE Determination	11/20/01

Notes:
LDEQ – Louisiana Department of Environmental Quality
LPDES - Louisiana Pollutant Discharge Elimination System
NPDES - National Pollutant Discharge Elimination System
LDNR – Louisiana Department of Natural Resources
COE – U.S. Army Corps of Engineers

Figures

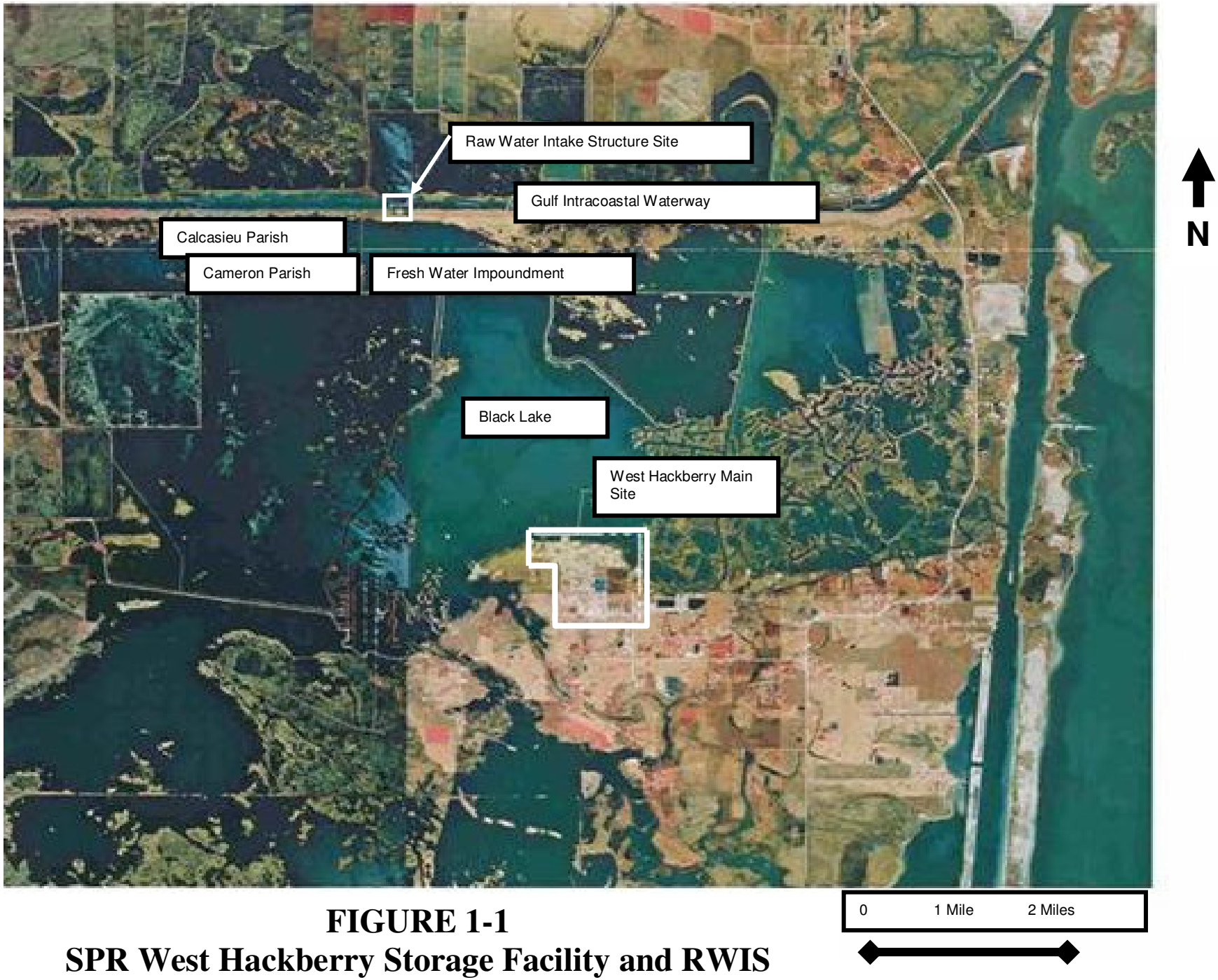


FIGURE 1-1
SPR West Hackberry Storage Facility and RWIS Location Map

FIGURE 1-2
RWIS Vicinity Map

0 1000 Feet

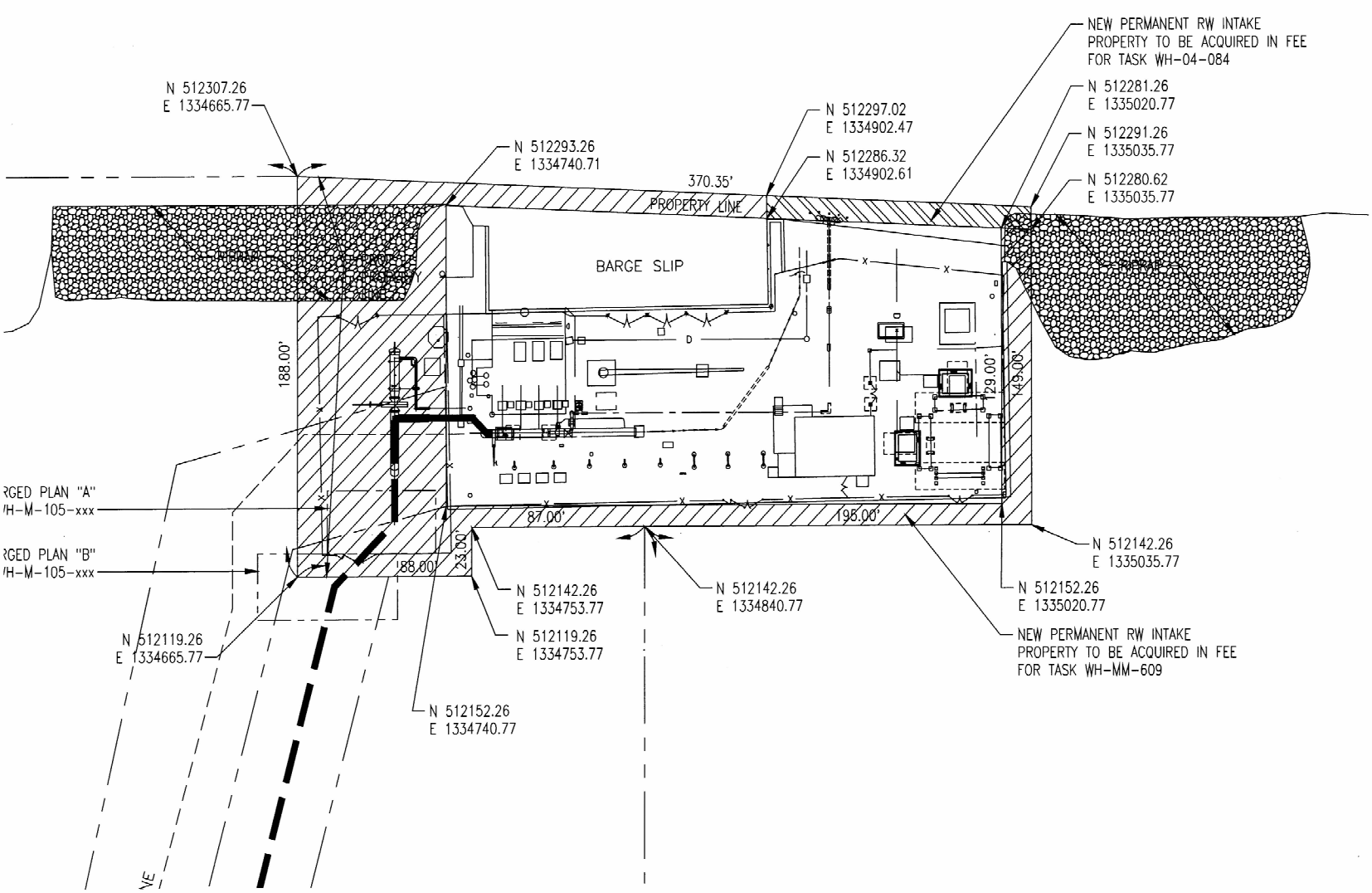
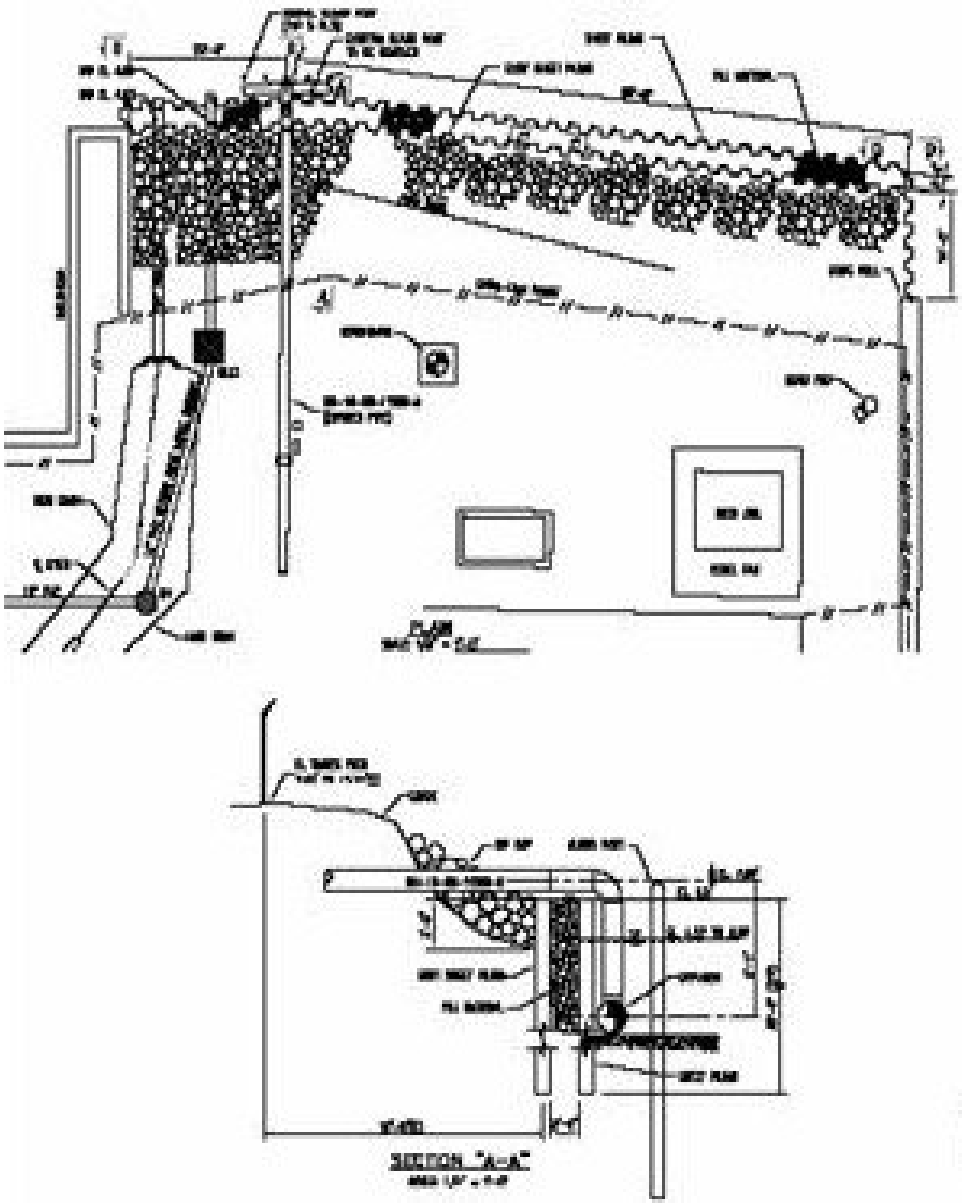


FIGURE 2-1
RWIS Site Footprint Map



SECTION "B-B"

SECTION "D-D"

SECTION "D-D"

PRELIMINARY
FOR EDP USE ONLY

FIGURE 2-2
Detail of Sheetpile Placement

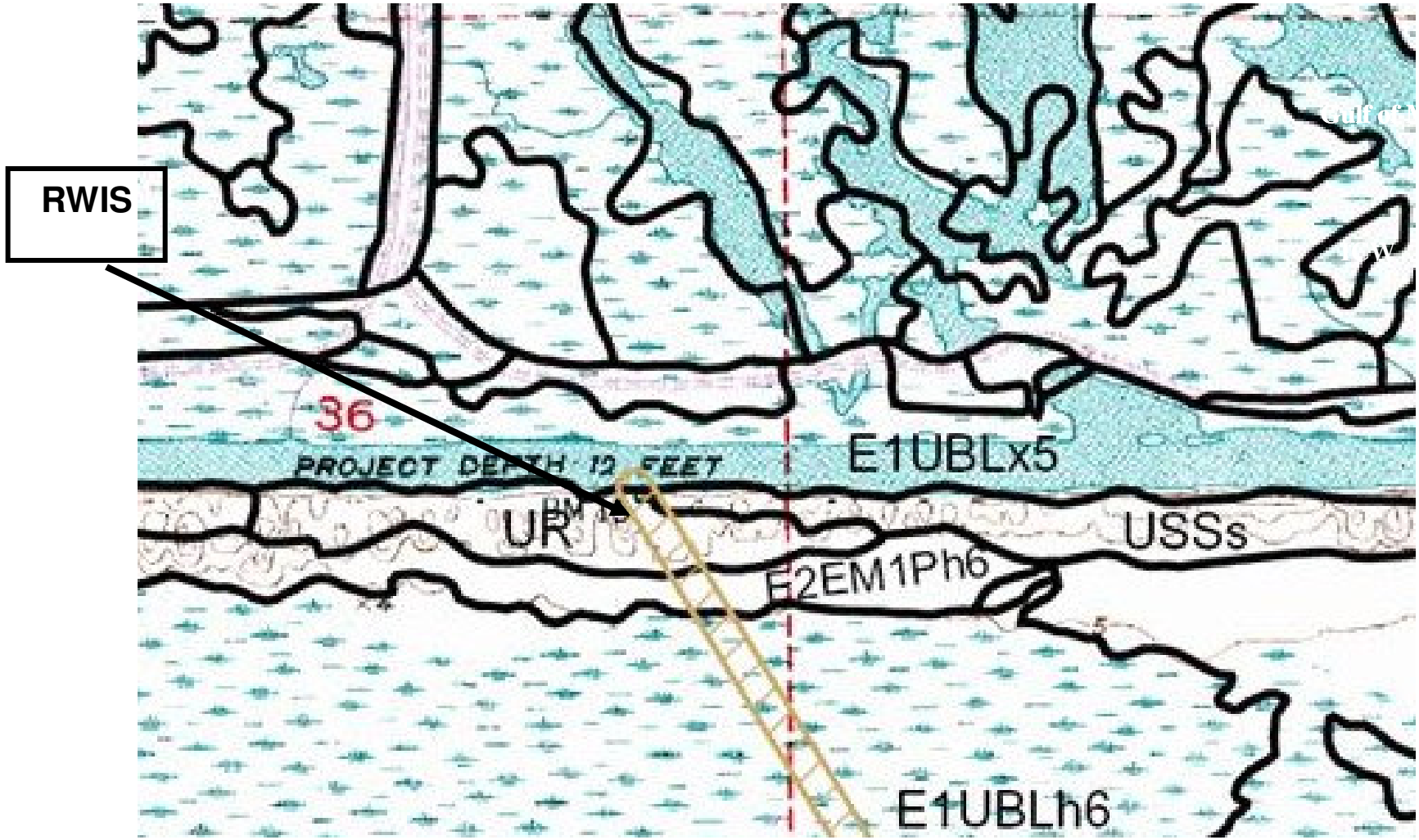


FIGURE 3-1
Location of Proposed Action Relative to Identified Wetlands
(See Section 3.1.1 for Explanations of Designations)

Appendix A

Notification Letter, Responses, and Response to Comments

Appendix A:

Notification Letter, Responses, and Response to Comments

Public involvement occurred as stated in Section 1.5. The SPR provided written notification of its intention to prepare this National Environmental Policy Act analysis to the parties listed in Chapter 7.0 on March 11, 2005. The notification included project information and provided the opportunity for parties to make scoping comments on this Environmental Assessment. Two comments were received from parties who were notified of the proposed action via the notification letter. All responses regarding the preparation of the EA were logged into a comment response report, and where appropriate, individual responses were provided to those providing comments. These initial comment letters and/or communications have been provided for review in this appendix.

Electronic access to the draft EA for review and comments was made available on July 8, 2005. The time period for review was 17 days. Comments received by the close of the comment period will be considered in preparation of the final EA. All responses regarding the draft EA will also be logged into a comment response report to be provided in this appendix, along with any individual responses provided to those providing comments. Comment letters and/or communications regarding the draft EA have also been provided for review in this appendix.

DATE, 2005

AGENCY

Subject: Raw Water Intake Structure Site Modifications, Strategic Petroleum Reserve's West Hackberry Facility, Cameron Parish, Louisiana

Dear Sir:

Pursuant to the National Environmental Policy Act, the United States Department of Energy (DOE) intends to prepare an Environmental Assessment for proposed modifications to the Raw Water Intake Structure Site (the Site) at the West Hackberry (WH) facility in Hackberry, Cameron Parish, Louisiana. The potential environmental impacts of this proposed project will be evaluated in conformance with DOE and Council on Environmental Quality (CEQ) regulations and provisions. A description of the WH facility, the Site, and the proposed project is provided below.

The WH facility was developed by the DOE in 1977 to store petroleum that may be presidentially ordered into the marketplace to alleviate the effects of a supply disruption to the United States. The WH facility has operated continuously since 1979. The Site, located on the Gulf Intracoastal Waterway (GIWW), supports the operation of the WH facility by providing an extraction point for raw water, which is utilized to displace the stored oil should it be presidentially ordered into the marketplace. Essentially, the Site allows for continued operations at the main facility. However, to allow the operation of the WH facility to continue optimally, the Site, which has also been in operation since 1979, needs to be modified, upgraded, and expanded.

Under the proposed action, the DOE would perform activities to modify and expand the Site as well as several activities that will upgrade the Site. Activities to be performed under the proposed action that will modify and expand the Site include installation of additional perimeter lighting and fencing, adjustment to the Closed Circuit Television security system, acquisition of additional land around the perimeter of the existing Site, placement of new sheet pile parallel to existing sheet pile with creation of a 2-foot cavity in the GIWW in which fill material will be deposited, extension of existing pipes to accommodate the expanded footprint, and placement of new guard posts to protect the modified piping. Activities to be performed under the proposed action that will upgrade the Site include grading and drainage of newly acquired areas including installation of catch basins and underground piping, installation of an additional jib crane at the Site, installation of

additional bulkhead and crushed limestone in the westernmost portion of the newly acquired area, and installation of a process water well for construction and equipment washdown.

As stated previously, implementation of the proposed action to modify the Site will require the acquisition of land. Associated land acquisition will consist of both fee simple acquisition of land as required for the proposed activities and temporary acquisition of land as required for construction purposes. A construction staging area will be located on a temporary construction easement contiguous to the existing Site. Approximately 0.6 acres of land adjacent to the Site on all sides will be acquired fee simple to enable expansion of the footprint of the Site in support of the proposed action. Involved lands occur within the 100-year floodplain and some wetlands associated with the GIWW. In accordance with 10 Code of Federal Regulations part 1022, DOE will prepare a floodplain and wetlands assessment and statement of findings and will perform this proposed action in a manner so as to avoid or minimize potential harm to or within the affected floodplain or wetlands. The floodplain and wetlands assessment will be included in the EA prepared for the proposed action.

Your agency has been identified as part of an outreach effort under NEPA. In this regard, DOE respectfully requests your comments regarding any potential effects of this proposed project that should be considered during the preparation of the Environmental Assessment for this action. Please direct any written comments or requests for additional information to Ms. Katherine Batiste, NEPA Compliance Officer, U. S. Department of Energy, Strategic Petroleum Reserve, Project Management Office, Environment, Safety, Health and Quality Division, 900 Commerce Road East, New Orleans, LA 70123 or (504) 734-4400. We request that comments be received by April 5, 2005. Thank you in advance for your expeditious attention to this project.

Sincerely,

William C. Gibson, Jr.
Project Manager
Strategic Petroleum Reserve

cc: K. Batiste

4-7-05 - 830

Department of Energy
Strategic Petroleum Reserve Project Management Office
900 Commerce Road East
New Orleans, Louisiana 70123

March 11, 2005

map
Rec. Ap. 1.

05-ESH&Q-010

Ms. Angela Culpepper
U.S. Department of the Interior
Fish and Wildlife Service
646 Cajundome Blvd., Suite 400
Lafayette, LA 70506

Dear Ms. Culpepper:

RAW WATER INTAKE STRUCTURE SITE MODIFICATIONS, STRATEGIC PETROLEUM RESERVE'S WEST HACKBERRY FACILITY, CAMERON PARISH, LOUISIANA

Pursuant to the National Environmental Policy Act (NEPA), the U.S. Department of Energy (DOE) intends to prepare an Environmental Assessment for proposed modifications to the Raw Water Intake Structure Site (the Site) at the West Hackberry facility in Hackberry, Cameron Parish, Louisiana. The potential environmental impacts of this proposed project will be evaluated in conformance with DOE and Council on Environmental Quality (CEQ) regulations and provisions. A description of the West Hackberry facility, the Site, and the proposed project is provided below.

The West Hackberry facility was developed by the DOE in 1977 to store petroleum that may be presidentially ordered into the marketplace to alleviate the effects of a supply disruption to the United States. The West Hackberry facility has operated continuously since 1979. The Site, located on the Gulf Intracoastal Waterway (GIWW), supports the operation of the West Hackberry facility by providing an extraction point for raw water, which is utilized to displace the stored oil should it be presidentially ordered into the marketplace. Essentially, the Site allows for continued operations at the main facility. However, to allow the operation of the West Hackberry facility to continue optimally, the Site, which has also been in operation since 1979, needs to be modified, upgraded, and expanded.

This project has been reviewed for effects to Federal trust resources under our jurisdiction and currently protected by the Endangered Species Act of 1973 (Act). The project, as proposed,
( ) Will have no effect on those resources
(✓) Is not likely to adversely affect those resources.
This finding fulfills the requirements under Section 7(a)(2) of the Act.

Debbie A Fuller April 6, 2005
Acting Supervisor — Date
Louisiana Field Office
U.S. Fish and Wildlife Service

SITE MAY CONTAIN WETLANDS. Contact the U.S. Army Corps of Engineers for a jurisdictional determination.

District: New Orleans, LA

Telephone No. 504-862-1288

Under the proposed action, the DOE would perform activities to modify and expand the Site as well as several activities that will upgrade the Site. Activities to be performed under the proposed action that will modify and expand the Site include installation of additional perimeter lighting and fencing, adjustment to the Closed Circuit Television security system, acquisition of additional land around the perimeter of the existing Site, placement of new sheet pile parallel to existing sheet pile with creation of a 2-foot cavity in the GIWW in which fill material will be deposited, extension of existing pipes to accommodate the expanded footprint, and placement of new guard posts to protect the modified piping. Activities to be performed under the proposed action that will upgrade the Site include grading and drainage of newly acquired areas including installation of catch basins and underground piping, installation of an additional jib crane at the Site, installation of additional bulkhead and crushed limestone in the westernmost portion of the newly acquired area, and installation of a process water well for construction and equipment washdown.

As stated previously, implementation of the proposed action to modify the Site will require the acquisition of land. Associated land acquisition will consist of both fee simple acquisition of land as required for the proposed activities and temporary acquisition of land as required for construction purposes. A construction staging area will be located on a temporary construction easement contiguous to the existing Site. Approximately 0.6 acres of land adjacent to the Site on all sides will be acquired fee simple to enable expansion of the footprint of the Site in support of the proposed action. Involved lands occur within the 100-year floodplain and some wetlands associated with the GIWW. In accordance with 10 Code of Federal Regulation, Part 1022, DOE will prepare a floodplain and wetlands assessment and statement of findings and will perform this proposed action in a manner so as to avoid or minimize potential harm to or within the affected floodplain or wetlands. The floodplain and wetlands assessment will be included in the Environmental Assessment prepared for the proposed action.

Your agency has been identified as part of an outreach effort under NEPA. In this regard, DOE respectfully requests your comments regarding any potential effects of this proposed project that should be considered during the preparation of the Environmental Assessment for this action. Please direct any written comments or requests for additional information to Ms. Kathy Batiste, NEPA Compliance Officer, Environmental, Safety, Health and Quality Division, U.S. Department of Energy, Strategic Petroleum Reserve .

Project Management Office, 900 Commerce Road East, New Orleans, LA 70123 or (504) 734-4400. We request that comments be received by April 5, 2005. Thank you in advance for your expeditious attention to this project.

Sincerely,

William C. Gibson, Jr.
Project Manager

FE-4441(KBatiste)
ext 4400

State of Louisiana

KATHLEEN BABINEAUX BLANCO
GOVERNOR

SCOTT A. ANGELLE
SECRETARY

DEPARTMENT OF NATURAL RESOURCES
OFFICE OF COASTAL RESTORATION AND MANAGEMENT

March 29, 2005

Ms. Kathy Batiste
NEPA Compliance Officer
Environmental, Safety, Health and Quality Division
U. S. Department of Energy
Strategic Petroleum Reserve
Project Management Office
900 Commerce Road East,
New Orleans, LA 70123

RE: **C20050134,** Coastal Zone Consistency
Strategic Petroleum Reserve
U.S. Department of Energy
Direct Federal Action
Raw water intake structure site modifications, Strategic Petroleum Reserve (SPR) West Hackberry Facility **FE-4441**
Cameron Parish, Louisiana

Dear Ms. Batiste:

Secretary Scott Angelle of the Louisiana Department of Natural Resources has received the March 11, 2005, letter from Mr. William C. Gibson of your office, requesting comments regarding the preparation of an Environmental Assessment for proposed modifications to the West Hackberry SPR site. Secretary Angelle has asked me to provide this response.

Preliminary review of the proposed activity indicates that these modifications may have an effect on the Louisiana Coastal Zone, and therefore are subject to review for consistency with the Louisiana Coastal Resources Program (LCRP) pursuant to the Coastal Zone Management Act (CZMA) of 1972, as amended.

The National Oceanic and Atmospheric Administration (NOAA) regulations at 15 CFR Part 930.34, require that the federal agency must submit to the state program a Consistency Determination and supporting information at the earliest possible time in the planning of the activity. This Determination is

COASTAL MANAGEMENT DIVISION • P. O. BOX 44487 • BATON ROUGE, LA 70804-4487
PHONE (225) 342-7591 • FAX (225) 342-9439 • WEB http://www.dnr.state.la.us
AN EQUAL OPPORTUNITY EMPLOYER

made by the federal agency after reviewing the proposed activity in light of the applicable requirements of the state program.

In general, the Consistency Determination should include a complete description of the project and plats including plan views and cross sections, as well as a location map showing the surrounding roads, water bodies, etc.. A discussion of the amount and type of wetlands impacted (including submerged aquatic vegetation), and the mitigation for those impacts, should also be included. Although there are no requirements as to the format of the Consistency Determination, it may be convenient to use the joint DNR/Corps of Engineers permit application form, found on our web site at http://dnr.louisiana.gov/crm/coastmgt/cup/cup.asp .

Consultation with Coastal Management Division as early as possible in the planning process will help to avoid delays and revisions. If you have any questions concerning this matter, please contact Brian Marcks of the Consistency Section at (225)342-7939 or 1-800-267-4019.

Sincerely,

David W. Frugé
Administrator

DWF/jdh

cc: Ronald Ventola, COE-NOD
John Stacy, CMD FI
Fred Dunham, LDWF
Tina Horn, Cameron Parish

Appendix B

Resources Eliminated From Further Consideration and Analysis

Resources Eliminated From Further Consideration and Analysis

A discussion of resource categories that are ***not*** affected by the proposed action is presented in this appendix. An explanation of the absence of effects and the results of any preliminary determinations are provided as appropriate below.

Environmental Justice

An environmental justice (EJ) analysis was conducted for the West Hackberry (WH) storage facility (facility) during preparation of the *Supplement Analysis of Site-Specific and Programmatic Environmental Impact Statements: Operational and Engineering Modifications, Regulatory Review, and Socioeconomic Variation (Supplement Analysis)*[6]. The results of a screening analysis conducted by ICF Consulting (CEQ, 1997) indicated that the population adjacent to the WH facility was less than 4% minority and approximately 9% impoverished. Thus, this facility did not exhibit characteristics that indicated a potential for classification of adjacent communities as EJ communities, removing the need for further evaluation.

Clean Air Act Conformity

The requirement to prepare a conformity determination is not applicable to this proposed action as the proposed action is located within an attainment area. The requirement to determine the conformity of non-transportation related Federal actions to state or Federal implementation plans (Clean Air Act) is applicable only when the proposed action would occur in a non-attainment or maintenance area <u>and</u> the total of the direct and indirect emissions would exceed rates set forth at 40 Code of Federal Regulations 93.153(b)(1) or (2).

Protection of Children

An analysis to determine whether the WH facility was compliant with the spirit of Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, was conducted during preparation of the *Supplement Analysis*. WH did not have a greater percentage of population that was comprised of children than the state in which it was located. Thus, this determination negates the need for additional analysis.

Essential Fish Habitat

Section 305 (b)(2) of the amended Magnuson-Stevens Act requires Federal Agencies to consult with the Secretary of Commerce for a proposed action if the agency determines that their action may adversely affect essential fish habitat (EFH) for federally-managed species of fish. A recent consultation with the National Oceanic and Atmospheric Administration[7] resulted in a determination of only minor effects on EFH for a much larger project also occurring within the same project area. As this proposed action will not result significantly affect water quality in nearby water bodies and will result in

surface disruptions only within the GIWW (a commercial shipping channel), it has been determined that EFH will not be affected by the proposed action and, therefore, the consultation requirement is inapplicable.

Prime Farmland

As the proposed action occurs entirely within the spoil bank created during construction of the GIWW, conversion of prime farmland for non-agricultural use is not an issue due to the poor nutrient content of the soil. As such, the requirement to identify and account for adverse effects of a proposed action on the preservation of farmland and consider alternative actions to lessen any adverse effects is inapplicable.

Fish and Wildlife Coordination Act

As the proposed action will involve the modification of a 2-foot portion of the GIWW as it fronts the RWIS site, the requirement for Federal agencies to consult with the United States (U.S.) Fish and Wildlife Service [16 U.S. Code 662(a)] may be applicable. However, the purpose of consultation is to prevent the loss of or damage to wildlife resources. Given that the proposed action is occurring adjacent to a commercially developed area and the only affected water body is the GIWW, a commercial conduit, it is unlikely that wildlife resources will be lost or damaged. Thus, this requirement is inapplicable.

General Regional and Facility Environment

The general regional and facility environment includes the climate, land use and aesthetic resources at the RWIS site and adjacent area. As the proposed action will be performed on-site at the RWIS, a previously developed/disturbed area, and within undisturbed land surfaces other than as associated with typical facility operations, temporary effects on land use may result, but are unlikely given the current use of the land to be affected by implementation of the proposed action. Effects on climate are not anticipated. A brief discussion of these resources is provided below for completeness only.

Existing Regional and Facility Climate

The regional climate near the WH facility is a moist subtropical mid-latitude climate, a subtropical climate with warm, humid summers dominated by thunderstorms and mild winters[8]. The climate near the facility is a Humid Subtropical climate most noted for little or no dry season and year round rainfall distribution[9]. In Lake Charles, the closest urban area to the WH facility, the mean temperature and mean normal rainfall are 68.6 degrees Fahrenheit and 57.19 inches, respectively with approximately a 73% chance of sunshine per year[10]. The average annual predominant wind direction and speed is 18 tens of degrees (primarily North) at 8.2 miles per hour. As the proposed action is comprised of small scale actions to upgrade the RWIS site operations and are limited

temporally and spatially, it is unlikely that the existing climate will be affected by implementation of the proposed action.

Land Use and Aesthetics

The WH RWIS site is located on the spoil bank formed during the creation of the GIWW. The area is in an unincorporated area of Calcasieu parish that has no zoning designation or land use requirements[11]. East and west of the facility, there are no developed areas adjacent to the RWIS site. South of the facility, there are spoil areas which dissipate into marsh areas and, ultimately, the Freshwater Impoundment. The continued industrial use of the WH RWIS site and temporary use of the undeveloped land in close proximity is compatible with the prevailing land use to date. As well, given that the area is not a recreational area and has been subject to commercial use and development, adjacent aesthetic resources will not be adversely affected by implementation of the proposed action. Thus, the aesthetics of the RWIS site and adjacent area will generally remain unchanged.

Archeological, Cultural, and Historical Resources

There are no known archeological, cultural and historical resources that will be affected by implementation of the proposed action. The State of Louisiana Office of Cultural Development, Division of Archeology was recently consulted regarding this project area and agreed with DOE's assessment of no impact on known or unknown cultural resources[12]. Thus, no further assessment is necessary.

Socioeconomics and Demographics

As the proposed action will be conducted in conjunction with other tasks that are temporary in nature and may even be conducted by the current management and operating contractor's workforce, socioeconomics in the vicinity of the WH facility will not be affected by implementation of the proposed action. No permanent change to the WH facility workforce is anticipated to result from this action; therefore, further analysis of socioeconomics and/or demographics is not necessary as no impacts to these are foreseeable. Additional information on the demographics and socioeconomics in the vicinity of the WH facility is available in the recent *Supplement Analysis*.

Air Quality

Air quality (in general) is a measure of the amount and distribution of potentially harmful pollutants in ambient air. Congress passed the *Clean Air Act* (CAA) in 1970 to mandate that the U.S. Environmental Protection Agency (EPA) regulate those potentially harmful pollutants through the National Ambient Air Quality Standards (NAAQS) for pollutants of concern known as criteria pollutants. The EPA has identified six criteria pollutants: carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen oxides (NO_x), ozone (O_3), lead (Pb), and particulate matter less than 10 microns (PM_{10})[13]. The EPA designates all areas of the U.S. having air quality better than the NAAQS as "attainment areas," areas

of the U.S. having air quality worse than the NAAQS as “non-attainment areas,” or areas where there is a lack of data from which the EPA can form a basis for attainment status as “unclassified.” [9] EPA has denoted EPA Air Quality Region 106, which encompasses Calcasieu and Cameron Parishes, an attainment area for all criteria pollutants, meaning that the concentration of ozone is below the Federal maximum allowed limits (NAAQS)[7].

As the proposed action would result only in a temporary increase in air emissions resulting from the use of heavy equipment, it would not affect the status of the WH facility as a minor source. Additionally, this temporary increase will be mitigated by the use of engines that comply with the EPA’s low emissions standards for non-road diesel engines. Further evaluation of air quality is not necessary and the clean air act conformity requirements are not applicable as the action occurs in an attainment area.

Waste Management

The Resource Conservation and Recovery Act (RCRA) regulates hazardous wastes from the instant the waste is generated until the waste is ultimately destroyed. This "cradle to grave" authority includes hazardous waste generators, transporters, and disposal facilities. Hazardous wastes generated on the SPR are managed in strict compliance with state and EPA hazardous waste requirements[1]. The SPR LA facilities fall under the jurisdiction of the Louisiana Department of Environmental Quality (LDEQ), which has received delegation for enforcement of RCRA.

The WH facility is currently operating as a conditionally-exempt small quantity generator (CESQG) of hazardous waste. CESQGs may not generate more than 100 kilograms (kg) [200 pounds (lbs)] of hazardous wastes per month. Also, a CESQG must not store more than 1,000 kg (2,200 lbs) of hazardous waste on-site. The hazardous wastes generated at the WH facility consist of laboratory wastes only.

As all wastes at the WH facility are characterized and disposed in accordance with Federal and state waste regulations, the appropriate waste management strategy is based on the results of waste stream characterization[1]. Exploration and production wastes generated by the SPR are associated with underground hydrocarbon storage activities. Other non-hazardous wastes, such as sanitary waste, are managed in accordance with state solid waste programs[14]. It is important to note that hazardous wastes are not treated, stored, or disposed at the SPR facilities, that SPR facilities are not RCRA-permitted treatment, storage, and disposal facilities, and that SPR facilities are not identified on the National Priority Listing. It is also important to note that it is not anticipated that hazardous waste would be generated during the proposed action, although construction wastes will likely be generated during the project. These construction wastes will be minimized as appropriate and disposed of in accordance with state and federal regulations.

Threatened and Endangered Species

In 1973, Congress enacted Endangered Species Act to foster the preservation of species whose presence was declining. There are currently five federally-listed endangered and/or threatened species and four state-listed endangered and/or threatened species known to be present in Calcasieu Parish, LA. A complete list of threatened and/or endangered species including common and scientific names has been provided in Appendix D.

As habitat for threatened and/or endangered species may exist within the RWIS site boundaries and the boundaries of the proposed temporary construction easement, the U.S. Fish and Wildlife Service has been consulted under the Endangered Species Act regarding potential impacts on these species. In correspondence dated April 6, 2005, the U.S. Fish and Wildlife Service indicated that a review of the project resulted in a finding that the project would likely not have an adverse impact on Federal trust resources such as endangered/threatened species[15]. Thus, adverse impacts on threatened and/or endangered species are not anticipated to directly affect threatened and/or endangered species.

Parks and Scenic Rivers

There are no national wildlife refuges, national parks, state parks or Wild or Scenic Rivers located within 3 miles of the WH facility or the RWIS site.

Terrestrial Resources

The terrestrial resources include the geology, hydrogeology and soil at the RWIS site and in the adjacent area. As the proposed actions to be performed on-site are occurring in previously developed and disturbed areas and will occur without major disturbance to the land surface off-site (with the exception of traversing said areas and some clearing of brush, tree brush, and small trees), these resources will not be affected by implementation of the proposed action. A brief discussion of these resources is provided below for completeness only.

Geology and Hydrogeology

Generally, the regional surficial geology in the vicinity of the RWIS site is mapped as coastal plain[16]. Holocene age eolian deposits, which primarily consist of clayey silts/sands and silty sands, are present on the surface of the dome[17]. These are underlain by the Pleistocene Prairie formation[18]. Depositional environments include alluvial, deltaic, and shallow marine. The Chicot aquifer is the only two hydrologic unit providing potable water to the WH area. The Chicot aquifer consists of the Williana and Bentley Formations (lower unit) and the Montgomery and Prairie Formations (Upper unit). The freshwater/saline interface is known to be approximately 700 ft bgs[11].

As the proposed action will be occurring at the RWIS site, the spoil bank on which the RWIS is built resulted from the construction of the GIWW. It rises above the surrounding marsh elevation and is characterized as a ruderal habitat due to limiting environmental conditions on the spoil bank including salinity levels in the soil and poor nutrient levels in the spoil bank.

Soils

Soil series represent soils with similar color, texture, structure, and mineral/chemical composition within their profile (soil layers). Soil series located at the RWIS site include the following: Malbis, Caddo, Malbis Midslope Glenmora Footslope, Crowley, Brimstone, and Beauregard[18]. Soils in the project area include silt loams to fine sandy loams. Soils range from moderately well drained to poorly drained.

Floodplains

In accordance with of 10 CFR 1022, proposed actions that occur within a floodplain must be assessed relative to the requirement for a preparation of a floodplains assessment. However, the spoil bank on which the RWIS was constructed and on which the proposed action will take place has been determined to be located outside the 500-year floodplain. Thus, the requirements for floodplains assessment are inapplicable. No further assessment is necessary.

Pollution Prevention

Pollution Prevention activities include detailed work controls to be defined in the specific job construction contracts and construction contractor oversight measures to prevent spills of oil or fuels from operation and fueling of construction equipment, to contain runoff from construction activities, and to properly handle waste material generated during construction. Some example of such activities are secondary containment around portable fuel tanks, use of absorbent pads to catch drips when fueling equipment, sediment fences to reduce silt from rainwater runoff, pre-job approval of materials to be utilized to choose the least toxic chemicals and fluids possible and a job specific waste management plan characterizing all potential job wastes and their proper disposal options once generated.

Appendix C

Wildlife in the Vicinity of the RWIS, Calcasieu Parish, Louisiana

Wildlife observed or expected to be found in the area include the following aquatic and terrestrial species.

Aquatic Fauna

The shallow estuarine waters of Black Lake provide nursery and feeding habitat for commercially important fishes and shellfishes such as: Gulf menhaden (*Brevoortia patronus*), Southern flounder (*Paralichthys lethostigma*), Spotted seatrout (*Cynoscion nebulosus*), Sand seatrout (*Cynoscion arenarius*), Spot (*Leiostomus xanthurus*), Atlantic croaker (*Micropogonias undulatus*), Red drum (*Sciaenops ocellatus*), Black drum (*Pogonias cromis*), Brown shrimp (*Farfantepenaeus aztecus*), White shrimp (*Litopenaeus setiferus*) and Blue crabs (*Callinectes sapidus*). Black Lake is considered a production and harvest area for Brown shrimp.

Mammals

Numerous species of mammals inhabit the region surrounding the WH facility. Terrestrial habitat is limited on the spoil bank, but common mammals in this area include: Muskrat (*Ondatra zibethicus*), Nutria (*Myocastor coypus*), Mink (*Mustela vison*), Bobcat *(Lynx rufus)*, Raccoon (*Procyon lotor*), Swamp rabbit (*Sylvilagus aquaticus*), Cottontail rabbit (*Sylvilagus floridanus*), Skunk (*Mephitis mephitis)*, Opossum (*Didelphis virginiana*), Nine-banded armadillo (*Dasypus novemcinctus*), Cotton rat (*Sigmodon hispidus*), House mice (*Mus musculus*), House rat (*Rattus rattus*), and the Norway rat (*Rattus norvegicus*). White-tail deer (*Odocoileu*s *virginianus*) prefer the bottomland forest, but are found in marshes where they seek higher ground during periods of high water. The coyote (*Canis latrans*) is the main mammalian predator in the Gulf Coast Prairie region feeding primarily on rodents.

Amphibians and Reptiles

The typical reptiles and amphibians found in the vicinity of the RWIS site include: water snakes (*Natrix* spp.), various turtle species (*Graptemys* spp., *Malaclemys* spp., *Pseudemys* spp. and *Terrapene* spp.), the Western cottonmouth (*Agkistrodon piscivorus leucostoma*), and several species of toads and frogs (*Bufo* spp., *Hyla* spp. And *Rana* spp.). The American Alligator (*Alligator mississippienis*) is also abundant in this coastal habitat.

Birds

The marshlands of the Gulf Coast Prairie provide an array of habitats suitable for use by a wide diversity of resident and migratory species of birds. Common winter residents of the marsh and lake shores include: Common snipe (*Gallinago gallinago*), Marsh hawk (*Circus cyaneus*), Gull-billed tern (*Sterna nilotica*), Tree swallow (*Tachycineta bicolor*), Short-billed marsh wren (*Cistothorus platensis*), and the Greater and Lesser Yellowlegs (*Tringa* spp.). The coastal marshes are especially important as a wintering area for many species of waterfowl. All common migratory ducks are winter residents. Several

species of geese also utilize the area as wintering grounds.Common permanent residents of the marsh include numerous wading birds such as:Willet (*Catoptrophorus semipalmatus*), Great blue heron (*Ardea herodias*), Louisiana heron *(Egretta tricolor)*, Black-crowned heron (*Nycticorax nycticorax*), Yellow-crowned night heron (*Nycticorax violaceus*), Great egret (*Casmerodius albus*), Snowy egret (*Egretta thula*), Least bittern (*Ixobrychus exilis*) and American bittern (*Botaurus lentiginosus*). Other permanent residents of the marsh include passerine species such as the Red-winged blackbird (*Agelaius phoeniceus*), Short-billed marsh wren and Sea-side sparrow (*Ammodramus maritimus*).

Colonial wading birds and seabirds known to inhabit the region around Black Lake include: Olivaceous cormorant (*Phalacrocorax olivaceus*), Louisiana heron (*Egretta tricolor*), Little blue heron (*Egretta caerulea*), Cattle egret (*Bubulcus ibis*), Snowy egret, Great egret, Great blue heron and Roseate spoonbill (*Ajaia ajaja*). The 1990 census of wading bird and seabird colonies in Louisiana (Martin and Lester, 1990) identified one nesting site for the above-referenced wading bird species northeast of Black Lake, just south of the Calcasieu/Cameron Parish line. The census noted that the last observation of activity at this site was in 1976. Subsequent survey observations in 1978, 1983, and 1990 reported no nesting activity at this location. The lack of nesting activity may be due to the construction of a freshwater impoundment in the vicinity that could have contributed to the disruption of the nesting site.

Appendix D

Threatened and Endangered Species in Calcasieu Parish

PARISH: Calcasieu[18]

Scientific Name	Common Name	State Rank	Global Rank	Fed Status	State Status
Agalinis filicaulis	Purple False-foxglove	S1	G3, G4		
Aimophilia aestivalis	Bachman's Sparrow	S3	G3		
Ajaia ajaja	Roseate Spoonbill	S3	G5		
Amsonia ludiviciana	Louisiana Blue Star	S3	G3		
Asclepias hirtella	Green Milkweed	S1	G5		
Bottomland hardwood forest	Bottomland Hardwood Forest	S4	GNR		
Brachycercus flavus	Yellow Brachycercus Mayfly	S1	G4		
Brackish marsh	Brackish Marsh	S3, S4	GNR		
Canis rufus	Red Wolf	SX	G1	LE, XN	
Caracara cheriway	Crested Caracara	S1	G5	PS:LT	
Carex meadii	Mead's Sedge	S2	G4, G5		
Chaetopappa asteroides	Chaetopappa	S1	G5		
Coastal prairie	Coastal Prairie	S1	G2Q		
Cooperia drummondii	Evening Rainlily	S1, S2	G5		
Cycleptus elongatus	Blue Sucker	S2, S3	G3, G4		
Fallicambarus dissitus	Pine Hills Crawfish	S2	G4		
Fallicambarus macneesei	Old Prairie Crawfish	S2	G3		
Grus canadensis	Sandhill crane	S1N	G5	PS	
Haliaeetus leucocephalus	Bald Eagle	S2N, S3B	G4	PS: LT, PDL	Endangered
Lampsilis satura	Sandbook Pocketbook	S2	G2		
Lobelia flaccidifolia		S2?	G5		
Ludwigia microcarpa	Small-fruited Water-willow	S1	G5		
Ludwigia sphaerocarpa	Grapefruit Primrosewilow	S1	G5		
Monarda lindheimeri	Linfheimer's Bee-balm	S1	G4		
Nymphaea elegans	Blue Water Lily	S2, S4	G4?		
Orconectes blacki	Calcasieu Painted Crawfish	S2	G2		
Physostegia longisepala	Long-sepaled False Dragon-head	S2, S3	G2, G3		
Picoides borealis	Red-cockaded Woodpecker	S2	G3	LE	Endangered
Polygala chapmanii		S1	G3, G5		
Polygala crenata		S2	G4?		
Polyodon spathula	Paddlefish	S3	G4		Prohibited
Reithrodontomys humulis	Eastern Harvest Mouse	S3, S4	G5		
Rhynchospora divergens	Spreading Beakrush	S1	G4		
Rhynchospora miliacea	Millet Beakrush	S2	G5		
Rhynchospora nitens	Short-beaked Baldsedge	S2, S3	G4?		
Rhynchospora perplexa		S2?	G5		
Rhynchospora tracyi	Beakrush	SH	G4		
Saccharum brevibarbe	Short-beard Plumegrass	SH	G3, G5		
Salix humulis var. tristis	Dwarf Gray Willow	S2	G5, T4, T5		
Samolus ebracteatus	Brookweed	S1	G4, G5		
Scleria verticillata	Low Nutrush	S1	G5		
Scutellaria cardiophylla	Heart-leaved Skullcap	S2	G4?		
Spilogale putorius	Eastern Spotted Skunk	S1	G5		
Sporobolus silveanus	Silveus Dropseed	S2, S3	G4		
Strophitus subvexus	Southern Creekmussel	S1	G3		
Terrapene ornata	Ornate Box Turtle	S1	G5		Restricted Harvest

Scientific Name	Common Name	State Rank	Global Rank	Fed Status	State Status
Waterbird nesting colony	Waterbird nesting colony	SNR	GNR		
Western acidic longleaf pine savannah	Western acidic longleaf pine savannah	S1, S2	GNR		
Western saline longleaf pine savannah	Western saline longleaf pine savannah	S1	G1		
Xyris fimbriata	Fringed Yellow-eyed Grass	S2?	G5		

Notes:

LE – Listed Endangered
LT – Listed Threatened
PS – Partial Status
XN – Nonessential experimental population
G1 – Critically imperiled globally because of extreme rarity or because of some factors making it especially vulnerable to extinction (5 or fewer known extant populations).
G2 - Critically imperiled globally because of extreme rarity or because of some factors making it especially vulnerable to extinction throughout its range (6 to 20 known extant populations).
G3 – Either very rare or local throughout its range or found locally (even abundantly at some of its locations) in a restricted range or because of other factors making it vulnerable to extinction throughout its range (21 to 100 known extant populations).
G4 – apparently globally secure, though it may be quite rare in parts of its range, especially at the periphery (100 to 1000 known extant populations).
G5 - demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery (100 to 1000 known extant populations).
G? – Global rank uncertain
GQ – uncertain taxonomic status
S1 – Critically imperiled in Louisiana because of extreme rarity or because of some factors making it especially vulnerable to extirpation (5 or fewer known extant populations).
S2 - Imperiled in Louisiana because of rarity or because of some factors making it especially vulnerable to extirpation (6 to 20 known extant populations).
S3 – Rare and local throughout the state or found locally (even abundantly at some of its locations) in a restricted region of the state or because of other factors making it vulnerable to extirpation (21 to 100 known extant populations).
S4 – apparently secure in Louisiana with many occurrences (100 to 1000 known extant populations).
S5 - demonstrably secure in Louisiana (100 to 1000 known extant populations).
SH – Of historical occurrence in Louisiana, but no recent records verified within the last 20 years; formerly part of the established biota, possibly still persisting
SX – believed to be extirpated from Louisiana
SR – reported from Louisiana, but without conclusive evidence to accept or reject the report.
S? – State rank uncertain
Prohibited – Possession of these species is prohibited. No legal harvest or possession.
Restricted Harvest – There are restrictions regarding the taking and possession of those species.

Endnotes

[1] 2004, Louisiana Natural Heritage Program, Terrestrial Wildlife Habitat Types of Louisiana as Identified for the Comprehensive Wildlife Conservation Strategy, LA Dept. of Wildlife & Fisheries http://www.wlf.state.la.us/apps/netgear/clientFiles/lawlf/files/1108651843.pdf

[2] Louisiana Department of Environmental Quality, Draft 2004 303(d) List, http://www.deq.state.la.us/planning/305b/2004/IR1_04_appA.pdf.

[3] DynMcDermott Petroleum Operations Company, September 16, 2003, SPR Exposure Assessment for WH crude oil pumps at the RWIS.

[4] Bolt, Beranek, and Newman, Noise from Construction Equipment and Operations, Building Equipment and Home Appliances, 1971

[5] Cunniff, Environmental Noise Pollution, 1977

[6] 2004, DOE, *Supplement Analysis of Site-Specific and Programmatic Environmental Impact Statements: Operational and Engineering Modifications, Regulatory Review, and Socioeconomic Variation*, http://www.spr.doe.gov.

[7] United States Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, correspondence to K. Batiste dated July 26, 2004.

[8] http://www.srh.weather.gov/srh/jetstream/global/climate.htm#map.

[9] http://www.srh.weather.gov/srh/jetstream/global/climate_max.htm.

[10] http://www.srcc.lsu.edu/southernClimate/atlas/; Hackberry, Louisiana

[11] DOE/ EA 1497.

[12] State of Louisiana Department of Culture, Recreation, and Tourism, Office of Cultural Development, Division of Archeology, correspondence to K. Batiste dated August 2, 2004.

[13] 1993, EPA, The Plain English Guide to the Clean Air Act, http://www.epa.gov/oar/oaqps/peg_caa/pegcaain.html.

[14] 2005, Email/Verbal communication with the DynMcDermott Waste Management Specialist, Patty Kuntz on April 14, 2005.

[15] U.S. Fish and Wildlife Service, correspondence to K. Batiste dated April 6, 2005.

[16] U.S. Geological Survey, http://biology.usgs.gov/s+t/SNT/noframe/se130.htm.

[17] 1996, Enecotech, Multisite Hydrogeological Investigation, Strategic Petroleum Reserve Sites, Louisiana and Texas

[18] Natural Resources Conservation Service, NSSC Soil Survey Laboratory, Soil Characterization Database, http://ssldata.nrcs.usda.gov/query.asp.