Hackberry Storage Project

FINAL ENVIRONMENTAL IMPACT STATEMENT

LA Storage, LLC

Docket No. CP21-44-000

Abstract:
The staff of the Federal Energy Regulatory Commission (Commission) prepared a final environmental impact statement for the Hackberry Storage Project proposed by LA Storage, LLC (LA Storage) in Cameron and Calcasieu Parishes, Louisiana. LA Storage proposes to convert three existing salt dome caverns and develop one new salt dome cavern for natural gas storage service. The project would also involve construction of the Pelican Compressor Station, a new 21,400-horsepower compressor station; up to six freshwater supply wells; a brine disposal system, including 6.2 miles of 16-inch-diameter pipeline to transport brine from the caverns to four new saltwater disposal wells; 4.9 miles of 42-inch-diameter bi-directional pipeline (the Cameron Interstate Pipeline Lateral); and 11.1 miles of 42-inch-diameter bi-directional pipeline (the Hackberry Pipeline). Construction and operation of the project would provide high-deliverability salt dome natural gas storage, capable of providing 20.03 billion cubic feet of working gas storage capacity and 1.5 billion cubic feet per day of gas deliverability and injectability. With implementation of LA Storage’s impact avoidance, minimization, and mitigation measures, as well as adherence to Commission staff’s recommendations, Commission staff conclude that project effects would be reduced to less than-significant levels, except for climate change impacts that are not characterized as significant or insignificant.

Contact: Office of External Affairs, (866) 208-FERC
Estimate of Staff's Time Spent in the Preparation of this EIS: $33,845.04. There were no cooperating agencies, direct contracts, or travel costs.

Federal Energy Regulatory Commission
Office of Energy Projects
888 First Street, NE, Washington, DC 20426
The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared a final environmental impact statement (EIS) for the Hackberry Storage Project (Project), proposed by LA Storage, LLC (LA Storage) in the above-referenced docket. LA Storage requests authorization to construct and operate natural gas storage and transmission facilities in Louisiana. The Project is designed to provide 20.03 billion cubic feet of working gas storage capacity and 1.5 billion cubic feet per day (Bcf/d) of gas deliverability and injectability, and interconnecting with the Cameron Interstate Pipeline (CIP) facilities operated by Cameron Interstate Pipeline, LLC and the Port Arthur Pipeline Louisiana Connector (PAPLC) facilities to be operated by Port Arthur Pipeline, LLC.

The final EIS assesses the potential environmental effects of the construction and operation of the Project in accordance with the requirements of the National Environmental Policy Act. FERC staff concludes that approval of the proposed Project, with the mitigation measures recommended in the EIS, would result in some adverse environmental impacts; however, with the exception of climate change impacts, those impacts would not be significant. The EIS does not characterize the Project’s greenhouse gas emissions as significant or insignificant because the Commission is conducting a generic proceeding to determine whether and how the Commission will conduct climate change significance determinations going forward.¹

The final EIS addresses the potential environmental effects of the construction and operation of the following Project facilities: the Project would involve the conversion of three existing salt dome caverns to natural gas storage service and the development of one new salt dome cavern for additional natural gas storage service, all within a permanent natural gas storage facility on a 160-acre tract of land owned by LA Storage in Cameron Parish, Louisiana.

In addition to the storage caverns, LA Storage would construct and operate on-site compression facilities (Pelican Compressor Station) and up to six solution mining water supply wells at the storage facility on LA Storage’s property. LA Storage would also construct and operate the following natural gas facilities in Cameron and Calcasieu Parishes, Louisiana: the Hackberry Pipeline, consisting of approximately 11.1 miles of 42-inch-diameter natural gas pipeline connecting the certificated PAPLC pipeline (CP18-7) to the natural gas storage caverns; the CIP Lateral, an approximately 4.9-mile-long, 42-inch-diameter natural gas pipeline extending from the existing CIP to the planned natural gas storage caverns; metering and regulating at the CIP and PAPLC interconnects; and an approximately 6.2-mile-long, 16-inch-diameter brine disposal pipeline that would transport brine from the caverns to four saltwater disposal wells located on two new pads north of the facility.

The Commission mailed a copy of the Notice of Availability of the Final Environmental Impact Statement for the Proposed Hackberry Storage Project to federal, state, and local government representatives and agencies; local libraries; newspapers; elected officials; Native American Tribes; and other interested parties. The final EIS is only available in electronic format. It may be viewed and downloaded from the FERC’s website (www.ferc.gov), on the natural gas environmental documents page (https://www.ferc.gov/industries-data/natural-gas/environment/environmental-documents). In addition, the final EIS may be accessed by using the eLibrary link on the FERC’s website. Click on the eLibrary link (https://elibrary.ferc.gov/eLibrary/search) select “General Search” and enter the docket number in the “Docket Number” field (i.e. CP21-44-000). Be sure you have selected an appropriate date range. For assistance, please contact FERC Online Support at FercOnlineSupport@ferc.gov or toll free at (866) 208-3676, or for TTY, contact (202) 502-8659.

Additional information about the Project is available from the Commission’s Office of External Affairs, at (866) 208-FERC, or on the FERC website (www.ferc.gov) using the eLibrary link. The eLibrary link also provides access to the texts of all formal documents issued by the Commission, such as orders, notices, and rulemakings.

In addition, the Commission offers a free service called eSubscription that allows you to keep track of all formal issuances and submittals in specific dockets. This can reduce the amount of time you spend researching proceedings by automatically providing you with notification of these filings, document summaries, and direct links to the documents. Go to https://www.ferc.gov/ferc-online/overview to register for eSubscription.
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ACRONYMS AND ABBREVIATIONS

APE         area of potential effect
ATWS        additional temporary workspaces
AQCR        Air Quality Control Region
BGEPA       Bald and Golden Eagle Protection Act
Bcf         billion cubic feet
Bcf/d       billion cubic feet per day
BUDM        beneficial use of dredged materials
CAAA        Clean Air Act
Certificate Certificate of Public Convenience and Necessity
CEQ         Council on Environmental Quality
C.F.R.      Code of Federal Regulations
CIP         Cameron Interstate Pipeline
CO          carbon monoxide
CO₂         carbon dioxide
CO₂e        carbon dioxide equivalent
Commission  Federal Energy Regulatory Commission
CWA         Clean Water Act
CZMA        Coastal Zone Management Act
dBA         decibels on the A-weighted scale
DOE         U.S. Department of Energy
DOT         U.S. Department of Transportation
Driftwood   Driftwood LNG, LLC
E2EM        estuarine intertidal emergent wetland
EFH         essential fish habitat
EI          environmental inspector
EIS         environmental impact statement
Entergy     Entergy Corporation
EO          Executive Order
EPA         U.S. Environmental Protection Agency
ESA         Endangered Species Act of 1973
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Definition</th>
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<tbody>
<tr>
<td>°F</td>
<td>degrees Fahrenheit</td>
</tr>
<tr>
<td>fbg</td>
<td>feet below grade</td>
</tr>
<tr>
<td>FEMA</td>
<td>Federal Emergency Management Agency</td>
</tr>
<tr>
<td>FERC</td>
<td>Federal Energy Regulatory Commission</td>
</tr>
<tr>
<td>FWS</td>
<td>U.S. Fish and Wildlife Service</td>
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<tr>
<td>g</td>
<td>gravity</td>
</tr>
<tr>
<td>GHG</td>
<td>greenhouse gas</td>
</tr>
<tr>
<td>GIWW</td>
<td>Gulf Intracoastal Waterway</td>
</tr>
<tr>
<td>gpm</td>
<td>gallons per minute</td>
</tr>
<tr>
<td>GWP</td>
<td>global warming potential</td>
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<tr>
<td>HAP</td>
<td>hazardous air pollutant</td>
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<tr>
<td>HCS</td>
<td>Hackberry Carbon Sequestration Project</td>
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<tr>
<td>HDD</td>
<td>horizontal directional drill</td>
</tr>
<tr>
<td>hp</td>
<td>horsepower</td>
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<tr>
<td>HUC</td>
<td>hydrologic unit code</td>
</tr>
<tr>
<td>IPCC</td>
<td>Intergovernmental Panel on Climate Change</td>
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<td>LA Storage</td>
<td>LA Storage, LLC</td>
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<td>LDEQ</td>
<td>Louisiana Department of Environmental Quality</td>
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<tr>
<td>L&lt;sub&gt;dn&lt;/sub&gt;</td>
<td>day-night sound level</td>
</tr>
<tr>
<td>LDNR</td>
<td>Louisiana Department of Natural Resources</td>
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<tr>
<td>LDWF</td>
<td>Louisiana Department of Wildlife and Fisheries</td>
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<tr>
<td>L&lt;sub&gt;eq&lt;/sub&gt;</td>
<td>24-hour equivalent sound level</td>
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<tr>
<td>LNG</td>
<td>liquefied natural gas</td>
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<tr>
<td>MBTA</td>
<td>Migratory Bird Treaty Act</td>
</tr>
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<td>MP</td>
<td>milepost</td>
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<tr>
<td>MSA</td>
<td>Magnuson-Stevens Fishery Conservation and Management Act</td>
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<tr>
<td>MTPA</td>
<td>million (metric) tonnes per annum</td>
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<tr>
<td>N&lt;sub&gt;2&lt;/sub&gt;O</td>
<td>nitrous oxide</td>
</tr>
<tr>
<td>NO&lt;sub&gt;2&lt;/sub&gt;</td>
<td>nitrogen dioxide</td>
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<td>NAAQS</td>
<td>National Ambient Air Quality Standards</td>
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<td>National Environmental Policy Act</td>
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<td>NGA</td>
<td>Natural Gas Act</td>
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<td>NMFS</td>
<td>National Marine Fisheries Services</td>
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<tr>
<td>Acronym</td>
<td>Full Form</td>
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<td>NNSR</td>
<td>Nonattainment New Source Review</td>
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<td>Notice of Application</td>
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<td>NOAA</td>
<td>National Oceanic and Atmospheric Administration</td>
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<td>NSA</td>
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<td>NSPS</td>
<td>New Source Performance Standards</td>
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<tr>
<td>O3</td>
<td>ozone</td>
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<tr>
<td>OCM</td>
<td>LDNR Office of Coastal Management</td>
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<tr>
<td>OEP</td>
<td>Office of Energy Projects</td>
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<tr>
<td>OPP</td>
<td>FERC’s Office of Public Participation</td>
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<tr>
<td>PAPL</td>
<td>Port Arthur Pipeline, LLC</td>
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<td>PAPLC</td>
<td>Port Arthur Pipeline Louisiana Connector</td>
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<tr>
<td>PEM</td>
<td>palustrine emergent wetland</td>
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<tr>
<td>PF</td>
<td>pre-filing environmental review process</td>
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<tr>
<td>PFO</td>
<td>palustrine forested wetland</td>
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<tr>
<td>PGA</td>
<td>peak ground acceleration</td>
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<tr>
<td>PHMSA</td>
<td>Pipeline and Hazardous Materials Safety Administration</td>
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<td>Plan</td>
<td>FERC’s Upland Erosion Control, Revegetation, and Maintenance Plan</td>
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<tr>
<td>PM10</td>
<td>particulate matter less than or equal to 10 microns</td>
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<tr>
<td>PSD</td>
<td>Prevention of Significant Deterioration</td>
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<tr>
<td>PSS</td>
<td>palustrine scrub-shrub wetland</td>
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<tr>
<td>Sabin Center</td>
<td>Sabin Center for Climate Change Law</td>
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</table>
SCC  Social Cost of Carbon
Secretary  Secretary of the Commission
SHPO  State Historic Preservation Office
SO\textsubscript{2}  sulfur dioxide
SONRIS  Strategic Online Natural Resources Information System
SPR  Strategic Petroleum Reserve
SWD  saltwater disposal
tpy  tons per year
ug/m\textsuperscript{3}  micrograms per cubic meter
USC  U.S. Code
USACE  U.S. Army Corps of Engineers
USGCRP  U.S. Global Change Research Program
USGS  U.S. Geological Survey
VOC  volatile organic compound
WRP  Wetlands Reserve Program
EXECUTIVE SUMMARY

The staff of the Federal Energy Regulatory Commission (FERC or Commission) prepared this final Environmental Impact Statement (EIS) to assess the environmental impacts associated with construction and operation of facilities proposed by LA Storage, LLC (LA Storage). The EIS was prepared in accordance with the requirements of the National Environmental Policy Act of 1969 (NEPA) under Title 40 of the Code of Federal Regulations (40 C.F.R. Parts 1500-1508), and the Commission’s implementing regulations at 18 C.F.R. Part 380.

On January 29, 2021, LA Storage filed an application with the Commission in Docket No. CP21-44-0001 for authorization under section 7(c) of the Natural Gas Act (NGA)2 to construct and operate the Hackberry Storage Project (Project). Under section 7(c) of the NGA, the Commission determines whether interstate natural gas transportation facilities are in the public convenience and necessity and, if so, grants a Certificate of Public Convenience and Necessity (Certificate) to construct and operate them. The Commission bases its decisions on economic issues, including need, and environmental impacts.

LA Storage proposes to modify existing industrial facilities and construct new facilities in order to operate a new natural gas storage facility (Gas Storage Facility) on 89.5 acres that it owns in Cameron Parish, Louisiana. Within the Gas Storage Facility, LA Storage would convert three existing salt dome caverns (Pelican Wells 001 through 003)3 and develop one new salt dome cavern (Pelican Well 004) for natural gas storage service. The Gas Storage Facility would also include:

- the Pelican Compressor Station, a new 21,400-horsepower (hp) compressor station;
- a total of about 2,000 feet of 36-inch-diameter underground piping connecting the storage caverns and the Pelican Compressor Station;
- up to six freshwater supply wells and piping;
- a leaching facility (part of the brine disposal system, see below); and
- other appurtenant facilities.

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1 Prior to the filing of LA Storage’s application, the Hackberry Storage Project was under pre-filing environmental review by the FERC staff in Docket No. PF20-5-000.
2 Title 15 USC § 717(b)(c).
3 By convention, each salt dome cavern is referred to by the name of the permitted well used to develop it.
Additionally, the Project would include construction of the following new facilities in Cameron and Calcasieu Parishes, Louisiana:

- the Cameron Interstate Pipeline Lateral, 4.9 miles of 42-inch-diameter bi-directional pipeline connecting the Project to the existing Cameron Interstate Pipeline (CIP);
- the Hackberry Pipeline, 11.1 miles of 42-inch-diameter bi-directional pipeline connecting the Project to the certificated Port Arthur Pipeline Louisiana Connector (PAPLC) (FERC Docket No. CP18-7-000);
- metering and regulating facilities at the interconnects with the CIP and PAPLC;
- four saltwater disposal (SWD) wells and 6.2 miles of 16-inch-diameter pipeline to transport brine from the caverns to the SWD wells; and
- other related auxiliary facilities and appurtenances.

LA Storage states that the purpose of the Project is to construct and operate a high-deliverability salt dome natural gas storage facility in Cameron Parish, Louisiana, capable of providing 20.03 billion cubic feet of working gas storage capacity and 1.5 billion cubic feet per day of gas deliverability and injectability, and interconnecting with the CIP facilities and the certificated PAPLC facilities.

We prepared this EIS to inform FERC decision makers, the public, and permitting agencies about the potential environmental impacts of the proposed Project and its alternatives and recommend mitigation measures that would reduce adverse impacts to the extent practicable. We prepared our analysis based on information provided by LA Storage and further developed from data requests; scoping; literature research; and contacts with or comments from federal, state, and local agencies, Native American Tribes, and individual members of the public. FERC is the lead federal agency responsible for authorizing interstate natural gas transmission facilities under the NGA and the lead federal agency for preparation of this EIS in accordance with NEPA (40 C.F.R. 1501) and the Energy Policy Act of 2005.

**Public Involvement**

On July 15, 2020, FERC began its pre-filing review of the Project under Docket No. PF20-5-000. On October 20, 2020, the Commission issued a *Notice of Scoping Period Requesting Comments on Environmental Issues for the Planned Hackberry Storage Project*, which opened a 30-day formal scoping period. Comments were requested from the public on specific concerns about the Project or environmental issues.

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4 “We,” “us,” and “our” refer to the environmental staff of the Office of Energy Projects.
that should be considered during the preparation of the environmental document. The pre-filing process ended on January 29, 2021, when LA Storage filed its application with the FERC.

On August 27, 2021, the FERC issued a Notice of Intent to Prepare an Environmental Impact Statement for the Proposed Hackberry Storage Project, Request for Comments on Environmental Issues, and Schedule for Environmental Review (NOI). The NOI was published in the Federal Register on September 2, 2021 (86 FR 49,321) and sent to 273 parties on our environmental mailing list, which included federal, state, and local government representatives and agencies; local libraries; newspapers; elected officials; Native American Tribes; and other interested parties. Consistent with Council on Environmental Quality regulations, issuance of the NOI opened a 30-day formal scoping period that ended September 26, 2021. From the time we accepted LA Storage’s request to start the pre-filing process on July 15, 2020 up until September 27, 2021, we received 28 comment letters on the record.

On December 17, 2021, the Commission issued a Notice of Availability of the Draft Environmental Impact Statement for the Proposed Hackberry Storage Project (Notice of Availability). This notice, which was published in the Federal Register, established a closing date of February 7, 2022 for receiving comments on the draft EIS. In response to the draft EIS, we received comments from the U.S. Environmental Protection Agency, the U.S. Department of the Interior, the National Marine Fisheries Service, three Cameron Parish organizations/politicians, seven companies and non-governmental organizations, and two individuals. LA Storage also filed comments on the draft EIS. All substantive comments received are addressed in the relevant resource sections of the EIS and in appendix F.

Environmental Impacts and Mitigation

In section 3.0 of this EIS, we evaluate the potential environmental impacts of construction and operation of the Project on geology, soils, water resources, wetlands, fisheries, wildlife, vegetation, land use, recreation, visual impacts, socioeconomics, environmental justice, cultural resources, air quality, climate change, noise, reliability and safety, and alternatives. Where necessary, we recommend additional mitigation measures to minimize or avoid these impacts. Sections 5.0 contains our impact conclusions and a compilation of our recommended mitigation measures.

Constructing the Project would require the use of about 484.5 acres of land, of which 103.1 acres would be required for aboveground facility operation and about 163.6 acres would be required for permanent pipeline right-of-way and permanent access roads. LA Storage would conduct the majority of construction activities between 7:00 A.M. and 7:00 P.M., Monday through Saturday. Drilling of the cavern wells and SWD wells would occur 24 hours per day, 7 days per week. The mining water supply well drilling would occur between 7:00 A.M. and 10:00 P.M. Monday through Saturday.
During construction and restoration of the Project, LA Storage would implement
the measures contained in its Project-specific Environmental Plan, which incorporates the
FERC’s *Upland Erosion Control, Revegetation, and Maintenance Plan* and *Wetland and
Waterbody Construction and Mitigation Procedures* with modifications. The
Environmental Plan also includes dust control measures; spill prevention, containment,
and notification measures; LA Storage’s Unanticipated Environmental Media Discovery
Plan; Unanticipated Discovery Plan for cultural resources; and Horizontal Directional
Drilling Contingency Plan.

**Geology**

The Project is in an area with historically low seismic risk and minimal seismic
activity. The presence of growth faults was identified as an issue of concern; however,
the rate of movement of growth faults near the Project is relatively low and the
composition of sediments and rocks that underlie the regional fault system are likely
unable to generate the energy required to produce significant seismic events. Therefore,
we conclude that the Project would not be significantly impacted by seismic hazards.

Impacts from hurricanes, storm surge, sea level rise, and coastal
erosion/subsidence in the context of climate change were also identified as concerns.
Subsidence rates in the Project vicinity are considered to be low. LA Storage would
elevate the compressor building and major electrical equipment to provide added flood
protection and operational reliability. Storage facilities would be designed to allow for
some potential subsidence, and LA Storage would complete periodic monitoring for
subsidence at the Gas Storage Facility during operation using ground elevation surveys.
LA Storage would also design the Gas Storage Facility to be operated safely from either
the on-site control room or remotely from an off-site location. LA Storage would also
implement buoyancy control measures for the pipelines. Based on LA Storage’s
proposed measures to mitigate and minimize impacts, we conclude that Project
construction and operation would not be significantly affected by hurricanes, storm surge,
sea level rise, and/or coastal erosion/subsidence.

LA Storage would utilize the horizontal directional drill (HDD) method to install
pipelines at three locations. LA Storage has also committed to conducting geotechnical
investigations at each of the proposed HDD crossing locations and to file the results for
FERC staff review no later than the time LA Storage files its Implementation Plan. To
further refine drill feasibility and risk of inadvertent returns of drilling fluid to the ground
surface, we recommend that, with its Implementation Plan, LA Storage file
feasibility/hydrofracture assessments for each proposed HDD that incorporate the results
of site-specific geotechnical investigation.
Soils

No Project area soils were classified as having a shallow depth to bedrock (bedrock within 60 inches of the ground surface) or as being highly erodible by wind or water. The Project overlies a total of 107.7 acres of soils with low revegetation potential and 18.2 acres of compaction prone soils. The Project would disturb approximately 194.1 acres classified as prime farmland, none of which are currently in agricultural use.

The Project would permanently convert 73.9 acres of prime farmland to industrial use. This impact is negligible when compared to the total acreage of prime farmland in Cameron Parish (105,996 acres) and Calcasieu Parish (479,407 acres). Soils underlying permanent aboveground facility foundations would also be permanently affected by compaction; however, these effects would be localized and minor. LA Storage would implement compaction minimization and mitigation; erosion control; spill prevention and cleanup; and revegetation measures in accordance with its Environmental Plan. Therefore, and because LA Storage would return disturbed areas to conditions that are similar to those before construction, maintain them in an herbaceous state, or otherwise permanently stabilize Project areas with gravel or pavement, we conclude that Project impacts on soils would not be significant.

Groundwater

Six water wells were identified within 150 feet of the Project area. Two of these wells are classified as active, including an LA Storage “test hole” and an irrigation well within the LY-CAL-01 contractor and pipe storage yard. The remaining four wells have been plugged and abandoned. Wells would be marked in the field with orange safety fencing or protective bollard posts for avoidance during construction, and the irrigation well would be sampled for quality and yield, with the owner’s permission, before and after construction. The SWD well pads, contractor and pipe storage yard LY-CAL-01, and a portion of the brine disposal pipeline are within wellhead protection areas associated with a pair of wells servicing Cameron Parish Waterworks District Number 10.

The Project would overlie the U.S. Environmental Protection Agency-designated sole source Chicot aquifer. In the Project area, the Chicot aquifer is subdivided into three water-bearing units, the “200-foot,” “500-foot,” and “700-foot” sands, which are separated by low-permeability clay. The 500-foot sand is the most heavily used aquifer in the region and supplies municipal drinking water for the Town of Hackberry. LA Storage would install up to six water supply wells at the Gas Storage Facility; three would be completed in the 500-foot sand and three would be completed in the 700-foot sand. The wells in the 700-foot sand would be the primary source of water for solution mining of the new natural gas storage cavern. LA Storage anticipates total groundwater withdrawal to be approximately 3.6 billion gallons.
The impact of Project withdrawal of groundwater on other users and on saltwater intrusion were identified as concerns. LA Storage modeled drawdowns in the 700-foot sand. Drawdown ranged between 9 and 10 percent at a distance of 5 miles from Project groundwater wells; however, no known users of the 700-foot sand were identified within 5 miles of the Gas Storage Facility site and groundwater from the 700-foot sand is highly brackish and is not used for drinking water in the Project vicinity. LA Storage also modeled drawdown for pumping from the 500-foot sand. Because Project wells completed in the 500-foot sand aquifer would primarily serve as a backup in case of a temporary outage of a primary well, the Project would not significantly impact the availability of groundwater resources in the 500-foot sand. The 500-foot sand is largely isolated and in the vicinity of the Gas Storage Facility, an approximately 180-foot-thick clay layer separates the 700-foot unit from the upper sands. Therefore, we conclude LA Storage’s withdrawal of groundwater from the 700-foot sand would not affect users of the 500-foot sand. However, and given the volume of proposed groundwater withdrawal, as well as the significance of the 500-foot sand aquifer unit to the Town of Hackberry, we recommended in the draft EIS that LA Storage develop a plan in coordination with the Town of Hackberry to monitor groundwater quality and availability during groundwater withdrawal for solution mining and respond to adverse effects. LA Storage submitted a draft Groundwater Monitoring Plan, developed in coordination with Cameron Parish Waterworks District Number 2, the water utility company servicing the Town of Hackberry, on February 7, 2022. LA Storage has committed to filing the finalized version of this plan once complete. Further, Cameron Parish Waterworks District Number 2 submitted comments in support of the Project and reaffirmed its support in its comments on the draft EIS.

Chloride content recorded over an extended period of time in the Town of Hackberry (500-foot sand) has shown minimal variation since 1981 even though substantial amounts of groundwater have been continuously withdrawn in the region during this period. Therefore, given the isolated nature of the 500-foot sand aquifer, and because the Project would primarily withdraw water from the 700-foot sand, we conclude that Project groundwater withdrawals would not significantly contribute to saltwater intrusion into the aquifer.

**Saltwater Disposal Wells**

At least 3,400 feet of sediments, including low permeability silt and clay layers, would separate the brine injection intervals from the lowest Underground Source of Drinking Water and the brine would be prevented from flowing upward to impact freshwater aquifers. Further, the SWD wells would be installed using multiple cemented steel casing strings to prevent interaction with otherwise isolated intervals and potable groundwater resources. Therefore, we conclude that the SWD wells would not significantly impact groundwater resources.
**Surface Water Resources**

The Project would cross 12 perennial waterbodies, 8 intermittent waterbodies, 7 ephemeral waterbodies, and 6 open water areas (including Black Lake). Of the 33 waterbodies crossed, we classify 13 as major waterbodies (greater than 100 feet wide). The use of existing and proposed temporary and permanent access roads would require crossing 12 waterbodies and require the filling of 10 roadside ditches and 6 roadside unnamed streams to accommodate Project widening of roads. To maintain existing drainage and flow, new ditches and streams would be created adjacent to the filled waterbodies. LA Storage would follow U.S. Army Corps of Engineers New Orleans District permitting requirements and its Environmental Plan to minimize impacts on these waterbodies.

Open-cut crossings of waterbodies would increase sedimentation and turbidity within affected waterbodies. The magnitude of these impacts would vary depending on the size of the waterbody crossed and the duration of construction. The push-pull method through Black Lake would disturb the mud bottom and suspend sediments, resulting in increased turbidity, lower water quality, and increased sedimentation in the vicinity of Project activities. Based on the characteristics of the waterbodies that would be affected by the Project, LA Storage’s proposed construction measures, and with implementation of its mitigation measures including the HDD Contingency Plan and its Environmental Plan, we conclude that Project impacts on surface water resources would not be significant.

**Wetlands**

Constructing the Project would impact a total of 143.1 acres of wetlands: 70.4 acres of freshwater palustrine emergent wetland (PEM); 56.9 acres of estuarine intertidal emergent wetland (E2EM); 10.0 acres of freshwater scrub-shrub marsh (PSS); and 5.8 acres of freshwater palustrine forested wetland (PFO). Of the 5.8 acres of PFO wetland affected, 2.0 acres would be permanently converted to PEM, and 3.8 acres would experience long-term impacts due to the clearing of trees and the time required for cleared trees to regrow. In addition, approximately 4.6 acres of PEM wetlands and 2.0 acres of PSS wetlands would be permanently affected by construction of aboveground facilities. With implementation of LA Storage’s Environmental Plan and HDD Contingency Plan, and given the abundance of wetlands in the Project vicinity, we conclude that the majority of impacts on wetlands would be temporary as revegetation would occur, soils would be returned, and hydrology would stabilize.

Our *Wetland and Waterbody Construction and Mitigation Procedures* stipulate that the width of the construction right-of-way be limited to 75 feet or less in wetlands. LA Storage determined a wider right-of-way is needed due to non-cohesive soils. LA Storage also proposes to use 70 additional temporary workspaces (ATWS) within 50 feet of wetlands; proposes to construct or modify five access roads and one water access route.
in wetlands; and proposes to place aboveground facilities in wetlands. We have reviewed these ATWS, access roads, and aboveground facilities and agree that their locations are justified.

**Aquatic Resources**

Perennial waterbodies that would be affected by the Project contain recreational freshwater and saltwater fish. Ephemeral and intermittent waterbodies may provide nursery habitat for forage fish and other recreational target species. Intermittent streams could support fish during periodic inundation that occurs seasonally or after precipitation events. All tidally-influenced waters and wetlands within the Project boundary are considered to be essential fish habitat for brown shrimp, white shrimp, red drum, reef fish, juvenile mackerel, gray snapper, and lane snapper. An essential fish habitat (EFH) assessment was prepared for the Project and is located in appendix C. In response to our EFH Assessment, the National Marine Fisheries Services in correspondence dated February 4, 2022, concurred with our determinations concerning EFH.

Reduced water quality, habitat loss and/or degradation, general construction related disturbances (noise, light, and vibration), physical barriers, and equipment spills or leaks could all affect aquatic wildlife and habitat. However, these impacts would generally be temporary and localized. Furthermore, impacts on fisheries and aquatic wildlife would cease once construction of the Project is complete and affected lands and waterbodies are restored. Given LA Storage’s construction measures to minimize impacts on surface waterbodies, and the implementation of measures within its Environmental Plan, we conclude that impacts on fisheries and other aquatic resources would not be significant.

**Vegetation**

Constructing the Project would temporarily and permanently affect about 121.2 acres of upland vegetation, of which 9.1 acres are considered upland forested. No large areas of contiguous or mature forest are present within the Project area. We expect that pasture and other herbaceous vegetation would require approximately one to five years to be fully restored. Impacts on upland forested lands are considered long-term because revegetation of some cleared trees may take decades to achieve. About 8.9 acres of forested land would be permanently affected because trees would not be permitted to grow back.

Following construction, affected lands would be restored. Revegetation within forested upland and unmaintained herbaceous upland areas would occur through natural regeneration, supplemented by seeding or planting, if required by landowner easement agreements. LA Storage would use clean equipment; revegetate upland areas using seed mixes developed in consultation with Natural Resources Conservation Service; and implement remedial revegetation plans and invasive species control measures if necessary. Given the relatively small amount of permanent impacts on vegetation
associated with the aboveground facilities, the scope of the Project, and LA Storage’s implementation of avoidance and mitigation measures as described in their Environmental Plan, we conclude that impacts on vegetation would not be significant.

Approximately 56.9 acres of brackish marsh would be affected by the Project along the shores of Black Lake. With the exception of 0.6 acre within permanent access roads, impacts on this vegetation would be temporary. While the Project is in the geographic range of sensitive coastal prairies, the Gas Storage Facility and upland pipeline areas were previously altered by livestock grazing and agricultural operations, and vegetation within the Project area is not dominated by species typically observed in coastal prairies. Therefore, we conclude that impacts on vegetation would not be significant.

Wildlife

Short-term impacts on wildlife include the displacement of individuals from construction areas and adjacent habitats and an increase in the rates of stress, injury, and mortality experienced by wildlife. Long-term and permanent impacts would include conversion of existing wildlife habitats to disturbed habitats. LA Storage would minimize long-term impacts from habitat alteration by implementing its Environmental Plan, which would ensure revegetation of areas temporarily disturbed by construction. LA Storage would minimize lighting impacts by completing most construction activities during daylight hours and by installing down shielded lighting at the Gas Storage Facility. LA Storage would also install noise walls at the compressor station. Given the limited Project area and abundant adjacent habitat, we conclude the impacts on wildlife would not be significant.

To reduce and minimize impacts on birds, LA Storage would conduct pre-construction surveys for evidence of nesting colonies within 1,000 feet (2,000 feet for Brown Pelicans) of the Project. If identified, Project activities in the vicinity of nesting colonies (depending on species, between 650 and 2,000 feet) would be restricted to the non-nesting period. Additionally, and prior to construction, LA Storage would perform a bald eagle nest survey along the construction right-of-way. Lastly, a variety of migratory birds, including birds of conservation concern and waterfowl, use or could use the wildlife habitats affected by the Project for resting (stopover), sheltering, foraging, breeding, and nesting. However, based on the limited amount of vegetative clearing (particularly forest), and available adjacent habitat, we have determined that the Project would not result in population-level impacts on migratory birds or eagles or lead to significant measurable negative impacts on migratory birds or their habitats.

Special Status Species

Eight federally-listed species may occur within the parishes affected by the Project. The federally-listed West Indian manatee could occur within waterbodies crossed by the pipelines. Given species mobility, natural history, LA Storage’s
avoidance measures, and the temporary impacts associated with construction in shoreline areas and aquatic environments, we have determined that the Project may affect but is not likely to adversely affect manatees. Because brackish marsh habitat suitable for the federally-listed eastern black rail exists within the Project area, we have also determined the Project may affect, but is not likely to adversely affect the eastern black rail. Given species mobility, natural history, and the temporary impacts associated with construction in shoreline areas and marine environments, we have determined that the Project would have no effect on the remaining six federally-listed species, all sea turtles. On September 29, 2020, the U.S. Fish and Wildlife Service concurred with the not likely to adversely affect and no effect determinations and stated no further consultation was necessary under Section 7 of the Endangered Species Act of 1973 and Marine Mammal Protection Act. LA Storage has also coordinated with National Marine Fisheries Services regarding the Marine Mammal Protection Act (response pending).

Brackish marsh and remnants of coastal prairies provide habitat for state-listed species. As described previously, constructing the Project would temporarily impact brackish marsh, open grasslands, coastal marsh, and salt marshes. However, given that most of the proposed Gas Storage Facility and the upland pipeline areas have been previously disturbed, permanent impacts on sensitive coastal prairie habitat during construction or operation of the Project are not anticipated. Additionally, no state-listed species were observed during field surveys of potentially affected lands. Therefore, we conclude the Project would not adversely impact state-listed species.

**Land Use**

Project area land use is primarily open land and open water. The majority of land use impacts would be temporary and land use along the pipeline construction right-of-way would return to conditions similar to those before construction. Land use at the meter stations, Gas Storage Facility, and SWD wells would be permanently converted to industrial land. Based on existing land use and the minor changes that would result from the Project, we conclude that the Project would not have a significant impact on land use.

LA Storage would cross dirt and gravel roads via open-cut. LA Storage would post signs on nearby streets to direct traffic around temporary road closures and would return any roads damaged by Project construction to conditions similar to those before construction. Project construction would not prevent access to any residential or commercial properties. Given the rural and industrial Project setting and the episodic nature of equipment and material deliveries, construction-related traffic would not have a significant impact on local residents or others who use the roads in the Project area.

Minor, temporary impacts on local recreation would occur during construction through Black Lake, localized to the construction right-of-way. LA Storage would minimize impacts by marking spoil piles and providing regularly spaced openings to allow boat traffic across the construction work area. We conclude that the Project would
not significantly affect recreation or special land use areas; however, we have included a recommendation that LA Storage should not begin construction until it files a copy of its Coastal Use Permit.

Visual Resources

Temporary visual impacts would occur during construction, from vehicle and equipment movement, vegetation clearing and grading, trench and foundation excavation, pipe storage, and spoil piles. The Pelican Compressor Station, wells, and other components of the Gas Storage Facility would be similar to other existing facilities in the Project vicinity including oil and gas production facilities and the adjacent Strategic Petroleum Reserve site. Down shielded lighting and noise walls at the compressor station would provide additional visual screening. We have included a recommendation that LA Storage reduce visual and noise impacts on the closest residences by planting a tree line along the south side of the Pelican Compressor Station. Therefore, the Project would not significantly alter the existing visual characteristics.

Cultural

LA Storage completed a Phase I cultural resources survey for the Project in July and August 2020 within the Project’s Area of Potential Effect, consisting of about 1,133 acres. The cultural resources survey identified two sites near the north end of the Project which are recommended as not eligible for inclusion in the National Register of Historic Places. In a letter dated November 25, 2020, the State Historic Preservation Office concurred with the findings of the Cultural Resource Survey Report. We also concur.

LA Storage sent Project notification letters to a total of ten federally-recognized Native American Tribes. The Alabama-Coushatta Tribe of Texas and the Choctaw Nation of Oklahoma requested copies of the cultural resources survey report. LA Storage sent copies of the report to both tribes on November 3, 2020. We sent our Notice of Scoping to a total of eight federally-recognized Native American Tribes and sent individual letters to the same tribes. The Choctaw Nation of Oklahoma requested a copy of the cultural resources report and the EIS. The cultural resources report was provided during the pre-filing process and the tribe is on our mailing list to receive the EIS.

Several areas along the Hackberry Pipeline and the brine disposal pipeline, totaling about 1.4 miles, were not surveyed because landowner permission could not be obtained. We recommend that LA Storage file complete survey reports and complete consultation for cultural resources.

Socioeconomics

Up to 251 workers may require temporary housing during the construction period. Based on the availability of about 12,800 vacant housing units, we conclude that sufficient housing is available in the Project vicinity to support the construction
workforce. However, localized increased housing pressures (e.g., availability, cost) may occur during Project construction if concentrations of non-local construction workers choose to live in the same areas. We conclude that the permanent addition of 10 new workers to the existing workforce within the two parishes would have a negligible effect on long-term housing. We also conclude that based on the size of the Project’s construction and operational workforce and existing medical, fire, and police services in Cameron and Calcasieu Parishes, adequate public services exist to handle emergency events impacting this workforce without significant impacts on these resources and their services to the community. As described previously, LA Storage would minimize impacts on area roads by crossing all paved or improved roads by boring under the road to prevent damage to the road surface and interruption of traffic. Most construction workers would traverse to and from workspaces outside of typical commuting periods. Local residents may experience minor, temporary increases in traffic and associated commute times. We also conclude that the Project would have a positive, although minor, impact on the local economy through spending by construction workers, purchases of goods and materials, and from taxes collected on purchases, payroll, and property.

We assessed environmental justice communities crossed by the pipeline facilities and within 1 mile of the proposed aboveground facilities. One environmental justice community was identified in Cameron Parish. Based on the scope of the Project and our analysis of the Project’s environmental impacts, as described throughout this EIS, we have determined Project-related impacts on socioeconomics, traffic, noise, visual resources, and air quality may adversely affect the identified environmental justice community; however, impacts would be less than significant (traffic and socioeconomics are discussed previously; see section 3.10 for additional detail). Operation of the compressor station would result in a permanent perceptible noise increase; however, contribution of the station at full load would be below the FERC criterion of 55 decibels on the A-weighted scale (dBA) (day-night sound level [Ldn]) at affected noise sensitive areas (NSA) (see below for additional discussion on noise, and section 3.12).

Permanent visual impacts may occur along the Hackberry Pipeline, CIP Lateral, and brine disposal pipeline rights-of-way from periodic vegetation clearing to allow for visual pipeline inspection. Visual impacts would also occur due to the operation of the Pelican Compressor Station. The sightline from the closest residences (1,150 and 1,470 feet south) to the compressor station would be partially obscured by existing trees, thereby reducing the Project’s impacts on visual resources. Although consistent with the industrial nature of the adjacent facilities, the Pelican Compressor Station would result in a permanent change to the viewshed. Therefore, we have included a recommendation that LA Storage implement visual screening to minimize impacts on the residences located south of the Pelican Compressor Station. We conclude that impacts on environmental justice populations may be disproportionately high and adverse as impacts in the Project area would be predominantly borne by environmental justice populations; however, based on our analysis in this EIS, the impacts on environmental justice
communities would be less than significant. With implementation of LA Storage’s mitigation measures for exhaust, fugitive dust, and other particulate matter, we conclude that the temporary use of construction equipment would not have a significant impact on air quality. Based on estimated operational emissions and review of LA Storage’s modeling analysis, we conclude that the Project would not cause or significantly contribute to an exceedance of National Ambient Air Quality Standards (NAAQS) and would not result in a significant impact on air quality in the region. Air quality is further discussed below, and in section 3.11.

Air Quality

The Project is in Cameron and Calcasieu parishes, which are listed as attainment/unclassified for all criteria pollutants. The Pelican Compressor Station would exceed Title V thresholds for nitrogen oxides and carbon monoxide and would be considered a major source under Title V. LA Storage submitted a Title V permit application to the Louisiana Department of Environmental Quality on October 16, 2020.5 Construction of the Project is expected to last 23 months; emissions associated with Project construction equipment would be considered temporary and cease at completion of construction. With implementation of LA Storage’s mitigation measures for exhaust, fugitive dust, and other particulate matter, we conclude that the temporary use of construction equipment would not have a significant impact on air quality. LA Storage modeled the air emission sources at the proposed Pelican Compressor Station interactively with other sources within 50 kilometers which identified that the collective contribution of all identified sources would exceed the 1-hour NAAQS for nitrogen dioxide. However, Project contributions to this NAAQS exceedance were determined to be below the respective U.S. Environmental Protection Agency-determined significant impact level. Based on estimated operational emissions and review of LA Storage’s modeling analysis, we conclude that the Project would not cause or significantly contribute to an exceedance of NAAQS and would not result in a significant impact on air quality in the region.

The construction and operation of the Project would increase the atmospheric concentration of greenhouse gases (GHG), in combination with past and future emissions from all other sources globally and would contribute incrementally to future climate change impacts. The EIS does not characterize the Project’s GHG emissions as significant or insignificant because the Commission is conducting a generic proceeding to determine whether and how the Commission will conduct climate change significance determinations going forward.6

5 Appendix 9D, Accession No. 20210129-5314_5
In addition to climate change, we received comments on upstream and downstream emissions. To date, the Commission has not found upstream emissions to be an effect of any proposed project. However, the Commission will continue to determine, on a case-by-case basis, whether GHG emissions from upstream production activities are a reasonably foreseeable and causally connected result of a proposed project. This EIS does not include downstream GHG emissions as the Project is designed to enhance the efficiency and reliability of gas service to contracting counterparties through the availability of storage service rather than providing new sources of natural gas to the market. There are no increases in system capacity associated with the Project. Emissions impacts associated with construction and operation of the Project are disclosed in the EIS, with context added to illustrate increases relative to state and national levels. We also received comments suggesting we utilize the social cost of carbon (SCC) tool in our NEPA analysis. We note there is pending litigation challenging federal agencies’ use of the Interagency Working Group on Social Cost of Greenhouse Gases’ interim values for calculating the social cost of GHGs. In addition, the Council on Environmental Quality noted that it is working with representatives on the GHG Interagency Working Group to develop additional guidance regarding the application of the SCC tool in federal decision-making processes, including in NEPA analyses. The Commission has not determined which, if any, modifications are needed to render the SCC tool useful for project-level analyses. Therefore, we are not applying it in this EIS.

Noise

Based on the rural and industrial setting, LA Storage’s commitment to conduct the majority of construction activities during daytime hours, and the mitigation measures LA Storage would employ during nighttime activities, we conclude that construction noise would not result in significant noise impacts on nearby residents.

LA Storage completed a noise survey to determine existing background noise levels for NSAs within 0.5 mile of operational noise from the proposed compressor station and PAPLC Interconnect Meter Station. LA Storage would mitigate the noise from compressor station operations by installing a noise barrier along the south property

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7 Missouri v. Biden, 8th Cir. No. 21-3013; Louisiana v. Biden, No. 21-cv-1074-JDC-KK (W.D. La). On February 11, 2022, the U.S. District Court for the Western District of Louisiana issued a preliminary injunction limiting federal agencies’ employment of estimates of the social costs of GHGs and use of the IWG’s interim estimates. On March 16, 2022, the U.S. Court of Appeals for the Fifth Circuit issued a stay of the district court’s preliminary injunction, finding among other things that the federal agency defendants’ continued use of the interim estimates was lawful. Louisiana v. Biden, No. 22-30087 (5th Cir. Mar. 16, 2022).


9 See Order Issuing Certificates and Approving Abandonment, 178 FERC ¶ 61,199 (2022) at footnote 141.
line of the Gas Storage Facility (see figure 1 and appendix A - figure A-2). With these noise mitigation measures in place, the estimated noise contribution of the Pelican Compressor Station at the closest NSA would be below 55 dBA $L_{dn}$. We recommend that LA Storage file noise surveys at the Pelican Compressor Station, no later than 60 days after placing the facility into service. Additional noise controls would be required if actual conditions caused by the Project exceed an $L_{dn}$ of 55 dBA at any nearby NSAs.

Based on the predicted noise impacts at the proposed aboveground facilities, the sound mitigation measures proposed by LA Storage, and the recommendations stated previously, we conclude that the proposed Project would not result in significant noise impacts in the Project area.

**Reliability and Safety**

Project facilities would be designed, constructed, operated, and maintained in accordance with the U.S. Department of Transportation Minimum Federal Safety Standards in 49 C.F.R. 192 and Louisiana Administrative Code Title 43 Part XIII, which specifically address underground natural gas storage facilities. These regulations are intended to ensure adequate protection for the public and to prevent natural gas facility accidents and failures. LA Storage’s Emergency Action Plan addresses emergency procedures for the storage facility. With continued compliance with federal and state safety standards, operation, and maintenance requirements, we conclude the Project would be constructed and operated safely.

**Alternatives**

In accordance with NEPA and FERC policy, we evaluated a range of alternatives. These alternatives include the no action alternative, system alternatives, pipeline route alternatives, and aboveground facility site alternatives. Implementing the no-action alternative would result in no impacts on the environment; however, the Project’s goals would not be met. The Commission decision, in its Order, would review the need for the Project. Because the Commission will ultimately determine Project need, and because staff has not identified a significant impact associated with the proposed action, we do not recommend the no-action alternative.

We reviewed two existing natural gas fields within 60 miles of the Project. These system alternatives were eliminated from further consideration because expansions of the existing facilities would likely be required to accept an additional 20 billion cubic feet of natural gas; more compression would likely be required than for the Project; and to connect either system alternative to the existing CIP would require pipelines substantially longer than the Hackberry Pipeline or the CIP Lateral.

We assessed an alternative route (Alternative 1) for the CIP Lateral. Alternative 1 would cross 9.1 acres of land that is now enrolled in the U.S. Department of Agriculture Wetlands Reserve Program (WRP). The proposed route would connect to the existing
CIP at the same interconnect location as Alternative 1 but would not cross WRP land. Alternative 1 would also affect more residential land than the proposed route. Therefore, we find that Alternative 1 does not present a significant environmental advantage over the proposed route.

We assessed two alternative routes (Alternatives 1 and 2) for the portion of the Hackberry Pipeline north of the CIP Interconnect. Alternative 1 would cross the Moss Lake Mitigation Bank.\(^{10}\) The U.S. Army Corps of Engineers could approve an amendment to allow a new utility to cross the mitigation bank conservation easement only if needed to avoid impacts on homes, businesses, or developed areas. We requested that LA Storage analyze Alternative 2, a route that begins at the CIP Interconnect and follows the existing CIP route for some distance. The Alternative 2 route would cross more forested wetlands than the proposed route and would cross 18.2 acres of WRP lands. Therefore, we find that Alternatives 1 and 2 do not present a significant environmental advantage over the proposed pipeline route.

In comments on the draft EIS, Stream Wetland Services, LLC; Driftwood; and Driftwood Pipeline LLC requested LA Storage’s proposed HDD of the Gulf Intracoastal Waterway (GIWW) be extended approximately 4,000 feet to the north to avoid disturbance of Driftwood Pipeline LLC’s proposed beneficial use of dredge material (BUDM) area located north of the GIWW. When weighing the non-significant impact of LA Storage’s proposed crossing (refer to section 3.4) with the inherent increased complexity of increasing the length of the HDD as well as considering identified constraints of the suggested alternative, we conclude that this alternative would not provide a significant environmental advantage over the proposed action.

One landowner expressed concern regarding the location of ATWS-CAL-017 on her property, as well as the proposed SWD wells. We assessed the feasibility of relocating ATWS-CAL-017 to the adjoining property south, owned by Cameron LNG, LLC. Relocating the ATWS-CAL-017 to the adjoining property south is not practical due to the presence of an overhead powerline that would not allow the drilling rig to safely raise its mast. Further, the adjoining property south is wetland, whereas the current location of ATWS-CAL-017 is in a cleared upland pasture. Therefore, and because the use of ATWS-CAL-017 would be temporary, we conclude that this alternative does not present a significant environmental advantage over the proposed action.

We assessed an alternative site (Alternative 1) for the SWD wells about 2 miles southeast of the proposed Gas Storage Facility. Although Alternative 1 offers some environmental benefits compared to the proposed route and well locations, the proposed SWD wells would be at a site with a willing landowner and would not inject brine into

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\(^{10}\) Wetland mitigation bank which provides offset credits for bottomland hardwood and coastal prairie.
the same reservoir currently used by the Strategic Petroleum Reserve. The proposed route is also collocated to the maximum extent possible with the proposed CIP Lateral and Hackberry Pipeline, and crosses fewer forested wetlands compared to Alternative 1. Therefore, we find that Alternative 1 does not present a significant environmental advantage over the proposed action.

We assessed two alternative water sources for solution mining of the new natural gas storage cavern. Alternative 1 would source water from Black Lake. The pumping rates and water volume required would likely result in significant loss of plankton or nekton, including larval and juvenile stages of brown and white shrimp and/or finfish. Alternative 2 would use municipal water for mining the new storage cavern. Based on our review of alternative water sources, associated potential impacts on the environment, physical infrastructure restrictions, and the impacts of the proposed water source, we conclude that Alternative 1 would not present a significant environmental advantage over the proposed action and Alternative 2 is not technically feasible.

**Conclusion**

For most resources, the construction and operation of the Project would result in limited adverse environmental impacts. Most adverse environmental impacts would be temporary or short-term during construction, but some long-term and permanent environmental impacts would occur on some soils, wetlands, and forest. Aboveground facilities would also result in permanent visual impacts, and operation of the Pelican Compressor Station would result in air emissions and noise throughout the life of the Project. This determination is based on our review of the information provided by LA Storage and further developed from environmental information requests; scoping; literature research; a consideration of potential alternatives; and contacts with federal, state, and local agencies, and other stakeholders. With regard to climate change impacts, the EIS does not characterize the Project’s GHG emissions as significant or insignificant. For the remainder of resources assessed in this EIS, we conclude that impacts would be reduced to less-than-significant levels through implementation of our recommendations presented in section 5.0 of this EIS and LA Storage’s proposed avoidance, minimization, and mitigation measures. We recommend that the Project-specific recommendations that we have developed (noted in bulleted bold type throughout this EIS and presented in section 5.0 of the EIS) be attached as conditions to any Certificate of Public Convenience and Necessity issued by the Commission.
1.0 INTRODUCTION

The staff of the Federal Energy Regulatory Commission (Commission or FERC) prepared this environmental impact statement (EIS) to assess the environmental impacts of the construction and operation of certain natural gas facilities proposed by LA Storage, LLC (LA Storage). FERC is the lead federal agency for authorizing interstate natural gas transmission facilities under the Natural Gas Act (NGA), and the lead federal agency for preparation of this EIS. We¹ prepared this EIS in compliance with the requirements of the National Environmental Policy Act (NEPA), the Council on Environmental Quality’s (CEQ) regulations for implementing NEPA (Title 40 of the Code of Federal Regulations (C.F.R.), Parts 1500-1508 [40 C.F.R. 1500-1508])², and with the Commission’s implementing regulations under 18 C.F.R. Part 380.

On January 29, 2021, LA Storage, a subsidiary of Sempra LNG, filed an application with the Commission in Docket No. CP21-44-000³ for authorization under section 7(c) of the NGA⁴ to construct and operate certain natural gas facilities in Calcasieu and Cameron Parishes, Louisiana. The proposed project is known as the Hackberry Storage Project (Project).

LA Storage proposes to modify existing industrial facilities and construct new facilities in order to operate a new natural gas storage facility (Gas Storage Facility) on 89.5 acres within a 160-acre tract of land that it owns in Cameron Parish, Louisiana. Within the Gas Storage Facility, LA Storage would convert three existing salt dome caverns (Pelican Wells 001 through 003)⁵ and develop one new salt dome cavern (Pelican Well 004) for natural gas storage service. The Gas Storage Facility would also include:

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¹ “We,” “us,” and “our” refer to environmental staff of the Office of Energy Projects. See appendix A for the List of Preparers.
² On July 16, 2020, CEQ issued a final rule, Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act (Final Rule, 85 Fed. Reg. 43,304), which was effective as of September 14, 2020. Therefore, we are using the new regulations in the preparation of this EIS.
³ Previous to the filing of LA Storage’s application, the Hackberry Storage Project was under pre-filing environmental review by the FERC staff in Docket No. PF20-5-000.
⁴ Title 15 of the USC, section 717(b)(c) (2018).
⁵ By convention, each salt dome cavern is referred to by the name of the permitted well used to develop it.
the Pelican Compressor Station, a new 21,400-horsepower (hp) compressor station;

- a total of about 2,000 feet of 36-inch-diameter underground piping connecting the storage caverns and the Pelican Compressor Station;
- up to six freshwater supply wells and piping;
- a leaching facility (part of the brine disposal system, see below); and
- other appurtenant facilities.

Additionally, the Project would include construction of the following new facilities in Cameron and Calcasieu Parishes, Louisiana:

- the Cameron Interstate Pipeline Lateral, 4.9 miles of 42-inch-diameter bi-directional pipeline connecting the Project to the existing Cameron Interstate Pipeline (CIP);
- the Hackberry Pipeline, 11.1 miles of 42-inch-diameter bi-directional pipeline connecting the Project to the certificated Port Arthur Pipeline Louisiana Connector (PAPLC) (FERC Docket No. CP18-7-000);
- metering and regulating facilities at the interconnects with the CIP and PAPLC;
- four saltwater disposal (SWD) wells and 6.2 miles of 16-inch-diameter pipeline to transport brine from the caverns to the SWD wells; and
- other related auxiliary facilities and appurtenances.

The Project is described in more detail in section 2.0.

1.1 Purpose and Need for the Project

LA Storage states that the purpose of the Hackberry Storage Project is to construct and operate a high-deliverability natural gas storage facility in Cameron Parish, Louisiana, capable of providing 20.03 billion cubic feet (Bcf) of working gas storage capacity and 1.5 Bcf per day (Bcf/d) of gas deliverability and injectability, and interconnecting with the CIP facilities operated by Cameron Interstate Pipeline, LLC and the PAPLC facilities to be operated by Port Arthur Pipeline, LLC (PAPL). In September 2020, LA Storage conducted a non-binding open season and received responses indicating interest for firm storage services in excess of the proposed 20.03 Bcf of working gas.

The proposed storage facility would interconnect with certificated PAPLC facilities and existing CIP facilities. LA Storage has executed a precedent agreement
with PAPL, an anchor customer for the Project. PAPL will serve liquefied natural gas (LNG) export terminal customers who require services that can accommodate shifts in daily demand due to shipment variability and outages. The interconnection of the Project with these pipelines would provide customer access to interstate pipelines serving the Gulf Coast market as well as markets along the Southeast and East Coasts. LA Storage states that in addition to supporting LNG export terminals, high-deliverability natural gas storage is often the most economic means of supporting deliveries to highly variable loads such as electric generation. As more gas-fired electric generating capacity has come online and pipeline utilization has correspondingly increased, high-deliverability natural gas storage can be substituted for upstream pipeline capacity and flowing gas supply, mitigating the adverse effects of pipeline compressor outages and other temporary capacity constraints that can cause gas price spikes and require costly fuel switching. LA Storage states that it continues to engage in negotiations with other customers and will file any such agreements with the Commission when they are executed.

In its comments on the draft EIS, the U.S. Environmental Protection Agency (EPA) recommended that FERC staff supplement the purpose and need discussion with examples of variability, outage, and access challenges the Project would address, questioning if other actions not evaluated in the EIS could address these issues. Additionally, in their comments on the draft EIS, Sierra Club and Healthy Gulf asserted that the EIS purpose and need statement adopted the applicant’s purpose and need, without accounting for the statutory mandates of NEPA. With regard to the Project’s “Purpose and Need” described in the EIS, regulations implementing NEPA in 40 C.F.R. 1502.13 state that “the statement shall briefly specify the underlying purpose and need for the proposed action” and “when an agency’s statutory duty is to review an application for authorization, the agency shall base the purpose and need on the goals of the agency’s authority.”

As an independent regulatory commission, the FERC reviews applicant proposals to construct and operate natural gas facilities. As described by the CEQ, if it were not for proposed projects and agency authority to consider the proposals, there would be no permit application and no need for NEPA review. Accordingly, where an agency action is in response to an application for permit or other authorization, the agency should consider the applicant’s goals based on the agency’s statutory authorization to act in defining the proposed action’s purpose and need. The FERC does not plan, design, build, or operate natural gas transmission infrastructure. Accordingly, the project proponent is the source for identifying the purpose for developing, constructing, and operating a project.

Under section 7(c) of the NGA, the Commission determines whether interstate natural gas transportation facilities are in the public convenience and necessity and, if so, grants a Certificate of Public Convenience and Necessity (Certificate) to construct and operate them. The Commission may accept the application in whole or in part and can attach engineering and environmental conditions to the Order that would be enforceable actions to assure that the proper mitigation measures are implemented. The Commission bases its decisions on economic issues, including need, and environmental impacts. The Commission developed a “Certificate Policy Statement”\(^7\) that established criteria for determining whether there is a need for a proposed project and whether the proposed project would serve the public interest. The Commission decision, in its Order, would review the need for the Project.

### 1.2 Purpose and Scope of this EIS

As the lead federal agency, we prepared this EIS to assess the environmental impacts that could result from constructing and operating the Project. This document was prepared in compliance with the requirements of the CEQ’s regulations at 40 C.F.R. 1500-1508\(^8\), and the FERC’s regulations for implementing NEPA at 18 C.F.R. Part 380. In their comments on the draft EIS, Sierra Club and Healthy Gulf commented that FERC should apply NEPA regulations as proposed by the CEQ and reference “numerous” lawsuits challenging CEQ’s 2020 NEPA rules. Although, CEQ issued a proposed rule implementing NEPA on October 7, 2021 (86 Fed. Reg. 55,757), it has not yet issued the final rule. Despite legal challenges, the 2020 NEPA rules have not been vacated. Therefore, they are still in effect.

Our principal purposes in preparing this EIS are to:

- identify and assess the potential impacts on the natural and human environment that would result from construction and operation of the Project;

- describe and evaluate reasonable alternatives to the Project that would avoid or minimize adverse impacts on environmental resources;

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\(^7\) See Certification of New Interstate Natural Gas Pipeline Facilities, 88 FERC ¶ 61,227 (1999), clarified in 90 FERC ¶ 61,128, and further clarified in 92 ¶ 61,094 (2000); and Certification of New Interstate Natural Gas Facilities, 178 FERC ¶ 61,107 (2022) (Updated Policy Statement). We note that on March 24, 2022, in an Order on Draft Policy Statements in Docket No. PL18-1-001, 178 FERC ¶ 61,197 (2022), the Commission indicated that it will not apply the Updated Draft Policy Statement to pending applications.

\(^8\) On July 16, 2020, CEQ issued a final rule, Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act (Final Rule, 85 Fed. Reg. 43,304), which was effective as of September 14, 2020. Therefore, we are using the new regulations in the preparation of this EIS.
• recommend mitigation measures, as necessary, that could be implemented by LA Storage to reduce impacts on specific environmental resources; and
• encourage and facilitate involvement by the public and interested agencies in the environmental review process.

The topics addressed in this EIS include geology, soils, water resources, wetlands, fisheries, wildlife, vegetation, land use, recreation, visual impacts, socioeconomics, environmental justice, cultural resources, air quality, climate change, noise, reliability and safety, and alternatives. The EIS describes the affected environment as it currently exists, addresses the environmental consequences of the Project, and compares the Project’s potential impacts to those of the alternatives. The EIS also presents our conclusions and recommended mitigation measures for the Project.

1.3 Public Review and Comment

On July 1, 2020, LA Storage filed a request to enter into the Commission’s pre-filing environmental review process (pre-filing or PF) for the Project. The FERC granted LA Storage’s request on July 15, 2020 and established pre-filing Docket No. PF20-5-000. Prior to and during the pre-filing process, LA Storage contacted federal, state, and local governmental agencies to inform them about the Project and discuss Project-specific issues. LA Storage also contacted affected landowners, to inform them about the Project, and to obtain permission to perform environmental surveys. LA Storage developed a public participation plan (its Public Outreach Plan\(^9\)) to facilitate stakeholder communications and make information available to the public and regulatory agencies. This public participation plan established a single point of contact within LA Storage for the public or agencies to call or e-mail with questions or concerns; a publicly accessible website (https://sempralng.com/la-storage-hackberry/) with information about the Project (including maps) and Project status; and regular correspondence with affected landowners and other interested parties.

In August 2020, LA Storage announced two community informational meetings to solicit comments on the Project: one virtually on August 18, 2020 and the other in-person and by appointment only on August 20, 2020. LA Storage placed advertisements in local newspapers announcing the community informational meetings. Advertisements were published in the American Press (Lake Charles) on August 9 and 16, in the Southwest Daily News (Sulphur) on August 5, 7, 9, and 16, and in the Cameron Pilot (Hackberry) on August 6 and 13, 2020. The virtual meeting on August 18, 2020 was attended by 34 participants. We participated in the virtual open house to provide information regarding

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\(^9\) LA Storage’s Public Outreach Plan was included in its July 1, 2020 Request to Initiate NEPA Pre-Filing Process and can be viewed on the FERC website at http://www.ferc.gov. Using the “eLibrary” link, select “Advanced Search” from the eLibrary menu and enter 20200701-5552 in the “Numbers: Accession Number” field.
the Commission’s environmental review process to interested stakeholders and to listen to stakeholder concerns. The appointment-only meeting scheduled for August 20, 2020 at the Hackberry Community Center offered appointments available between 8:00 a.m. and 8:00 p.m. However, no appointments were requested, and the event was cancelled. LA Storage posted signs on the Hackberry Community Center with project information and contacts on August 19 and 20, 2020.

On October 20, 2020, the Commission issued a Notice of Scoping Period Requesting Comments on Environmental Issues for the Planned Hackberry Storage Project (NOS). The Notice of Scoping was sent to affected landowners; federal, state, and local government agencies; elected officials; Native American Tribes; and local libraries and newspapers. Comments were requested from the public on specific concerns about the Project or environmental issues that should be considered during the preparation of the environmental document. Issuance of the NOS opened a 30-day formal scoping period that ended November 19, 2020. Comments received in response to the NOS are discussed below.

During the PF period, FERC staff participated in conference calls on an approximately bi-weekly basis with representatives from LA Storage and federal and state governmental agencies to discuss the progress of Project development and potential issues. Summaries of the telephone calls were placed in the public record.

LA Storage filed its formal application for the Project on January 29, 2021. On February 10, 2021, the FERC issued a Notice of Application (NOA). Our notice stated there are two ways to become involved in the Commission’s review of the Project. Parties were afforded the option of becoming an intervenor, or party to the proceeding. This is a legal position that carries certain rights and responsibilities and gives parties legal standing to request a rehearing and challenge a Commission decision in court. The second option was to participate by filing comments with the Secretary of the Commission (Secretary). The comment period to respond to the NOA closed on March 3, 2021.

On August 27, 2021, the FERC issued a Notice of Intent to Prepare an Environmental Impact Statement for the Proposed Hackberry Storage Project, Request for Comments on Environmental Issues, and Schedule for Environmental Review (NOI). The NOI was published in the Federal Register on September 2, 2021 (86 FR 49,321) and sent to 273 parties on our environmental mailing list, which included federal, state, and local government representatives and agencies; local libraries; newspapers; elected officials; Native American Tribes; and other interested parties. This list also includes all affected landowners (as defined in the Commission’s regulations) and anyone who submitted comments on the Project. Consistent with CEQ regulations, issuance of the NOI opened a 30-day formal scoping period that ended September 26, 2021. In total, we received 28 comments about the Project. Commenters included the EPA, the Louisiana Department of Wildlife and Fisheries (LDWF), and the Choctaw Nation of Oklahoma,
who each filed two comments. Four organizations (Sierra Club, Healthy Gulf, RESTORE, and the Sabin Center for Climate Change Law [Sabin Center]) also filed a total of seven comments, and nine individuals each filed comments. In addition, the Cameron Parish Waterworks District Number 2, the Cameron Parish Port Harbor and Terminal District, one state senator, one state representative, one Cameron Parish Police Juror, and one individual submitted comments in support of the Project (see appendix E).

On December 17, 2021, the Commission issued a Notice of Availability of the Draft Environmental Impact Statement for the Proposed Hackberry Storage Project (Notice of Availability). This notice established a closing date of February 7, 2022 for receiving comments on the draft EIS. The Notice of Availability was also mailed to Project stakeholders (see appendix D for the Distribution List). The draft EIS was also filed with the EPA and a formal notice of availability was issued in the Federal Register on December 23, 2021 (86 FR 72,936). In response to the draft EIS, we received 19 total comments from 15 commenters (the EPA, the U.S. Department of the Interior, the National Marine Fisheries Service (NMFS), three Cameron Parish organizations/politicians, seven companies and non-governmental organizations, and two individuals). LA Storage also filed comments on the draft EIS. All substantive comments received are addressed in the relevant resource sections of the EIS and in appendix F. Cameron Parish Waterworks District Number 2, Cameron Parish Port Harbor and Terminal District, and the Cameron Parish Police Juror reaffirmed their support for the Project in separate comments on the draft EIS. The Moore-Odom Wildlife Foundation also expressed support for the Project in comments on the draft EIS. On February 7, 2022, the U.S. Department of the Interior filed a letter stating that it did not have comments on the draft EIS at this time.

In accordance with the CEQ’s regulations implementing NEPA, no agency decision on a proposed action may be made until 30 days after the EPA publishes a notice of availability of the final EIS in the Federal Register. However, the CEQ regulations provide an exception to this rule when an agency decision is subject to a formal internal appeal process that allows other agencies or the public to make their views known. In such cases, the agency decision may be made at the same time the notice of the final EIS is published, allowing both periods to run concurrently. The Commission decision for this proposed action is subject to a 30-day rehearing period.

**Summary of Submitted Alternatives, Information, and Analyses**

NEPA regulations at 40 C.F.R. § 1502.17 state that a draft and final EIS shall include a summary that identifies all alternatives, information, and analyses submitted by State, Tribal, and local governments and other public commenters during the scoping process for consideration by the lead and cooperating agencies in developing the EIS. Section 4.0 of this EIS addresses comments filed regarding alternatives. In response to the NOI and NOS, commenters suggest the no-action alternative should be selected; however, no other specific alternatives were submitted.
In its comments on the draft EIS, Stream Wetland Services, LLC requested LA Storage’s proposed horizontal directional drill (HDD) of the Gulf Intracoastal Waterway (GIWW) be extended approximately 4,000 feet to the north to avoid disturbance of Driftwood Pipeline LLC’s proposed beneficial use of dredge material (BUDM) located north of the GIWW. In their comments on the draft EIS, Driftwood LNG, LLC (Driftwood) and Driftwood Pipeline, LCC requested that LA Storage adopt the HDD extension proposed by Stream Wetland Services, LLC. As discussed in greater detail in section 4.5, we do not recommend that LA Storage adopt this suggested alternative.

From the time we accepted LA Storage’s request to start the PF process on July 15, 2020 to the closure of the comment period on the draft EIS, we received 47 comment letters on the record. Comments received on the Project addressed concerns with the purpose and need statement, alternatives, water resources, wetland impacts, fish, wildlife, impacts on hunting/fishing, impacts on boating and recreation, visual impacts, air quality, noise, community social and economic impacts, tribal consultation, environmental justice, cumulative impacts, minority and low-income populations, salt dome stability, safety, impacts off brine injection, potential or existing contamination from BUDM sites, greenhouse gases (GHG), and climate change. We also received several comments that are outside of the scope of this environmental analysis, including on the determination of need for the Project, financial stability of the natural gas market and the Project, depletion of methane supplies, use of union laborers, and Project contribution to delaying the development of renewable energy sources. These comments are not addressed further in this EIS, but may be addressed in any Order the Commission may issue for this Project.

Healthy Gulf requests a full environmental analysis in the form of a Programmatic EIS given the proliferation of fossil gas facilities (i.e., storage, liquefaction, compressor stations and pipelines) in the Gulf Coast and offshore. Healthy Gulf comments that the Programmatic EIS should include a comprehensive cumulative impact analysis, and asserts that the public has not had a chance to weigh in on the cumulative impacts of fossil fuel buildout in the region. Sierra Club and Healthy Gulf reiterated this request in their comments on the draft EIS. There have been multiple comment opportunities for the Project, as detailed below. CEQ regulations do not require broad or “programmatic” NEPA reviews. CEQ’s guidance provides that such a review may be appropriate where an agency is: (1) adopting official policy; (2) adopting a formal plan; (3) adopting an agency program; or (4) proceeding with multiple projects that are temporally and spatially connected.  

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10 Memorandum from CEQ to Heads of Federal Departments and Agencies, Effective Use of Programmatic NEPA Reviews 13-15 (Dec. 24, 2014) (citing 40 C.F.R. § 1508.18(b)).
entire region (that is, programmatic review) is required only if there has been a report or recommendation on a proposal for major federal action with respect to the region.\textsuperscript{11}

We note the Commission does not have a program to direct the development of the natural gas industry’s infrastructure, either on a broad regional basis or in the design of specific projects, and does not engage in regional planning exercises. Natural gas infrastructure projects subject to the Commission’s jurisdiction do not share sufficient elements in common to narrow future alternatives or expedite the current detailed assessment of each particular project.\textsuperscript{12}

In their comments on the draft EIS, Sierra Club and Healthy Gulf stated that the draft EIS failed to adequately consider the cumulative impacts of the Project in conjunction with both existing and proposed projects in the Gulf Coast region. As the Commission acts on individual applications, we provide a project-specific analysis here. However, section 3.1 of this EIS (Environmental Trends and Planned Activities) describes several reasonably foreseeable planned activities that were identified that may influence the environmental baseline in which the Project would be constructed. This approach is consistent with CEQ’s 2020 NEPA rules.

This EIS describes the applicant’s stated purpose and need, and the need for the Project will be addressed by the Commission in the Order and is outside the scope of this document. Socioeconomic impacts of the Project are discussed in detail in section 3.10, and Project alternatives are discussed in section 4.0. Comments received are addressed as appropriate in the following sections of this document and in appendix F.

1.4 Permits, Approvals, and Regulatory Requirements

Review and development of the Project will require compliance with, as appropriate: section 7 of the Endangered Species Act of 1973 (ESA); the Migratory Bird Treaty Act (MBTA); the Bald and Golden Eagle Protection Act (BGEPA); the Magnuson-Stevens Fishery Conservation and Management Act (MSA); the Marine Mammal Protection Act; section 307 of the Coastal Zone Management Act (CZMA); the Clean Air Act (CAA); the Clean Water Act (CWA); and section 106 of the National Historic Preservation Act. These and other applicable statutes have been considered in the preparation of this EIS.

Table 1 provides a list of major federal, state, and local permits for the Project, as well as any responses that have been received to date. LA Storage would be responsible for obtaining all permits and approvals required for the Project, regardless of their listing in table 1. The FERC encourages cooperation between applicants and state and local

\textsuperscript{11} Kleppe v. Sierra Club, 427 U.S. 390 (1976) (holding that a broad-based environmental document is not required regarding decisions by federal agencies to allow future private activity within a region).

\textsuperscript{12} Atlantic Coast Pipeline, LLC, 161 FERC ¶ 61,042 at P284 (2017).
authorities, but this does not mean that state and local agencies, through applications of state and local laws, may prohibit or unreasonably delay the construction or operation of facilities approved by the FERC. Any state or local permits issued with respect to jurisdictional facilities must be consistent with the conditions of any authorization issued by the FERC.

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>Anticipated Environmental Permits, Reviews, and Consultations for the Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agency</td>
<td>Permit/Clearance</td>
</tr>
<tr>
<td>Federal</td>
<td></td>
</tr>
<tr>
<td>Federal Energy Regulatory Commission</td>
<td>Certificate of Public Convenience and Necessity</td>
</tr>
<tr>
<td>U.S. Army Corps of Engineers</td>
<td>Section 404/408/10 of the Clean Water Act (Title 33 of the U.S. Code, Section 1344)</td>
</tr>
<tr>
<td>U.S. Fish and Wildlife Service (FWS)</td>
<td>Consultation under Section 7 of the Endangered Species Act; the Migratory Bird Treaty Act; the Bald and Golden Eagle Protection Act; and the Fish and Wildlife Coordination Act (Title 16 of the U.S. Code, Sections 661 et seq.).</td>
</tr>
<tr>
<td>National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS)</td>
<td>Section 7 Consultation – NMFS Protected Resources Division</td>
</tr>
<tr>
<td>NOAA NMFS</td>
<td>Essential Fish Habitat Consultation – NMFS Habitat Conservation Group</td>
</tr>
<tr>
<td>NOAA NMFS</td>
<td>Marine Mammal Protection Act</td>
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<tr>
<td>State of Louisiana</td>
<td></td>
</tr>
<tr>
<td>Louisiana Department of Environmental Quality (LDEQ)</td>
<td>Louisiana Pollutant DischargeElimination System (LPDES) Permit – Sanitary Wastewater</td>
</tr>
<tr>
<td>LDEQ</td>
<td>Title V Air Permit for CompressorStation</td>
</tr>
<tr>
<td>LDEQ</td>
<td>Hydrostatic Test Water Discharge General Permit</td>
</tr>
<tr>
<td>LDEQ</td>
<td>Water Quality Certification</td>
</tr>
<tr>
<td>Agency</td>
<td>Permit/Clearance</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Louisiana Department of Culture, Recreation, &amp; Tourism, Division of Historic Preservation, Office of Cultural Development</td>
<td>Section 106 of the National Historic Preservation Act review, consultation, and comment on cultural resources studies and mitigation plans.</td>
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<tr>
<td>Louisiana Department of Natural Resources (LDNR), Office of Coastal Management</td>
<td>Coastal Use Permit</td>
</tr>
<tr>
<td>LDNR, Injection and Mining Division, Office of Conservation, Injection &amp; Mining Division</td>
<td>Class II Hydrocarbon Storage Permit for Pelican Well 004</td>
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<tr>
<td>LDNR, Injection and Mining Division, Office of Conservation, Injection &amp; Mining Division</td>
<td>Class III Solution Mining Permit for Pelican Well 004</td>
</tr>
<tr>
<td>LDNR, Injection and Mining Division, Office of Conservation, Injection &amp; Mining Division Underground Injection Control Program</td>
<td>Class II Injection Disposal Permit for Saltwater Disposal Wells</td>
</tr>
<tr>
<td>LDNR, Office of Coastal Management</td>
<td>Fresh Water Wells Notification Permit</td>
</tr>
<tr>
<td>LDNR, Office of Coastal Management</td>
<td>Fresh Water Wells Registration Permit</td>
</tr>
</tbody>
</table>
2.0 DESCRIPTION OF THE PROPOSED ACTION

2.1 Project Facilities

As described previously, the Project would involve the conversion of three existing salt dome caverns and the development of one new salt dome cavern for natural gas storage. The Project would also involve the construction and operation of two natural gas transmission pipelines, the Pelican Compressor Station, and a brine disposal system. The general Project area is shown in figure 1. Appendix A contains additional mapping (figures A-1 through A-6) showing the location of the Project facilities.

Pipeline Facilities

The Hackberry, CIP Lateral, and brine disposal pipelines would all begin at the Gas Storage Facility. The CIP Lateral would include about 4.9 miles of 42-inch-diameter pipeline extending to the CIP Interconnect Meter Station, the Hackberry Pipeline would include about 11.1 miles of 42-inch-diameter pipeline extending to the PAPLC Interconnect Meter Station, and the brine disposal pipeline would include about 6.2 miles of 16-inch-diameter pipeline extending to the SWD wells.

The southernmost 4.7 miles of the CIP Lateral would be collocated with the Hackberry Pipeline and the brine disposal pipeline. The remaining 0.2 mile of the CIP Lateral would be collocated with the Hackberry Pipeline (see figure A-1 in appendix A). The brine disposal pipeline would be collocated with an existing power line for 0.8 mile between mileposts (MP) 4.9 and 5.7 and with the existing CIP for about 0.8 mile between MPs 4.8 and 5.6. A cathodic protection system would be installed within the permanent rights-of-way to protect the pipelines from corrosion.

Aboveground Facilities

Meter Stations

LA Storage would construct two new meter stations in Calcasieu Parish: the CIP Interconnect Meter Station at the interconnect with the CIP; and the PAPLC Interconnect Meter Station at the interconnect with the planned PAPLC pipeline.

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13 The segments of the CIP Lateral, Hackberry Pipeline, and brine disposal pipeline within the Gas Storage Facility boundary (about 0.3 mile) are evaluated as part of the Gas Storage Facility. As such, the mileposts for the pipelines begin at the northwest boundary of the Gas Storage Facility (MP 0.0).
Gas Storage Facility

LA Storage would construct and operate the new Gas Storage Facility on 89.5 acres within a 160-acre tract of land owned by LA Storage in Cameron Parish. A portion of the Gas Storage Facility site was previously cleared for oil and gas operations. As a result, the area is mostly open land and contains three existing salt dome caverns and an existing well pad. LA Storage would convert the three existing salt dome caverns (Pelican Wells 001 through 003) to natural gas storage service and create one new salt dome cavern (Pelican Well 004) for additional natural gas storage service (see figure A-2). LA Storage also proposes to drill a second entry into Pelican Well 003 which would be a larger wellbore into the cavern to provide greater flexibility for injection and withdrawal. LA Storage’s three existing salt dome caverns are roughly cylindrical in shape and are approximately 1,500 feet tall on average and 150 feet in diameter. The top of the caverns are, on average, 2,900 feet below grade (fbg). The new cavern would be 2,200 feet tall and 200 feet wide, and the top would be at a depth of about 3,000 fbg.

In addition to the storage caverns, LA Storage would construct and operate the 21,400-hp Pelican Compressor Station (four natural gas driven reciprocating compressors) on the Gas Storage Facility site, as well as:

- dehydration equipment;
- pressure regulator equipment;
- filter separators;
- gas heaters;
- one 1,000-kilowatt diesel backup generator;
- one pig launcher/receiver assembly for each of the 42-inch-diameter natural gas pipelines (two total);
- mining water supply wells, pipes, and tanks for development of the new cavern; and
- additional auxiliary equipment.

The Gas Storage Facility would also include the leaching facility portion of the brine disposal system (brine storage tank, return lines, pumps, and cyclone separators). Brine removed from the existing caverns and created from solution mining the new cavern would be transported to the brine storage tank and solid separation equipment to allow solids separation prior to pumping the brine into the brine disposal pipeline. Solids removal would be performed as a part of routine maintenance, and disposal would be completed in accordance with applicable state and federal regulations.
Saltwater Disposal Wells

LA Storage would drill four wells on two pads in Calcasieu Parish for disposal of saltwater (brine). The SWD wells would be constructed and operated according to Louisiana Department of Natural Resources (LDNR) permitting requirements. Brine from the brine disposal pipeline would be injected into the SWD wells for disposal into suitable zones approved by the LDNR.

Access Roads and Contractor Yards

LA Storage identified 8 existing access roads and 7 new access roads for the Project, summarized in table 2. All access roads would be 40 feet in width, with the exception of AR-CAL-610B, which would be 80 feet wide. Roads would be widened as necessary to meet these widths.

<table>
<thead>
<tr>
<th>Access Road</th>
<th>Temporary or Permanent</th>
<th>Existing or New</th>
<th>Modifications</th>
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<tr>
<td>AR-CAL-601</td>
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<td>AR-CAL-142</td>
<td>Permanent</td>
<td>Existing</td>
<td>Minor grading if needed</td>
<td>40</td>
</tr>
<tr>
<td>AR-CAL-143</td>
<td>Permanent</td>
<td>Existing</td>
<td>Add culvert, gravel</td>
<td>44</td>
</tr>
</tbody>
</table>

* Access road AR-CAL-601 would be used to access the brine disposal pipeline and the CIP Interconnect Meter Station.

As shown in table 2, LA Storage would grade and add gravel to most existing access roads. LA Storage would also install a culvert to access road AR-CAL-143. LA Storage would use existing public roadways and driveways to access the Gas Storage Facility, the SWD wells, and the PAPLC Interconnect Meter Station. LA Storage has
also identified seven temporary water access routes that would be used to traverse to and from open water construction workspaces. The water access routes are listed in table 3.

Water access routes WR-CAM-604-C and WR-CAL-606A cross small areas (0.2 acre and 0.5 acre, respectively) of saturated, tidally-influenced wetland. Excavation (up to 7 feet) would be required for access by watercraft. LA Storage proposes that soils excavated (and stacked adjacent to affected lands) for the land-based portions of water access route WR-CAL-606-A be left in-place following construction to re-settle naturally via tidal influences. Leaving wetland soils in-place as proposed is a modification to our Procedures. LA Storage has accounted for these impacts in its Section 404/408/10 Permit application to the U.S. Army Corps of Engineers (USACE). Additionally, given the amount of wetlands affected and the ultimate resettling of excavated spoils, we find this modification to be acceptable.

<table>
<thead>
<tr>
<th>Access Road ID</th>
<th>MP a</th>
<th>Dimensions</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Width (feet)</td>
<td>Length</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WR-CAM-602-A</td>
<td>1.3</td>
<td>40</td>
<td>15,617</td>
<td></td>
</tr>
<tr>
<td>WR-CAM-602-B</td>
<td>1.4</td>
<td>40</td>
<td>6,517</td>
<td></td>
</tr>
<tr>
<td>WR-CAM-603-A</td>
<td>1.8</td>
<td>40</td>
<td>5,345</td>
<td></td>
</tr>
<tr>
<td>WR-CAM-604-A</td>
<td>3.1</td>
<td>100</td>
<td>2,659</td>
<td></td>
</tr>
<tr>
<td>WR-CAM-604-B</td>
<td>3.4</td>
<td>40</td>
<td>7,311</td>
<td></td>
</tr>
<tr>
<td>WR-CAM-604-C b</td>
<td>3.7</td>
<td>40</td>
<td>692</td>
<td></td>
</tr>
<tr>
<td>WR-CAL-606-A b</td>
<td>5.4</td>
<td>60/100</td>
<td>2,912</td>
<td></td>
</tr>
</tbody>
</table>

a Milepost at final intersection of water access route with mainline construction workspace.
b Land crossed by WR-CAM-604-C and WR-CAL-606A is included in table 2.

**2.2 Non-Jurisdictional Facilities**

Under Section 7 of the NGA, the Commission is required to consider, as part of the decision to approve facilities under its jurisdiction, all factors bearing on the public interest. Occasionally, proposed projects have associated facilities that do not come under the jurisdiction of the Commission. These “non-jurisdictional” facilities may be integral to the need for the proposed facilities, such as a power plant at the end of a jurisdictional pipeline, or they may be minor, non-integral components of the facilities under the Commission’s jurisdiction.

Electrical power from Entergy Corporation (Entergy) is already available on LA Storage’s property at the Gas Storage Facility site. LA Storage is currently coordinating with Entergy on operational and peak electrical load requirements. Entergy would build a new substation within the Gas Storage Facility and may upgrade the existing power line
to LA Storage’s property. The substation and upgraded power line would be non-jurisdictional facilities. If poles or conductors are replaced, the activities would occur within Entergy’s existing utility right-of-way. LA Storage would install additional overhead pole-mounted power lines within the Gas Storage Facility to extend power to buildings and equipment.

An existing municipal water line from the Town of Hackberry already extends to the Gas Storage Facility. Aside from the solution mining water supply wells included in the Project, no new water supply facilities would be needed for the Project; however, sections of the existing municipal water line within the proposed Gas Storage Facility may be replaced based on the final facility design. A private sanitary disposal system comprised of an on-site septic system would also be constructed within the Gas Storage Facility; LA Storage would apply for a septic system permit in accordance with Louisiana Department of Environmental Quality (LDEQ) requirements. Impacts associated with modifications to the electric, water, and sewage facilities within the Gas Storage Facility are included within the 89.5-acre footprint.

2.3 Land Requirements

Constructing the Project would require the use of about 484.5 acres of land, of which 266.7 acres would be required for facility operation. Specifically, the Gas Storage Facility would require 89.5 acres, the two meter stations would require about 8.1 acres, and the SWD wells would require about 5.5 acres for permanent operation. About 163.6 acres would be required for permanent pipeline right-of-way and permanent access roads. Two temporary contractor yards are proposed for this Project. Land requirements are summarized in table 4 below.

Table B-1 in appendix B lists the construction and permanent right-of-way widths by milepost for each proposed pipeline. LA Storage requests use of a variable width right-of-way that exceeds the 75-foot width in the FERC Procedures. We have reviewed this expansion and determined that it is justified. Table B-1 also provides additional justifications for areas where construction right-of-way widths are greater than 125 feet, permanent right-of-way widths are greater than 50 feet, or spacing between centerlines is greater than 50 feet.

Where the three pipelines would be installed in a single corridor, LA Storage proposes a combined construction right-of-way width of 230 feet to 330 feet. From MP 4.7 to 4.9, the combined construction right-of-way width for the CIP Lateral and Hackberry Pipeline would be 255 feet.
### TABLE 4
Land Requirements for the Proposed Project

<table>
<thead>
<tr>
<th>Facility</th>
<th>Land Required for Construction (acres)</th>
<th>Land Required for Operations (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pipeline Facilities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Collocated Pipelines (Hackberry Pipeline, CIP Lateral, and Brine Disposal Pipeline, MP 0.0 to MP 4.7)</td>
<td>144.8</td>
<td>100.5</td>
</tr>
<tr>
<td>2 Collocated Pipelines (Hackberry Pipeline and CIP Lateral, MP 4.7 to MP 4.9)</td>
<td>3.2</td>
<td>2.1</td>
</tr>
<tr>
<td>Hackberry Pipeline (MP 4.9 to MP 11.2)</td>
<td>71.6</td>
<td>36.8</td>
</tr>
<tr>
<td>Brine Disposal Pipeline (MP 4.7 to MP 6.2)</td>
<td>12.9</td>
<td>8.0</td>
</tr>
<tr>
<td>Additional Temporary Workspace</td>
<td>60.5</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>New Aboveground Facilities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas Storage Facility b</td>
<td>89.5</td>
<td>89.5</td>
</tr>
<tr>
<td>Meter Station – CIP Interconnect (MP 4.9)</td>
<td>3.1</td>
<td>3.1</td>
</tr>
<tr>
<td>Meter Station – PAPLC Interconnect (MP 11.1)</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>SWD Well Pads</td>
<td>5.5</td>
<td>5.5</td>
</tr>
<tr>
<td><strong>Access Roads and Contractor Yards</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access Roads c</td>
<td>24.2</td>
<td>16.2</td>
</tr>
<tr>
<td>Water Access Routes (open water)</td>
<td>43.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Contractor and Pipe Laydown Yards</td>
<td>21.3</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Project Total</strong></td>
<td><strong>485.5</strong></td>
<td><strong>266.7</strong></td>
</tr>
</tbody>
</table>

a. Includes land needed for operations. Addends may not equal the sums due to rounding.
b. Includes Pelican Compressor Station, cavern wells and piping, mining water supply wells and injection piping, and brine return piping, in addition to about 0.3 mile of CIP Lateral, Hackberry Pipeline, and brine disposal pipeline. The Gas Storage Facility would also be used for contractor staging, pipe storage, and spoil storage.
c. Includes portions of water access routes that cross land (0.7 acre).

Note: The numbers in this table have been rounded. Therefore, the total may not reflect the sum of the addends.

The 6.2 miles of the Hackberry Pipeline north of the CIP Interconnect Meter Station (MP 4.9 to 11.1) would be installed using a nominal 125-foot-wide construction right-of-way in upland areas and a nominal 100-foot-wide construction right-of-way in wetland areas constructed by conventional lay or push/pull. LA Storage would install the remaining 1.5 miles of the brine disposal pipeline (MP 4.7 to 6.2) in a 100-foot-wide construction right-of-way in uplands and saturated wetlands, and an 85-foot-wide construction right-of-way in non-saturated wetland areas.

A total of 60.5 acres of additional temporary workspace (ATWS) would be required along the pipeline routes for spoil storage and staging of materials and equipment staging. ATWS is required during construction and would revert to previous land use following construction with no permanent impacts. Two laydown yards (21.3 total acres) would be used for equipment, pipe, and material/spoil storage during construction of the pipelines, as well as for temporary field offices and pipe preparation/assembly areas.
Laydown yards were sited to overlap proposed rights-of-way to the extent possible. Both laydown yards would be restored to their original land use after pipeline construction is complete.

2.4 Construction and Operation Procedures

LA Storage would design, construct, test, operate, and maintain the proposed facilities to conform with or exceed federal, state, and local requirements, including the U.S. Department of Transportation’s (DOT) Minimum Safety Standards in 49 C.F.R. 192, *Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards*, and the Commission’s regulations at 18 C.F.R. 380.15, *Siting and Maintenance Requirements*.

During construction and restoration of the Project, LA Storage would implement measures consistent with the FERC’s *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan)\(^{14}\) and *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures)\(^{15}\) in addition to other federal, state, and local permit requirements. FERC’s Plan and Procedures are baseline construction and mitigation measures developed to minimize the impacts of construction on upland areas, wetlands, and waterbodies. LA Storage requests approval for numerous modifications to the Procedures: ATWS less than 50 feet from waterbodies and wetlands, pipeline right-of-way greater than 75 feet wide in wetlands, an aboveground facility within wetlands, access roads in wetlands, access roads encroaching on waterbodies, restoration measures for open water access routes, and for the number of Project environmental inspectors (EI). Further details of the modifications are discussed below and in sections 2.1 and 3.4.

LA Storage would also implement the measures contained in its Project-specific Environmental Plan\(^{16}\) which incorporates the FERC’s Plan and Procedures with modifications as indicated above. The Environmental Plan also includes LA Storage’s:

- dust control measures;
- spill prevention, containment, and notification measures;
- Unanticipated Environmental Media Discovery Plan;
- Unanticipated Discovery Plan for cultural resources; and
- Horizontal Directional Drilling Contingency Plan.

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\(^{15}\) The FERC Procedures can be viewed on the FERC website [https://www.ferc.gov/industries/gas/enviro/procedures.pdf](https://www.ferc.gov/industries/gas/enviro/procedures.pdf).

\(^{16}\) This plan can be viewed in LA Storage’s application filed on January 29, 2021 in Docket No. CP21-44-000.
LA Storage would employ one full-time EI to oversee and document environmental compliance. LA Storage proposes to construct the Project in multiple spreads; therefore, this would be a modification to our Plan and Procedures. Because the distances between Project components and the lengths of the pipeline segments are relatively short, we find this modification acceptable. All Project-related construction personnel would be informed of the EI’s authority and would receive job-appropriate environmental training prior to commencement of work on the Project. In addition, FERC staff or its representatives would monitor construction activities and may conduct periodic inspections to ensure compliance with the Commission’s environmental conditions and other mitigation measures proposed by LA Storage.

Prior to commencement of any construction-related activities, survey crews would stake the limits of the construction work areas and access roads. LA Storage would use flagging or fencing to avoid sensitive areas, as appropriate, and would contact the Louisiana “one-call” system and the national “811” call system to identify and mark buried utility lines prior to ground disturbance. Construction work areas would be cleared of existing vegetation and graded, as necessary, to create level surfaces for the movement of construction vehicles. In accordance with LA Storage’s Environmental Plan, temporary erosion and sediment control measures would be installed immediately following initial ground disturbance. LA Storage does not intend to burn vegetation cleared from the right-of-way during construction of the Project facilities. However, if LA Storage decides to burn cleared vegetation, all applicable federal, state, and local regulations would be followed. No blasting would be required for construction of Project facilities. Construction of the proposed facilities would require the use of structural clay, sand, and gravel for fill, road base, and surfacing. LA Storage expects that these materials would be obtained from existing facilities and that no new sources of these construction materials would be needed for the Project.

During Project operation, LA Storage would operate and maintain the proposed facilities in compliance with the Commission’s regulations in 18 C.F.R. 380.15 and the maintenance requirements in the Environmental Plan. Project facilities would be marked and identified in accordance with applicable DOT regulations. In accordance with 49 C.F.R. 192, the facilities would be inspected for leaks as part of scheduled operations and maintenance.

**Pipeline Construction Methods and Procedures**

Conventional construction methods consist of surveying, staking, clearing, grading, excavating, soil placement and storage, pipe stringing and bending, pipe assembly, welding, lowering-in and backfilling, hydrostatic testing, cleanup, restoration, and revegetation. For efficiency, crews working on each stage of construction would prefer to proceed along the pipeline right-of-way in one continuous assembly-line type operation. However, depending on several factors including, construction activity, crew availability and efficiency, accessibility and/or timing restrictions, and weather, crews
may work independently of each other. The entire process would be coordinated to reduce the total time a tract of land would be disturbed and, therefore, exposed to erosion and temporarily precluded from normal use. On any given property, ground disturbance and construction crews/equipment may be present for several days up to several months. LA Storage would rough grade the full width of the construction right-of-way, including temporary workspace, as necessary to allow for safe passage of equipment and to prepare the work surface for pipeline installation. Rootstock would be left in the temporary workspace wherever possible to encourage natural revegetation.

At locations where the proposed pipelines are collocated, the pipelines would be installed consecutively (one at a time) rather than concurrently so that at any given time, the construction workspace would be limited to the width necessary to construct one pipeline. Consequently, the active construction right-of-way would range in width from 100 to 125 feet depending on the pipeline diameter. In saturated areas, buoyancy control methods would be installed on the pipeline to keep it in place (e.g., concrete coating, set-on weights, screw anchors).

In accordance with its Environmental Plan, following construction, LA Storage would regrade and stabilize the disturbed temporary work areas with the goal of returning contours and drainage patterns to a condition that is similar to pre-construction, to the extent practical, and reseed the areas within days of final grading. LA Storage would leave temporary erosion control measures in place or replace them with interim erosion control measures until sufficient vegetative cover is re-established. Temporary erosion controls would be maintained throughout construction and until either completion of restoration or replacement with permanent erosion controls.

**Push-Pull Pipeline Construction**

For crossing saturated and inundated wetlands and waterbodies (see table 5), LA Storage would use the push-pull method. Construction across these areas would initially be similar to conventional crossings, but following excavation, LA Storage would push prefabricated lengths of pipe from the edge of the wetland or pull the pipe with a winch from the opposite bank of the wetland into the trench. Right-of-way clearing would be limited to the width necessary to install the pipeline. Typically, grading would not be necessary in saturated/inundated wetlands due to the level topography, and equipment mats would be placed over existing vegetation. LA Storage would install sediment barriers prior to grading where needed to protect adjacent wetland areas.

Crews would excavate the trench using amphibious excavators (pontoon-mounted trackhoes) or trackhoes (supported by fabricated equipment mats or floats). The excavated material would be stored adjacent to the trench. Trench spoil bank heights are anticipated to be relatively low because the excavated material would be saturated (lacking adequate unconfined compressive strength). LA Storage would store and join pipe at staging areas (push and pull sites).
To allow the pipeline to be floated into place, floats may be attached temporarily and then removed to allow the pipeline to settle into the bottom of the trench. LA Storage would place the excavated material over the pipeline to backfill the trench.

<table>
<thead>
<tr>
<th>Pipeline Facility</th>
<th>Begin Milepost</th>
<th>End Milepost</th>
<th>Length (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Collocated Pipelines a</td>
<td>0.0</td>
<td>3.1</td>
<td>3.1</td>
</tr>
<tr>
<td>3 Collocated Pipelines a</td>
<td>3.6</td>
<td>4.7</td>
<td>1.1</td>
</tr>
<tr>
<td>Hackberry Pipeline</td>
<td>5.4</td>
<td>6.4</td>
<td>1.0</td>
</tr>
<tr>
<td>Hackberry Pipeline</td>
<td>7.6</td>
<td>8.1</td>
<td>0.6</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td><strong>5.8</strong> b</td>
</tr>
</tbody>
</table>

a The three collocated pipelines are the Hackberry Pipeline, the CIP Lateral, and the brine disposal pipeline, from MP 0.0 to MP 4.7.

b Given pipeline collocation, 14.2 total miles of pipeline would be installed within 5.8 miles of right-of-way.

To install the three collocated pipelines across Black Lake, LA Storage would excavate a flotation ditch, beginning at the proposed southern push site, crossing the wetlands along the south bank of Black Lake, and terminating at the Salt Ditch HDD exit point. Based on preliminary bathymetric survey information of Black Lake, typical water depths along the pipeline route range from 2 to 5 feet. LA Storage would use barge-mounted trackhoes and marsh trackhoes working in a line to excavate the flotation ditch. The ditch would be a minimum of 8 feet deep and about 25 feet wide at the top. LA Storage would place excavated materials along both sides of the trench to form the channel in which the pipeline would float. The spoil piles would be about 20 feet wide on the non-working side of the trench and about 75 feet wide on the working side. From the southern push site, crews would line up, weld, non-destructively test, coat field joints, install floats, and push the pipeline into the excavated flotation ditch from the push site to the exit point.

Following pipeline installation in Black Lake, LA Storage would backfill the ditch in compliance with the conditions of its Coastal Use Permit. LA Storage would map pre-construction contours and would also map post-construction contours of the lakebed. LA Storage anticipates that all excavated sediments would be used for backfilling the trench to pre-construction contours and does not anticipate needing to dispose of any excess spoils.

**Horizontal Directional Drill**

The HDD method allows for pipeline installation without the excavation of a trench, by drilling under a feature and pulling the pipe back through the borehole. The initial step of placing guide wires over the path of the drill may require minor hand clearing of a 3- to 5-foot-wide corridor to enable a line of sight. A small-diameter pilot hole is then drilled under the area to be crossed and enlarged through successive reaming.
passes until it is large enough to accommodate the pipeline. The head of the pilot drill string contains a pivoting head that can be steered by an operator as the drill progresses. During this process, drilling fluid consisting primarily of bentonite clay and water is continuously pumped into the borehole to lubricate the drill bit, remove cuttings, and maintain the integrity of the borehole. When the borehole has been sufficiently enlarged, a prefabricated segment of pipeline is attached behind the reaming tool on the exit side of the crossing and pulled back through the borehole towards the drill rig.

HDD drilling fluid is pressurized and has the potential to be released inadvertently to the surface if fractures or fissures are encountered in the substrate during drilling. The potential for an inadvertent release is generally greatest during drilling of the pilot hole and/or when drills are at their shallowest depths. LA Storage has developed site-specific HDD plans and an HDD Contingency Plan. The HDD Contingency Plan provides procedures for monitoring drilling activities to minimize the potential for inadvertent releases of drilling fluids to the ground surface and provides for timely detection of and response to any releases. This plan also provides contingency crossing plans in the event of drill failure. We have reviewed the HDD Contingency Plan and determined that it is sufficient to minimize impacts on resources.

LA Storage would install pipelines across Salt Ditch, the GIWW, and Bayou Choupique by HDD as shown in table 6. The size of the temporary workspaces needed at the entry and exit points of each HDD would vary by location. The largest would be at the Black Lake HDD where the entry workspace would be 500 feet by 375 feet and the exit would be 426 feet by 312 feet.

<table>
<thead>
<tr>
<th>Primary Waterbody Crossed</th>
<th>Pipelines</th>
<th>Entry Milepost</th>
<th>Exit Milepost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salt Ditch</td>
<td>3 Collocated Pipelines (Hackberry Pipeline, CIP Lateral, and Brine Disposal Pipeline)</td>
<td>3.6</td>
<td>3.1</td>
</tr>
<tr>
<td>GIWW</td>
<td>Hackberry Pipeline</td>
<td>4.8</td>
<td>5.3</td>
</tr>
<tr>
<td>Bayou Choupique</td>
<td>Hackberry Pipeline</td>
<td>7.1</td>
<td>7.6</td>
</tr>
</tbody>
</table>

**Conventional Bore**

The conventional bore method is a trenchless construction method that involves excavation of a launcher pit on one side of a crossing and a receiving pit on the other side. A boring machine is then lowered to the bottom of the bore pit to tunnel using a cutting head mounted on an auger. The auger rotates through a bore tube, both of which are pushed forward as the hole is cut. A pipeline segment of sufficient length is then installed through the bored hole and welded to the adjacent pipeline. The excavation of the hole and installation of the pipe occur relatively simultaneously to maintain borehole integrity.
LA Storage proposes to install the Hackberry Pipeline under Ellis Moss Road via a 100-foot-long bore near MP 6.8, and under Sam Vincent Road via a 125-foot-long bore near MP 8.8.

**Foreign Pipeline Crossings**

LA Storage conducted a sonar survey of the proposed pipeline route across Black Lake, which identified 11 foreign pipelines, including risers and pipe racks, that could be encountered during open cut trenching activities. A pipe rack belonging to Texas Petroleum crosses Black Lake. Four-inch and 6-inch-diameter gathering lines utilize this pipe rack to transfer product to Texas Petroleum’s facility at the end of Black Lake Road. LA Storage would remove flow lines to the Texas Petroleum pipe rack across the working width of the proposed pipelines. LA Storage coordinated with Texas Petroleum on the planned actions at the pipe rack and would coordinate with Texas Petroleum on timing and other factors prior to any construction that may affect its resources. LA Storage would restore the pipe rack and pipe within the workspace back to like or better condition post-construction.

The HDDs would cross under 12 additional foreign pipelines. LA Storage would conduct additional surveys and/or probe, if required, to identify smaller foreign pipelines and other buried utilities that could be encountered during construction at aboveground facility sites and during installation of the brine disposal pipeline. Crossing of foreign pipelines generally would require the pipeline to be buried at greater depths, depending upon the depth of the foreign pipeline. A minimum of 12 inches of clearance (49 C.F.R. § 192.325) would be maintained when crossing foreign pipelines, utilities, or other structures. At aboveground utility crossings, such as power lines, LA Storage would bury the pipeline with a minimum of 3 feet of cover. Trenching in the vicinity of these foreign utilities would begin only after LA Storage completes the appropriate notification procedures.

**Waterbody and Wetland Crossings and Construction Methods**

The Project would cross 33 waterbodies and 88 wetlands. LA Storage would use the conventional open-cut crossing technique at 15 of the waterbody crossings, and the remaining waterbodies would be crossed by conventional bore, HDD, or the push-pull method (see table B-3). All waterbodies would be re-evaluated prior to constructing the crossing to confirm proposed crossing methods based on conditions at the time of crossing. LA Storage would request any necessary change to a waterbody crossing method through the FERC variance process.

LA Storage would design and implement waterbody crossings in accordance with the USACE New Orleans District permitting requirements and its Environmental Plan. The conventional open-cut construction method would involve excavation of the pipeline trench across the waterbody, installation of a prefabricated segment of pipe, and backfilling of the trench with native material. Construction workspace is not isolated.
from the stream flow and the objective of this method is to complete the waterbody crossing as quickly as practical in order to minimize the duration of impacts on aquatic resources. Wetlands not crossed using the push-pull method or HDD (26 wetlands) would be crossed by open-cut trenching. In unsaturated wetlands, up to 12 inches of topsoil would be removed from the trench line and stored separately from subsoil. Topsoil would not be stripped in saturated wetlands, where no topsoil layer is evident, or in areas where the topsoil depth exceeds the depth of the trench. Special construction techniques would be used in saturated wetlands, including use of low ground pressure equipment, timber construction mats, or layers of timber riprap. LA Storage would add coating or weights to ensure that the pipeline would not float in saturated conditions. Following construction, LA Storage would remove timber mats and timber riprap and return surface contours as close to pre-existing condition as possible. In our experience, removal of timber mats is usually successful, but on occasion a mat, or portion of a mat, gets buried and cannot be retrieved. This does not generally prevent restoration but could reduce the speed with which revegetation occurs. Wetlands would be allowed to revegetate naturally, or as required by applicable permits.

**Hydrostatic Testing**

All pipe would be hydrostatically tested in accordance with DOT’s regulations at 49 C.F.R. Part 192 prior to being put in service. Water for hydrostatic testing of the pipelines, compressor station piping, and HDD drilling fluid would be obtained from commercial sources, municipal sources, or the proposed on-site water wells (completed in the 500-foot sand). Hydrostatic test water would be sampled, tested, and discharged in accordance with regulatory agency permit requirements (including the Louisiana General Permit [LAG67000]) and LA Storage’s Environmental Plan. The total volume of water that would be required for all hydrostatic testing is approximately 7.2 million gallons. The Project would require 2.8 million gallons of water for HDD drilling fluids.

**Aboveground Facility Construction**

The Project’s aboveground facilities would be constructed and maintained in compliance with federal regulations and guidelines and in accordance with the specific requirements of applicable federal and state approvals. After completion of construction, the area within the fence line of the Gas Storage Facility would be covered with gravel, limestone, or similar materials, or would be stabilized and revegetated using the seed mixes and soil amendments approved by the Natural Resources Conservation Service (NRCS). Each meter station and SWD well pad would also be fenced and stabilized with gravel cover.

**Conversion of Existing Storage Caverns**

LA Storage would remove the brine from each of the three existing storage caverns within the Gas Storage Facility by injecting natural gas into the storage cavern(s) through the existing well(s), displacing the brine and causing it to return to the surface.
Specifically, natural gas would be injected into the annular space between two well casings, while flowing the brine through a third, smaller well casing to the surface. The removed brine would be disposed via the brine disposal system (described below). A schematic diagram of the completed wells is included as figure A-7 in appendix A. LA Storage would drill a second entry into Cavern 3 as part of the Project (figure A-8). The second entry would be a larger wellbore into the cavern to provide greater flexibility for injection and withdrawal. LA Storage would construct a permanent well pad to include both the existing entry into Cavern 3 (Pelican Well 003) and the second entry (Pelican Well 003a).

**New Storage Cavern**

LA Storage proposes to construct a new gas storage cavern within the Gas Storage Facility. As illustrated on figure A-9, LA Storage would drill a new well, Pelican Well 004, to a depth of about 5,200 feet. The well would consist of a series of four nested well casings ranging in diameter from 48 inches to 20 inches and extending to various depths above the top of the cavern as shown in figure A-9. A 16-inch-diameter outer leaching casing would be initially hung to an approximate depth of 5,042 feet, and a 10.75-inch-diameter leaching casing would be hung to an approximate depth of 5,150 feet. LA Storage would use about 150 feet at the bottom of the new cavern as a sump to collect solids that may fall out during the leaching and brining process. Upon completion of solution mining, the top and base of the new cavern would be at an approximate depth of 3,000 feet and 5,200 feet, respectively, with the top of salt at an approximate depth of 2,200 feet. The cavern would be about 200 feet wide and roughly cylindrical. During construction of Pelican Well 004, LA Storage would place board mats around the well to support equipment and establish a permanent well pad of gravel or a similar surfacing material around the wellhead following completion.

LA Storage would drill six freshwater wells on three pads within the Gas Storage Facility to provide water for solution mining of the new cavern. Mining water would be injected down the 10.75-inch-diameter tubing and returned to the surface up the 16-inch-diameter by 10.75-inch annulus during the initial leaching process. About 3.5 billion gallons of water would be required to create the new cavern by solution mining.

As the cavern is developed, LA Storage would use a blanket material, which is immiscible with and lighter (lower specific gravity) than water and brine, to prevent uncontrolled solution mining of the cavern roof and to protect the production-casing cement seal. As described in the LDNR Office of Conservation—Injection and Mining Subpart 5 of Statewide Order No. 29-M-3, Title 43 Chapter 33: “Blanket material typically consists of crude oil, diesel, mineral oil, or some fluid possessing similar noncorrosive, nonsoluble, low density properties.” LA Storage would use diesel fuel as the blanket material because it is readily available in the West Hackberry area and would be used for other purposes such as fueling of equipment and backup generators.
The diesel fuel would be stored in a 21,000-gallon storage tank located at the cavern site and conveyed into the cavern via aboveground piping. Storage would be compliant with secondary containment regulatory requirements.

**Brine Disposal System**

LA Storage would construct and operate the SWD wells in accordance with LDNR permitting requirements. LA Storage would drill two SWD wells to a depth of about 6,000 feet and two SWD wells would be drilled to an approximate depth of 8,000 feet. SWD Well 3 would be completed using an existing test well that is associated with an unrelated non-jurisdictional project. LA Storage would complete the SWD wells with 9 5/8-inch-diameter casing and 7-inch-diameter tubing. Brine would be injected via the 7-inch-diameter tubing into suitable zones approved by the LDNR.

**Construction Schedule**

LA Storage anticipates that the construction of the compressor station and pipelines, and conversion of existing caverns to natural gas storage would begin in 2022. Construction of the Gas Storage Facility would begin with construction of the water supply wells, SWD wells, and leaching system followed by construction of the compressor station. Construction of the compressor station and Gas Storage Facility are expected to take 21 months and be complete in 2023-2024. Pipeline and meter station construction is expected to take 14 months and be complete in 2023. Drilling for the new cavern (Pelican Well 004) is anticipated to be complete in 2024 for a total construction time of 23 months and an in-service date of 2025.

LA Storage would conduct the majority of construction activities from 7:00 a.m. and 7:00 p.m., Monday through Saturday. Drilling of the cavern wells and SWD wells would occur 24 hours per day, 7 days per week. Drilling of the new Cavern 3 well is anticipated to occur over 10 weeks between months 1 and 3 of Project construction and well drilling for Cavern 4 is anticipated to occur over 16 weeks between months 20 and 23 of Project construction. The mining water supply well drilling would occur between 7:00 a.m. and 10:00 p.m. Monday through Saturday for eight weeks during the first two months of Project construction.

A total temporary labor force of about 313 workers would be hired to construct the proposed facilities. The natural gas pipelines, pipeline interconnects, meter stations, and brine disposal pipeline would be constructed in one spread with about 140 workers. The new storage cavern and facilities pads would be constructed concurrent with pipeline construction. Construction of the leaching plant and compressor station require about 150 workers. Approximately 35 workers would be required for drilling the storage cavern, SWD wells, and mining water supply wells.
3.0 ENVIRONMENTAL ANALYSIS

The following sections discuss the Project’s potential impacts on environmental resources. Our description of the affected environment is based on a combination of data sources, including desktop resources such as scientific literature and regulatory agency reports, information from resource and permitting agencies, scoping comments, and field data collected by LA Storage and its consultants that was provided in their application and in response to information requests from our staff.

For the purposes of this analysis, we discuss four impact durations: temporary, short-term, long-term, and permanent. A temporary impact generally occurs during construction with the resource returning to a condition similar to that prior to construction almost immediately afterward. A short-term impact could continue for up to three years following construction. An impact is considered long-term if the resource would require more than three years to recover. A permanent impact would occur if an activity modifies a resource to the extent that it would not be restored during the life of the Project. Permanent impacts may also extend beyond the life of the Project. For example, the construction and operation of aboveground facilities would also cause permanent impacts. When determining the significance of an impact(s), we consider the duration of the impact; the geographic, biological, and/or social context in which the impact would occur; and the magnitude and intensity of the impact. The duration, context, and magnitude of impacts vary by resource and therefore significance varies accordingly. Lastly, our analysis considers impacts on resources collectively without discerning the specific categories (e.g., direct, indirect, primary, and secondary).

Our impacts conclusions and determinations of significance are based on the successful restoration of affected lands. The restoration of affected lands is a process, dependent on a number of factors, and may be accomplished relatively quickly (1-2 growing seasons) or may require several years to complete. Restoration of affected lands can be adversely affected by weather conditions such as drought or abnormal rainfall, landowner actions (e.g., physical changes to land use, cattle grazing), and/or third-party actions including non-project use/activities. If initial restoration activities are unsuccessful, affected lands may exhibit uneven grades, ponding, rill erosion, inconsistent revegetation, and/or other adverse conditions that are not consistent with preconstruction conditions. Some of these restoration issues may require additional attention by the applicant or may resolve themselves through normal land use practices and/or natural processes. Ineffective restoration may result in unexpected impacts and the prolonging of impacts described in the following analyses. It is our expectation that if initial restoration activities are unsuccessful, LA Storage, in consultation with the affected landowner and consistent with our environmental compliance monitoring and reporting requirements, would continue to assess, take action, and implement measures to ensure the eventual restoration of the affected resources.
The EPA has assessed indicators of climate change and summarizes this information in its *Climate Change Indicators in the United States.*

17 Included in the summary is a conclusion that a larger percentage of “heavy participation” events, in recent years, have come in the form of intense single-day events. 18 “Heavy precipitation” which refers to instances during which the amount of rain (or snow) experienced in a location substantially exceeds what is normal and intense single-day events can increase the risk and intensity of project-related impacts on the environment. Based on our experience regulating the construction of interstate natural gas transmission pipeline projects, “heavy participation” and intense single-day events are not wholly uncommon, especially for projects in which construction spans several months, and it is reasonable to expect that one or more of these events may occur during a project’s construction. Predicting these and other extreme weather events (hurricanes and tropical storms) is difficult; however, should an extreme weather event occur (“heavy participation” or an intense single-day event), project workspaces could become inundated, spoil piles could experience some erosion, and erosion control devices could be overwhelmed. Individually or collectively, these actions may result in off right-of-way impacts and would likely increase rates of erosion, turbidity, and sedimentation. These impacts could in turn affect soil/slope stability, water quality, aquatic wildlife, and other environmental resources. In addition, extreme 1-day precipitation events may lengthen the amount of time required to adequately restore the construction right-of-way. If off-right-of-way impacts occur, LA Storage would need to request additional approvals from FERC and affected landowners to access these off-right-of-way areas to remediate the erosion and clean-up the sedimentation.

The impacts of an extreme weather event(s) must be assessed and addressed in a timely manner by the company so as to avoid further impacts on the environment. Should a project proponent fail to address these impacts in a timely fashion, the project would be out of compliance with the requirements contained within the FERC Plan. Specifically, the Plan requires that project proponents inspect and ensure the maintenance of temporary erosion control measures within 24 hours of each 0.5 inch of rainfall. The Plan then requires that the repair of all ineffective temporary erosion control measures occur within 24 hours of identification, or as soon as conditions allow. Still, it should be noted that these measures ensure that once an incident occurs, it will be remediated. The occurrence of an incident involving off-right-of-way sediment transport is more likely

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18 The prevalence of extreme single-day precipitation events remained fairly steady between 1910 and the 1980s, but has risen substantially since then. Over the entire period from 1910 to 2020, the portion of the country experiencing extreme single-day precipitation events increased at a rate of about half a percentage point per decade.
now than in the past based on the increase in extreme 1-day weather events and should be expected in regions that may experience these events, which includes the Project area.

The analysis contained in this EIS is based upon LA Storage’s application and supplemental filings and our experience with the construction and operation of natural gas infrastructure. However, if the Project is approved and proceeds to the construction phase, it is not uncommon for a project proponent to require modifications (e.g., minor changes in workspace configurations). These changes are often identified by a company once on-the-ground implementation work is initiated. Any Project modifications would be subject to review and approval from the Director of FERC’s Office of Energy Projects (OEP) and any other permitting/authorizing agencies with jurisdiction.

3.1 Environmental Trends and Planned Activities

The Project is within the West Gulf Coastal Plain section of the Coastal Plain physiographic province (U.S. Geological Survey [USGS], 2008). The West Gulf Coastal Plain section consists of Late Cretaceous to Holocene age deposits formed in a mostly marine environment and later uplifted and tilted seaward. The surficial geology of the Project area consists of Quaternary age clay or mud with either silt or sand, deposited in alluvial, bay, marsh, and deltaic environments (USGS, 2005; Whiting, 1980). Project area elevations range from near mean sea level to about 15 feet above mean sea level, with the highest elevations occurring within the Gas Storage Facility site.

Climate in the Gulf Coast Region is dominated by the flow of warm, humid, tropical air from the Gulf of Mexico. During winter, the area is alternately influenced by a continental regime, with winds from the north and west, and by a modified maritime regime that prevails during most of the winter. The average minimum temperature in January (typically the coldest month) is approximately 43 degrees Fahrenheit (°F) and the average maximum temperature in August (typically the warmest month) is approximately 91.5 °F (National Oceanic and Atmospheric Administration [NOAA], 2020). The average annual precipitation is approximately 60 inches. Severe weather events documented in Cameron and Calcasieu Parishes include thunderstorms, tornados, hail, drought, flooding, tropical storms, and hurricanes.

Coastal land loss is an ongoing process, which includes discrete (hurricanes) and continuous (subsidence and sea level rise) processes. For example, from 2004 through 2008 alone, Hurricanes Katrina, Rita, Gustav, and Ike eroded more than 300 square miles of the Louisiana coastland (USGS, 2011). Regional subsidence is widespread through coastal Louisiana due to natural consolidation of sediments, downwarping of basement rocks, and global sea level rise. The proposed Project generally falls within the Calcasieu-Sabine River Basin. Subsidence rates in this basin are considered to be low (between zero and 1 foot every 100 years) (USACE, 2016).
Louisiana’s wetlands today represent about 40 percent of the wetlands of the continental United States. Louisiana’s 3 million acres of wetland are lost at the rate of about 75 square kilometers (18,533 acres) annually. The degradation and loss of wetlands in Louisiana can be attributed to natural processes; construction of levees that channel the Mississippi River; an extensive system of dredged canals and flood-control structures; and fill to accommodate development and agriculture (USGS, n.d.). Rising sea level and subsidence accelerate coastal erosion and wetland loss, exacerbate flooding, and increase storm impacts.

The Project facilities are in an area characterized by large expanses of marshland and open water, as well as industrial facilities such as the U.S. Department of Energy’s (DOE) West Hackberry Strategic Petroleum Reserve (SPR) and oil and gas production facilities. Population densities for Calcasieu and Cameron Parishes are approximately 181.2 persons per square mile and 5.3 persons per square mile, respectively (U.S. Census Bureau, 2018a). One existing Project access road is within 50 feet of a residence; other than the use and improvement of temporary access roads, no construction activities would occur within 150 feet of any residences.

General past activities in the Project parishes have included construction of natural gas and oil facilities, agriculture, and commercial and residential development projects. The Project is located adjacent to the DOE’s West Hackberry SPR. The SPR was established to reduce the impact of disruptions in supplies of petroleum products and to carry out obligations of the United States under the international energy program. Federally-owned emergency crude oil stocks are stored in underground salt caverns at four sites along the coastline of the Gulf of Mexico. The West Hackberry SPR became operational in 1988 and currently has 21 storage caverns, an authorized crude oil storage capacity of 220.4 million barrels and a cavern inventory of 192.3 million barrels (DOE, 2020).

In its comments on the draft EIS, RESTORE states that wetland impacts from the Project should be considered along with the Hackberry Carbon Sequestration Project (HCS), which would also disrupt wetlands and Essential Fish Habitat (EFH). In their comments on the draft EIS, Sierra Club and Healthy Gulf commented that while the draft EIS describes a few reasonably foreseeable planned activities, it failed to adequately consider other projects within the Project’s affected area and failed to evaluate the cumulative impacts and effects of the Project in connection with other reasonably foreseeable LNG export facilities and associated infrastructure proposed nearby. Sierra Club and Healthy Gulf referenced the HCS, Delfin LNG, CP2 LNG, Sabine Pass LNG and the Sabine Pass LNG Expansion, and Port Arthur LNG in their comments.

As the Commission acts on individual applications, we provide a project-specific analysis here, but include below a description of reasonably foreseeable planned activities that were identified that may influence the environmental baseline in which the Project would be constructed. This approach is consistent with CEQ’s 2020 NEPA rules.
Six reasonably foreseeable planned activities would be within the same 12-digit hydrologic unit codes (HUC) as the Hackberry Storage Project: the Driftwood LNG Project, the PAPLC, the Line 200 and Line 300 Project, the HCS, the CP Express Pipeline, and the Cameron LNG Expansion Project.

As of June 23, 2021, Driftwood is targeting the first quarter of 2022 for start of construction, with completion in mid-2026. Construction and operation of the Driftwood LNG Facility would result in the permanent loss of about 319.3 acres of wetlands. The Driftwood LNG Facility would be approximately 1.5 miles northeast of LA Storage’s proposed SWD well pads. Constructing and operating the associated pipeline would temporarily and permanently impact about 425.9 and 78.1 acres of wetlands, respectively. In total, about 551.3 acres of vegetation would be permanently cleared at the Driftwood LNG Facility site and about 86.2 acres of vegetated areas would be converted to industrial use associated with operation of the compressor stations and meter stations. The Driftwood LNG Project would develop several BUDM areas, one of which would be crossed by the Hackberry Pipeline from approximate MP 5.4 to 6.8. Dredging activities in support of the Driftwood LNG Marine Facility, pioneer docks, and materials offloading facility would occur in the Calcasieu River and GIWW. For the Marine Berth, Driftwood would use a cutterhead suction dredge, which minimizes turbidity at the dredging site compared to mechanical dredging methods, such as clamshell and dragline dredges.

Approximately 10 miles of the proposed PAPLC share a HUC-12 with the Hackberry Storage Project. PAPL has stated that it anticipates it would begin construction of the PAPLC in the third quarter of 2022. In Louisiana, construction and operation of the PAPLC would affect a total of about 636.9 acres of wetlands, of which 244.1 acres would be permanently disturbed. Approximately 2,053 acres of vegetated land would be cleared, including 547 acres of upland forest and 173 acres of forested wetland. Approximately 184 acres of upland forest and 68 acres of forested wetland would be retained for operation.

Approximately 11.5 miles of the proposed Line 200 and Line 300 share a HUC-12 with the Hackberry Storage Project. The sponsor, Driftwood Pipeline, LLC, states that it anticipates that construction of the Line 200 and Line 300 Project would commence in late-2022/early-2023. In Calcasieu Parish, construction and operation of Line 200 and Line 300 would affect a total of about 110.5 acres of wetlands, of which 18.7 acres of primarily forested wetland would be permanently retained for pipeline right-of-way. A total of approximately 841.5 acres of vegetated land would be cleared, including 160 acres of forest and 118.4 acres of pine plantation. Approximately 66.1 acres of forest and 40.7 acres of pine plantation would be retained for operation.

The entire HCS would share a HUC-12 with the Hackberry Storage Project and the suction pipeline of the HCS would intersect the Hackberry Storage Project workspace at approximate milepost 0.0. The HCS is designed to capture and compress carbon
dioxide (CO₂) from nearby LNG and industrial facilities, and transfer compressed CO₂ by pipeline to a pump station where it would be injected into Miocene-aged sands at a depth of approximately 10,000 ftbg. The HCS is dependent on receipt of permits for its injection well and would commence construction upon receipt of required permits. The HCS would affect a total of approximately 330 acres, comprised of approximately 290 acres of open water, 16 acres of brackish marsh, 1 acre total of freshwater scrub-shrub marsh (PSS) and freshwater palustrine forested (PFO) wetlands, and 23 acres of upland during construction. The HCS would convert approximately 0.5 acre of PFO and PSS wetland to freshwater palustrine emergent (PEM) wetland or upland. In its comments on the draft EIS, RESTORE urged FERC to deny permits for the HCS; however, the HCS is not an application before the FERC.

In December 2021, Venture Global CP2 LNG, LLC and Venture Global CP Express, LLC submitted an application proposing to construct, install, own, operate LNG and pipeline facilities (the CP2 LNG facility and CP Express Pipeline) in Cameron and Calcasieu Parishes, Louisiana. Approximately 4.0 miles of the proposed CP Express Pipeline share a HUC-12 with the Hackberry Storage Project. The sponsor of the CP Express Pipeline states that construction is anticipated to commence during the second quarter of 2023, with phased in-service targeted to begin during the second quarter of 2026. The CP Express Pipeline would affect a total of approximately 941 acres of wetlands, including approximately 38 acres of PSS wetlands and 213 acres of PFO wetlands. A total of approximately 53 acres of PSS and PFO wetlands would be converted to PEM wetlands within the operational pipeline right-of-way.

On March 25, 2020, the Commission granted Cameron LNG’s request for an extension of time to complete construction of the Cameron LNG Expansion Project, extending the time to complete all phases of the project until May 5, 2024. The Cameron LNG Expansion Project would involve modifications to the existing LNG Terminal facilities and the construction of new infrastructure. After issuance of the draft EIS, Cameron LNG filed an amendment application in January 2022 for the Cameron LNG Expansion (CP22-41). This application would amend the previously approved Cameron Expansion Project which increased the Cameron LNG Terminal’s LNG production capacity by 9.97 million (metric) tonnes per annum (MTPA) from approximately 14.95 MTPA to 24.92 MTPA. The amendment proposes design enhancements to reduce GHG emissions and increase the overall reliability and capacity of one new train. The overall maximum production capacity of the amended Expansion Project would be reduced from 9.97 MTPA to 6.75 MTPA. The construction area for the new facilities would be entirely within the previously authorized LNG Terminal and would not require any new construction infrastructure (i.e., roads or docks) or modifications. No wetlands would be affected by the construction of the Cameron LNG Expansion Project.

Eleven natural gas projects (Driftwood LNG; Cameron Liquefaction; Cameron LNG Expansion; Magnolia LNG and Lake Charles Expansion; Commonwealth LNG; Calcasieu Pass LNG; Cameron Extension; Lake Charles Pipeline Modifications and
Liquefaction; PAPLC; CP2 LNG and CP Express Pipeline; and Line 200 and Line 300) and the HCS are within the same parishes as the proposed Project and would contribute to temporary impacts on traffic, and short- and long-term increased tax revenues.

Air emission sources at the proposed Pelican Compressor Station were modeled interactively with other sources that have a potential for air quality impact overlap (i.e., within 50 kilometers). This modeling indicated an exceedance of the 1-hour nitrogen dioxide (NO₂) National Ambient Air Quality Standard (NAAQS). Modeling was also used to compare Project emissions to the collective impact, which indicated that the Project would not cause or significantly contribute to an exceedance of the NAAQS concentrations. Section 3.11 of this EIS provides additional information on the air quality analysis that was completed for the Project. Specific environmental resources and land uses affected by the Project activities are discussed below.

3.2 Geology

Salt domes are common along the Gulf Coast of Texas and Louisiana. They were created when roughly circular masses of salt from thick, deeply buried layers slowly rose upward through denser formations. LA Storage’s Gas Storage Facility site is located over one of these salt features, referred to as the West Hackberry Salt Dome. The West Hackberry Salt Dome is roughly elliptical in plan view, trending east-northeast to west-southwest. The dome is approximately 4 miles long (east-west) and 2 miles wide (north-south), and the top of salt is at a depth of about 2,000 feet (Sandia, 2015). The top of the dome is relatively flat and is covered with a layer of anhydrite and carbonate cap rock.

Geotechnical Considerations

LA Storage conducted two geotechnical investigations to evaluate subsurface conditions in the area of the compressor station site. In 2008, two 100-foot-deep soil borings and six 50-foot-deep soil borings were conducted at accessible locations near the proposed facility. Generally, the borings encountered 2.5 feet of fill underlain by silty clay, sandy clay, and clay to 100 fbg. Clays were determined to have moderate to high plasticity, which can cause shrinking and swelling in response to moisture fluctuations near the surface. In 2015, six soil borings conducted at the compressor station site generally encountered up to 1.5 feet of clayey silt with sand, underlain by clay to the termination depth of 6 fbg.

LA Storage states that the foundation design would be completed during detailed engineering design and that it would be selected based upon the required loads and site geotechnical data. LA Storage would design aboveground facilities to account for expansive soils. Typical mitigation includes the replacement of existing soil with an impermeable soil (e.g., engineered fill). LA Storage also anticipates that foundations would require pile installation, and states that piles are not expected to exceed 60 fbg.
Shallow potable aquifers are at a depth of 200 fbg to 300 fbg in the Project vicinity; therefore, if the use of piles is determined to be necessary, the piles would not impact or penetrate underlying potable aquifers.

**HDD Feasibility**

LA Storage would utilize the HDD method to install pipelines at three locations (see table 6). LA Storage has filed site-specific HDD plans and an HDD Contingency Plan that describes drilling fluid composition and management, HDD monitoring procedures and frequency, and response procedures should an inadvertent return of drilling fluid occur. We have reviewed LA Storage’s HDD Contingency Plan and find it acceptable. LA Storage has also committed to conducting geotechnical investigations at each of the proposed HDD crossing locations and to file the results for FERC staff review and approval no later than the time LA Storage files its Implementation Plan. However, in our experience, a feasibility/hydrofracture assessment is necessary in order to further refine drill feasibility and predict the risk of inadvertent returns of drilling fluid to the ground surface. Therefore, we recommend that:

- **With its Implementation Plan**, LA Storage should file with the Secretary, for review and written approval by the Director of the OEP, or the Director’s designee, feasibility/hydrofracture assessments for each proposed HDD that include:
  a. the results of site-specific geotechnical investigation;
  b. an alignment plan and profile that incorporates site-specific geotechnical information;
  c. a description of any subsurface conditions that were identified during geotechnical investigations that may increase the risk of HDD complications (e.g., loss of drilling fluids; drill transition between overburden/bedrock, drill hole collapse, existing groundwater and/or soil contamination) as well as the measures that would be implemented to minimize these risks; and
  d. an assessment of the potential for hydrofracture and inadvertent return using the USACE’s Delft method (or an equivalent method).

Based on the regional geology (e.g., clays, silts, sands), LA Storage’s implementation of its HDD Contingency Plan, and our recommendation, we conclude that HDDs are a feasible installation method for the proposed pipelines.
Mineral Resources

Mineral resources in the Project vicinity include oil, natural gas, and salt. Surficial sand, gravel, and shell mining operations occur throughout southwest Louisiana, but none were identified within 0.25 mile of the Project area (Mine Safety and Health Administration, 2020; Horton and San Juan, 2020). Salt was historically solution-mined from the West Hackberry salt dome for commercial purposes. Some of the resulting salt caverns have been converted to hydrocarbon storage and other caverns have been specifically created for hydrocarbon storage, including at the adjacent DOE West Hackberry SPR facility (DOE, 2020). The nearest off-site cavern to LA Storage’s proposed storage caverns is a DOE crude oil storage cavern located approximately 500 feet northeast of existing Pelican Well No. 001.

Petroleum deposits have been identified along the flanks of the West Hackberry Salt Dome at depths of approximately 3,100 to 9,800 ftbg (Whiting, 1980). The LDNR Strategic Online Natural Resources Information System ([SONRIS]; LDNR, 2020) database lists 147 wells associated with oil production or natural gas storage within 0.25 mile of the Project area. Of these, 17 are active, including the 3 existing cavern wells at LA Storage’s Gas Storage Facility and 12 cavern wells at the SPR facility. Most of the remaining identified oil and natural gas wells, including the two active wells not associated with storage caverns, are clustered in Black Lake. LA Storage conducted a preliminary magnetometer survey between MPs 0.2 and 3.3 of a 700-foot-wide corridor centered on the proposed pipelines to identify oil field-related equipment or other obstructions in Black Lake. The survey did not identify any wells not included in the SONRIS database. Table B-2 in appendix B lists the 29 oil and natural gas wells that are within 200 feet of the Gas Storage Facility site and pipeline construction right-of-way.

In addition to the 3 existing cavern wells at LA Storage’s Gas Storage Facility, two dry and plugged wells are within the Gas Storage Facility site; one inactive well is within the exit workspace for the HDD at MP 7.6; and thirteen oil wells are mapped within the construction right-of-way for the pipelines, none of which are active. The remaining thirteen oil and natural gas wells mapped within the pipeline construction right-of-way are within Black Lake between MPs 0.8 and 1.6.

Prior to construction, LA Storage would conduct additional surveys within and adjacent to Project workspaces, for old undocumented wells and to confirm the locations of documented wells. Final engineering design would determine whether existing wells can be avoided during construction or if they would need to be cut and capped. If necessary, LA Storage would file a re-entry and plugging application with the owner/operator’s consent and have the well cut, capped, and sealed by a licensed contractor in accordance with State of Louisiana requirements in advance of construction.

LA Storage would depict all identified oil field-related equipment (including wells) within or immediately adjacent to construction work areas on final construction
grade drawings. Any oil field-related equipment in the construction work area would be marked in the field with orange safety fencing, protective bollard posts, buoys, or other visible identification measures prior to construction. If a previously unidentified well is encountered during construction, LA Storage would cordon off an area 50 feet in diameter centered on the well and contact the appropriate local, state, and federal agencies to develop a plan to avoid or mitigate impacts on the well.

The Project would not significantly impact future oil and natural gas development because common drilling techniques include angled drilling to avoid surface features such as utility rights-of-way. If new pipelines or flow lines would need to cross LA Storage’s pipeline facilities in the future, the operators of such lines would be required by law to determine the locations of existing utilities and avoid disturbing them. LA Storage would provide detailed depth and location information to any operators so that the crossings could be constructed and operated safely.

Because LA Storage would implement the measures described above to mitigate impacts on oil field facilities, we conclude that the Project would not significantly impact the availability of, or access to, mineral resources including oil and natural gas facilities.

**Geologic Hazards**

Geologic hazards are natural, physical conditions that can result in damage to land and structures or injury to people. Such hazards typically are seismic-related, including earthquakes, surface faulting, and soil liquefaction. Additional geologic hazards discussed below include ground subsidence, unstable ground, and flood hazards. Landslides are not a concern for the flat, coastal terrain characteristic of the Project location.

**Seismicity**

The Project would be within the Gulf-margin normal fault system, a belt of poorly defined, mostly seaward-facing normal faults that trend parallel to the Gulf Coast throughout Louisiana (USGS, 2020a). Movement along active growth faults in this system tends to be minimal (less than 0.2 millimeters/year) and non-seismogenic; the Louisiana Geological Survey (2001) describes this process as gradual creep instead of sudden break or displacement. Additionally, the composition of sediments and rocks that underlie the fault system are likely unable to generate the energy required to produce significant seismic events (Wheeler and Heinrich, 1998).

RESTORE expressed concerns regarding regional fault movement damaging Project facilities. As is common over salt domes, a local, complex, northeast-southwest-trending fault pattern exists in the sedimentary deposits over and adjacent to the West Hackberry Salt Dome. The faults extend to the surface (Sandia, 2015). The potential for damaging earthquakes to occur in association with these faults is extremely low. The estimated potential displacement across any of the faults was estimated to be less than 6
inches over the life of the adjacent SPR facility (Whiting, 1980), and similar conditions would be expected to apply at LA Storage’s Gas Storage Facility. The low vertical rate of movement characteristic of faults in the Project area allows pipelines to move relative to the soil and relieve any stresses imposed by the ground movement. LA Storage would engineer and design the natural gas storage and pipeline facilities in accordance with industry standards to account for minor ground movement associated with faults typical of the area.

The shaking during an earthquake can be expressed in terms of the acceleration as a percent of gravity (g), and seismic risk can be quantified by the motions experienced at the ground surface or by structures during a given earthquake expressed in terms of g. For reference, a peak ground acceleration (PGA) of 10 percent g (0.1g) is generally considered the minimum threshold for damage to older structures or structures not constructed to resist earthquakes. USGS National Seismic Hazard Probability Mapping shows that, for a 50-year period, there is a 2 percent probability of an earthquake with a PGA of 4 to 6 percent g and a 10 percent probability of an earthquake with a PGA of 1 to 2 percent g. (Rukstales and Petersen, 2019). Further, only one earthquake has occurred within 10 miles of the Project area since 1900 (USGS, 2021). This earthquake occurred in Sulphur, Louisiana, approximately 6.5 miles north of the PAPLC Interconnect, and had a magnitude of 3.8. An earthquake of this magnitude can be felt but is unlikely to cause damage. Further, as described previously, the composition of sediments and rocks that underlie the regional fault system are likely unable to generate the energy required to produce significant seismic events (Wheeler and Heinrich, 1998). Additionally, soil liquefaction is a physical phenomenon in which saturated, non-cohesive soils temporarily lose their bearing strength when subjected to dynamic forces such as strong and prolonged shaking during an earthquake. Because of the low seismic risk in the Project area, soil liquefaction is unlikely to occur.

RESTORE comments that the SWD well location is vulnerable to an earthquake event from wastewater injection because it is at the intersection of the east-west regional Lake Arthur Fault and a fracture which trends north-south. Injection of large volumes of fluids into low permeability and brittle rocks has potential to trigger low level seismicity (earthquakes). A number of factors contribute to the conditions necessary for injection to induce felt earthquakes. These include: the injection rate and total volume injected; the presence of faults that are large enough to produce felt earthquakes; stresses that are large enough to produce earthquakes; and the presence of pathways for the fluid pressure to travel from the injection point to faults (USGS, 2020b). RESTORE references a paper written by Sherwood M. Gagliano and published in 2005. We reviewed this paper; however, given the scale and detail of mapping in this paper, the precise location of the Lake Arthur Fault and the referenced fracture are unclear (Gagliano, 2005). Further, other sources, including review of Light Detection and Ranging digital elevation models

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19 National Earthquake Hazard Reduction Program site class B/C (i.e., soft rock site conditions).
and aerial imagery, depict the Lake Arthur Fault closer to Moss Lake, Louisiana (north of the Project area in Calcasieu Parish) (Heltz, 2005; Stevenson and Agnew, 1988). Regardless, incidences of earthquakes from fluid injection have not occurred, to date, in Cameron or Calcasieu Parishes. LA Storage would construct and operate in accordance with the requirements of its Class II Injection Disposal Permit for Saltwater Disposal Wells. Given the conditions described above, we conclude that there is low potential for natural or anthropogenically-induced ground shaking, ground rupture, or soil liquefaction to occur or significantly impact Project facilities.

**Ground Subsidence and Dredge Spoil Deposits**

Ground subsidence, involving the localized or regional lowering of the ground surface, may be caused by karst dissolution, sediment compaction due to oil, natural gas, and/or groundwater withdrawal/extraction, and/or underground mining. The geology of the Project area does not include shallow carbonate formations susceptible to karst formation, and no mapped karst areas have been identified within the Project area (Tobin and Weary, 2004).

In its comments on the draft EIS, RESTORE expressed concern about subsidence of the West Hackberry Salt Dome. Subsidence has occurred locally around the West Hackberry Salt Dome and is believed to be primarily a result of hydrocarbon and groundwater withdrawal (Whiting, 1980). Surface subsidence rates in the Project vicinity are estimated at approximately 0.08 feet per year (Whiting, 1980). Additionally, Magorian et al. (1991) estimated the rate of subsidence over the caverns at the adjacent SPR facility due to cavern creep closure to be 0.20 feet per year. However, they note that the 1991 survey results showed a lower rate and that creep closure is most rapid immediately during and after cavern construction and could possibly be manifested in reduced surface subsidence after some time. The only subsidence which has been actively and repeatedly measured is subsidence over the top of the salt dome. Subsidence monitoring surveys, taken annually on the SPR section of the West Hackberry Salt Dome, have determined that the surface subsidence rate over the salt dome is 1 inch per year. This subsidence is centered over the existing caverns within the salt diapir. No salt cavern collapse has occurred in the West Hackberry area (Sandia, 2019).

LA Storage would pump groundwater from the Chicot aquifer over a period of 2 to 3 years to mine Pelican Well 004. Any subsidence caused by the proposed groundwater withdrawal is expected to be minimal given the depth of extraction and because the proposed screened intervals within the 500-foot and 700-foot sands are composed almost entirely of sand with high water production. More detailed information regarding the hydrologic characteristics of the 500-foot and 700-foot sands and proposed pumping rates is provided in section 3.4. Additionally, no discernable subsidence was reported when groundwater from the 500-foot sand was used to create the three existing caverns at the Gas Storage Facility site in the 1970s.
LA Storage would design the storage facilities to allow for some potential subsidence in the immediate area over the caverns with time. The estimated total surface subsidence would be 30 inches, assuming a project life of 30 years. LA Storage would monitor for potential subsidence at the Gas Storage Facility using ground elevation surveys in accordance with its Ground Subsidence Monitoring Program. Periodic elevation surveys would be referenced to an off-dome monument and use satellite imagery technology and modeling. Post-construction monitoring of the pipeline right-of-way for the life of the Project would include visual assessment for subsidence. Should subsidence occur along the pipelines, the affected area would be exposed, repositioned, or replaced to a stress-free state, and properly bedded and backfilled to restore the original state.

The NRCS-mapped Aquents and Udifluvents soils, which occur in areas along the proposed pipeline right-of-way, both have parent material consisting of dredge spoils. In addition to these mapped soil units, there are two areas of BUDM and one proposed BUDM that would be crossed by the pipeline right-of-way. The first area, located south of the GIWW between MPs 3.5 and 4.5 and adjacent to the east side of the Salt Ditch, was identified by aerial photo-based imagery during LA Storage’s assessment of land use and verified by field observance of hilly topography characteristic of dredge spoils. The second area is the West Calcasieu Port Mitigation Area, located north of the Intracoastal Waterway between MPs 5.0 and 5.2, which will be crossed by HDD (USACE, 2017). Driftwood’s proposed BUDM area would be crossed by the Hackberry Pipeline between approximate MPs 5.4 and 6.8.

It is LA Storage’s understanding that the material in the beneficial use area to be crossed by the Project was placed in accordance with all regulatory requirements. These requirements include Section 404(b)(1) guidelines of the CWA and more specifically, USACE permits, which require analytical testing. LA Storage has accounted for potential instability of the trench in dredge spoil deposits by increasing the proposed width of the construction right-of-way to accommodate a wider trench and larger spoil piles. Given the low topographic relief in the Project area, no other special construction methods or additional mitigation measures would be necessary in dredge spoil deposits. Based on this assessment of site conditions and LA Storage’s proposed monitoring and design measures to minimize adverse impacts, we conclude that ground subsidence and unstable ground would not significantly impact the Project.

**Flood Hazards**

Executive Order (EO) 11988, Floodplain Management, requires Executive agencies to avoid adverse effects on the 100-year floodplain when possible. It also states that growth and development within the floodplain should not be encouraged unless no alternatives exist, and that functions and habitat associated with floodplains should be protected. Most of the Project falls within a Federal Emergency Management Agency (FEMA)-designated 100-year floodplain. The PAPLC Interconnect Meter Station and
most of the Gas Storage Facility are within a 500-year floodplain. In a desktop review, LA Storage conservatively estimated the storage volume within a single zone and base flood elevation to represent a portion of the total floodplain in which a facility would be located. The affected available storage volume of each facility would be minor compared to total floodplain storage volume. Therefore, the impact on the total available flood storage capacity of the entire floodplain would be much less, and therefore negligible.

Sierra Club, Healthy Gulf, the Sabin Center, RESTORE, and several individuals expressed concern about impacts from hurricanes, storm surge, sea level rise, and coastal erosion/subsidence in the context of climate change. We also received comments expressing concern that the loss of wetlands would increase flooding. As described in section 3.4, most wetlands affected by the Project would only experience temporary impacts. Therefore, we conclude that any impacts on flood attenuation would be minimal and local. Regional subsidence is widespread through coastal Louisiana due to natural consolidation of sediments, downwarping of basement rocks, and global sea level rise. The proposed Project generally falls within the Calcasieu-Sabine River Basin. Subsidence rates in this basin are considered to be low (between zero and 1 foot every 100 years) (USACE, 2016).

The Project would be within the 100-year floodplain except for the PAPLC Interconnect Meter Station and most of the Gas Storage Facility, which would be within the 500-year floodplain (FEMA, 2020). Flooding in Cameron and Calcasieu Parishes is very common during storm surges related to hurricane events. The level of inundation for the portions of the Project area with the lowest elevations ranges from 4 feet for a Category 1 hurricane to over 20 feet for a Category 5 hurricane (NOAA, 2018). The Gas Storage Facility site would not be affected by storm surge for a Category 1 hurricane and could experience a storm surge of around 10 to 16 feet during a Category 5 hurricane (NOAA, 2018).

The Pelican Compressor Station site is at an approximate elevation of 13 feet above mean sea level. LA Storage would incorporate specific engineering elements into final designs to allow the facility to operate during most tropical storm events. Critical structures such as the compressor building and major electrical equipment would be raised above natural grade, providing added flood protection and operational reliability. The injection compressors would be driven by natural gas with on-site backup diesel generators to provide ancillary power. This would allow the gas storage facility to operate in the event of electric grid outages. LA Storage would also design the gas storage facility to be operated safely from either the on-site control room or an off-site location to avoid endangering operating personnel during a tropical storm.

LA Storage would implement buoyancy control measures for the pipelines, which could include saddle bags, anchors, or concrete-coated piping. The pipelines would also be buried at a minimum of 36 inches below grade, which would minimize the potential for scour related to flooding. The segments of the pipeline installed by HDD at
waterbody crossings would be well below the depth that could be exposed due to scour. Based on LA Storage’s proposed measures to mitigate impacts from flooding, we conclude that Project construction and operation would not be significantly affected by flooding.

### 3.3 Soils

Soil characteristics for the Project area were assessed using the NRCS Soil Survey geographic database (NRCS, 2020). Soils were evaluated according to the characteristics that could affect construction or increase the potential impacts on soils during construction or operation. These characteristics include farmland designation, erodibility, revegetation potential, depth to bedrock, and compaction potential. No Project area soils were classified as having a shallow depth to bedrock (bedrock within 60 inches of the ground surface) or as being highly erodible by wind or water. Other soil limitations within the Project area are listed in table 7.

<table>
<thead>
<tr>
<th>Facility</th>
<th>Prime Farmland a</th>
<th>Compaction Prone Soils b</th>
<th>Low Revegetation Potential Soils c</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pipeline Facilities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Collocated Pipelines (Hackberry Pipeline, CIP Lateral, and Brine Disposal Pipeline MP 0.0 to MP 4.7)</td>
<td>5.7</td>
<td>8.5</td>
<td>44.1</td>
</tr>
<tr>
<td>2 Collocated Pipelines (Hackberry Pipeline and CIP Lateral MP 4.7 to MP 4.9)</td>
<td>0.0</td>
<td>0.3</td>
<td>3.2</td>
</tr>
<tr>
<td>Hackberry Pipeline (MP 4.9 to MP 11.1)</td>
<td>56.6</td>
<td>5.5</td>
<td>5.8</td>
</tr>
<tr>
<td>Brine Disposal Pipeline (MP 4.7 to MP 6.2)</td>
<td>0.0</td>
<td>0.2</td>
<td>12.9</td>
</tr>
<tr>
<td>Additional Temporary Workspace</td>
<td>19.4</td>
<td>2.4</td>
<td>7.7</td>
</tr>
<tr>
<td><strong>Aboveground Facilities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas Storage Facility</td>
<td>89.5</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Meter Station – CIP Interconnect (MP 4.9)</td>
<td>0.0</td>
<td>0.0</td>
<td>3.2</td>
</tr>
<tr>
<td>Meter Station – PAPLC Interconnect (MP 11.1)</td>
<td>5.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>SWD Well Pads</td>
<td>0.0</td>
<td>0.0</td>
<td>5.4</td>
</tr>
<tr>
<td><strong>Access Roads and Contractor Yards</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access Roads d</td>
<td>14.4</td>
<td>1.3</td>
<td>8.3</td>
</tr>
<tr>
<td>Contractor and Pipe Laydown Yards</td>
<td>3.5</td>
<td>0.0</td>
<td>17.1</td>
</tr>
<tr>
<td><strong>Project Total</strong></td>
<td>194.1</td>
<td>18.2</td>
<td>107.7</td>
</tr>
</tbody>
</table>

- a As designated by the NRCS. No unique farmland or farmland of statewide and local importance is present.
- b Determination made on the basis of NRCS information for trench backfilling.
- c Determined by drainage class, K factor, and slope.
- d Includes portions of water access routes that cross land (0.7 acre).

Source: NRCS, 2020
Prime Farmland

The U.S. Department of Agriculture defines prime farmland as land that has the best combination of physical and chemical characteristics for growing food, feed, forage, fiber, and oilseed crops. Based on NRCS information, the Project would disturb approximately 194.1 acres of soils classified as prime farmland, none of which is currently in agricultural use. At the Gas Storage Facility, 21.8 acres of prime farmland have been previously converted to industrial use. The Project would result in 73.9 acres of permanent impact where prime farmland is converted to industrial use at the Gas Storage Facility, the PAPLC Interconnect Meter Station, and within permanent access roads. After construction is complete, prime farmland soils within the permanent pipeline rights-of-way would be available for agricultural use. The acreage of prime farmland that would be permanently impacted by the Project is negligible when compared to the total acreage of prime farmland in Cameron Parish (105,996 acres) and Calcasieu Parish (479,407 acres) (NRCS, 2020). Therefore, we conclude impacts on the availability of prime farmland would not be significant.

Compaction-Prone Soils

Soil compaction modifies the structure of soil, and consequently, alters its strength and drainage properties. As a result, soil productivity (and plant growth) rates may be reduced, and natural drainage patterns may be altered. The susceptibility of soils to compaction varies based on moisture content, composition, grain size, and density. During construction, 18.2 acres of compaction prone soils would be disturbed.

LA Storage’s Environmental Plan specifies measures it would employ for all areas that would not be permanently altered by aboveground facilities or pavement, such as the use of timber mats or low ground weight equipment in wetlands, preparation of a proper seedbed prior to seeding, and conducting follow-up inspections to evaluate the success of revegetation efforts. As such, we conclude any compaction impacts would be adequately reduced and mitigated. Soils underlying permanent aboveground facility foundations would be permanently affected by compaction; however, we conclude these effects would be localized and minor, and the overall Project impact would not be significant.

Erosion and Revegetation

Although no Project area soils are classified as highly erodible by wind or water; clearing, grading, and equipment movement can accelerate erosion processes. To minimize or avoid soil erosion, LA Storage would implement measures in accordance with its Environmental Plan. These measures include installation of temporary erosion controls, such as silt fences and straw bales. LA Storage would inspect temporary erosion controls on a regular basis and after each rainfall event of 0.5 inch or greater to ensure proper functioning and would maintain these devices until the Project areas are successfully revegetated or stabilized. LA Storage would also use dust-control measures as outlined in its Environmental Plan, including routine wetting of work areas, as needed.
The Project also overlies a total of 107.7 acres of soils with low revegetation potential. LA Storage would use and apply seed mixes and fertilizer in accordance with NRCS recommendations; prepare seedbeds to a depth of 3 to 4 inches; implement temporary stabilization measures (e.g., using mulch in upland areas); and conduct follow-up monitoring and seed application to ensure successful revegetation. Therefore, and because LA Storage would return disturbed areas to approximate pre-construction conditions, maintain them in an herbaceous state, or otherwise permanently stabilize Project areas with gravel or pavement, we conclude that Project construction and operation would not result in significant or permanent impacts due to soil erosion or poor revegetation potential.

Soil Contamination

LA Storage reviewed EPA databases, as well as other available information to identify hazardous waste sites, landfills, or other sites with the potential for soil or groundwater contamination within 0.25 mile of the Project area (EPA, 2020; LDNR, 2020). No potentially contaminated sites were identified. If contaminated or suspect soils are encountered during construction, LA Storage would follow the measures outlined in its Unanticipated Environmental Media Discovery Plan which identifies the steps LA Storage would follow to contain, characterize, manage, and dispose of contaminated environmental media.

RESTORE comments that the LA Storage pipelines would cross a BUDM that the Driftwood LNG Project would create with dredged mud originating from an area with known contamination by priority pollutants. As described in the January 2019 final EIS for the Driftwood LNG Project (CP17-117-000 and CP17-118-000), an area of known contamination was identified adjacent to the LNG facility, but would not be dredged or directly disturbed. Additionally, an area unassessed for sediment contamination due to an existing riprap revetment would not be dredged. Contaminated sediments would be managed with separate remediation and excavation actions as prescribed by the LDEQ, and only sediments defined by the LDEQ as "uncontaminated dredged material" would be used for proposed marsh development.

Contamination from spills or leaks of fuels, lubricants, and coolant from construction equipment during construction could adversely affect soils. LA Storage’s Environmental Plan contains cleanup procedures in the event of soil contamination from spills or leaks of these materials. LA Storage and its contractors would implement the Environmental Plan to minimize accidental spills of materials that may contaminate soils, and to ensure that inadvertent spills are contained, cleaned up, and disposed of as quickly as possible and in an appropriate manner. Given an absence of identified known soil contamination and LA Storage’s proposed minimization and response measures described above, we conclude that the Project would not significantly contribute to or be significantly impacted by soil contamination.
3.4 Water Resources and Wetlands

Groundwater Resources

The Project area is within the Coastal Lowlands Aquifer System. The Coastal Lowlands Aquifer System is a regional aquifer spanning from coastal Texas to Florida. It is comprised of permeable zones typically consisting of sand and clay. Some of these permeable zones with water-yielding and confined spaces have been regionally identified and have received local names. The Project overlies the locally named Chicot aquifer system (LDEQ, 2014; USGS, 1998). Depth to shallow groundwater within surficial water bearing zones in the Project area typically ranges from 2 to 10 feet, with water bearing zones being present at roughly 10, 20, and 50 feet, depending on local geology. Local surficial groundwater sources consisting of discontinuous beds of alluvial sand near the surface, may also provide small quantities of groundwater for domestic use (USGS, 1998).

The Chicot aquifer is composed of unconsolidated silt, sand, and minor gravel interlayered and sandy clay deposited by ancestral streams, tidal marshes, and estuarine environments. The aquifer receives recharge from rainfall in the outcrop areas north of the Project area, downward infiltration through overlying clays, limited upward movement from the deeper Evangeline aquifer, and inflow from the Vermilion and Calcasieu Rivers (LDEQ, 2014). The Chicot aquifer is locally subdivided into three units based on the occurrence of major water-bearing zones: the “200-foot,” “500-foot,” and “700-foot” sands, characterized by their general depth of occurrence in the Lake Charles area (USGS, 2017). An approximate 70-foot-thick low-permeability layer of predominantly clay separates the 200-foot sand from the 500-foot sand, and about 180 feet of clay separates the 500-foot sand from the 700-foot sand.

The 200-foot sand supplies water regionally for irrigation, industrial, public supply, and domestic purposes (USGS, 2017). The 500-foot sand is the most heavily used aquifer in the region, supplying the bulk of water used for irrigation, power generation, and industrial needs. The 500-foot sand also supplies municipal drinking water for the town of Hackberry, approximately 3 miles east of the Gas Storage Facility. Groundwater in the 700-foot sand is highly brackish (total dissolved solids levels up to 10,000 milligrams per liter) and is not used for drinking water in the Project area. No registered drinking water supply wells have been completed within 1 mile of the Gas Storage Facility site (LDNR, 2020) and no known users of the 700-foot sand were identified within 5 miles of the Gas Storage Facility site based on reviews of water well records. In Cameron Parish about 7.74 million gallons per day is withdrawn from the Chicot aquifer, and in Calcasieu Parish about 85.86 million gallons per day is withdrawn (Louisiana Ground Water Resources Commission, 2012). The heaviest water use in these parishes occurs east-southeast of Lake Charles, where water from the 200-foot and 500-foot sands is used primarily for industrial purposes and rice irrigation.
The Chicot aquifer is designated by the EPA as a sole source aquifer because it provides at least 50 percent of the drinking water in a given service area, and there are no reasonably available alternative sources should the aquifer become contaminated (EPA, 2019). The brine disposal pipeline would also cross two wellhead protection areas from MP 5.7 to 6.0, associated with a pair of wells servicing Cameron Parish Waterworks District Number 10 and located about 0.75 mile southeast of the east SWD well pad. The SWD well pads and most of the LY-CAL-01 contractor and pipe storage yard are also within these wellhead protection areas. The measures described below for SWD wells, and in section 3.4 to mitigate impacts on surface water resources would also serve to mitigate impacts on these wellhead protection areas.

Existing Water Wells and Springs

Based on the LDNR’s SONRIS water well database, six water wells would be in or within 150 feet of the Project construction workspace (see table 8). Two of the wells are classified as active, including an LA Storage “test hole” at the eastern boundary of the Gas Storage Facility and an irrigation well that would be within the LY-CAL-01 contractor and pipe storage yard. The remaining four wells have been plugged and abandoned. No springs are known to occur within 150 feet of the proposed Project and the Project does not cross any Area of Groundwater Concern (LDNR, 2020).

<table>
<thead>
<tr>
<th>Tract Number</th>
<th>Nearest Project Feature, MP if Applicable</th>
<th>Well Type</th>
<th>Status</th>
<th>Approximate Distance from Construction Workspace (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAM-600</td>
<td>Gas Storage Facility</td>
<td>Industrial</td>
<td>Plugged and Abandoned</td>
<td>Within</td>
</tr>
<tr>
<td>CAM-600</td>
<td>Gas Storage Facility</td>
<td>Test hole</td>
<td>Active</td>
<td>Within</td>
</tr>
<tr>
<td>CAM-602</td>
<td>3 Collocated Pipelines, MP 0.8</td>
<td>Rig supply</td>
<td>Plugged and Abandoned</td>
<td>Within</td>
</tr>
<tr>
<td>CAM-603</td>
<td>3 Collocated Pipelines, MP 1.2</td>
<td>Rig supply</td>
<td>Plugged and Abandoned</td>
<td>90</td>
</tr>
<tr>
<td>CAL-603</td>
<td>LY-CAL 01 and Brine Disposal Pipeline, MP 5.9</td>
<td>Irrigation</td>
<td>Active</td>
<td>Within</td>
</tr>
<tr>
<td>CAL-610</td>
<td>Hackberry Pipeline, MP 8.0</td>
<td>Rig supply</td>
<td>Plugged and Abandoned</td>
<td>90</td>
</tr>
</tbody>
</table>

LA Storage would depict the water wells identified above and any additional water wells identified prior to construction that are within or immediately adjacent to

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An Area of Groundwater Concern is defined by the Louisiana Administrative Code Title 43 Part VI.1 as an area in which, under current usage and normal environmental conditions, sustainability of an aquifer is not being maintained due to either movement of a saltwater front, water level decline, or subsidence, resulting in unacceptable environmental, economic, social, or health impacts, or causing a serious adverse impact to an aquifer, considering the areal and temporal extent of all such impacts.
construction work areas on final construction grade drawings. The wells would be marked in the field with orange safety fencing or protective bollard posts for avoidance during construction. The irrigation well within the LY-CAL-01 contractor and pipe storage yard would be sampled with the owner’s permission before and after construction to determine whether water quality or yield has been affected by construction activities. In its comments on the draft EIS, the EPA commented that the scope of construction groundwater sampling could be expanded to include sampling events during construction. LA Storage would implement its spill prevention, containment, and notification measures during construction and would protect the above-referenced irrigation well from physical damage with use of orange safety fencing or protective bollards. In the unlikely event that a water supply well is adversely affected by the Project, LA Storage would provide a temporary source of potable water and repair or replace the water supply well. Therefore, potential construction impacts on nearby water supply wells would be minimized, and we find LA Storage’s commitment to offer pre- and post-construction testing of the irrigation well for water quality and yield to be sufficient for assessment of and response to construction-related impacts. No domestic water supply wells were identified within 150 feet of Project areas.

**Groundwater Contamination**

As described in section 3.3, existing groundwater contamination was not identified within 0.25 mile of the proposed Project facilities. If contaminated or suspect groundwater is encountered during construction, LA Storage would follow the measures in its Unanticipated Environmental Media Discovery Plan.

Sierra Club commented about groundwater and surface water pollution, including inadvertent releases from the diesel storage system at the Gas Storage Facility or from the brine disposal system. A landowner, Sheron Faulk, additionally expressed concern regarding groundwater contamination from the SWD wells, pipeline leaks, and other non-specific Project-related sources. Fuel or chemical spills associated with construction or maintenance activities during operations could impact groundwater quality and nearby wells if not addressed appropriately. LA Storage would implement its Environmental Plan, which includes a Project-specific version of the FERC’s Plan and Procedures, best management practices, and spill prevention and containment procedures. Implementation of the Environmental Plan would minimize the potential for a spill to occur and limit the impact that a spill may have on soil and groundwater resources.

During construction of the new storage cavern a diesel blanket would be used on top of the brine to prevent uncontrolled solution mining of the cavern roof and protect the production-casing cement seal. To reduce the potential for a diesel fuel release to occur, the diesel fuel storage tank at the Gas Storage Facility would be contained within a secondary structure that would limit the extent of a potential spill. In the event of a diesel fuel (or brine) release from the cavern well or diesel blanket system, LA Storage would implement the provisions outlined in its Environmental Plan and the Emergency
Operation Plan provided to LDNR as Attachment 11 in the Area Wide Class III Permit Application submitted in August 2020. These provisions include, among others, shutting down the well immediately, notifying the LDNR and LDEQ, and developing a plan to investigate the depth and severity of the leak.

A release from the brine disposal system could also impact groundwater quality. The brine disposal pipeline would be constructed of welded steel with a minimum 3 feet of cover and would be hydrostatically tested for integrity. LA Storage would periodically clean and inspect the pipeline for corrosion. The brine disposal system would be monitored continuously using an automated system that would allow for the system to be shut down in the event of a leak, thereby limiting the extent of impact from a potential leak.

In comments on the draft EIS, one individual expressed concern about the potential for contamination of groundwater during operation from releases of methane from the storage component of the Project. LA Storage has designed and would construct new storage wells to be protective of potable aquifers. Specifically, a series of nested and cemented casings would isolate the storage horizon from shallower, potable aquifers. Mechanical integrity of each existing storage well was established by LA Storage through acceptable industry testing standards and the State of Louisiana regulatory requirements, and LA Storage would conduct operational leak monitoring of new and existing storage wells (refer to section 3.13 of this EIS). Further, methane, the primary component of natural gas, is not toxic. When water containing dissolved methane is exposed to air, the methane quickly escapes from the water into the atmosphere. If inhaled at a high concentration, oxygen deficiency can result in serious injury or death and a flammable concentration of methane within an enclosed space in the presence of an ignition source can explode; however, we did not identify domestic water supply wells (where water use could occur within a confined space) within 2 miles of the Gas Storage Facility.

With LA Storage’s proposed minimization and mitigation measures described above and in section 3.13, we conclude that groundwater quality would not be significantly impacted by the Project construction or operation.

Proposed Water Supply Wells

LA Storage would install two water supply wells on each of three well pads at the Gas Storage Facility for a total of six wells. On each well pad, one well would be completed in the 500-foot sand and one would be completed in the 700-foot sand. The wells in the 700-foot sand (001A, 0002A, and 003A) would be the primary source of water for solution mining of the new natural gas storage cavern. The wells would be operated 24 hours per day, 7 days per week. LA Storage anticipates a withdrawal rate of about 3,000 gallons per minute (gpm) from the three wells combined (1,000 gpm from
each) over a period of about 27 months, for a total groundwater use of approximately 3.6 billion gallons.

The wells completed in the 500-foot sand aquifer (001B, 002B, and 003B) would serve as a backup in case of a temporary outage of a primary well. These wells may also provide water for hydrostatic testing and HDD drilling fluid. LA Storage anticipates filing notification forms to the LDNR Environmental Division to drill the proposed water source wells in January 2022.

RESTORE expresses concern that extraction of the volume of water required for the Project could create a cone of depression that would affect the availability of water for municipal wells of the cities of Sulphur and Hackberry. RESTORE also comments that layers of water-bearing sands in Southwest Louisiana are vertically connected through the intervening clay layers by fractures. As previously described, the Chicot aquifer system is largely composed of one, major, undifferentiated sand where it crops out and receives recharge to the north and northeast of Calcasieu Parish. This undifferentiated sand thickens and deepens to the south and, near the northern border of Calcasieu Parish, becomes subdivided by clay confining layers into a complex series of sand layers. West of about the longitude of the town of Iowa, where the Hackberry Storage Project would be located, these divisions consist of the 200-foot, 500-foot, and 700-foot sands. East of this longitude, these divisions consist of the Chicot aquifer upper and lower sands, which are hydraulically connected to the 200-foot and 700-foot sands, respectively (USGS, 2017). The “500-foot” sand is largely isolated except where it merges with the 700-foot sand north of Calcasieu Parish (LDEQ, 2003). In the vicinity of the Gas Storage Facility, an approximately 180-foot-thick clay layer separates the 700-foot unit from the upper sands. While local fractures in clay layers may exist, the extent of any connection would be localized rather than representative of general aquifer flow characteristics.

To analyze potential impacts of water withdrawal on the 700-foot sand aquifer, LA Storage conducted modeling using GFLOW 2000, which is a commercial model based on the EPA’s Wellhead Analytic Element Model. Drawdown in the 700-foot sand was initially modeled using the hydraulic conductivity and aquifer thickness measured in LA Storage’s test well (TW-1) at the Gas Storage Facility site. Drawdowns as a percentage of the available head (based on an available head of 670 feet in TW-1) ranged from 24 percent at TW-1 to 11 percent at a distance of 3 miles and 9 to 10 percent at a distance of 5 miles. LA Storage also modeled drawdown for pumping from the 500-foot sand. Although such backup use would be temporary and unlikely to require all three wells, to be conservative the analysis assumed all three 500-foot sand wells pumping at 1,000 gpm each for 3 years. Drawdowns as a percentage of the available head at TW-1 ranged from 11 percent at TW-1 to 6 percent at 3 miles and 5 percent at 5 miles. The nearest landowner utilizing the 500-foot sand is the SPR. LA Storage has stated that it meets monthly with the SPR, which would provide an opportunity for notification of LA Storage’s usage of the 500-foot wells, if needed.
We conclude that Project groundwater withdrawals would not significantly impact the availability or quality of groundwater resources that currently serve other users. This conclusion is based on a number of factors. First, the 700-foot sand is brackish and there is an absence of users of this aquifer unit within 5 miles of the Gas Storage Facility. Second, wells completed in the 500-foot sand aquifer would only be used as a backup in case of a temporary outage of a primary well, which is hydraulically isolated from the primary withdrawal layer. Lastly, the total anticipated available head of both the 700-foot and 500-foot sand is sufficient to accommodate proposed withdrawals. However, given the volume of proposed groundwater withdrawal, as well as the significance of the 500-foot sand aquifer unit to the Town of Hackberry, we recommended in the draft EIS that LA Storage develop a plan in coordination with the Town of Hackberry to monitor groundwater quality and availability during groundwater withdrawal for solution mining and respond to adverse effects.

LA Storage submitted a draft Groundwater Monitoring Plan, developed in coordination with Cameron Parish Waterworks District Number 2, the water utility company servicing the Town of Hackberry, on February 7, 2022. LA Storage proposes to monitor six existing water wells installed within the 500-foot sand, as well as up to six water wells installed within the 700-foot sand, all located within a 5-mile buffer of the Project area. Monitoring would include measuring static water levels and water quality sampling for chlorides, total dissolved solids, pH, and temperature, and would be conducted on a quarterly basis during solution mining activities and then annually for two years after mining operations cease. LA Storage has committed to filing the finalized version of this plan once complete. Further, Cameron Parish Waterworks District Number 2 submitted comments in support of the Project and reaffirmed its support in its comments on the draft EIS.

Total dissolved solids and salinity content within the 500-foot sand generally decrease from moderately hard and brackish levels under the Gas Storage Facility to more fresh moving east toward the Hackberry municipal water supply wells. Groundwater was used to create the three existing caverns at the Gas Storage Facility and no indication of saltwater intrusion was observed in the 500-foot sand. Further, chloride content recorded over an extended period of time in the Cameron Parish Water District 2 (Town of Hackberry) 500-foot well has shown only a small variation in chlorides since 1981 even though substantial amounts of groundwater have been continuously withdrawn in the Hackberry area during this period (LBG-Guyton, 2009). Therefore, and because wells completed in the 500-foot sand aquifer would serve as a backup in case of a temporary outage of a primary well, the Project would not significantly contribute to saltwater intrusion into the aquifer.

21 Accession No. 20220207-5271.
Saltwater Disposal Wells

Sheron Faulk expressed concern about the location of LA Storage’s proposed SWD wells. Specifically, she states that the location SWD Well 2 and SWD Well 4 are within 125 feet of her property, on which she has two drinking water supply wells installed to a depth of 650 fbg. SWD Well 2 and SWD Well 4 would be approximately 125 feet south of the Faulk property; however, based on LDNR mapping, the nearest of Ms. Faulk’s water wells is approximately 1,250 feet from SWD Well 2. Per LDNR information, this well is installed at a depth of 650 fbg into the 500-foot sand. The second water supply well on the Faulk property is farther north and installed at a depth of 633 fbg, also into the 500-foot sand.

In its comments on the draft EIS, the EPA stated that SWD well construction requirements should be followed to ensure that no contamination of the Chicot aquifer results from brine injection. The SWD wells would be constructed to inject brine into Miocene age “saltwater sand” layers that occur at depths of approximately 6,000 and 8,000 fbg. Therefore, at least 3,400 feet of sediments, including low permeability silt and clay layers, would separate the brine injection intervals from the lowest Underground Source of Drinking Water at the location of the SWD wells. The low permeability layers and thickness of overlying sediments would restrict the upward mixing of the brine with freshwater aquifers. The wells would be designed and operated in accordance with Class II injection disposal permits issued by LDNR’s Injection & Mining Division Underground Injection Control Program, and stringent LDNR requirements that are designed to ensure the integrity of the well and prevent impacts on shallower aquifers. The SWD wells would be installed using multiple cemented steel casing strings to protect shallower groundwater resources. The casings would prevent interaction with otherwise isolated intervals, and the wells would be required to pass integrity tests prior to start-up. Given the depth of brine injection, separation of the brine injection interval from potable drinking water by 3,400 feet of low-permeability sediments, and well construction and monitoring as described above, we conclude that the SWD wells would not contaminate the Chicot aquifer and would not have significant impacts on groundwater resources.

Surface Water Resources

The Project is within the Lower Calcasieu Watershed defined by the USGS at the 8-digit HUC, or sub-basin level, as 08080206 (USGS, 2020c). The Project would cross two 12-digit HUCs: Bayou Choupique (080802060106) and Black Lake Bayou-Alkali Ditch (080802060406). The pipelines would cross 12 perennial waterbodies (including the GIWW, Bayou Choupique, and Salt Ditch), 8 intermittent waterbodies, 7 ephemeral waterbodies, and 6 open water areas (including Black Lake) (see table B-3 in appendix B). Of the 33 waterbodies crossed, we classify 13 (including the GIWW, Black Lake, Salt Ditch, and Bayou Choupique) as major waterbodies (greater than 100 feet wide), 11 as intermediate waterbodies (10 to 100 feet wide), and 9 as minor waterbodies (less than 10 feet wide). The use of existing and proposed temporary and permanent access roads
would require crossing 12 waterbodies and would require the filling of 16 intermediate and minor waterbodies (10 roadside ditches and 6 roadside unnamed streams).

The LDWF and the Coastal Protection Restoration Authority provided correspondence stating there are no time-of-year restrictions for crossing waterbodies. All waterbodies that would be affected by the widening of existing access roads and the construction of one new access road to accommodate heavy construction equipment movement are unnamed roadside ditches and streams. To maintain the existing drainage and flow provided by these waterbodies, LA Storage would create new ditches and streams adjacent to the filled waterbodies. LA Storage would also create/use open waters to access construction workspaces. Watercraft, barges, and other equipment would traverse open water and wetlands to complete construction activities. Use of the laydown yards and workspaces associated with the aboveground facilities (i.e., Gas Storage Facility, the SWD wells, and the two meter stations) would not affect waterbodies.

Section 303(d) of the CWA requires all states to submit a list every 2 years for EPA approval of all surface waters in the state for which beneficial uses, such as drinking, recreation, aquatic habitat, and industrial use, are impaired by pollutants. According to the LDEQ 2018 Louisiana Water Quality Inventory: Integrated Report (305(b)/303(d)) approved by the EPA on November 20, 2019, two stream sub-segments crossed by the Project are listed as not fully supporting their designated uses and are included on the 303(d) List of Impaired Waters (LDEQ, 2018): Black Lake (fishing and swimming) and Bayou Choupique (swimming). The causes for impairment for both waterbodies are listed as natural sources and on-site treatment systems (septic and similar decentralized systems). The USACE New Orleans District considers Black Lake, the GIWW, Bayou Choupique, and Salt Ditch as Section 10 Navigable Waters.

Surface Water Impacts and Mitigation

Open-cut crossings of waterbodies would increase sedimentation and turbidity within affected waterbodies. The magnitude of these impacts would vary depending on the size of the waterbody crossed and the duration of construction through the waterbody. Impacts in open waters like Black Lake would be greater than those of streams and creeks. Increased sedimentation and turbidity would temporarily reduce water quality. To reduce impacts on waterbodies, LA Storage would implement measures in its Environmental Plan. Additionally, in upland areas adjacent to waterbodies, LA Storage would implement measures in its Environmental Plan to reduce erosion potential into crossed waterbodies.

The push-pull method through Black Lake would involve the excavation of a trench (through the mud bottom) in which to float the pipeline. This trench would be excavated and subsequently backfilled using equipment mounted on spudded barges that

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22 Accession No. 20210412-5825
are capable of working in up to 10 feet of water by impressing spuds (support legs) into the mud bottom. Material excavated from the trench would be temporarily stockpiled along both sides of the trench to create a channel in which the pipeline would be floated. The soil stockpiles would also serve to buffer the trench from wave action, maintaining trench integrity and reducing sedimentation into the trench. Breaks would be left in the spoil piles to allow for boat traffic to cross the workspace. Equipment and vehicles that are required to move along the construction right-of-way via water access routes within Black Lake would be floating or low ground-pressure weighted to minimize impacts on vegetation and soil compaction. Once the pipeline is lowered into the pipeline trench, the pipeline would be covered with its spoil material using the spudded barges, and the water bottom would be returned as close as possible to its original contour along the pipeline route in Black Lake. Trenching operations would be followed as closely as possible by lowering in (pipeline) and backfilling to minimize the length of time the trench is open, as described in LA Storage’s Environmental Plan.

Constructing pipelines through Black Lake (including the use of open water access routes to move equipment) would disturb the mud bottom and the water column. Disturbing the mud bottom would suspend sediments, resulting in increased turbidity, lower water quality, and increased sedimentation in the vicinity of Project activities. Increased turbidity would be temporary and disturbed sediments are expected to settle in a relatively short amount of time. Increased turbidity would also be localized due to the stockpiled spoils which would work to contain turbidity. The use of equipment through Black Lake would also disturb the water column, increase turbidity and sedimentation, and increase the potential for an inadvertent release of equipment-related fluids. Any marsh track hoes utilized for construction would be returned to shore at the end of each workday. If required to stay in place overnight for construction or inclement weather reasons, protective measures would be put in place. Equipment that utilizes hydraulic lift would be staged in a manner that releases pressure in the lines to minimize potential leaks, and secondary containment and oil booms would be placed to contain potential leaks.

As described previously, LA Storage proposes to cross the GIWW, Salt Ditch, and Bayou Choupique using the HDD construction method to avoid in-stream impacts and impacts to associated bed and banks and riparian zones. Trenchless crossings of waterbodies would generally result in the avoidance of impacts on waterbodies. However, the use HDD to cross a waterbody could result in subsurface drilling fluid loss and/or an inadvertent return to the surface of drilling fluids. If an inadvertent return of HDD drilling fluid occurs within a waterbody, the resulting turbidity would temporarily reduce water quality. To reduce the potential for an inadvertent return to occur, LA Storage would monitor HDD operations, and should an inadvertent return occur, LA Storage would implement response and containment measures as described in its HDD Contingency Plan. Spills of fuel or chemicals could also affect water quality within waterbodies. To avoid and reduce potential impacts from spills, LA Storage would implement the spill prevention and containment measures in its Environmental Plan. If
unanticipated contamination is discovered during construction of waterbody crossings, LA Storage would follow its Unanticipated Hazardous Waste Discovery Plan included in the Environmental Plan.

Our Procedures require that ATWS be no less than 50 feet from waterbodies except where the adjacent upland consists of cultivated or rotated cropland or other disturbed land (at section V.B.2.a). If the setback cannot be maintained, a project sponsor can provide site-specific justification for each extra work area with less than 50 feet setback from the waterbody edge. LA Storage requested approval to use 35 ATWS within 50 feet of waterbodies. These ATWS are listed in table B-4 along with LA Storage’s justification for each location. In addition to the spill mitigation measures described above, LA Storage would implement erosion and sediment control measures and other applicable measures detailed in its Environmental Plan to minimize impacts on waterbodies from activities occurring at these ATWS. We have reviewed the requests and agree that they are justified.

As described above, access road widening would require crossing 12 waterbodies, and alteration of 16 waterbodies. Equipment crossings of culverted waterbodies would result in negligible impacts on the crossed waterbody. Some erosion and turbidity may occur within the crossed waterbodies, but any resulting impact on water quality would be temporary and minor. Alteration of waterbodies would involve filling roadside ditches and unnamed streams and creating replacement drainage adjacent to widened roads. This could temporarily affect water quality, flow, and drainage. However, these impacts would not be permanent or significant, as the waterbodies would be restored to their pre-existing locations following construction. LA Storage would follow USACE New Orleans District permitting requirements and its Environmental Plan to minimize impacts on these waterbodies.

Based on the characteristics of the waterbodies that would be affected by the Project, LA Storage’s proposed construction measures and with implementation of its mitigation measures including the HDD Contingency Plan, and its Environmental Plan, we conclude that Project impacts on surface water resources would not be significant.

In its comments on the draft EIS, the EPA recommended that the final EIS provide an explanation for why the HDD method was not implemented on more crossings to avoid or minimize impacts on aquatic resources. Measures LA Storage would use to minimize and avoid impacts on aquatic resources are described above. Based on our review of these measures, the waterbodies crossed, and expected impacts resulting from the crossing methods that are proposed, we determined that implementation of additional HDDs was not warranted and would not substantially reduce already insignificant impacts.
HDD Drilling Fluid and Dust Suppression

Water for HDD drilling fluid would be obtained from commercial sources, municipal sources (such as fire hydrants), or the proposed on-site freshwater wells (completed in the 500-foot sand) and not from adjacent surface waterbodies. Approximately 2.8 million gallons of water would be needed for HDD drilling fluid. LA Storage does not anticipate requiring water for dust suppression given the high average annual precipitation in the Project vicinity.

Wetland Resources

Wetlands are areas inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions. In southern Louisiana, wetlands generally include swamps, marshes, wet pastures, and similar areas.

LA Storage conducted field delineations and desktop analyses in 2020 to identify wetlands crossed by the Project. Field delineations were conducted in accordance with methods defined in the USACE Wetlands Delineation Manual (USACE, 1987) and the regional supplement (USACE, 2010). Wetland types were classified using the Cowardin system (Cowardin, et al., 1979):

- **PEM** (palustrine emergent wetland) — PEM wetlands within the Project area are characterized by hydrophytic rushes (*Eleocharis* spp.), flat sedges (*Cyperus* spp.) and beak sedges (*Rynchospora* spp.). Other dominant species include swamp smartweed (*Persicaria hydronis*), broom sedge (*Andropogon virginicus*), Virginia buttonweed (*Diodia virginica*) and Jesuit’s-bark (*Iva frutescens*).

- **E2EM** (estuarine intertidal emergent wetland) — These wetlands typically are identified by more salt-tolerant species but can also contain freshwater vegetation if the area is exposed to freshwater inflow. Within the Project area, E2EM wetlands consist primarily of mid- to high-marsh hydrophytic vegetation such as rushes (*Eleocharis, Schoenoplectus*, and *Juncus* spp.), cord grasses (*Spartina* spp.), and coastal salt grass (*Distichlis spicata*).

- **PSS** (palustrine scrub-shrub wetland) — PSS wetlands maintain a similar herbaceous layer as E2EM wetlands, but these wetlands are located in higher elevation areas. Dominant species include groundseltree (*Baccharis halimifolia*), Jesuit’s-bark, southern bay berry (*Morella cerifera*), and Chinese tallow (*Triadica sebifera*).

- **PFO** (palustrine forested wetland) — Forested wetlands typically containing red maple (*Acer rubrum*), Chinese tallow, and a number of other
shrub, woody vines, and herbaceous species. Forested wetlands within the Project area occur in a small forested area near Black Lake and a riparian area bordering an unnamed tributary of Bayou Choupique along the Hackberry Pipeline route.

A total of 48 PEM wetlands, 17 E2EM wetlands, 6 PFO wetlands, 2 PEM/PSS wetland complexes, and 1 E2EM/PSS wetland complex were identified within the Project construction workspaces. Furthermore, and as described previously, BUDM wetlands also occur within Project construction workspaces. Table B-5 in appendix B lists each wetland that would be crossed or within Project workspaces, including wetland identification, classification, milepost, crossing length, and impacts. Table 9 summarizes the wetland types affected by the Project.

<table>
<thead>
<tr>
<th>Facility</th>
<th>PEM Const</th>
<th>PEM Oper</th>
<th>PSS Const</th>
<th>PSS Oper</th>
<th>PFO Const</th>
<th>PFO Oper</th>
<th>E2EM Const</th>
<th>E2EM Oper</th>
<th>Total Const</th>
<th>Total Oper</th>
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<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
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<td>6.6</td>
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<tr>
<td>Pipelines</td>
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<td>5.9</td>
<td>3.8</td>
<td>3.7</td>
<td>2.0</td>
<td>52.7</td>
<td>34.9</td>
<td>110.7</td>
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<tr>
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<td>0.0</td>
<td>2.1</td>
<td>0.0</td>
<td>3.4</td>
<td>0.0</td>
<td>19.8</td>
<td>0.0</td>
</tr>
<tr>
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<td>0.0</td>
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<td>0.0</td>
<td>0.0</td>
<td>0.6</td>
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<td>5.8</td>
<td>2.0</td>
<td>56.9</td>
<td>35.5</td>
<td>143.1</td>
<td>76.2</td>
</tr>
</tbody>
</table>

a Gas Storage Facility, SWD Wells, and Meter Stations
b Includes portions of water access routes that cross land (0.7 acre).

Our Procedures stipulate (at section VI.A.3) that the width of the construction right-of-way be limited to 75 feet or less in wetlands. Based on its prior experience constructing pipelines in the Project vicinity, LA Storage determined a wider right-of-way is needed because of the presence of Occupational Safety and Health Administration Type C soils\textsuperscript{23} along the route. These non-cohesive soils require a wider ditch to reach the required depth for the 42-inch-diameter pipelines and more area for spoil storage.

\textsuperscript{23} "Type C" means:

(i) cohesive soil with an unconfined compressive strength of 0.5 ton per square foot or less; or
(ii) granular soils including gravel, sand, and loamy sand; or
(iii) submerged soil or soil from which water is freely seeping; or
(iv) submerged rock that is not stable, or
(v) material in a sloped, layered system where the layers dip into the excavation or a slope of four horizontal to one vertical (4H:1V) or steeper.
Accordingly, LA Storage proposes to use a wider construction right-of-way in the areas listed for each pipeline in table B-6. We have reviewed these modifications and agree that they are justified.

Our Procedures also require (at section VI.B.1.a) that ATWS be no less than 50 feet from wetlands except where the adjacent upland consists of cultivated or rotated cropland or other disturbed land. If the setback cannot be maintained, a project sponsor can provide site-specific justification for each extra work area with less than 50 feet setback from the wetland. LA Storage proposes to use 70 ATWS within 50 feet of wetlands, as listed in table B-7 along with LA Storage’s justification for why they are necessary. We have reviewed these ATWS and agree that their locations are justified.

Our Procedures also state (at section VI.B.1.d) that the only access roads, other than the construction right-of-way, that can be used in wetlands are those existing roads that can be used with no modifications or improvements (other than routine repair) and that would not impact the wetland. LA Storage proposes to construct or modify five access roads and one water access route in wetlands, as listed in table B-8 with LA Storage’s justification for why they are necessary. LA Storage would use low-pressure equipment or matting on access roads within wetlands to avoid rutting and would follow the requirements of its Section 404 Permit and Coastal Use Permit. After construction, the mats would be removed and the temporary workspaces would be restored to approximate pre-construction contours. We have reviewed these access roads and agree that their locations are justified.

LA Storage proposes to place aboveground facilities in wetlands (modification to section VI.A.6 of our Procedures). The affected wetlands would include approximately:

- 1.1 acres of PEM wetlands at the Gas Storage Facility;
- 0.4 acre of PEM and 2.0 acres of PSS wetlands at the SWD wells; and
- 3.1 acres of PEM wetland at the CIP Interconnect Meter Station.

We have reviewed these aboveground facility locations and agree they are justified due to the factors dictating the facility locations.

Sierra Club, Healthy Gulf, and several individuals express concern for Project disturbance of wetlands and describe that coastal wetlands provide species habitat, as well as a buffer from coastal flooding and incoming tropical storms. Sabin Center additionally expresses concern regarding temporary and permanent wetland impacts in terms of their role in carbon sequestration. Commenters express that the environmental analysis should assess wetland impacts in the context of climate change and identify solutions to protect these wetlands. The Project’s impacts on aquatic species and wildlife are addressed in subsequent sections. As described by Sabin Center, wetlands have been identified as “carbon sinks,” where carbon is captured and stored in wetland complexes. Wetlands have also been identified as methane emitters or carbon sources. Constructing
and operating the Project would involve the temporary clearing of wetlands and the permanent loss of wetlands (aboveground facilities). Both actions/impacts would reduce the total amount of wetlands available to sequester carbon. However, the permanent loss of wetlands would be minimal and wetlands affected only by construction would continue to provide functions, such as carbon sequestration. Therefore, we conclude that an overall reduction in carbon sequestration is possible, but it would be minimal. Climate change impacts are also addressed in a subsequent section.

**Wetland Impacts and Mitigation Measures**

Wetlands are protected under Section 404 of the CWA. Under Section 404, the USACE regulates the discharge of dredged or fill materials into waters and adjacent wetlands of the U.S. The LDNR Office of Coastal Management (OCM) administers the Louisiana Coastal Resources Program, which issues coastal use permits and mitigation for unavoidable losses of wetland function and value. LA Storage submitted a Joint Permit Application for Work Within the Louisiana Coastal Zone to USACE and LDNR on October 16, 2020. In its comments on the draft EIS, the EPA recommended that LA Storage develop a compensatory mitigation plan that would fully offset temporary and permanent impacts to wetlands, as well as impacts due to conversion from forested and scrub-shrub habitats to emergent wetlands. Proposed mitigation to address wetland impacts is described herein.

LA Storage would construct the Project across wetlands in accordance with the Environmental Plan. The open trench/push-pull method would be the primary method for pipeline construction. LA Storage would cross wetland areas associated with Salt Ditch, the GIWW, and Bayou Choupique by HDD. These crossing methods are described in section 2.4. As shown in table 9, constructing the Project would impact a total of 143.1 acres of wetlands: 70.4 acres of PEM; 56.9 acres of E2EM; 10.0 acres of PSS; and 5.8 acres of PFO. Wetland vegetation would be cleared and soils would be disturbed which would in turn affect wetland hydrology. However, these impacts would likely be temporary as revegetation would occur, soils would be returned, and hydrology would stabilize accordingly. Additionally, in E2EM wetlands, construction related activities would temporarily increase turbidity and sedimentation. Following construction, wetlands that are temporarily affected by construction would be allowed to revert to conditions similar to those before construction through natural revegetation from existing seed and root stock. LA Storage anticipates that this process would be completed in one to two growing seasons.

To facilitate periodic pipeline corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide would be cleared at a frequency necessary to maintain the 10-foot corridor in an herbaceous state. Trees within 15 feet of the pipeline with roots that could compromise the integrity of pipeline coating would be selectively cut and removed from the permanent right-of-way. As such, approximately 2.0 acres of PFO wetland and 3.7 acres of PSS wetland would be permanently affected as it would be
converted to PEM wetland due to routine right-of-way maintenance. In addition, approximately 4.6 acres of PEM wetlands and 2.0 acres of PSS wetlands would be permanently lost due to construction and operation of aboveground facilities.

In their comments on the draft EIS, Driftwood and Driftwood Pipeline LLC stated that part of the proposed Hackberry Pipeline transects a permitted BUDM area which has been authorized for wetland mitigation through beneficial placement of dredged spoil resulting from the Driftwood LNG Project. As stated in section 3.1, the Hackberry Pipeline would cross one of Driftwood’s proposed BUDM areas from approximate MP 5.4 to 6.8. Stream Wetland Services, LLC further expressed concern that construction of the Hackberry Pipeline would disrupt marsh to the north of the GIWW and Driftwood’s proposed BUDM area. Depending on timing of construction of both projects, the Project may impact BUDM wetlands; however, these impacts would be minor and temporary and would not significantly impact the affected area. As with other affected wetlands, LA Storage would reduce impacts on wetlands and restore them following construction.

In the event that construction of both projects occurs concurrently, LA Storage would coordinate with Driftwood to minimize conflict. Should construction of the Hackberry Pipeline precede development of Driftwood’s BUDM, the presence of the subsurface Hackberry Pipeline would not affect Driftwood’s ability to place dredge material on the surface. Should Driftwood need to do any excavation near the Hackberry Pipeline, it would, as with any foreign pipeline crossing, be required to coordinate these activities with LA Storage.

In their comments on the draft EIS, Sierra Club and Healthy Gulf expressed concern that adverse impacts on wetlands resulting from the Project were at odds with state efforts (namely the Coastal Protection Restoration Authority) to protect coastal wetlands. In its comments on the draft EIS, the Moore-Odom Wildlife Foundation conversely stated that attracting responsible industry to the region is important for continued preservation and conservation efforts. To date, we have not received any comments from the State of Louisiana expressing concern that the Project would adversely affect coastal resources.

With implementation of LA Storage’s mitigation measures, restoration plans, the HDD Contingency Plan, the abundance of wetlands in the Project vicinity, and LA Storage’s Environmental Plan to avoid or minimize impacts on wetlands, we conclude that Project impacts on surface water resources would not be significant.

3.5 Aquatic Resources

As described previously, constructing the Project would affect 33 waterbodies. Table B-3 provides information on these waterbodies and the warmwater fisheries they support. The perennial waterbodies that would be affected by the Project contain recreational freshwater species such as channel catfish, crappie, largemouth bass, and spotted bass. Saltwater species include red drum, speckled trout, and flounder.
(Hackberry Fishing Guide, 2020). Additionally, waterbodies listed as ephemeral or intermittent are not likely to support fish populations sustaining local fisheries, even though classified by the NMFS as freshwater fisheries. While unlikely to support fisheries, they may provide nursery habitat for forage fish and other recreational target species. Lastly, intermittent streams could potentially support fish during periodic inundation that occurs seasonally or after precipitation events.

Waterbodies affected by the Project also contain EFH. EFH is defined by the NMFS as “those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity” (16 U.S. Code [USC] § 1801[10]). Based on LA Storage’s consultation with NMFS, all tidally-influenced waters and wetlands within the Project boundary are considered to be EFH for the following species: brown shrimp, white shrimp, red drum, 43 reef fish, juvenile mackerel, gray snapper, and lane snapper. In its comments on the Project, RESTORE notes that there are three major pulses of aquatic organism migration in the Calcasieu ecosystem. Other comments received also expressed concern about fish migration and habitat, indicating that turbidity is one of the main impediments to such travel and that resuspension of toxic chemicals from contaminated sediments is another.

In compliance with the Magnuson-Stevens Fisheries Conservation and Management Act, we prepared an EFH assessment, located in appendix C. This assessment was submitted to the NMFS upon issuance of the draft EIS. The EFH assessment acknowledges the seasonality of fish life stages which, as noted by RESTORE, generally occur during spring, summer, and early fall. As described in the EFH assessment effects analysis, constructing the proposed pipelines would affect estuarine marsh, water column, and mud bottoms, which are considered EFH for numerous fish species. Impacts on EFH resulting from construction of the pipelines would depend on construction methods, construction timing, duration of in-water work, and implementation of impact minimization measures. Impacts on EFH would include general disturbance of tidally-influenced waterbodies (and associated sediments) and estuarine marsh; decreased water quality due to increased turbidity; and the physical disturbance of the water column from vessel movements and operations. Following construction, EFH could also be affected by increased turbidity and subsequent sedimentation due to unstable stream banks that have not been fully restored or are still in the process of settling and revegetation. Lastly, the inadvertent release of equipment-related fluids could impact water quality and EFH. Therefore, constructing the proposed facilities would adversely impact EFH and dependent fisheries in their many life stages. Operating the Project is not expected to impact EFH or dependent fisheries.

Based on our review of the Project including the EFH and associated fish species potentially affected, and LA Storage’s proposed construction methods and general impact minimization measures, it is our view that the effects of the Project on EFH would be highly localized, temporary, and not significant. In response to our EFH Assessment, the
NMFS in correspondence dated February 4, 2022, concurred with our determinations concerning EFH.

**Aquatic Resources Impacts and Mitigation Measures**

As stated in section 3.4, LA Storage plans to use an open-cut crossing method at all waterbody crossings, except for those waterbodies crossed by conventional bore or HDD (see table B-3 in appendix B), and at Black Lake where a push-pull method would be used. LA Storage consulted with NMFS and the LDNR’s OCM regarding timing restrictions for in-water work. In an email dated December 8, 2020, LDNR stated that no timing restrictions are required in the Project area. During a December 2, 2020 teleconference, NMFS also stated that no timing restrictions are required for the Project.

Project related activities would affect aquatic habitats, fisheries, and other aquatic wildlife. Reduced water quality, habitat loss and/or degradation, general construction related disturbances (noise and vibration), physical barriers, and equipment spills or leaks could all affect aquatic wildlife and habitat.

Constructing the Project would result in the temporary loss and/or degradation of aquatic habitats including reduced water quality. Constructing the Project would also require the use of equipment and construction methods that would act as a physical barrier for fisheries and aquatic wildlife movement and could result in the introduction of fluids, further reducing water quality. The loss of aquatic habitat and the obstruction of movement would result in fisheries and aquatic wildlife displacement and avoidance. Additionally, other fish behaviors could be affected, and rates of predation and competition could increase. Individually and collectively, these impacts would increase the rates of stress, injury, and mortality experienced by fisheries and aquatic wildlife. However, these impacts would generally be temporary and localized. Furthermore, impacts on fisheries and aquatic wildlife would cease once construction of the Project is complete and affected lands and waterbodies are restored. Operation of the Project is not anticipated to impact fisheries and other aquatic resources.

In its comments, the EPA recommends that measures be taken to avoid or minimize impacts to aquatic habitats and that compensatory mitigation is provided for all unavoidable impacts. As described throughout this EIS and in the EFH assessment, LA Storage proposes numerous measures (including its use of HDDs) to reduce impacts on aquatic species and their habitats. Based on our review of LA Storage’s application, we have determined that its proposed measures sufficiently reduce impacts on aquatic species.

Although the use of an HDD would substantially reduce impacts on fisheries and aquatic wildlife, impacts could still occur due to potential inadvertent drilling mud releases. Also spuds and anchors from barges and other vessels may crush benthic species as they come into contact with the floor of Black Lake. Lastly, aquatic resources may be temporarily affected by altered light regimes associated with vessels operating in
Black Lake. Artificial lights may increase light levels and/or the vessels may reduce light levels due to shading. Subsequently, aquatic species may be precluded from these areas/habitats and may experience increased rates of predation, stress, injury, and mortality; however, these impacts would be temporary, localized, and minor.

To reduce impacts on aquatic resources, LA Storage would implement measures described in its Environmental Plan and HDD Contingency Plan. Equipment used within Black Lake would be floating or low ground-pressure weighted to minimize impacts to aquatic vegetation and to reduce erosion. LA Storage would also implement its spill prevention and containment procedures to prevent impacts to aquatic species.

In comments on the draft EIS, one individual expressed concern that LA Storage’s withdrawal of groundwater could impact surficial biota. Given the depth of water withdrawal and the hydraulic separation between these aquifer intervals and surface water resources, there would be no effects on overlying or surrounding biota.

Given LA Storage’s construction measures to minimize impacts on surface waterbodies, and the implementation of measures within its Environmental Plan, we conclude that impacts on fisheries and other aquatic resources would not be significant.

### 3.6 Vegetation

The Project crosses upland and wetland vegetation types commonly found in Louisiana. Upland vegetation primarily includes herbaceous species (e.g., grasses, forbs, shrubs) commonly associated with existing rights-of-way, roadside ditches, pastures, and unmanaged lands. Forested vegetation is also present within the Project area. Wetlands are described in section 3.4.

Upland vegetation dominates the Project area. Although less prevalent than pasture, areas of upland scrub-shrub vegetation are present at some locations along the pipelines and access roads, and in the SWD well area. Upland forested vegetation is present at the Gas Storage Facility site and along edges of ditches and high berms bordering larger waterbodies. No large areas of contiguous or mature forest are present within the Project area.

As indicated in table 10, the majority of Project impacts would be on herbaceous vegetation. Using the HDD method to cross larger open water areas in Black Lake would reduce impacts on submerged aquatic vegetation. Therefore, submerged aquatic vegetation is not included in table 10.

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24 Common species for each habitat type observed during field surveys can be found in LA Storage’s Resource Report 3, FERC accession number 20210129-5314.
Unique, Sensitive, or Protected Vegetation

LA Storage consulted with the U.S. Fish and Wildlife Service (FWS) and LDWF to determine if any unique, sensitive, or protected vegetation communities (including federal and state species of special concern) occur within the Project area. The LDWF indicated brackish marsh and remnants of coastal prairies may occur within the Project area. No other unique, sensitive, or federally or state protected plant species or communities were identified at, or adjacent to, the proposed Project.

Brackish marsh exists along the shores of Black Lake. Typical brackish marsh vegetation includes cordgrass, bulrush, and other rush species (LDWF, 2010a). As indicated in table 9, 56.9 acres of brackish marsh (i.e., E2EM wetlands) would be affected by the Project. With the exception of 0.6 acre within permanent access roads, the impacts on E2EM wetlands vegetation would be temporary as the pipeline right-of-way and temporary access roads would be restored following construction.

While the Project is in the range of coastal prairies, based on review of the historical aerial imagery, the Gas Storage Facility and upland pipeline areas were previously altered by livestock grazing and agricultural operations. Vegetation within the Project area is not dominated by species typically observed in coastal prairies, such as brownseed paspalum, and little, slender, and big bluestems (LDWF, 2010b). Therefore, sensitive coastal prairie habitat would not be affected by the Project.

Noxious and Invasive Species

Noxious and/or invasive plant species can out-compete and displace native plant species, thereby negatively altering the appearance, composition, and habitat value of affected areas. Project activities could introduce and increase the spread of noxious weed species, particularly in areas where vegetation is cleared. Once established, noxious weeds can become permanent if left uncontrolled. Chinese tallow was identified within the Gas Storage Facility and pipeline corridors during wetland delineations and is identified as noxious by the state of Louisiana.

To minimize the potential spread of invasive species, LA Storage would revegetate upland areas using seed mixes developed in consultation with the NRCS in accordance with its Environmental Plan. Additionally, LA Storage would implement the following measures to minimize the potential for the spread of invasive species: use clean equipment to prevent potential transport and spread of invasive species; conduct post-construction monitoring; and address invasive species consistent with our Plan.

General Vegetation Impacts and Mitigation

Constructing the Project would temporarily and permanently affect about 121.2 acres of upland vegetation, of which 9.1 acres is considered forested. Vegetation would be cleared for the duration of construction. The loss of vegetation would reduce available
wildlife habitat and increase erosion potentials. Additionally, the use of construction equipment would result in an increased potential for the introduction and spread of noxious and invasive plant species. Following construction, affected lands would be restored. Revegetation within forested upland and unmaintained herbaceous upland areas would occur through natural regeneration, supplemented by seeding or planting, if required by the landowner.

We expect that pasture and other herbaceous vegetation would require approximately one to five years to return to pre-construction conditions. Impacts on upland forested lands are considered long-term because revegetation trees may take decades to achieve. About 8.9 acres of upland forested land would be permanently affected because trees would not be permitted to grow back.

Following construction, LA Storage would conduct follow-up inspections of all disturbed areas to ensure revegetation is successful. Vegetation within the new and existing aboveground facilities would be maintained by mowing, cutting, and trimming as necessary. The frequency of the vegetation maintenance would be in accordance with LA Storage’s Environmental Plan.

Given the relatively small amount of permanent impacts on vegetation associated with the aboveground facilities, the scope of the Project, and LA Storage’s implementation of avoidance and mitigation measures as described in their Environmental Plan, we conclude that impacts on vegetation would not be significant.

3.7 Wildlife

Wildlife habitats are generally based on vegetation types. As described previously, most of the Project would be located through areas containing upland and wetland herbaceous vegetation as well as some forested vegetation. Special status species and migratory birds are discussed later in this section.

Wildlife commonly occurring within the Project areas includes raccoon, gray fox, gray squirrel, white-tailed deer, cotton mouse, Virginia opossum, mourning dove, egret, heron, eastern box turtle, bull frog, leopard frog, and common watersnake (Sutton and Sutton, 1985).

General Wildlife Impacts and Mitigation

Impacts on wildlife would vary depending on the specific habitat requirements of the species and the vegetation type crossed by the Project. Additionally, constructing and operating the Project would increase the rates of stress, injury, and mortality experienced by wildlife. Additionally, long-term impacts would include the permanent conversion of wildlife habitat to developed land within the footprints of permanent access roads and aboveground facilities.
<table>
<thead>
<tr>
<th>Facility</th>
<th>Upland</th>
<th>Wetland</th>
<th>Upland</th>
<th>Wetland b</th>
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<td>Oper</td>
<td>Const</td>
<td>Oper</td>
<td>Const</td>
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<tr>
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<td>0.0</td>
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<td>0.0</td>
<td>66.0</td>
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<td><strong>PROJECT TOTAL</strong></td>
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<td>8.9</td>
<td>5.8</td>
<td>2.0</td>
<td>112.1</td>
</tr>
</tbody>
</table>

a The numbers in this table have been rounded. Therefore, the totals may not reflect the sum of the addends in all cases.
b Based on field observations, the National Land Cover Database, and analysis of aerial photography. Table does not include open water or industrial/commercial land because it is not vegetated.
c Includes portions of water access routes that cross land (0.7 acre).
Const = Construction right-right-way and workspace (which includes the operational footprint);
Oper = Operations, which includes the permanent pipeline right-of-way, aboveground facility footprint, and permanent access roads.
Altered habitat and periodic disturbance, including disturbance due to noise and artificial lighting at night, could also increase wildlife mortality, injury, and stress. Noise generated by construction activities and artificial lighting may cause some wildlife species to abandon habitats near the construction area which may cause temporary loss in foraging, bedding, or nesting habitat. It is possible that sensitive species could permanently abandon nest or brooding sites due to noise or light pollution; however, this is considered rare because most species occurring within the Project area do not have fine scale reproductive habitat requirements.

Artificial lighting can affect wildlife by impeding reproduction and altering sleep patterns. LA Storage would minimize lighting impacts by completing most construction activities during daylight hours. Drilling and completion of the cavern wells and the SWD wells would occur 24 hours per day and require artificial lighting for safe operations. However, the impacts would be confined to relatively small areas, the cavern wells would be in an area that is already industrial in nature, and the SWD wells would be in previously disturbed habitat.

Existing industrial facilities with artificial lighting at night in the area of the Project include the DOE’s West Hackberry SPR, which is adjacent to the proposed Gas Storage Facility, and the Cameron LNG facility, about 0.4 mile from the proposed SWD wells. The existing cavern wells at the Gas Storage Facility are also lighted at night. Due to the existing light sources, it is likely that wildlife in these areas are adapted to or not affected by the presence of the artificial nighttime lighting. To mitigate impacts during operations, LA Storage would install down shielded lighting at the Gas Storage Facility to the extent practicable, and noise walls at the compressor station.

LA Storage would minimize long-term impacts from habitat alteration by implementing its Environmental Plan, which would ensure revegetation of areas temporarily disturbed by construction. LA Storage would revegetate areas disturbed by construction to mitigate impacts on wildlife. Given the limited Project area, limited duration of disturbance, and abundant adjacent habitat, we conclude the impacts on wildlife would not be significant.

**Migratory Birds**

Migratory birds are species that nest in the U.S. and Canada during the summer and then migrate to and from the tropical regions of Mexico, Central and South America, and the Caribbean for the non-breeding season. Migratory birds are protected under the MBTA (Title 16 of the USC, sections 703-711). The MBTA, as amended, prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests. EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, was enacted in 2001 to, among other things, ensure that environmental analyses of federal actions evaluate the impacts of actions on migratory birds. EO 13186 directs federal agencies to identify where unintentional take is likely to have a measurable
negative effect on migratory bird populations and avoid, minimize, or mitigate adverse impacts on migratory birds through enhanced collaboration with the FWS, and states that emphasis should be placed on species of concern, priority habitats, and key risk factors, with particular focus given to population-level impacts.

On March 30, 2011, the FWS and FERC entered into a Memorandum of Understanding regarding implementation of EO 13186, that focuses on birds of conservation concern and strengthening migratory bird conservation through enhanced collaboration between the two agencies. This memorandum does not waive legal requirements under the MBTA, BGEPA, the ESA, or any other statutes, and does not authorize the take of migratory birds.

A variety of migratory birds, including birds of conservation concern and waterfowl use or could use the wildlife habitats affected by the Project. These birds use these habitats for resting (stopover), sheltering, foraging, breeding, and nesting. Potential suitable habitat for colonial nesting birds or colonial nesting bird colonies was identified during the field surveys, but no migratory bird rookeries or nesting colonies were observed within the Project area. LA Storage would follow LDWF’s recommendation to conduct a pre-construction survey of the areas identified as potential suitable nesting habitat for migratory birds and colonial nesting birds to look for evidence of nesting colonies within 1,000 feet (2,000 feet for Brown Pelicans) of the Project. This pre-construction survey would take place no more than 2 weeks before construction begins in the areas of suitable habitat.

The loss of upland and wetland habitats associated with Project would result in temporary, short- and long-term impacts on migratory birds. Constructing the Project would reduce the amount of habitat available for use by migratory birds (shelter and foraging) and would temporarily displace birds into adjacent habitats, which could increase competition for food and other resources. Bird displacement could also impact nesting, foraging, migration, and mating behaviors, and susceptibility to predation. Behavior changes and predation could increase the amounts of stress, injury, and mortality experienced by migratory birds which could in turn could negatively impact reproductive success.

Vegetation clearing and other construction activities could affect bird nests. Additionally, increased human presence and noise from construction activities could disturb actively nesting birds. Non-nesting migratory birds would not be substantially affected, as these individuals would temporarily relocate to avoid construction activities. However, construction activity near active nests during incubation or brood rearing could result in nest abandonment; overheating, chilling, or desiccation of unattended eggs or young causing nestling mortality; premature fledging; and/or ejection of eggs or young from the nest. LA Storage designed the Project to minimize impacts on forested vegetation. In addition, activity within 1,000 feet of an active nesting colony would be restricted to the non-nesting period (September 1 through February 15) and for colonies
containing nesting gulls, terns, or black skimmers all Project activity within 650 feet (or 2,000 feet for brown pelicans) of an active nesting colony would be restricted to the non-nesting period (September 16 through April 1).

Bald and golden eagles are protected under the BGEPA (Title 16 of the USC, sections 668-668d). Prior to construction, LA Storage would perform a bald eagle nest survey along the construction right-of-way. In the event that a bald eagle nest is encountered, LA Storage would conduct construction in compliance with the National Bald Eagle Management Guidelines.

On September 28, 2020, LA Storage contacted the FWS about federally protected species, including species protected under the MBTA and BGEPA. The FWS response on September 29, 2020 did not provide specific recommendations relative to migratory birds or bald and golden eagles.

Based on the limited amount of vegetative clearing (particularly forest), available adjacent habitat, and LA Storage’s commitment to conduct a pre-construction bald eagle nest survey, we have determined that the Project would not result in population-level impacts on migratory birds or eagles and would not lead to significant measurable negative impacts on migratory birds or their habitats.

**Special Status Species**

Special status species are those species for which state or federal agencies provide an additional level of protection by law, regulation, or policy. Included are federally listed species that are protected under the ESA, species considered as candidates for such listing by the FWS, and those species that are state listed as threatened, endangered, or state species of special concern.

**Federally Listed Species**

In accordance with Section 7 of the ESA, the FERC, in coordination with the FWS and NMFS, must ensure that any federal action authorized, funded, or carried out by the agency does not jeopardize the continued existence of a federally listed threatened or endangered species or result in an adverse modification of designated critical habitat of a federally listed species.

LA Storage used the FWS Informational Planning and Consultation system to obtain a list of threatened and endangered species that may occur in the Project area. LA Storage conducted a threatened and endangered species survey in conjunction with the wetland delineation in July and August 2020. LA Storage also consulted the NMFS species lists for threatened and endangered species that may occur in marine habitats in the Project area. Table 11 identifies the federally listed species potentially occurring within Project workspaces.
The West Indian manatee could occur within waterbodies crossed by the pipelines. These waterbodies include Black Lake, Salt Ditch, the GIWW, and Bayou Choupique. Three of the four waterbodies are saltwater while Bayou Choupique is likely too far inland for manatee occurrence. During any in-water work in areas that potentially support manatees, all personnel would be instructed about their potential presence, the location of reduced speed zones, and the need to avoid collisions with and injuries to manatees. The Project’s Section 404/10 permit that was re-authorized by the USACE includes special conditions related to manatees which LA Storage has agreed to implement. Given species mobility, natural history, LA Storage’s avoidance measures, and the temporary impacts associated with construction in shoreline areas and aquatic environments, we have determined that the Project may affect but is not likely to adversely affect manatees. In their comments on the draft EIS, Healthy Gulf and Sierra Club stated that the draft EIS failed to consider impacts on manatees from habitat loss (including from the cumulative impacts of other projects in the vicinity), extreme weather events, and health impacts from potential contaminant releases. The Project’s impact on manatee habitat would be temporary and minor. No permanent aboveground facilities would be placed within manatee habitat. As described previously, extreme weather events may exacerbate project impacts. However, adherence to our Plan and Procedures

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Federal Status</th>
<th>Species Observed Within Affected Area?</th>
<th>Habitat Observed Within Affected Area?</th>
<th>Determination</th>
</tr>
</thead>
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<td>Mammals</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>West Indian Manatee</td>
<td><em>Trichechus manatus</em></td>
<td>FWS: Threatened</td>
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<td>Yes</td>
<td>May affect, not likely to adversely affect</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Birds</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Eastern Black Rail</td>
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<td>May affect, not likely to adversely affect</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Red-cockaded Woodpecker</td>
<td><em>Picoides borealis</em></td>
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<td></td>
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<td>Reptiles</td>
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<tr>
<td>Green Sea Turtle</td>
<td><em>Chelonia mydas</em></td>
<td>NMFS: Threatened</td>
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<td>No effect</td>
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<tr>
<td>Hawksbill Sea Turtle</td>
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<td>NMFS: Endangered</td>
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<td>No effect</td>
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<td>Kemp’s Ridley Sea Turtle</td>
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<td>No effect</td>
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<tr>
<td>Leatherback Sea Turtle</td>
<td><em>Dermochelys coriacea</em></td>
<td>NMFS: Endangered</td>
<td>No</td>
<td>No</td>
<td>No effect</td>
</tr>
<tr>
<td>Loggerhead Sea Turtle</td>
<td><em>Caretta caretta</em></td>
<td>Threatened</td>
<td>No</td>
<td>No</td>
<td>No effect</td>
</tr>
</tbody>
</table>

No critical habitat for any species in this table is found within Cameron or Calcasieu Parishes (FWS, 2020a).
would reduce the levels at which Project impacts are experienced in the region following extreme weather events. For example, Project environmental inspectors are required to inspect and ensure the maintenance of temporary erosion control measures within 24 hours of each 0.5 inch of rainfall event. LA Storage would implement numerous measures to avoid inadvertent releases of Project-related fluids and would work to minimize any impacts should a release occur.

Red-cockaded woodpecker nesting and foraging habitat requires open stands of longleaf, loblolly, or southern pines greater to or equal than 60 years old or greater than or equal to 30 years old that are at least 10 inches diameter at breast height. No red-cockaded woodpecker nesting habitat was observed during the 2020 field surveys. No mature longleaf pine forests were observed within the Project area. Given species mobility and lack of suitable habitat observed in the Project area, we have determined that the Project would have no effect on red-cockaded woodpeckers.

The eastern black rail is found in a variety of salt, brackish, and freshwater marsh habitats that can be tidally- or non-tidally influenced. Because brackish marsh habitat suitable for the eastern black rail exists within the Project area and in consideration of the mobility of the eastern black rail, we have determined the Project may affect, but is not likely to adversely affect the eastern black rail. In their comments on the draft EIS, Sierra Club and Healthy Gulf stated that the draft EIS failed to consider impacts from noise and lighting, habitat destruction (including cumulative habitat destruction from other projects in the vicinity), and climate change on the eastern black rail. Predicted climate change impacts, including expected sea level rises that may cause inundation in certain low lying areas, are considered in a subsequent section. However, the specific impacts on the eastern black rail are difficult to discern. In general, the effects of climate change vary across the range of the species, but the best available information supports projections of increased temperatures, decreased precipitation, increases in severe weather events (droughts, hurricanes, etc.), and sea-level rise – all stressors that are likely to have significant impacts on eastern black rail populations. As described above, the loss of habitat, specifically brackish marsh habitat, was considered. Additionally, noise and light emitted from the permanent aboveground facilities could render nearby habitats less desirable. However, the Project area already contains substantial industrial development, so if present, this species may have become habituated to the presence of oil and gas infrastructure.

While potential sea turtle habitat may exist along the GIWW, there are no known occurrences of sea turtles within the Project area. Additionally, the GIWW would be crossed via HDD. No shoreline loss (beaches or dunes) would occur as a result of the Project. Given species mobility, natural history and the temporary impacts associated with construction in shoreline areas and marine environments, we have determined that the Project would have no effect on federally-listed sea turtles.
On September 29, 2020, the FWS concurred with the *not likely to adversely affect* and *no effect* determinations and stated no further consultation was necessary under Section 7 of the ESA and Marine Mammal Protection Act. LA Storage has also coordinated with NMFS regarding the Marine Mammal Protection Act (response pending as of October 18, 2021); LA Storage states that NMFS indicated it would provide comments following EIS issuance, as necessary.

**State-Listed Species**

On July 29, 2020, LA Storage contacted the LDWF to identify the state-listed species potentially present in the Project area. On August 15, 2020, the LDWF stated that based on the Wildlife Diversity Program database, brackish marsh and remnants of coastal prairies may be present in or near the Project area. These natural areas provide habitat for the following state-listed species: eastern pygmy blue butterfly, western pygmy blue butterfly, obscure skipper, Celia’s roadside-skippers, bay skipper butterfly, West Indian manatee, bald eagle, crested caracara (a bird), diamondback terrapin, and ornate box turtle. The West Indian manatee and bald eagle are addressed above. The LDWF requested that LA Storage use caution while working near these areas to avoid impacts on these species.

Suitable habitat was observed for the eastern and western pygmy blue butterfly, the obscure skipper butterfly, and the bay skipper butterfly. In addition, suitable habitat was observed for Celia’s roadside skipper butterfly.

Although habitat suitable for crested caracaras (pastureland with scattered trees) is present within the Project area, no crested caracaras or nests were observed during the 2020 field surveys. Habitat suitable for diamondback terrapins and the ornate box turtle (brackish marsh) is present south of Black Lake near the proposed Gas Storage Facility and southern pipeline terminus. No diamondback terrapins or nests were observed during field surveys and the ornate box turtle has not been detected in Louisiana for over 40 years.

As described in section 3.6, temporary impacts on brackish marsh, open grasslands, coastal marsh, and salt marshes would occur during pipeline construction, but LA Storage would return the disturbed areas to approximate pre-Project conditions following construction. Given most of the proposed gas storage facility was previously disturbed for existing development and the upland pipeline areas were previously disturbed for agriculture, permanent impacts on sensitive coastal prairie habitat during construction or operation of the Project are not anticipated. Additionally, no state-listed species were observed during field surveys of potentially affected lands. Therefore, we conclude the Project would not adversely impact state-listed species.
3.8 Land Use, Recreation, and Visual Resources

Land Use

Land uses crossed by the Project (table 12) includes forest, rangeland, open land, open water, and commercial/industrial land. Open land consists of non-forested lands and scrub-shrub wetlands used for open space or pasture not included in rangeland. Open water in the Project area includes lakes and waterbodies used for recreation, commercial fishing, and navigation.

Constructing the Project would affect 484.5 acres of land, of which 217.8 acres would be returned to previous use following construction. The remaining 266.7 acres of land would be retained for aboveground facilities and the permanent pipeline right-of-way. A summary of the land use acreages that would be affected by construction and operation of the Project is provided in table 12.

The proposed pipelines would cross mostly open land and open water. The central portion of the Hackberry Pipeline would cross an area of rangeland used for grazing livestock. Use of the land for grazing would be precluded within the construction right-of-way during pipeline construction but most areas would return to grazing following construction. In most cases, impacts would be temporary and land use along the pipeline construction right-of-way is expected to approximate preconstruction conditions following construction. LA Storage would use HDD to cross the Salt Ditch, the GIWW, and Bayou Choupique, thereby avoiding temporary impacts on open water and permanent impacts on forest land adjacent to these waterbodies.

Existing land use at the Gas Storage Facility site is open land, industrial, and forest. The open land and forest would be permanently converted to industrial use. Land use at the meter stations and SWD wells would be permanently converted from open land to industrial. Based on our review of existing land use and the minor changes that would result from the Project, we conclude that the Project would not have a significant impact on land use.

Residential Areas

One existing temporary access road, AR-CAL-611, is within 50 feet of a residence. This access road would be improved by grading and adding gravel. No residences would be within 50 feet of the construction workspaces for the pipelines, meter stations, SWD wells, or Gas Storage Facility. The closest residences to the pipelines would be approximately 560 feet west of the Hackberry Pipeline right-of-way at Sam Vincent Road. Although unlikely to be encountered, LA Storage would repair or replace any septic tanks or drain fields damaged during pipeline construction.
One residential property abuts the southern boundary of the Gas Storage Facility, but the residence is greater than 50 feet from the boundary. This residence and an additional six residences would be within 0.5 mile of the Pelican Compressor Station. There are no residences within 0.5 mile of the CIP Interconnect Meter Station, and the distance to the nearest residence to the PAPLC Interconnect Meter Station is about 1,960 feet.

Temporary impacts on residential areas include noise and fugitive dust during construction activities, altered traffic patterns, and increased traffic in the area of the proposed facilities. However, given the rural and industrial Project setting and the episodic nature of equipment and material deliveries, construction-related traffic would not have a significant impact on local residents or others who use the roads in the Project area.

Two named roads (Ellis Moss Road and Sam Vincent Road) would be crossed by the Project, and both crossings would be completed by boring in accordance with road crossing permit requirements. No traffic disruption would occur with conventional boring techniques. Crossings of dirt and gravel roads would be open-cut. These road crossings would be completed quickly, and LA Storage would post signs on nearby streets to direct traffic around the temporary road closure. Project construction would not prevent access to any residential or commercial properties. LA Storage would return any roads damaged by Project construction to their approximate pre-construction condition. Construction noise is addressed in section 3.12, and dust control is addressed in section 3.11.

Permanent impacts on residential areas during operation of the compressor station include noise (see section 3.12) and visual impacts (see below). Given the distances to the nearest residences, LA Storage’s noise mitigation measures, and our recommendation that LA Storage implement visual screening to minimize visual impacts on the residences located south of the Pelican Compressor Station (see below), we do not anticipate significant impacts on residences during construction or operation of the facilities.

As described previously, in her comments on the Project, Ms. Sheron Faulk expresses concern about the location of the SWD wells and their potential impact(s) on her nearby property. Ms. Faulk expresses concerns about the devaluation of her property and the security of the SWD wells. The SWD wells and nearby properties are bordered to the north by the GIWW, to the east by an electrical substation and State Highway 27, to the southeast by the Cameron LNG Project, and to the south and west by large wetland complexes. Also, an existing interstate natural gas pipeline bisects this area. In comments on the draft EIS, an individual expressed concerns regarding economic loss that would be felt by local farmers and community members due to a decline in property values in proximity to the Gas Storage Facility.
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<tr>
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<th>Forest</th>
<th>Rangeland</th>
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<th>Industrial/Commercial</th>
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a  The numbers in this table have been rounded. Therefore, the totals may not reflect the sum of the addends in all cases.
b  Three collocated pipelines for 4.7 miles
c  Two collocated pipelines for 0.2 mile
d  Includes portions of water access routes that cross land (0.7 acre).
Const = Construction, Oper = Operations
An interstate natural gas facility’s impact on the value of a tract of land is dependent on a number of variables, including the size of the tract, the current value of the land, the utilities and services that are available or accessible, the current land use, property improvements, and the value of adjacent properties and other amenities. Generally, land values are determined by real estate appraisals that consider the aforementioned property characteristics. Based on the location of the Gas Storage Facility and its proximity to other oil and natural gas infrastructure, and the scope of the SWD wells (minor aboveground facilities) and their proposed location in an industrial area which is accessible via an existing road, we conclude that these facilities would not likely impact nearby property values and if an impact were to occur, it would not be significant. We also conclude, based on the presence of other industrial facilities in the area and the purpose of the SWD wells that these facilities would not be at an increased risk of vandalism or present other risks to public safety.

Recreation, Public Interest Areas, and Special Land Use Areas

Black Lake, Salt Ditch, and Bayou Choupique support recreational fishing, crabbing, and waterfowl hunting. These waterbodies are publicly accessible waterways that also provide opportunities for boating and nature watching. The GIWW is a federal channel that provides passage to barges and other commercial vessels as well as recreational boaters.

Minor, temporary impacts on local recreation would occur during construction of the pipelines through Black Lake. These impacts would be localized to the construction right-of-way, which would occupy less than 1 percent of Black Lake at any given time during construction. Boat traffic and activities such as fishing would be restricted from areas of active construction. Boaters passing through the area may experience slightly longer trip times as they detour around the construction. However, LA Storage would minimize impacts by marking spoil piles and providing regularly spaced openings to allow boat traffic across the construction work area, as required by the U.S. Coast Guard. LA Storage would avoid impacts on the Salt Ditch, the GIWW, and Bayou Choupique by using HDD crossing methods.

There are no national or state forests on or adjacent to the proposed Project (USGS Gap Analysis Project, 2018). There are also no Wetlands Reserve Program (WRP)25 easements crossed by the Project. The nearest wildlife management area, Sabine National Wildlife Refuge, is over 2 miles south of the Project and would not be affected by Project construction or operation.

25 A voluntary program administered by the NRCS which offers landowners the opportunity to protect, restore, and enhance wetlands on their property.
Given the measures LA Storage would implement to avoid or minimize impacts on recreation and special land use areas, we conclude that the Project would not affect these areas.

**Coastal Zone Consistency**

All of Cameron Parish lies within the boundaries of the Louisiana’s designated coastal zone as does a portion of Calcasieu Parish to the south and west of Bayou Choupiquie. Construction and operation of the Project facilities within the Coastal Zone (including portions of the pipelines, the Gas Storage Facility, the CIP Interconnect Meter Station, and the SWD wells) are subject to Louisiana’s Coastal Zone Consistency Review and require a Coastal Use Permit. The purpose of the Coastal Use Permit is to ensure that any activity affecting the coastal zone is completed in a manner that is consistent with the Louisiana Coastal Resource Program.

LA Storage has submitted its joint permit application for work within the Louisiana Coastal Zone to the OCM and the USACE. FERC must confirm LA Storage’s receipt of a Coastal Use Permit prior to authorizing construction. Because the Coastal Use Permit not yet been received, we recommend that:

- **LA Storage should not begin construction of the Project until it files with the Secretary a copy of the Coastal Use Permit issued by the Louisiana OCM.**

**Visual Resources**

The Project is proposed within a rural/industrial location where existing oil and gas development projects occur. Temporary visual impacts would occur during construction, from vehicle and equipment movement, vegetation clearing and grading, trench and foundation excavation, pipe storage, and spoil piles. Permanent visual impacts may occur along the pipeline right-of-way from periodic vegetation clearing in previously wooded or scrub-shrub areas to allow for visual pipeline inspection, and aboveground facilities would introduce new visual elements. There are no residences within 0.5 mile of the CIP Interconnect Meter Station, and existing vegetation would screen the PAPLC Interconnect Meter Station from the nearest residence, which is about 1,960 feet away.

Two residences located south of the Gas Storage Facility would likely have at least partial views of the aboveground facilities, including the compressor station. The Pelican Compressor Station, wells, and other components of the Gas Storage Facility would be similar to other existing facilities in the Project vicinity including oil and gas production facilities and the DOE’s West Hackberry SPR site. We require that aboveground facilities which are visible from nearby residences or public areas be planted in trees and shrubs or other appropriate landscaping. Existing vegetation and trees on the north side of the adjacent residential property would provide some visual
screening; however, given the proximity of the Pelican Compressor Station to the nearest residences (approximately 1,100 feet) and because the viewshed of these residences would be obstructed, in part, by Project facilities, we recommend:

- **Prior to construction of the Pelican Compressor Station, LA Storage should file with the Secretary a visual screening plan for review and written approval by the Director of OEP, or the Director’s designee, to minimize visual impacts on the residences located south of the Pelican Compressor Station. At a minimum, the plan should include vegetative plantings to provide a visual buffer.**

LA Storage would install down shielded lighting to the extent practicable to minimize impacts at night, and noise walls at the compressor station would provide additional screening. We conclude that the Project would not significantly alter the existing visual characteristics of the Project area.

### 3.9 Cultural Resources

Section 106 of the National Historic Preservation Act, as amended, requires the FERC to take into account the effect of its undertakings on properties listed, or eligible for listing, on the National Register of Historic Places (NRHP), and to afford the Advisory Council on Historic Preservation an opportunity to comment. LA Storage, as a non-federal party, is assisting the FERC in meeting our obligations under Section 106 and its implementing regulations at 36 C.F.R. Part 800.

LA Storage completed a Phase I cultural resources survey for the Project in July and August 2020 and filed a draft survey report with the FERC and the Louisiana Office of Cultural Development, which functions as the State Historic Preservation Office (SHPO). The survey included accessible portions of the Project’s area of potential effects (APE). The APE consists of the construction footprint for the Project plus a buffer (a 700-foot-wide survey corridor for the common pipeline corridor and a 300-foot-wide survey corridor for the single pipelines) to allow for possible changes in the proposed pipeline alignments, for a total of 1,133 acres. The survey included both shovel testing and visual observation. Several areas along the Hackberry Pipeline and the brine disposal pipeline, totaling about 1.4 miles out of 12.6 miles of pipeline right-of-way, were not surveyed because landowner permission could not be obtained. For the areas where no access was granted, LA Storage would complete surveys and file a report with FERC and the SHPO prior to construction once access to these areas has been obtained.

The Phase I cultural resources survey identified two sites within the APE, sites 16CU223 and 16CU224, in Calcasieu Parish near the north end of the Project. The sites both consist of buried artifact scatters of historic-age glass, ceramics, and iron. Based on historic topographic maps, site 16CU223 is a farmstead that likely dates to 1945–1965. Site 16CU224 is most likely associated with that farmstead and dates to a similar time range. Sites 16CU223 and 16CU224 are recommended not eligible for inclusion in the
NRHP for lack of integrity and significance. The visual survey did not identify any standing structures 45 years or older, or NRHP-listed or NRHP-eligible properties within the APE. No significant historic resources were identified within the APE.

LA Storage submitted the Draft Cultural Resources Survey Report to the SHPO on November 3, 2020. In a letter dated November 25, 2020, the SHPO concurred with the findings of the Cultural Resource Survey Report. We also concur.

**Native American Consultation**

In its comments on our NOS, EPA recommended that FERC (1) identify all tribes that would potentially be impacted by the Project, (2) fully implement NEPA requirements regarding EO 13175, and (3) include a discussion in the environmental document related to any comments/concerns and mitigations if warranted. Within the context of our governing statutes (e.g., the NGA), the FERC has a trust responsibility to federally-recognized Tribes, as described more fully in the FERC’s Policy Statement on Consultation with Indian Tribes in Commission Proceedings (issued July 2003, revised in October 2019) and 18 C.F.R. § 380.14 (compliance with the National Historic Preservation Act). As stated in our NOS, the Commission’s NOS initiates consultation with interested Indian Tribes. It is our practice to conduct independent research to identify Tribes with a potential interest in the Project area, including all Tribes that currently or historically have occupied or used the area, regardless of where the Tribes currently reside. This research also includes Tribes that are known to attach religious or cultural significance to historic properties that may be affected by a Project.

As is also described in our Policy Statement on Consultation with Indian Tribes in Commission Proceedings and stated in the NOS, the Commission uses its environmental and decisional documents to communicate how Tribal input has been considered. Accordingly, a discussion is included below related to Tribal comments.

On July 16, 2020, LA Storage sent a Project notification letter describing the proposed Project to six federally recognized Native American Tribes. This letter described the Project and proposed activities, provided maps, and requested that the Tribes inform LA Storage of any known or potential concerns regarding impacts on traditional cultural and historic properties. The six tribes contacted were the Alabama-Coushatta Tribe of Texas, the Apache Tribe of Oklahoma, the Alabama-Quassarte Tribal Town, the Coushatta Tribe of Louisiana, the Jena Band of Choctaw Indians, and the Mississippi Band of Choctaw Indians. On July 28, 2020 and September 11, 2020, LA Storage sent emails to four additional tribes that were identified on the stakeholder list for the Project based on previous coordination by Sempra LNG on other regional projects:

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26 For additional information on the FERC’s responsibilities and practices regarding Tribal consultations, refer to Guidelines for Reporting on Cultural Resources Investigations for Natural Gas Projects (https://www.ferc.gov/sites/default/files/2020-04/cultural-guidelines-final.pdf) and 18 C.F.R. § 380.12 (f)
the Caddo Nation of Oklahoma, the Chitimacha Tribe of Louisiana, the Choctaw Nation of Oklahoma, and the Quapaw Tribe of Oklahoma.

The Coushatta Tribe of Louisiana responded by email August 5, 2020, stating they did not wish to consult on the Project further unless cultural resources were discovered. The Quapaw Tribe of Oklahoma and the Chitimacha Tribe of Louisiana responded that they do not have an interest in the Project and requested to be removed from the Section 106 coordination list. The Alabama-Coushatta Tribe of Texas and the Choctaw Nation of Oklahoma requested copies of the cultural resources survey report. LA Storage sent copies of the report to both tribes on November 3, 2020. The Choctaw Nation of Oklahoma responded via email on December 2, 2020 indicating that they had received a copy of the Cultural Resource Survey Report and they do not feel they are related to the archaeological sites that were discovered during the survey. No other tribes have responded to date.

On October 20, 2020 we sent the Notice of Scoping to the Mississippi Band of Choctaw Indians, the Jena Band of Choctaw Indians, the Choctaw Nation of Oklahoma, the Caddo Nation of Oklahoma, the Apache Tribe of Oklahoma, the Alabama-Quassarte Tribal Town, the Alabama Coushatta Tribe, and the Tunica-Biloxi Tribe of Louisiana. On December 8, 2020 we sent individual letters to the same tribes. The Choctaw Nation of Oklahoma filed with the Secretary a request for a copy of the cultural resources report. As indicated above, LA Storage provided the tribe with a copy of the report and on December 2, 2020 and the tribe responded to the company that they do not feel they are related to the sites discovered during the survey. No other responses have been received to date.

In response to our second Notice of Scoping (August 27, 2021) the Choctaw Nation of Oklahoma confirmed that the Project is within their area of historic interest and requested a copy of the cultural resources report and the EIS. The cultural resources report was provided during the pre-filing process and the tribe is on our mailing list to receive the EIS.

**Unanticipated Discovery Plan**

LA Storage has prepared an Unanticipated Discovery Plan that describes the procedures to be employed if previously unidentified archaeological resources, including human remains, are encountered during construction of the Project. A copy of the plan is included in the Project’s Environmental Plan. We have reviewed LA Storage’s Unanticipated Discovery Plan and find it to be acceptable.
Compliance with the National Historic Preservation Act

Because surveys and consultations are not complete for the Project and to ensure our responsibilities under the National Historic Preservation Act and its implementing regulations are met, we recommend that:

- LA Storage **should not begin construction** of facilities and/or use of all staging, storage, or temporary work areas and new or to-be-improved access roads **until**:
  
  a. LA Storage files with the Secretary:
     
     (i) remaining cultural resources survey report(s);
     
     (ii) site evaluation report(s) and avoidance/treatment plan(s), as required; and
     
     (iii) comments on the cultural resources reports and plans from the Louisiana SHPO;
  
  b. the Advisory Council on Historic Preservation is afforded an opportunity to comment if historic properties would be adversely affected; and
  
  c. the FERC staff reviews and the Director of OEP, or the Director’s designee, approves the cultural resources reports and plans, and notifies LA Storage in writing that treatment plans/mitigation measures (including archaeological data recovery) may be implemented and/or construction may proceed.

All materials filed with the Commission containing location, character, and ownership information about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: “CUI/PRIV-DO NOT RELEASE.”

3.10 Socioeconomics

Constructing and operating the Project may affect the socioeconomic character of the Project area. The Project could impact employment, transportation infrastructure, demand for housing and public services, public safety, and other economic characteristics and tax revenue. We also assess the Project’s potential impact on environmental justice.
Employment

The Project would require a total workforce of about 313 workers, including construction and supervisory personnel. LA Storage estimates between 20 to 40 percent of the hired construction workers would be local residents and that 10 new permanent personnel would be hired to operate the new facilities. However, the percentage of hired local workers could vary substantially based on other employment opportunities (and other economic circumstances) in the area. Table 13 provides demographic and employment information for the State of Louisiana and for the two parishes where any socioeconomics effects would be expected to occur.

Table 13

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<tbody>
<tr>
<td>Louisiana</td>
<td>4,659,978</td>
<td>$27,274</td>
<td>2,152,802</td>
<td>6.4</td>
<td>E, R</td>
</tr>
<tr>
<td>Calcasieu Parish</td>
<td>200,182</td>
<td>$27,954</td>
<td>93,541</td>
<td>4.2</td>
<td>E, A</td>
</tr>
<tr>
<td>Cameron Parish</td>
<td>6,888</td>
<td>$29,000</td>
<td>3,371</td>
<td>4.2</td>
<td>E, M</td>
</tr>
</tbody>
</table>

a E = Educational services, and health care and social assistance; R = Retail trade; A = Arts, entertainment, and recreation, and accommodation and food services; M = Manufacturing; Sources: U.S. Census Bureau, 2010, 2018a, 2018c, 2018d

Given the population of the parishes, the size of the labor force, the duration of construction, and the rate of unemployment, we anticipate that the Project would have a temporary and negligible positive impact on unemployment rates.

Transportation

Constructing the Project may result in minor, temporary impacts on roadways due to the movement and delivery of equipment, materials, and workers. Workers commuting to and from the work sites every day would result in a short-term, temporary increase in traffic during construction. The Gas Storage Facility would be accessed from existing Parish Road 390 off State Highway 27. The PAPLC Interconnect Meter Station would be accessed from Louisiana Highway 108, an existing two-lane state highway, and the CIP Interconnect Meter Station would be accessed from Park Road off Louisiana Highway 27.

LA Storage provided estimates of monthly construction workforce and anticipates an average monthly workforce of about 206 workers with a maximum of 313 workers in the third month of construction. At peak workforce, 313 workers would be driving to construction sites using the local road network, spread out over about 11 miles. In addition to the construction workforce, the delivery of construction equipment and materials to the Project facility sites could temporarily congest existing transportation
networks. LA Storage estimates a monthly peak of 267 deliveries of materials and equipment to the Project area by truck, and a total of about 3,800 deliveries by truck spread out over the 23 months of construction. Traffic associated with the delivery of materials and equipment to the Project sites would result in short-term, temporary increases in traffic and traffic congestion on the roads near the Project facilities for the duration of construction.

LA Storage would minimize impacts on area roads by crossing all paved or improved roads by boring under the road to prevent damage to the road surface and interruption of traffic. Most construction workers would access the site before 7:00 am and depart after 7:00 pm, outside of typical commuting periods, while deliveries would occur during the course of the day throughout the approximate 23-month construction period. LA Storage’s Environmental Plan requires its contractor to install and maintain safe and accessible conditions at all road crossings and access points during construction. Other measures to reduce traffic impacts on local roadways would include:

- use of crushed stone access pads at paved roadways to reduce tracking of soils onto paved roads;
- crossing roadways with equipment using tires or other low-impact material to protect the road surface;
- monitoring crossings of paved roads during use and after rain events; and
- sweeping paved roads to remove tracked soils or mud to not create a traffic hazard.

Given the mitigation measures outlined in LA Storage’s Environmental Plan, we conclude impacts on transportation and traffic would be temporary and not significant.

**Housing**

Housing characteristics for the parishes in the socioeconomic study area are presented in table 14.

<table>
<thead>
<tr>
<th>TABLE 14</th>
<th>Housing Characteristics in Project Area, 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Housing Units</td>
</tr>
<tr>
<td>State</td>
<td></td>
</tr>
<tr>
<td>Louisiana</td>
<td>2,045,554</td>
</tr>
<tr>
<td>Parish</td>
<td></td>
</tr>
<tr>
<td>Cameron Parish, LA</td>
<td>3,997</td>
</tr>
<tr>
<td>Calcasieu Parish, LA</td>
<td>88,830</td>
</tr>
<tr>
<td>City</td>
<td></td>
</tr>
<tr>
<td>Hackberry, LA</td>
<td>915</td>
</tr>
<tr>
<td>Carlyss, LA</td>
<td>2,216</td>
</tr>
</tbody>
</table>
**TABLE 14**

Housing Characteristics in Project Area, 2018

<table>
<thead>
<tr>
<th>State, Parish or City</th>
<th>Total Housing Units</th>
<th>Occupied Units</th>
<th>Vacant Units</th>
<th>Vacant Seasonal, Recreational, or Occasional Use Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulphur, LA</td>
<td>9,207</td>
<td>7,989</td>
<td>1,218</td>
<td>371</td>
</tr>
<tr>
<td>Lake Charles, LA</td>
<td>38,378</td>
<td>32,981</td>
<td>5,397</td>
<td>738</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau, 2018d

Based on LA Storage’s estimate that 20 to 40 percent of the construction workforce would be local, up to 251 workers from outside the Project area may require temporary housing during the construction period. In addition to there being an estimated 83 hotels and motels within commuting distance of the Project, the U.S. Census Bureau estimates that there are about 12,800 vacant housing units and 2,925 vacant seasonal, recreational, or occasional use housing units available for rent in Cameron and Calcasieu Parishes. Another 83 hotels or motels and 15 recreational vehicle parks are within a 50-mile radius of the Project, mostly along I-10 in Sulphur and Lake Charles (Hotels.com, 2020; Good Sam Club, 2020).

Based on the number of available rental units and hotels and motels in the Project vicinity, along with other recreational vehicle parks, we conclude that sufficient housing is available in the Project vicinity to support the construction and operational workforce. Depending on where non-local construction workers choose to live, for example, if concentrated to certain areas, localized increased housing pressures (e.g., availability, cost) may occur during Project construction. The addition of 10 new workers to the existing workforce within the two parishes would have only a negligible effect on long-term housing in the Project area. Therefore, we conclude the Project would not have a significant impact on housing.

**Public Safety**

LA Storage identified the existing inventory of public service providers in the Project area, which includes 6 hospitals with over 700 beds, 10 fire departments, and 9 police and sheriff departments (see table 15).

Although the need for medical, fire, and police services may increase slightly due to the non-local construction workers who would relocate to the Project area during the 23-month construction period or as part of the permanent workforce, we conclude adequate public services exist in the Project area to handle emergency events impacting this workforce without significant impacts on these resources and their services to the community.
<table>
<thead>
<tr>
<th>Parish</th>
<th>Public Services by Parish</th>
<th>Hospitals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcasieu</td>
<td>Police: 1 Sheriff Office: Calcasieu Parish Sheriff Office 7 Police Departments:</td>
<td>Parish Total: 5 Hospitals, 729 Beds:</td>
</tr>
<tr>
<td>Parish</td>
<td>• DeQuincy • Iowa • Lake Charles • McNeese State University • Sulphur • Vinton • Westlake</td>
<td>• Lake Charles Memorial Hospital (312 Beds) • Lake Charles Memorial Hospital for Women (54 Beds) • CHRISTUS Ochsner St. Patrick Hospital (148 Beds) • CHRISTUS Ochsner Lake Area Hospital (108 Beds) • West Calcasieu Cameron Hospital (107 Beds)</td>
</tr>
<tr>
<td>Cameron</td>
<td>Fire: 8 Fire Departments 10 stations</td>
<td></td>
</tr>
<tr>
<td>Parish</td>
<td>Fire: 2 Fire Departments 3 stations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Parish Total: 1 Hospital: South Cameron Memorial Hospital (49 Beds)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sources: USA Cops, 2019; FireDepartment.net, 2019; American Hospital Directory, 2020</td>
<td></td>
</tr>
</tbody>
</table>

### Economy and Tax Revenue

In its comments on the Project, Healthy Gulf expressed concerns that the Project would harm the long-term economic future of affected parishes and that the Project would discourage future residential and commercial development. LA Storage is repurposing an existing industrial site adjacent to a larger industrial site (the DOE’s West Hackberry SPR); and is therefore unlikely to physically affect local residential and commercial development.

Healthy Gulf specifically cites tax breaks that petrochemical companies receive from the state and adverse impacts these tax breaks have on small businesses. FERC has no jurisdiction over state tax programs. Therefore, the effects that these programs (including incentivization) have on businesses or industries is outside of the scope of this EIS. However, as part of our analysis, we assessed Project impacts on the local and regional economy, as described below.

Oil and gas development is a substantial component of the Louisiana economy, as well as that of Cameron and Calcasieu parishes. In comments on the draft EIS, Cameron Parish Police Juror Curtis Fountain noted that the local community is dependent on the natural gas industry. The Project would contribute to the local and regional economy directly and indirectly through spending by construction workers, purchases of goods and materials, and from taxes collected on purchases, payroll, and property. LA Storage estimates the total construction payroll for the Project to be approximately $47,820,000. Spending by non-local workers would include rent payments, food, and fuel purchases. LA Storage anticipates that the Project would pay $5.26 million in sales taxes on goods and material purchases during construction in Louisiana. When in service, LA Storage would pay approximately $7 million per year in property taxes to the parishes. For comparison, in 2018, Calcasieu Parish reported $74.8 million in sales tax revenues, $55.1
million in property tax revenues, and $12.5 million in gaming revenues (Calcasieu Parish Police Jury, 2019). In 2016, Cameron Parish collected $2.5 million in sales tax revenues and $36.5 million in property tax revenues (Louisiana Department of Revenue, 2017).

In their comments on the draft EIS, Sierra Club and Healthy Gulf stated that the draft EIS does not analyze the cost to the taxpayers of additional health care that would be required for community members surrounding the Project due to the adverse impacts on air quality. LA Storage modeled the operational air emission sources at the proposed Pelican Compressor Station interactively with other sources within 50 kilometers (identified based on a review of permits filed with the LDEQ). This modeling identified that collective contribution of all identified sources would exceed the 1-hour NO$_2$ NAAQS. Project contributions to exceedances of the NAAQS for the 1-hour NO$_2$ were further assessed and determined to be below the respective EPA-determined significant impact level. See section 3.11 of this EIS for more detailed discussion. Therefore, we conclude that the Project would not cause or significantly contribute to an exceedance of the NAAQS and would not result in a significant impact on air quality in the region.

In its comments on the draft EIS, Teamsters National Pipeline Labor Management Cooperation Trust expressed support for the Project and recommended that LA Storage utilize Teamster union member pipeline workers and contractors domiciled in New Orleans and Baton Rouge, Louisiana. LA Storage estimates that 20 to 40 percent of the construction workforce would be local. LA Storage, or its contractor, would be responsible for hiring appropriately trained workers.

Based on the estimates above and LA Storage’s repurposing of an existing industrial facility, we conclude that the Project would have a positive, although minor, impact on the local economy and would not hinder future economic development.

**Environmental Justice**

The EPA’s environmental justice policies are directed, in part, by the recent Executive Order 14008, *Tackling the Climate Crisis at Home and Abroad*, and Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, as amended, which require federal agencies to consider if impacts on human health or the environment would be disproportionately high and adverse for environmental justice communities in the surrounding community resulting from the programs, policies, or activities of federal agencies. The term “environmental justice community” could encompass: (i) populations of color; (ii) communities of color; (iii) Native communities; and (iv) low-income rural and urban communities, who are exposed to a disproportionate burden of the negative human health and environmental impacts of pollution or other environmental hazards.\(^\text{27}\)

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A disproportionately high and adverse effect on an environmental justice community means the adverse effect is predominately borne by such population or is appreciably more severe or greater in magnitude on the minority or low-income population than the adverse effect suffered by the non-minority or non-low-income population. The EPA’s Federal Interagency Working Group on Environmental Justice and NEPA Committee’s publication, *Promising Practices for EJ Methodologies in NEPA Reviews* (EPA, 2016), provides methodologies for conducting environmental justice analyses. In its comments on the Project, the EPA recommends we utilize its publication, *Promising Practices for EJ Methodologies in NEPA Reviews*. As described throughout this section, we have incorporated these practices into our analysis. Issues considered in the evaluation of environmental justice include human health or environmental hazards; the natural physical environment; and associated social, economic, and cultural factors.

According to the CEQ environmental justice guidance under NEPA (CEQ, 1997) and *Promising Practices for EJ Methodologies in NEPA Reviews*, minorities are those groups that include: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. Following the recommendations set forth in *Promising Practices for EJ Methodologies in NEPA Reviews*, minority populations are defined in this EIS where either: (a) the minority population of the affected area exceeds 50 percent; or (b) the aggregate minority population of the affected area is meaningfully greater (10 percent greater) than the aggregate minority population percentage in the general population or other appropriate unit of geographic analysis. The guidance also directs low-income populations to be identified based on the annual statistical poverty thresholds from the U.S. Census Bureau. Low-income populations are identified as census block groups where the percentage of low-income individuals (or households) is greater than or equal to that of the parish. According to the current U.S. Census Bureau information, a low-income population exists within the Project area, as discussed further below.

We received comments on environmental justice from the EPA, Sierra Club, Healthy Gulf, and several members of the public. The EPA recommends that we: (1) fully implement NEPA requirements regarding Executive Order 12898 (as previously described); (2) incorporate and substantiate the environmental justice demographic near or impacted by the Project; (3) utilize area knowledge to supplement Census data by working with the State, Parishes, local governments, interested parties, minority and environmental organizations to identify minority and low-income populations in the impacted areas; (4) identify and engage minority and low-income populations for meaningful participation in the decision-making process, including remote and unincorporated areas/communities and share the project safety/failure projection; (5) include a discussion of outreach and meeting accessibility; (6) allow enough time for outreach consultation, coordination and comments, due to COVID-19 impact; (7) utilize its *Promising Practices for EJ Methodologies in NEPA Reviews* (as previously addressed); and (8) that the FERC commit to mitigation and evaluation measures to reduce or eliminate adverse environmental and health impacts to the minority and low-income populations.
income populations due to the potential failure of natural gas storage caverns and potential flooding. The Sierra Club and Healthy Gulf commented that: (1) the Commission must adequately consider the environmental justice impacts of the Project; and (2) the Commission must consider that Cameron and Calcasieu Parishes are “already overburdened with industry and polluting facilities” and “additional projects would exacerbate the impacts felt by these already overburdened communities.” Several members of the public also commented that the environmental review must consider the human health, economic and social effects of the project on low-income people and communities of color. They commented further that the environmental review must also consider the risks of methane emissions and leaks, and the impacts they will have on the families in the vicinity.

EPA asked that we incorporate and substantiate the environmental justice demographic near or impacted by the Project. Table 16 below identifies the minority populations (by race and ethnicity) and low-income populations within Louisiana, the parishes affected by the Project (Calcasieu and Cameron Parish), and U.S. Census block groups crossed by the pipeline facilities and within 1 mile of the proposed aboveground project facilities. We have determined that a 1-mile radius around the proposed aboveground facilities is the appropriate unit of geographic analysis for assessing impacts on the environmental justice community. A 1-mile radius is sufficiently broad considering the likely concentration of construction activities, noise, visual, and traffic impacts proximal to the aboveground facilities, operational emissions, and is consistent with our regulations. To ensure we are using the most recent available data, we use the 2019 U.S. Census American Community Survey data from File# B17017 and File# B03002 as the source for race, ethnicity, and poverty data at the census block group level.

As identified in table 16, the Project would impact four block groups, three in Calcasieu Parish and one in Cameron Parish. None of the block groups affected have a minority population greater than 50 percent or a minority population meaningfully greater than the reference populations, in this case, Calcasieu and Cameron Parishes. Of these four block groups, one contains a low-income population. The single block group affected in Cameron Parish (Census Tract 9702.01 block group 1) has 12.6 percent of its population below the poverty level, whereas the reference group (Cameron Parish) has a population of 10.9 percent below the poverty level. Because the percentage of the low-income population in the block group exceeds the percentage of the low-income population in the reference group, an environmental justice community is present.

28 Census block groups are statistical divisions of census tracts that generally contain between 600 and 3,000 people (U.S. Census Bureau, 2021).
29 18 C.F.R. § 380.12 Environmental reports for Natural Gas Act applications
Impacts on Environmental Justice Communities

Project work within the identified environmental justice community includes the conversion of three existing salt dome caverns to natural gas storage service and the development of one new salt dome cavern for additional natural gas storage service, all within a permanent natural gas storage facility on a 160-acre tract of land owned by LA Storage. LA Storage would also construct and operate the Pelican Compressor Station within this community. Additionally, portions of the Hackberry, CIP Lateral, and brine disposal pipelines would be located within this community.

In its comments on the Project, the Sierra Club and Healthy Gulf state that the Commission must adequately consider the environmental justice impacts of the Project. In addition, several members of the public also commented that the environmental review must consider the human health, economic and social effects of the project on low-income people and communities of color. Based on the scope of the Project and our analysis of the Project’s impacts on the environment as described throughout this EIS, we have determined Project-related impacts on socioeconomics, traffic, noise, visual resources, and air quality may adversely affect the identified environmental justice community. In general, the magnitude and intensity of the aforementioned impacts would be greater for individuals and residences closest to the Project’s facilities, particularly the Pelican Compressor Station, and would diminish with distance. These impacts are addressed in greater detail in the associated sections of this EIS.

Environmental justice concerns are not present for other resource areas such as geology, groundwater, wetlands, wildlife, or cultural resources due to the minimal overall impact the Project would have on these resources and the absence of any suggested connection between such resources and environmental justice communities.

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30 No active domestic water wells were identified within 2 miles of proposed water supply wells (LDNR, 2020). LA Storage submitted a draft Groundwater Monitoring Plan, developed in coordination with Cameron Parish Waterworks District Number 2, the water utility company servicing the Town of Hackberry, on February 7, 2022. LA Storage has committed to filing the finalized version of this plan once complete. Further, Cameron Parish Waterworks District Number 2 submitted comments in support of the Project and reaffirmed its support in its comments on the draft EIS. Refer to section 3.4 for additional detail.
## Table 16
Minority Populations by Race and Ethnicity and Low-Income Populations in the Project Area

<table>
<thead>
<tr>
<th>State/County/Census Tract/Block Group</th>
<th>Total Population</th>
<th>White Alone Not Hispanic (%)</th>
<th>African American (%)</th>
<th>Native American/Alaska Native (%)</th>
<th>Asian (%)</th>
<th>Native Hawaiian &amp; Other Pacific Islander (%)</th>
<th>Some Other Race (%)</th>
<th>Two or More Races (%)</th>
<th>Hispanic or Latino (%)</th>
<th>Total Minority a (%)</th>
<th>Below Poverty Level b (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Louisiana</td>
<td>4,664,362</td>
<td>58.7</td>
<td>32.0</td>
<td>0.5</td>
<td>1.7</td>
<td>0.0</td>
<td>0.2</td>
<td>5.1</td>
<td>1.8</td>
<td>41.3</td>
<td>18.8</td>
</tr>
<tr>
<td>Calcasieu Parish</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Census Tract 32, Block Group 1</td>
<td>1,840</td>
<td>67.4</td>
<td>24.8</td>
<td>0.3</td>
<td>1.4</td>
<td>0.0</td>
<td>0.2</td>
<td>3.6</td>
<td>2.3</td>
<td>32.6</td>
<td>16.0</td>
</tr>
<tr>
<td>Census Tract 33, Block Group 1</td>
<td>2,584</td>
<td>96.9</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>2.3</td>
<td>0.8</td>
<td>3.1</td>
<td>8.7</td>
</tr>
<tr>
<td>Census Tract 34, Block Group 2</td>
<td>4,429</td>
<td>91.0</td>
<td>6.9</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>2.1</td>
<td>0.0</td>
<td>9.0</td>
<td>6.0</td>
</tr>
<tr>
<td>Cameron Parish</td>
<td>6,930</td>
<td>88.3</td>
<td>3.4</td>
<td>0.5</td>
<td>0.5</td>
<td>0.0</td>
<td>0.0</td>
<td>5.9</td>
<td>1.4</td>
<td>11.7</td>
<td>10.9</td>
</tr>
<tr>
<td>Census Tract 9702.01, Block Group 1</td>
<td>1,384</td>
<td>96.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>3.9</td>
<td>0.0</td>
<td>3.9</td>
<td>12.6</td>
</tr>
</tbody>
</table>

Source: American Community Survey, 2019, File # B01017 and File # B03002.

- a  “Minority” refers to people who reported their ethnicity and race as something other than non-Hispanic White.
- b  Low-income or minority populations exceeding the established thresholds are indicated in red, bold, type and blue shading.

Due to rounding differences in the dataset, the totals may not reflect the sum of the addends.
In their comments on the draft EIS, Sierra Club and Healthy Gulf stated that while the draft EIS concluded that impacts on environmental justice populations may be disproportionately high and adverse, little is said as to how mitigation could be implemented to protect these populations. Environmental impact minimization and mitigation measures are addressed throughout this document. Mitigation measures proposed for the Project that would reduce impacts on environmental justice communities include:

- measures to reduce traffic impacts included in LA Storage’s Environmental Plan;
- installation of a noise barrier south of the proposed compressor station to minimize noise impacts on the surrounding area and environmental justice community during construction and operation;
- implementation of our recommendation to implement visual screening to minimize visual impacts on the residences located south of the Pelican Compressor Station;
- use of construction equipment and vehicles that comply with EPA mobile and non-road emission regulations, and usage of commercial gasoline and diesel fuel products that meet specifications of applicable federal and state air pollution control regulations to mitigate exhaust emissions; and
- mitigation of fugitive dust by applying water to the roadways and reducing vehicle speed.

Project impacts on environmental justice populations may include impacts on socioeconomic factors. Constructing the Project would require about 300 workers/contractors. The combined populations of Cameron and Calcasieu Parishes are about 207,000 individuals. The 300 workers/contractors would increase the combined populations of the two parishes by about 0.14 percent. The temporary flux of workers/contractors into the environmental justice community could increase the demand for community services, such as housing, police enforcement, and medical care. An influx of workers could also affect economic conditions, and other community infrastructure. Socioeconomic impacts on the environmental justice community would be less than significant. Socioeconomic impacts are more fully addressed above.

Potential impacts on the environmental justice communities during construction of the Project may also include traffic delays. There would be a temporary increase in use of area roads by heavy construction equipment and associated trucks and vehicles. Increased use of these roads would result in a higher volume of traffic, increased commute times, and greater risk of vehicle accidents. These impacts would adversely affect local residents. However, these impacts would be limited to periods of active construction (see the Construction Schedule section within section 2.4) over the course of
a 23-month construction period. LA Storage would implement measures to reduce traffic impacts as described in its Environmental Plan. Further, our analysis determined that operating the Project would not substantially increase traffic on local roads. Traffic impacts on environmental justice communities would be less than significant. Project transportation needs and impacts are more fully addressed above.

Noise levels above ambient conditions attributable to construction activities would vary over time and would depend upon the nature of the construction activity, the number and type of equipment operating, and the distance between sources and receptors. The closest noise sensitive areas (NSA) (residences) are located about 1,150 and 1,470 feet south of the proposed compressor station. The human ear’s threshold of perception for noise change is considered to be 3 decibels on the A-weighted scale (dBA). Construction noise related to Project activities would increase noise levels over ambient by 1 to 3 decibels at this NSA and would be temporary. Operating the compressor station with noise mitigation would increase noise levels over ambient by 3 to 4 decibels. This level slightly exceeds the threshold of perception. Therefore, operation of the compressor station would result in a permanent perceptible noise increase in the Project area. A noise barrier would be installed along the south property line to minimize the impact to the surrounding area and environmental justice community (see figure 1 and appendix A - figure A-2). Contribution of the station at full load would be below FERC criterion of 55 dBA day-night sound level (L_{dn}) at the affected NSAs. Noise impacts are more fully addressed in section 3.12.

Temporary visual impacts would occur during construction of the pipeline and aboveground facilities, including vehicle and equipment movement, vegetation clearing and grading, trench and foundation excavation, pipe storage, and spoil piles. Permanent visual impacts may occur along the pipeline right-of-way from periodic vegetation clearing to allow for visual pipeline inspection. Visual impacts would also occur due to the operation of the Pelican Compressor Station. The Pelican Compressor Station would be located in an industrial area on land that is currently an open field. This facility would be located immediately adjacent to the DOE’s West Hackberry SPR, which contains numerous similar types of aboveground facilities. The sightline from the closest residences (1,150 and 1,470 feet south) to the compressor station would be partially obscured by existing trees, thereby reducing the Project’s impacts on visual resources. LA Storage would install down shielded lighting to the extent practicable to minimize impacts at night, and noise walls at the compressor station would provide additional visual screening. Although consistent with the industrial nature of the adjacent facilities, the Pelican Compressor Station would result in a permanent change to the viewshed. We have included a recommendation that LA Storage implement visual screening to minimize visual impacts on the residences located south of the Pelican Compressor Station. Therefore, with implementation of our visual screening recommendation, visual impacts on environmental justice communities would be less than significant. Visual impacts are more fully addressed in section 3.8.
Construction air emissions from the Project, when considered with current background concentrations, would be below the NAAQS, which are designated to protect public health. Construction emissions would occur over the duration of construction activity and would be emitted at different times throughout the Project area. Construction emissions in the form of particulate matter (i.e., dust) would occur, and construction emissions from equipment exhaust would result in short-term, localized impacts in the immediate vicinity of construction work areas, particularly the Pelican Compressor Station. Efforts to mitigate exhaust emissions during construction would include using construction equipment and vehicles that comply with EPA mobile and non-road emission regulations, and usage of commercial gasoline and diesel fuel products that meet specifications of applicable federal and state air pollution control regulations. Fugitive dust would be mitigated by applying water to the roadways and reducing vehicle speed.

LA Storage modeled the operational air emission sources at the proposed Pelican Compressor Station interactively with other sources within 50 kilometers (identified based on a review of permits filed with the LDEQ). Identified sources include numerous petrochemical manufacturing and processing facilities, as well as waste management facilities. Other contributing sources include five active and FERC-authorized LNG facilities. This modeling identified that collective contribution of all identified sources would exceed the 1-hour NO$_2$ NAAQS. Project contributions to exceedances of the NAAQS for the 1-hour NO$_2$ were further assessed and determined to be below the respective EPA-determined significant impact level. See section 3.11 of this EIS for more detailed discussion. Therefore, we conclude that the Project would not cause or significantly contribute to an exceedance of the NAAQS and would not result in a significant impact on air quality in the region.

In their comments on the draft EIS, Sierra Club and Healthy Gulf stated that FERC must consider environmental justice communities’ susceptibility to air pollution even at levels below the NAAQS, and given that multiple exposure may not be captured by the NAAQS. Although the Project would be in compliance with the NAAQS and the NAAQS are designated to protect sensitive populations, we acknowledge that NAAQS attainment alone may not assure there is no localized harm to such populations due to project emissions of volatile organic compounds (VOC), hazardous air pollutants (HAP), as well as issues such as the presence of non-Project related pollution sources, local health risk factors, disease prevalence, and access (or lack thereof) to adequate care.

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31 Magnolia LNG Liquefaction Project (CP14-347-000, CP19-19-000), Calcasieu Pass LNG Project (CP15-550-000, CP15-551-000); Driftwood LNG Project (CP17-117); Lake Charles LNG Liquefaction Project (CP14-119-000, CP14-120-000, and CP14-122-000); and Cameron LNG Facility (CP13-25-000; expansion under CP15-560).
Healthy Gulf commented “the environmental and climate justice effects of the Project have not been assessed adequately, and the disproportionate impacts to environmental justice communities have been thus far disregarded.” The construction and operation of the Project would increase the atmospheric concentration of GHGs, in combination with past and future emissions from all other sources and would contribute incrementally to future climate change impacts. The EIS notes that while the climate change impacts taken individually may be manageable, for certain communities, including environmental justice individuals, impacts of compound extreme events (such as simultaneous heat and drought, or flooding associated with high precipitation on top of saturated soils) can be synergistic (i.e., greater than the sum of the parts). Section 3.11 of this EIS addresses impacts associated with climate change.

The Sierra Club and Healthy Gulf also state that the Commission must consider that Cameron and Calcasieu Parishes are “already overburdened with industry and polluting facilities” and “additional projects would exacerbate the impacts felt by these already overburdened communities.” As previously described, the Project is located adjacent to the DOE’s West Hackberry SPR. Other planned or existing industrial projects nearby include the Driftwood LNG Project, Cameron LNG Expansion Project, the PAPLC, Calcasieu Pass LNG, Lake Charles LNG, Commonwealth LNG, and Magnolia LNG in addition to many other petrochemical and manufacturing projects. These projects would contribute to a range of impacts felt by nearby overburdened communities including, but not limited to, air, noise, traffic, and visual impacts. In addition, as previously stated, the collective air emissions from active and proposed sources within 50 kilometers of the Project were found to exceed the 1-hour NO₂ NAAQS. Further, and while Project contributions to exceedances of the NAAQS for the 1-hour NO₂ were determined to be below the respective EPA-determined significant impact level, NAAQS attainment alone may not assure there is no localized harm to these overburdened communities due to cumulative air impacts including emissions of VOCs and HAPs, as well as issues, such as the presence of other related pollution sources, local health risk factors, disease prevalence, and lack of access to adequate healthcare.

The EPA also recommends that we commit to mitigation and evaluation measures to reduce or eliminate adverse environmental and health impacts on minority and low-income populations due to the potential failure of natural gas storage caverns and potential flooding. Critical structures such as the compressor building and major electrical equipment would be raised above natural grade, providing added flood protection and operational reliability. The injection compressors would be driven by natural gas with on-site backup diesel generators to provide ancillary power. This would allow the gas storage facility to operate in the event of electric grid outages. We do not anticipate that flooding would impact the Project facilities or that flood storage capacity would be permanently displaced as a result of the Project (see section 3.2). Therefore, no impacts on flood storage or environmental justice communities due to flooding are anticipated. More discussion regarding flooding is included in sections 3.1, 3.2, 3.4, and 3.11.
Several members of the public commented that the environmental review must also consider the risks of methane emissions and leaks, and the impacts they will have on the families in the vicinity. GHGs are previously discussed above and in section 3.11. Regarding leaks, the Pipeline and Hazardous Materials Safety Administration (PHMSA) administers the national regulatory program to ensure the safe transportation of natural gas and other hazardous materials by pipeline. PHMSA’s safety mission is to ensure that people and the environment are protected from the risk of incidents. The natural gas storage facility, pipeline and associated aboveground facilities would be designed, constructed, operated, and maintained in accordance with the DOT Minimum Federal Safety Standards in 49 C.F.R. Part 192 and other applicable state and federal requirements, including Section 192.12 of 49 C.F.R. Part 192, and Louisiana Administrative Code Title 43 Part XIII, which specifically address underground natural gas storage facilities. More discussion regarding safety is included in section 3.13.

As described throughout this EIS, the proposed Project would have a range of impacts on the environment and individuals living in the vicinity of the Project facilities, including environmental justice populations. Based on our analysis, we conclude that impacts on environmental justice populations may be disproportionately high and adverse as impacts in the Project area would be predominantly borne by environmental justice populations. Additionally, although only one of the four block groups crossed/affected by the Project (or 25 percent of the block groups) includes an environmental justice community (low income), a majority of the Project’s adverse impacts would be borne by this environmental justice community.

Public Involvement

EPA recommends that FERC (1) utilize area knowledge to supplement census data, by working with the state, parishes, local governments, interested parties, and minority and environmental organizations to identify minority and low-income populations in the impacted areas; (2) identify and engage minority and low-income populations for meaningful participation in the decision-making process; and (3) allow enough time for outreach consultation, coordination and comments due to coronavirus (COVID-19) impact. FERC’s communication and involvement with the surrounding communities have occurred throughout the environmental review process and was initiated when we approved LA Storage’s participation in our pre-filing review process on November 19, 2020. Throughout the pre-filing process we engaged with LA Storage and interested federal and state agencies to identify Project-related issues, concerns, and environmental impacts. During the pre-filing process, we also solicited input from the public on the Project’s potential impacts. In our NOS, we encouraged the public’s participation in the pre-filing review process as well as the sharing of information by elected officials on behalf of their constituents.
As part of its outreach efforts during the pre-filing review process, LA Storage, in August 2020, held two community informational meetings: one virtually on August 18, 2020, and the other in-person and by appointment only, in accordance with COVID-19 guidelines, on August 20, 2020. These informational meetings were designed to address any questions as well as solicit feedback from the public. LA Storage placed advertisements in local newspapers announcing the community informational meetings. Advertisements were published in August 27, 2020 in the American Press (Lake Charles), in the Southwest Daily News (Sulphur), and in the Cameron Pilot (Hackberry). The virtual meeting on August 18, 2020, was attended by 34 participants. The appointment-only meeting scheduled for August 20, 2020, at the Hackberry Community Center, offered appointments between 8:00 a.m. and 8:00 p.m. However, no appointments were requested and the event was cancelled. LA Storage posted signs at the Hackberry Community Center with project information and contacts on August 19 and 20, 2020. Additionally, LA Storage arranged individual meetings with residents within 0.5 mile of the Pelican Compressor Station. LA Storage continues to use Sempra LNG social media channels like Facebook and Twitter as well as the project-specific website at (https://sempralng.com/what-we-do/natural-gas-infrastructure/la-storagehackberry) to provide virtual, continually updated project information to the public.

On February 10, 2021, the FERC issued a NOA for the Project. The NOA was entered into the Commission’s publicly available administrative record and mailed to the service list. On August 27, 2021, the FERC issued an NOI for the Project. The NOI was also entered into the Commission’s publicly available administrative record and mailed to the parties on our environmental mailing list, which included federal and state resource agencies; elected officials; environmental groups and non-governmental organizations; Native Americans Tribes; potentially affected landowners; local libraries and newspapers; and other stakeholders who had indicated an interest in the Project. The NOA stated that any person wishing to comment on the project could do so and comments may include statements of support or objections to the project as a whole or specific aspect of the project. That comment period extended 21 days and ended on March 3, 2021. The NOI opened an additional 30-day formal scoping period which expired on September 26, 2021. In response to the NOI, we received several comments including comments pertaining to environmental justice from the EPA, Sierra Club, and Healthy Gulf. These comments are addressed above.

On December 17, 2021, the Commission issued a Notice of Availability for the Project’s draft EIS. This notice established a closing date of February 7, 2022 for receiving comments on the draft EIS. The Notice of Availability was also mailed to Project stakeholders (see appendix D for the Distribution List). In response to the draft EIS, we received 19 total comments from 15 commenters. Comments pertaining to environmental justice are addressed above.
In 2021, the Commission established the Office of Public Participation (OPP) to support meaningful public engagement and participation in Commission proceedings. OPP provides members of the public with assistance in FERC proceedings—including navigating Commission processes and activities relating to the Project. For assistance with interventions, comments, requests for rehearing, or other filings, and for information about any applicable deadlines for such filings, members of the public are encouraged to contact OPP directly at 202-502-6592 or OPP@ferc.gov for further information.

### 3.11 Air Quality

Air quality in the Project area would be affected by construction and operation of the Project. Short-term air emissions would be generated by Project construction due to usage of equipment, land disturbance and increased traffic from worker and delivery vehicles. New operational emissions would result from the proposed Pelican Compressor Station. Ambient air quality is protected by federal and state regulations. Under the CAA and its amendments, the EPA has established NAAQS for carbon monoxide (CO), lead, nitrogen oxides (NOx), ozone (O3), particulate matter less than or equal to 10 microns (PM10), particulate matter less than or equal to 2.5 microns (PM2.5), and sulfur dioxide (SO2). These standards incorporate short-term (hourly or daily) levels and long-term (annual) levels to address acute and chronic exposures to the pollutants, as appropriate. The NAAQS include primary standards, which are designed to protect human health, including the health of sensitive subpopulations such as children and those with chronic respiratory problems. The NAAQS also include secondary standards designed to protect public welfare, including economic interests, visibility, vegetation, animal species, and other concerns not related to human health. Combustion of fossil fuels also produces VOCs, a large group of organic chemicals that have a high vapor pressure at room temperature and react with NOx to form O3. Other byproducts of combustion are GHGs and HAPs. HAPs are chemicals known to cause cancer and other serious health impacts.

GHGs occur in the atmosphere both naturally and as a result of human activities, such as the burning of fossil fuels. GHGs are non-toxic and non-hazardous at normal ambient concentrations, and there are no applicable ambient standards or emission limits for GHGs under the CAA. The primary GHGs that would be emitted by the Project are CO2, methane, and nitrous oxide (N2O). During construction and operation of the Project, these GHGs would be emitted from the majority of construction and operational equipment, as well as from fugitive methane leaks from the aboveground facilities. Emissions of GHGs are typically quantified and regulated in units of carbon dioxide equivalents (CO2e). The CO2e takes into account the global warming potential (GWP) of

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32 “Members of the public” includes environmental justice communities, landowners, Tribal citizens, and consumer advocates.

33 The current NAAQS are listed on EPA’s website at https://www.epa.gov/criteria-airpollutants/naaqs-table.
each GHG. The GWP is the measure of a particular GHG’s ability to absorb solar radiation as well as its residence time within the atmosphere. The GWP allows comparison of global warming impacts between different gases; the higher the GWP, the more that gas contributes to climate change in comparison to CO\textsubscript{2}. Thus, CO\textsubscript{2} has a GWP of 1, methane has a GWP of 25, and N\textsubscript{2}O has a GWP of 298.

**Existing Air Quality**

Project facilities would be located in Cameron and Calcasieu parishes, Louisiana. The EPA and state and local agencies have established a network of ambient air quality monitoring stations to measure concentrations of criteria pollutants across the U.S. The data are then averaged over a specific time period and used by regulatory agencies to determine compliance with the NAAQS and to determine if an area is in attainment (criteria pollutant concentrations are below the NAAQS), nonattainment (criteria pollutant concentrations exceed the NAAQS), or maintenance (area was formerly nonattainment and is currently in attainment). Air Quality Control Regions (AQCR) are areas established for air quality planning purposes in which implementation plans describe how ambient air quality standards will be achieved and maintained. AQCRs were established by the EPA and local agencies, in accordance with Section 107 of the CAA and its amendments, as a means to implement the CAA and comply with the NAAQS through state implementation plans. The AQCRs are intrastate and interstate regions such as large metropolitan areas where the improvement of the air quality in one portion of the AQCR requires emission reductions throughout the AQCR. An AQCR, or portion thereof, is designated based on compliance with the NAAQS. The Project is located in the Southern Louisiana Southeast Texas AQCR and would be constructed in Cameron and Calcasieu parishes, which are listed as attainment/unclassified for all criteria pollutants.

**Federal Air Quality Requirements**

*Prevention of Significant Deterioration and Nonattainment New Source Review*

The Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NNSR) air permit programs are designed to protect air quality when air pollutant emissions are increased either through the construction of new major stationary sources or major modifications to existing stationary sources. The LDEQ administers the PSD and NNSR permitting programs in their state. The Pelican Compressor Station would be located within an area designated as attainment for all pollutants and the NNSR program is not applicable. A “major stationary source” under the PSD regulations is defined as any source that emits or has the potential to emit greater than 250 tons per year (tpy) of at least one criteria pollutant. No proposed emission rate of an individual criteria pollutant is greater than 250 tpy, and therefore the Pelican Compressor Station is not subject to PSD.
Title V Permitting

Title V is an operating air permit program run by each state for each facility that is considered a “major source.” The major source threshold for an air emission source is 100 tpy for criteria pollutants, 10 tpy for any single HAP, and 25 tpy for total HAPs. The LDEQ has been delegated authority to administer the Title V program. The Pelican Compressor Station would exceed Title V thresholds for NOx and CO and would be considered a major source under Title V. LA Storage submitted a Title V permit application to LDEQ on October 16, 2020.34

New Source Performance Standards

The EPA regulations at 40 C.F.R. Part 60 establish New Source Performance Standards (NSPS) for criteria pollutant emissions from specific new, modified, or reconstructed emission sources. The LDEQ incorporates these emission standards by reference. The following NSPS requirements were identified as potentially applicable to the Pelican Compressor Station. Subpart IIII of 40 C.F.R. 60 applies to stationary compression-ignition engine manufacturers and owners/operators. Diesel-fired emergency engines manufactured after April 1, 2006, must meet Tier 2 non-road standards. In addition, a non-resettable hour meter must be installed on each engine prior to startup, as listed in Section 60.4209. Per Section 60.4211(f), hours per engine are limited to 100 hours per year for maintenance, testing and non-emergency situations, with non-emergency situations being capped at 50 hours of the 100 hours limit. The engine manufacturer for the proposed diesel-fired standby generator would provide a certificate of conformity to meet the applicable standards. The standby diesel (emergency) generator would be operated in compliance with all other applicable requirements.

Subpart JJJJ of 40 C.F.R. 60 applies to owners and operators of new or existing stationary spark ignition internal combustion engines that commence construction, modification, or reconstruction after June 12, 2006. All four of the proposed new compressor engines associated with the Project would be subject to Subpart JJJJ limits. In addition, each proposed compressor engine would be equipped with a catalytic converter for emissions controls of CO and VOC.

National Emission Standards for Hazardous Air Pollutants

The EPA regulations under 40 C.F.R. Part 63 establish National Emission Standards for Hazardous Air Pollutants (NESHAP) emission standards for major and area sources of HAPS. The 1990 CAA Amendments established a list of 189 HAPs, resulting in the promulgation of NESHAP.

34 Appendix 9D, Accession No. 20210129-5314_5
The NESHAP regulate HAP emissions from specific source types located at major or area sources of HAPs by setting emission limits, monitoring, testing, record keeping, and notification requirements. The Pelican Compressor Station is not expected to be a major source of HAPs.

Subpart ZZZZ, NESHAP for Stationary Reciprocating Internal Combustion Engines, would apply to the emergency standby generator. By complying with NSPS Subpart III, the emergency generator would meet the requirements of NESHAP and no further requirements apply.

**General Conformity**

A general conformity analysis must be conducted by the lead federal agency if a federal action would result in the generation of emissions that would exceed the general conformity applicability threshold levels of the pollutants(s) for which an AQCR is in nonattainment. General Conformity does not apply to federal actions in attainment areas or unclassifiable/attainment areas. As the Project is located in an area listed as in attainment/unclassified for all criteria pollutants, a General Conformity analysis does not apply.

**Greenhouse Gas Reporting**

Subpart W under 40 C.F.R. 98, the Mandatory Greenhouse Gas Reporting Rule, requires petroleum and natural gas systems that emit 25,000 metric tons or more of CO$_2$e per year to report annual emissions of GHG to the EPA. If GHG emissions exceed 25,000 metric tons of CO$_2$e per year, LA Storage would comply with this requirement.

**State Air Quality Regulations**

The Pelican Compressor Station would be subject to certain state emission standards, codified in Louisiana Administrative Code Title 33, Part III. Some of the specific emission standards applicable to the compressor engines, generator, dehydration systems, heaters, condensate loading, condensate tank and fugitive emissions (and the facility as a whole) are:

- Section 1103 – Impairment of Visibility on Public Roads Prohibited
- Section 1109 – Control of Air Pollution from Outdoor Burning
- Section 1305 – Control of fugitive emission of Particulate Matter (PM)
- Section 1311 – Emission Limits (PM)
- Section 2103 – Storage of Volatile Organic Compounds
- Section 2111 – Pumps and Compressors
Section 2113 – Housekeeping

Section 2116 – Glycol Dehydrators

LA Storage would comply with state air quality requirements as detailed in the Title V Air Permit Application.

Construction Emissions Impacts and Mitigation

Construction of the Project components would result in short-term increases in emissions of some air pollutants due to the use of equipment powered by diesel fuel or gasoline engines and the generation of fugitive dust due to the disturbance of soil and other dust-generating activities. Efforts to mitigate exhaust emissions during construction would include using construction equipment and vehicles that comply with EPA mobile and non-road emission regulations, and usage of commercial gasoline and diesel fuel products that meet specifications of applicable federal and state air pollution control regulations. Fugitive dust would be mitigated by applying water to the roadways and reducing vehicle speed. A sand substitute surface preparation blasting media would be used to reduce PM emissions. Estimated construction emissions are summarized in table 17. LA Storage’s emission estimates for on-road vehicle engines are based on the expected construction worker commuter travel and trips by vehicles delivering construction materials and equipment. Emission factors were obtained from the EPA’s Motor Vehicle Emission Simulator (MOVES). Emission estimates for off-road construction equipment engines are based on the equipment that is expected to be used (number, type, capacity, and level of activity). Most emission factors for nonroad equipment engines were obtained using the MOVES 2014 model (EPA, 2020b). Emission factors for N₂O were computed using the ratio of N₂O and CO₂ diesel emission factors from tables 13.1 and 13.7 of the 2020 Climate Registry Default Emission Factors (Climate Registry, 2020) and apportioned based on CO₂ emissions. Following construction, air quality would not revert back to previous conditions but would transition to permanent operational-phase emissions after commissioning and initial start-up. Estimated construction emissions are summarized in table 17.

<table>
<thead>
<tr>
<th>Construction Activity</th>
<th>NOₓ</th>
<th>SO₂</th>
<th>CO</th>
<th>PM₁₀</th>
<th>PM₂.₅</th>
<th>VOC</th>
<th>CO₂e</th>
<th>HAPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Year 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Commuter transit</td>
<td>0.20</td>
<td>0.01</td>
<td>4.45</td>
<td>0.01</td>
<td>0.01</td>
<td>0.03</td>
<td>895</td>
<td>0.01</td>
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<tr>
<td>On-road vehicles</td>
<td>24.40</td>
<td>0.13</td>
<td>9.36</td>
<td>0.69</td>
<td>0.64</td>
<td>2.20</td>
<td>15,500</td>
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<td>0.15</td>
<td>17.40</td>
<td>3.10</td>
<td>3.00</td>
<td>4.19</td>
<td>20,600</td>
<td>4.29</td>
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<tr>
<td>Fugitive dust</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>10.20</td>
<td>1.08</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>90.40</td>
<td>0.29</td>
<td>31.21</td>
<td>14.00</td>
<td>4.73</td>
<td>6.42</td>
<td>36,995</td>
<td>4.84</td>
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<tr>
<td>Construction Activity</td>
<td>Emissions (tpy)</td>
<td>NO$_x$</td>
<td>SO$_2$</td>
<td>CO</td>
<td>PM$_{10}$</td>
<td>PM$_{2.5}$</td>
<td>VOC</td>
<td>CO$_2$</td>
</tr>
<tr>
<td>----------------------------</td>
<td>----------------</td>
<td>--------</td>
<td>--------</td>
<td>-----</td>
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<td></td>
<td></td>
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<td></td>
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<tr>
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<td>3.22</td>
<td>0.01</td>
<td>0.01</td>
<td>0.02</td>
<td>649</td>
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<td>17.10</td>
<td>0.09</td>
<td>6.54</td>
<td>0.48</td>
<td>0.44</td>
<td>1.54</td>
<td>10,800</td>
<td>0.38</td>
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<td>Off-road equipment</td>
<td>40.20</td>
<td>0.08</td>
<td>8.96</td>
<td>1.63</td>
<td>1.58</td>
<td>2.25</td>
<td>11,700</td>
<td>2.35</td>
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<tr>
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<td>-</td>
<td>-</td>
<td>5.93</td>
<td>0.63</td>
<td>-</td>
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<tr>
<td>Total a</td>
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<td>0.18</td>
<td>18.72</td>
<td>8.05</td>
<td>2.66</td>
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<td>0.21</td>
<td>0.33</td>
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<tr>
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<td>0.00</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total a</td>
<td>9.18</td>
<td>0.03</td>
<td>1.39</td>
<td>0.23</td>
<td>0.23</td>
<td>0.38</td>
<td>1,880</td>
<td>0.38</td>
</tr>
</tbody>
</table>

* The numbers in this table have been rounded. Therefore, the total may not reflect the sum of the addends.

Note: based on 10 months of construction in year 1, 12 months of construction in year 2, and one month of construction in year.

Emissions during construction would increase pollutant concentrations in the vicinity of the facilities; however, their effect on ambient air quality would vary with time due to the construction schedule, the mobility of the sources, and the variety of emission sources. Construction of the Project is expected to last 23 months; emissions associated with Project construction equipment would be considered temporary and cease at completion of construction. With implementation of the mitigation measures discussed above, we conclude that the temporary use of construction equipment would not have a significant impact on air quality.

**Operational Emissions Impacts and Mitigation**

Operation of the Project would result in fugitive emissions from the pipeline and meter station facilities and permanent operational emissions from the Pelican Compressor Station. Sources of fugitive emissions would include natural gas leaks from equipment such as valves and flanges during normal operations, and emissions from pigging operations. Emissions associated with the pipelines would also result from pigging operations. Sources of permanent operational emissions at the Pelican Compressor Station would consist of four natural gas compressor engines, four glycol dehydration units equipped with vapor combustor units for emissions control, glycol dehydrator

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35 Pigging operations include launching a maintenance tool, referred to as a pipeline “pig,” into the pipeline to sweep the line of any debris without stopping operation of the pipeline. Pigs are also used for pipeline safety inspections. Emissions occur during launching and receiving of the pig.
reboilers, five withdrawal heaters, two fuel gas heaters, one emergency engine, one condensate/process liquids tank with truck loading, several low vapor pressure storage tanks. Up to 40 compressor blowdowns (10 per compressor unit) and three station blowdowns a year would occur as part of Project operations. Operational emissions for the Project are summarized in Table 18.

<table>
<thead>
<tr>
<th>Source</th>
<th>Estimated Emissions (tons per year)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NO\textsubscript{x}</td>
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<tr>
<td>Pelican Compressor Station (^a)</td>
<td>102.40</td>
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<tr>
<td><strong>Fugitive Emissions</strong></td>
<td></td>
</tr>
<tr>
<td>Meter Stations</td>
<td>–</td>
</tr>
<tr>
<td>Hackberry Pipeline</td>
<td>–</td>
</tr>
<tr>
<td>CIP Lateral</td>
<td>–</td>
</tr>
<tr>
<td><strong>Project Total</strong></td>
<td>102.40</td>
</tr>
</tbody>
</table>

\(^a\) Includes fugitive emissions from compressor station piping components, blowdowns, and pipeline pigging operations.

An individual commented on the draft EIS expressing concern regarding adverse impacts on human health caused by off-gassing of methane at the wellhead and at the Project compressor station. In their comments on the draft EIS, Sierra Club and Healthy Gulf stated that FERC must address the cumulative impact of the Hackberry Storage Project and other reasonably foreseeable projects in the area on air pollution. Air dispersion modeling was conducted in accordance with the EPA Guidelines on Air Quality Models (EPA, 2017) and LDEQ requirements using the latest version of the American Meteorological Society/EPA Regulatory Model (AERMOD) dispersion model for the proposed Pelican Compressor Station. As part of a modeling assessment, the air emission sources at the proposed compressor station were modeled interactively with other sources within 50 kilometers that have a potential for significant air quality impact overlap. These sources were identified based on permits filed with the LDEQ and include numerous petrochemical manufacturing and processing facilities, as well as waste management facilities. Other contributing sources include five active and certificated LNG facilities:

- Magnolia LNG Liquefaction Project (FERC certificated April 15, 2016 [CP14-347-000, CP19-19-000]; construction has not yet commenced);
- Calcasieu Pass LNG Project (FERC certificated February 21, 2019 [CP15-550-000, CP15-551-000]; construction is underway)
• Driftwood LNG Project (FERC certificated [CP17-117-000]; targeting 2022 for start of construction)

• Lake Charles LNG Liquefaction Project (FERC certificated December 17, 2015 [CP14-119-000, CP14-120-000, and CP14-122-000]; construction has not yet commenced); and

• Cameron LNG Facility (existing LNG terminal. On March 25, 2020, the Commission granted a request for an extension of time to complete construction of a terminal expansion [CP15-560], extending the time to complete all phases of the project until May 5, 2024).

The maximum modeled concentrations were then combined with representative ambient background concentrations to represent the non-modeled background sources. The air dispersion modeling results are summarized in table 19. The results indicate an exceedance of the 1-hour NO\textsubscript{2} NAAQS. In determining Project contributions to exceedances of the NAAQS for the 1-hour NO\textsubscript{2}, AERMOD modeling was used to compare Project emissions to the cumulative impacts at each receptor paired in time and space. The Pelican Compressor Station’s contribution to the maximum concentration modeled is 1.55 micrograms per cubic meter (\textmu g/m\textsuperscript{3}). The maximum contribution to any exceedance modeled is 6.02 \textmu g/m\textsuperscript{3}, which is below the EPA-determined significant impact level of 7.5 \textmu g/m\textsuperscript{3}. These results indicate that the Project would not significantly contribute to this NAAQS exceedance. As a result, the Project would be in compliance with the NO\textsubscript{2} 1-hour NAAQS. Based on estimated operational emissions and review of the modeling analysis, we conclude that the Project would not cause or significantly contribute to an exceedance of the NAAQS and would not result in a significant impact on air quality in the region.

In their comments on the draft EIS, Sierra Club and Healthy Gulf expressed concern that even air pollution that does not exceed the individual NAAQS can cause adverse health impacts. They reference that particulate matter, nitrogen-dioxide, and ozone are recognized as pollutants for which no threshold of exposure fully protects human health, and that although the current NAAQS for O\textsubscript{3} is 70 parts per billion, the EPA has recognized that lower concentrations adversely impact short- and long-term respiratory mortality. Ozone is not emitted into the atmosphere from an emissions source but develops as a result of a chemical reaction between NO\textsubscript{x} and VOCs in the presence of sunlight; NO\textsubscript{x} and VOCs are considered precursors to O\textsubscript{3} and are regulated to control the potential for O\textsubscript{3} formation. The NAAQS include primary standards that are designed to protect human health, including the health of “sensitive” individuals such as children, the elderly, and those with chronic respiratory problems and we consider these established levels appropriate for evaluation of Project level impacts to air quality.
Although the Project would be in compliance with the NAAQS and the NAAQS are designated to protect sensitive populations, we acknowledge that NAAQS attainment alone may not assure there is no localized harm to local population due to Project emissions of NO\textsubscript{x} and VOCs.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging Period</th>
<th>Maximum Modeled Concentration</th>
<th>Background Concentration</th>
<th>Cumulative Impacts</th>
<th>NAAQS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO\textsubscript{2}</td>
<td>Annual</td>
<td>5.5</td>
<td>13.16</td>
<td>27.2</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>1-hour</td>
<td>78.8</td>
<td>72.56</td>
<td>240.6</td>
<td>188</td>
</tr>
<tr>
<td>CO\textsuperscript{b}</td>
<td>8-hour</td>
<td>106.8</td>
<td>1,565</td>
<td>N/A</td>
<td>10,000</td>
</tr>
<tr>
<td></td>
<td>1-hour</td>
<td>139.2</td>
<td>2,645</td>
<td>N/A</td>
<td>40,000</td>
</tr>
<tr>
<td>PM\textsubscript{10}</td>
<td>24-hour</td>
<td>8.9</td>
<td>76.33</td>
<td>114.5</td>
<td>150</td>
</tr>
<tr>
<td>PM\textsubscript{2.5}</td>
<td>Annual</td>
<td>0.69</td>
<td>7.49</td>
<td>9.2</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>24-hour</td>
<td>7.9</td>
<td>19.80</td>
<td>31.3</td>
<td>35</td>
</tr>
<tr>
<td>SO\textsubscript{2}\textsuperscript{a}</td>
<td>3-hour</td>
<td>2.63</td>
<td>51.13</td>
<td>N/A</td>
<td>1,300</td>
</tr>
<tr>
<td></td>
<td>1-hour</td>
<td>2.65</td>
<td>68.32</td>
<td>N/A</td>
<td>197</td>
</tr>
</tbody>
</table>

\textsuperscript{a} Data are from EPA AIRS Database (https://www.epa.gov/outdoor-air-quality-data). Short-term values are high-2nd high except for 24-hour PM\textsubscript{2.5} (98th percentile), 8-hour O\textsubscript{3} (4th highest 8-hour concentration), 1-hour NO\textsubscript{2} (98th percentile) and 1-hour SO\textsubscript{2} (99th percentile).

\textsuperscript{b} The modeling results indicate that the maximum off-site concentrations of CO and SO\textsubscript{2} were below the respective PSD modeling significant impact levels. Therefore, a cumulative impact analysis for CO and SO\textsubscript{2} was not required.

\texttt{ug/m\textsuperscript{3} = micrograms per cubic meter}

EPA recommends the inclusion of a Construction Emissions Mitigation Plan. EPA further recommends that fugitive dust source controls, mobile/stationary source controls, and administrative controls be considered for inclusion in the Construction Emissions Mitigation Plan in order to reduce impacts associated with emissions of NO\textsubscript{x}, CO, PM, SO\textsubscript{2}, and other pollutants from construction-related activities. In its comments, Sierra Club states that the residents would be affected by air pollution emitted by Project construction and operating emissions.

Construction emissions would be temporary and minor, and localized. Mitigation measures to be implemented during construction activities are discussed above. Potential operational equipment fugitive emission are included in the Project’s annual operational emission calculations provided in section 3.11 of this EIS, and can be viewed in more details in tables 9.1-5 through 9.1-9a of the Project application.\textsuperscript{36} Operational emissions from the compressor station are discussed in section 3.11; we find the proposed facility

\textsuperscript{36} Accession No. 20210129-5314_5
emission levels to be within regulatory thresholds. LA Storage submitted an initial Title V Air Permit Application to LDEQ on October 16, 2020 for construction and operation of the proposed Pelican Compressor Station. Based on the scope of activities for the Project, we find the proposed mitigation measures for construction and operations acceptable.

We received comments regarding air pollution as a comorbidity factor for the COVID-19. In an analysis of 3,080 counties in the United States, researchers at the Harvard University T.H. Chan School of Public Health found that higher levels of PM$_{2.5}$ were associated with higher death rates from the disease (Friedman, 2020). The report indicates that individuals who experience long-term exposure to air pollution may experience the most severe COVID-19 outcomes. However, the information does not address the extent to which those exposed to an incremental increase in emissions, such as those from the modified compressor stations, would experience those same increased effects. Nor does the information establish for how long or at what level emissions would need to occur for the increased effects to be experienced. Therefore, while we are sensitive to the impacts of COVID-19, the information does not provide parameters from which we can do additional analyses beyond the Project-specific air modeling and risk assessment that were discussed above.

**Climate Change**

Climate change is the variation in climate (including temperature, precipitation, humidity, wind, and other meteorological variables) over time and cannot be represented by an individual event or anomalous weather pattern. For example, a severe drought or abnormally hot summer in a particular region is not a certain indication of climate change. However, a series of severe droughts or hot summers that statistically alter the trend in average precipitation or temperature over decades may indicate climate change. Recent research has begun to attribute certain extreme weather events to climate change.  

The leading U.S. scientific body on climate change is the U.S. Global Change Research Program (USGCRP), composed of representatives from 13 federal departments and agencies. The Global Change Research Act of 1990 requires the USGCRP to submit a report to the President and Congress no less than every 4 years that “1) integrates, evaluates, and interprets the findings of the USGCRP; 2) analyzes the effects

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38 The USGCRP member agencies are: Department of Agriculture, Department of Commerce, Department of Defense, Department of Energy, Department of Health and Human Services, Department of the Interior, Department of State, Department of Transportation, Environmental Protection Agency, National Aeronautics and Space Administration, National Science Foundation, Smithsonian Institution, and U.S. Agency for International Development.
of global change on the natural environment, agriculture, energy production and use, land and water resources, transportation, human health and welfare, human social systems, and biological diversity; and 3) analyzes current trends in global change, both human-induced and natural, and projects major trends for the subsequent 25 to 100 years.”

These reports describe the state of the science relating to climate change and the effects of climate change on different regions of the United States and on various societal and environmental sectors, such as water resources, agriculture, energy use, and human health.

In 2017 and 2018, the USGCRP issued its Climate Science Special Report: Fourth National Climate Assessment, Volumes I and II. The Fourth Assessment Report states that climate change has resulted in a wide range of impacts across every region of the country. Those impacts extend beyond atmospheric climate change alone and include changes to water resources, transportation, agriculture, ecosystems, and human health. The United States and the world are warming, global sea level is rising and acidifying, and certain weather events are becoming more frequent and more severe. These changes are driven by accumulation of GHG in the atmosphere through combustion of fossil fuels (coal, petroleum, and natural gas), combined with agriculture, clearing of forests, and other natural sources. These impacts have accelerated throughout the end of the 20th and into the 21st century (USGCRP, 2018). Since the issuance of the Climate Science Special Report: Fourth National Climate Assessment, the Intergovernmental Panel on Climate Change (IPCC) has issued a portion of the Sixth Assessment Report, *Climate Change 2021: The Physical Science Basis*, which discusses acceleration of impacts of GHG on the global climate.40

GHGs were identified by the EPA as pollutants in the context of climate change. GHG emissions do not result in proportional local and immediate impacts; it is the combined concentration in the atmosphere that affects the global climate system. These are fundamentally global impacts that feedback to local and regional climate change impacts. Thus, the geographic scope for analysis of GHG emissions is global, rather than local or regional. For example, a project 1 mile away emitting 1 ton of GHGs would contribute to climate change in a similar manner as a project 2,000 miles distant also emitting 1 ton of GHGs.

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Climate change is a global concern; however, for this analysis, we will focus on the existing and potential climate change impacts in the general Project area. The USGCRP’s Fourth Assessment Report notes the following observations of environmental impacts are attributed to climate change in the Southeast region of the United States (USGCRP, 2017, USGCRP, 2018):

- The decade of 2010 through 2017 has been warmer than any previous decade since 1920 for average daily maximum and average daily minimum temperature;
- since 1960, there have been lower numbers of days above 95°F compared to the pre-1960 period but during the 2010’s the number of nights above 75°F has been nearly double the average over 1901 to 1960. The length of the freeze free season was 1.5 weeks longer on average in the 2010s compared to any other historical period on record;
- number of days with 3 or more inches of rain has been historically high over the past 25 years. The 1990s, 2000s, and 2010s rank first, third and second, respectively in number of events;
- summers have been either increasingly dry or extremely wet, depending on location;
- due to a combination of sea level rise and soil subsidence, approximately 2,006 square miles of land has been lost in Louisiana between 1932 and 2016, or about 23 square miles per year; and
- in southeast Louisiana, relative sea level is rising at a rate of 1 to 3 feet per 100 years.

The USGCRP’S Fourth Assessment Report notes the following projections of climate change impacts in the Project region (Southeast U.S.) with a high or very high level of confidence:\footnote{The report authors assessed current scientific understanding of climate change based on available scientific literature. Each “Key Finding” listed in the report is accompanied by a confidence statement indicating the consistency of evidence or the consistency of model projections. A high level of confidence results from “moderate evidence (several sources, some consistency, methods vary and/or documentation limited, etc.), medium consensus.” A very high level of confidence results from “strong evidence (established theory, multiple sources, consistent results, well documented and accepted methods, etc.), high consensus.” https://science2017.globalchange.gov/chapter/front-matter-guide/} (USGCRP, 2018):
• climate models project nighttime temperatures above 75°F and daytime maximum temperatures above 95°F become the summer norm. Nights above 80°F and days above 100°F, which are now relatively rare, would become common;

• lowland coastal areas are expected to receive less rainfall on average but experience more frequent intense rainfall events followed by longer drought periods;

• coastal areas along the Gulf of Mexico are flat; therefore, expected sea level rises may cause inundation in certain low lying areas;

• drought and sea level rise will create stressful conditions for coastal trees that are not adapted to higher salinity levels;

• other coastal species may also be stressed by sea level rise and warmer temperatures, prompting migration out of the area; and

• tropical storms and hurricanes may become more intense.

It should be noted that while the impacts described above taken individually may be manageable for certain communities, the impacts of compound events (such as simultaneous heat and drought, or flooding associated with high precipitation on top of saturated soils) can be greater than the sum of the parts. The EPA commented that we should replace the statement above with more detailed excerpts from the USGCRP’s National Climate Assessment. We believe the preceding statements are sufficient to meet the intended purpose of providing a brief summary of the Fourth Assessment for the USGCRP’s Climate Science Special Report regarding existing and predicted impacts on the region.

GHG emissions from construction and operation of the Project are previously identified and quantified. Emissions of GHGs are typically expressed in terms of CO₂e. Project construction would result in 62,024 tpy of CO₂e emissions (equivalent to 56,267 metric tpy) of CO₂e. Operation of the Project would result in emissions of up to 181,369 tpy (164,502 metric tons) of CO₂e. Estimates for operational emissions are based on the potential to emit (100 percent utilization), where the facilities are operated at maximum capacity for 365 days per year, 24 hours per day. Additionally, the estimate includes blowdowns and fugitive emissions from compressor station equipment and piping, as well as fugitive emissions from the pipelines, meter station, valves, and other ancillary facilities.

GHG gases are converted to CO2e by means of the global warming potential, the measure of a particular GHG’s ability to absorb solar radiation as well as its residence time within the atmosphere, consistent with the EPA’s established method for reporting GHG emissions for air permitting requirements that allows a consistent comparison with federal regulatory requirements.
This EIS does not disclose downstream GHG emissions as the Project is designed to enhance the efficiency and reliability of gas service to contracting counterparties through the availability of storage service rather than providing new sources of natural gas to the market. There are no increases in system capacity associated with the Project. LA Storage has not contracted with any end-use facilities for the Project at this time and exact end-use of the gas is unknown.

In their comments on the draft EIS, Sierra Club and Healthy Gulf commented that while Project emissions are a small fraction of the state and national total, they should not be “dismissed” without further analysis given that climate change is inherently a cumulative issue. The construction and operation of the Project would increase the atmospheric concentration of GHGs, in combination with past and future emissions from all other sources globally and would contribute incrementally to future climate change impacts. In order to assess impacts on climate change associated with the Project, Commission staff considered whether it could identify discrete physical impacts resulting from the Project’s GHG emissions or compare the Project’s GHG emissions to established targets designed to combat climate change.

To date, Commission staff have not identified a methodology to attribute discrete, quantifiable, physical effects on the environment resulting from the Project’s incremental contribution to GHGs. Without the ability to determine discrete resource impacts, Commission staff are unable to assess the Project’s contribution to climate change through any objective analysis of physical impact attributable to the Project. Additionally, Commission staff have not been able to find an established threshold for determining the Project’s significance when compared to established GHG reduction targets at the state or federal level. Ultimately, this EIS is not characterizing the Project’s GHG emissions as significant or insignificant because the Commission is conducting a generic proceeding to determine whether and how the Commission will conduct significance determinations going forward.43

In order to provide context of the Project emissions on a national level, we compare the Project’s construction and operational GHG emissions to the total GHG emissions of the United States as a whole. At a national level, 5,769.1 million metric tons of CO₂e were emitted in 2019 (inclusive of CO₂e sources and sinks).44 The construction-related emissions from the Project could potentially increase CO₂e emissions based on the national 2019 levels by 0.00098 percent; in subsequent years, the Project operations could potentially increase emissions by 0.0029 percent.

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In order to provide context of the Project emissions on a state level, we compare the Project’s GHG emissions to the state GHG inventories.\textsuperscript{45} At the state level, energy related CO\textsubscript{2} emissions in Louisiana were 211 million metric tons in 2018. GHG emissions in Louisiana would result from direct construction and operational emissions; no end-use is expected as part of the Project. Construction emissions from the Project could potentially increase CO\textsubscript{2}e emissions based on the Louisiana 2018 levels by 0.027 percent; in subsequent years, the Project operations could potentially increase emissions by 0.078 percent.

This EIS also evaluates the Project’s operational emissions in the context of Louisiana’s GHG reduction goals. The state of Louisiana established executive targets in 2020 to reduce net GHG emissions 26 to 28 percent by 2025 and 40 to 50 percent by 2030, compared to 2005 levels. The targets also aim for net-zero GHG emissions by 2050. Direct GHG emissions from the operation of the Project would represent 0.11 percent and 0.15 percent of Louisiana’s 2025 and 2030 projected GHG emission levels, assuming the reductions from 2005 levels summarized above.\textsuperscript{46}

\textbf{Response to Comments on Climate Change}

Healthy Gulf, Sabin Center, and RESTORE contend that a full environmental review including the Project’s contribution to climate change and quantified GHG emissions resulting from the Project be included. Sabin Center further qualifies that we ensure the environmental review reflects the unique risks to the Project and the surrounding environment due to observed and anticipated sea level rise, storm surge, and erosion in the region.

In its comments on the draft EIS, the EPA recommended omitting percentage comparisons to national and state goals and instead including a qualitative discussion disclosing the increasing conflict over time between continued GHG emissions and GHG emission reduction policy. The Commission has stated in recent orders that the comparisons provide additional context in considering a project’s potential impact on climate change.\textsuperscript{47} Accordingly, we have included those comparisons in our NEPA analysis.

\textsuperscript{45} U.S. Energy Information Administration, \textit{Table 1, State Energy-Related Carbon Dioxide Emissions by Year, Unadjusted.} https://www.eia.gov/environment/emissions/state/ (March 2, 2021).

\textsuperscript{46} \textit{Id.} Louisiana’s CO\textsubscript{2} emissions in 2005 were 205.1 million metric tons; therefore, we consider the 2025 GHG emission target to be 147.7 million metric tons (assuming a 28 percent reduction) and the 2030 target to be 102.6 million metric tons (assuming a 50 percent reduction).

\textsuperscript{47} See Order Issuing Certificates and Approving Abandonment, 178 FERC ¶ 61,199 (2022) at P89; and Order Issuing Certificate, 178 FERC ¶ 61,198 (2022) at P48.
The Sabin Center questioned why FERC staff used the GWP from the IPCC’s Fourth Assessment Report as opposed to the GWP values from the IPCC’s Fifth Assessment Report. Sierra Club and Healthy Gulf made a similar comment on the draft EIS. This EIS appropriately selects the GWP value for methane as 25 over a 100-year period because this is the value EPA established on November 29, 2013 for reporting of GHG emissions. The EPA supported the 100-year time period over the 20-year period in its summary of comments and responses in the final rulemaking, 2013 Revisions to the Greenhouse Gas Reporting Rule and Final Confidentiality Determinations for New or Substantially Revised Data Elements, establishing the methane GWP at 25. Similarly, in this final rulemaking, EPA supported the adoption of the published IPCC Fourth Assessment Report (2007) GWP values over the Fifth Assessment Report (2014) values. The EPA acknowledged the Fifth Assessment Report could lead to more accurate assessments of climate impacts in the future; however, when balanced with the benefit of retaining consistency across national and international programs, EPA concluded that the possible gain in accuracy did not justify the loss of consistency in reporting. Further, EPA recognized that the loss of consistency would likely cause stakeholder confusion among the various GWPs used in different programs. Because the Fourth Assessment Report is the formal method adopted by EPA in their rulemaking, we remain consistent with EPA’s methodology relating to methane’s GWP. EPA noted that it may consider adoption of the Fifth Assessment Report GWPs in the future; at which time, FERC staff will revisit the use of any revised EPA GWP values in its NEPA evaluations.

RESTORE and Sabin Center also stated concerns about methane leaks impacting climate change and that the volumes of methane involved create the potential for a significant contribution to the acceleration of climate change should there be a catastrophic release anywhere along LA Storage’s system, and that, regardless of incident, emission of greenhouse gasses from the compressor units and fugitives from valves and fittings and blowdowns should not be allowed. They further state that avoidance of that threat would be best addressed by denial of the Project and that, similar to LDEQ having numerical limits or reporting requirements for some of the other greenhouse gases, there should be a numerical limit for methane. FERC does not have

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49 Id. at 71,913. The larger the value of GWP for a particular gas, the more it will warm the earth in comparison to CO₂, over the particular time period being measured. U.S. Environmental Protection Agency, Greenhouse Gas Emissions: Understanding Global Warming Potentials (Feb. 14, 2017), https://www.epa.gov/ghgemissions/understanding-global-warming-potentials.


51 Id. at 71,912.

52 Id.

53 Id.
jurisdictional oversight of methane emissions; however, this EIS quantifies and discusses the direct GHG emissions from construction and operation of the Project, the climate change impacts in the region, and the regulatory structure for GHGs under the Clean Air Act. This EIS also quantifies fugitive emissions of methane in units of CO$_2$e for Project construction and operations. CO$_2$e was estimated using a GWP of 25 for methane, based on a 100-year time period, consistent with the EPA’s established method for reporting GHG emissions for air permitting requirements that allows a consistent comparison with federal regulatory requirements.

In its comments on the draft EIS, the EPA stated that because FERC’s policy decisions for identification and consideration of practical mitigation of GHG emissions are pending, these policy updates should be finalized prior to finalizing the EIS and prior to making a decision on the proposed action. The Commission issued a Draft Policy Statement on GHG Emissions on March 24, 2022. This EIS has been prepared consistent with current Commission policies. The timing of decisions on any proposed project is determined by the Commission.

In its comments on the draft EIS, the EPA recommended that the EIS consider and incorporate practicable mitigation measures to reduce the proposed action’s GHG emissions. These considerations are part of the Commission’s public interest determination under the NGA; however, we note that policy decisions are pending at the time of this EIS publication and their resolution is beyond the scope of staff’s NEPA review in this proceeding.

**Response to Comments on Upstream Emissions**

Sabin Center states that the Commission should quantify upstream emissions that would result from use of natural gas stored at the project site as part of the EIS. The Project is designed to enhance the efficiency and reliability of gas service, through the availability of high injection storage service rather than providing new sources. Sabin Center provides only general information regarding the source of natural gas for the Project and asks the Commission to extrapolate this data to determine specific Project effects.

Sierra Club and Healthy Gulf commented that the draft EIS failed to address the full scope of environmental impacts from the Project by not addressing upstream GHG emissions. Further, in its comments on the draft EIS, the EPA recommended that the final EIS quantify all upstream GHG emissions by activity, consistent with the CEQ’s October 7, 2021 notice of proposed rulemaking. Although, the CEQ issued a proposed rule, National Environmental Policy Act Implementing Regulations Revision (Proposed Rule, 86 Fed. Reg. 55,757), on October 7, 2021, it has not yet issued the final rule. Therefore, the 2020 NEPA rules are still in effect.
Related to comments on upstream emissions impacts, as the Commission has previously concluded in numerous natural gas infrastructure proceedings, the environmental effects resulting from natural gas production are likely neither caused by a proposed project nor are they reasonably foreseeable consequences of its approval of a project. Regarding reasonable foreseeability, courts have found that an impact is reasonably foreseeable if it is “sufficiently likely to occur that a person of ordinary prudence would take it into account in reaching a decision.” Although courts have held that NEPA requires “reasonable forecasting,” an agency “is not required to engage in speculative analysis” or “to do the impractical, if not enough information is available to permit meaningful consideration.”

To date, the Commission has not found upstream emissions to be an effect of any proposed project, primarily because of the following unknown factors: the location of the supply source; whether transported gas will come from new or existing production; and whether there will be any potential associated development activities, and if so, its location. However, the Commission will continue to determine, on a case-by-case basis, whether GHG emissions from upstream production activities are a reasonably foreseeable and causally connected result of a proposed project.

Response to Comments on Downstream Emissions

Sabin Center encourages the Commission to disclose in the EIS the Project’s indirect downstream GHG impacts. Sierra Club and Healthy Gulf reiterated this in their comments on the draft EIS, stating that the draft EIS failed to adequately address the full environmental impacts from the Project by not addressing downstream GHG emissions. Further, in its comments on the draft EIS, the EPA recommended that the final EIS quantify all downstream GHG emissions by activity associated with the proposed project, as supported by CEQ’s preamble to the notice of proposed rulemaking. As noted previously, although, the CEQ issued a proposed rule, National Environmental Policy Act Implementing Regulations Revision (Proposed Rule, 86 Fed. Reg. 55,757), on October 7, 2021, it has not yet issued the final rule. Therefore, the 2020 NEPA rules are still in effect. As also previously noted, this EIS does not disclose the Project’s downstream GHG emissions as the Project is designed to enhance the efficiency and reliability of gas service to contracting counterparties through the availability of storage service rather than providing new sources of natural gas to the market. There are no increases in system capacity associated with the Project.

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54 *EarthReports, Inc. v. FERC*, 828 F.3d 949, 955 (D.C. Cir. 2016) (citations omitted); see also *Sierra Club v. Marsh*, 976 F.2d 763, 767 (1st Cir. 1992).
56 *Id.* at 1078.
57 *Id.* (quoting *Envtl. Prot. Info. Ctr. v. U.S. Forest Serv.*, 451 F.3d 1005, 1014 (9th Cir. 2006)).
Response to Comments on Social Cost of Carbon

Sabin Center encourages FERC to consider the social cost of carbon (SCC) tool as a means to assess the effects of GHG emissions from the Project. The EPA and Sierra Club and Healthy Gulf made similar comments on the draft EIS. We note there is pending litigation challenging federal agencies’ use of the Interagency Working Group on Social Cost of Greenhouse Gases’ interim values for calculating the social cost of GHGs. On February 11, 2022, the U.S. District Court for the Western District of Louisiana issued a preliminary injunction limiting federal agencies’ employment of estimates of SCC and use of the IWG’s interim estimates (Louisiana v. Biden, No. 21-cv-1074-JDC-KK (W.D. La.) Order Granting Preliminary Injunction (Feb. 11, 2022). On March 16, 2022, the U.S. Court of Appeals for the Fifth Circuit issued a stay of the district court’s preliminary injunction, finding, among other things, that the federal agency defendants’ continued use of the interim estimates was lawful (Louisiana v. Biden, No. 22-30087 (5th Cir. Mar. 16, 2022)). CEQ has noted that it is working with representatives on the GHG Interagency Working Group to develop forthcoming additional guidance regarding the application of the SCC tool in federal decision-making processes, including in NEPA analyses. The Commission has not determined which, if any, modifications are needed to render the SCC tool useful for project-level analyses. Therefore, we are not applying it in this EIS.

3.12 Noise

Noise is generally defined as sound with intensity greater than the ambient or background sound pressure level. Construction and operation of the Project would affect overall noise levels in the Project area. The magnitude and frequency of environmental noise may vary considerably over the course of the day, throughout the week, and across seasons, in part due to changing weather conditions and the effects of seasonal vegetative cover. Two measures that relate the time-varying quality of environmental noise to its known effect on people are the 24-hour equivalent sound level (Leq) and Ldn. The Leq is an A-weighted sound level containing the same energy as the instantaneous sound levels measured over a specific time period. Noise levels are perceived differently, depending on length of exposure and time of day. The Ldn takes into account the duration and time the noise is encountered. Specifically, the Ldn is the Leq plus a penalty of 10 dBA, added to account for people’s greater sensitivity to nighttime sound levels (typically considered between the hours of 10:00 pm and 7:00 am). The A-weighted scale is used to assess noise impacts because human hearing is less sensitive to low and high frequencies than mid-range frequencies.

59 See Order Issuing Certificates and Approving Abandonment, 178 FERC ¶ 61,199 (2022) at footnote 141.
The human ear’s threshold of perception for noise change is considered to be 3 dBA; 6 dBA is clearly noticeable to the human ear, and 10 dBA is perceived as a doubling of noise (Bies and Hansen, 1988).

**Federal and State Noise Regulations**

**Federal**

In 1974, the EPA published Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (EPA, 1974). This document provides information for state and local governments to use in developing their own ambient noise standards. The EPA has indicated that an \( L_{dn} \) of 55 dBA protects the public from indoor and outdoor activity interference. We have adopted this criterion and use it to evaluate the potential noise impacts from the proposed Project at NSAs. NSAs are defined as homes, schools, churches, or any location where people reside or gather. FERC requires that the noise attributable to any new or modified compressor engine during full load operation not exceed an \( L_{dn} \) of 55 dBA at any NSAs. Due to the 10 dBA nighttime penalty added prior to the logarithmic calculation of the \( L_{dn} \), for a facility to meet the 55 dBA \( L_{dn} \) limit, it must be designed such that actual constant noise levels on a 24-hour basis do not exceed 48.6 dBA \( L_{eq} \) at any NSA.

**State and Local**

There are no state noise standards applicable to the Project. Section 15-32 of the Cameron Parish Code of Ordinances and Section 18-100 of the Calcasieu Parish Code of Ordinances both prohibit “the operating of any equipment used in construction work within one hundred sixty-five (165) feet of any residential or noise sensitive area between sunset and sunrise on weekdays and Saturdays, and 9:00 p.m. to 8:00 a.m. on Sundays and holidays, except for emergency work.”

**Construction Noise Impacts and Mitigation**

Noise would be generated during construction of the Project. Construction activities throughout the Project site are estimated to last up to 23 months on an intermittent basis. LA Storage would conduct the majority of construction activities from 7:00 a.m. and 7:00 p.m., Monday through Saturday. Drilling of the cavern wells and SWD wells would occur 24 hours per day, 7 days per week. The mining water supply well drilling would occur between 7:00 a.m. and 10:00 p.m. Monday through Saturday. Some activities, including HDDs, conventional bores, hydrostatic and/or pneumatic pressure testing, and pipeline commissioning activities may need to be completed overnight or over the weekend due to specific construction requirements. Construction noise associated with these activities would be short-term and intermittent. Nighttime HDD activities would not be conducted unless required during a pullback or other activity that cannot be stopped. Only one NSA would be within 0.5 mile of an HDD crossing (Bayou Choupique).
Several NSA’s are within 0.5 mile of the proposed 24-hour well drilling activities. A noise impact analysis was conducted by HDR Engineering, Inc. to assess noise levels for all drilling activities, these results are shown in table 20.

<table>
<thead>
<tr>
<th>Activity</th>
<th>NSA</th>
<th>Distance (feet)</th>
<th>Ambient Ldn (dBA)</th>
<th>Unmitigated Drilling Ldn (dBA)</th>
<th>Mitigated Drilling Ldn (dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bayou Choupique HDD</td>
<td>H1</td>
<td>1,185</td>
<td>56</td>
<td>50</td>
<td>N/A</td>
</tr>
<tr>
<td>SWD Wells</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SWD 1</td>
<td>S1A</td>
<td>2,000</td>
<td>57</td>
<td>61</td>
<td>55</td>
</tr>
<tr>
<td>SWD 1</td>
<td>S1B</td>
<td>2,400</td>
<td>57</td>
<td>60</td>
<td>53</td>
</tr>
<tr>
<td>SWD 2</td>
<td>S1A</td>
<td>1,220</td>
<td>57</td>
<td>64</td>
<td>52</td>
</tr>
<tr>
<td>SWD 2</td>
<td>S1B</td>
<td>2,040</td>
<td>57</td>
<td>59</td>
<td>49</td>
</tr>
<tr>
<td>SWD 3</td>
<td>S1A</td>
<td>2,000</td>
<td>57</td>
<td>62</td>
<td>55</td>
</tr>
<tr>
<td>SWD 3</td>
<td>S1B</td>
<td>2,400</td>
<td>57</td>
<td>61</td>
<td>53</td>
</tr>
<tr>
<td>SWD 4</td>
<td>S1A</td>
<td>1,220</td>
<td>57</td>
<td>64</td>
<td>54</td>
</tr>
<tr>
<td>SWD 4</td>
<td>S1B</td>
<td>2,040</td>
<td>57</td>
<td>59</td>
<td>51</td>
</tr>
<tr>
<td>Cavern and Water Supply Wells</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pelican Well 003</td>
<td>G1</td>
<td>1,380</td>
<td>53</td>
<td>67</td>
<td>55</td>
</tr>
<tr>
<td>Pelican Well 003</td>
<td>G2</td>
<td>1,595</td>
<td>53</td>
<td>66</td>
<td>54</td>
</tr>
<tr>
<td>Pelican Well 004</td>
<td>G1</td>
<td>810</td>
<td>53</td>
<td>72</td>
<td>54</td>
</tr>
<tr>
<td>Pelican Well 004</td>
<td>G2</td>
<td>1,050</td>
<td>53</td>
<td>69</td>
<td>55</td>
</tr>
<tr>
<td>Freshwater Wells 001A/001B</td>
<td>G1</td>
<td>720</td>
<td>53</td>
<td>61</td>
<td>55</td>
</tr>
<tr>
<td>Freshwater Wells 001A/001B</td>
<td>G2</td>
<td>1,040</td>
<td>53</td>
<td>57</td>
<td>50</td>
</tr>
<tr>
<td>Freshwater Wells 002A/002B</td>
<td>G1</td>
<td>2,300</td>
<td>53</td>
<td>50</td>
<td>N/A</td>
</tr>
<tr>
<td>Freshwater Wells 0012A/002B</td>
<td>G2</td>
<td>2,530</td>
<td>53</td>
<td>49</td>
<td>N/A</td>
</tr>
<tr>
<td>Freshwater Wells 003A/003B</td>
<td>G1</td>
<td>1,235</td>
<td>53</td>
<td>56</td>
<td>51</td>
</tr>
<tr>
<td>Freshwater Wells 003A/003B</td>
<td>G2</td>
<td>1,370</td>
<td>53</td>
<td>54</td>
<td>49</td>
</tr>
</tbody>
</table>

Note: Drilling of the new Cavern 3 well is anticipated to occur over 10 weeks between months 1 and 3 of Project construction and well drilling for Cavern 4 is anticipated to occur over 16 weeks between months 20 and 23 of Project construction. The mining water supply well drilling would occur for eight weeks during the first two months of Project construction.

For those activities that would occur during nighttime hours and exceed the FERC standards, LA Storage would employ temporary noise barriers at the well pads for the cavern and SWD well drilling (all locations) and at mining water supply wells 1A/1B and 3A/3B. To further mitigate noise from Pelican Well 004, LA Storage also proposes to
install a sound wall along the south property line of the Gas Storage Facility to reduce noise to acceptable levels.60

Based on the projected drilling sound levels, we recommend that:

- For all HDD and well drilling operations, LA Storage should implement the proposed noise barriers and sound wall to restrict the noise attributable to the drilling operations to no more than an $L_{dn}$ of 55 dBA at all NSAs. LA Storage should monitor noise levels and document the noise levels in the biweekly status reports.

Based on the rural and industrial setting, LA Storage’s commitment to conduct the majority of construction activities during daytime hours, the mitigation measures LA Storage would employ during nighttime activities, and our recommendation above, we conclude that construction noise would not result in significant noise impacts on nearby residents.

**Operation Noise Impacts and Mitigation**

HDR Engineering, Inc. conducted a noise survey to determine existing background noise levels for NSA’s within 0.5 mile of operational noise from the proposed compressor station and PAPLC Interconnect Meter Station. The results of the ambient sound survey were used in noise modeling to determine the proposed Project’s operational noise impacts on nearby NSAs. The results of the noise modeling are provided in table 21.

<table>
<thead>
<tr>
<th>NSA</th>
<th>Distance from NSA to Station Center (feet)</th>
<th>Current Ambient $L_{dn}$ (dBA)</th>
<th>Calculated $L_{dn}$ at Full Load (dBA)</th>
<th>Unmitigated $L_{dn}$ + Ambient $L_{dn}$ (dBA)</th>
<th>Mitigated $L_{dn}$ + Ambient $L_{dn}$ (dBA)</th>
<th>Potential Increase above Ambient Sound Level (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pelican Compressor Station</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G1</td>
<td>1,150</td>
<td>53</td>
<td>54</td>
<td>61</td>
<td>57</td>
<td>4</td>
</tr>
<tr>
<td>G2</td>
<td>1,470</td>
<td>53</td>
<td>52</td>
<td>59</td>
<td>56</td>
<td>3</td>
</tr>
<tr>
<td>PAPLC Interconnect Meter Station</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M1</td>
<td>1,960</td>
<td>58</td>
<td>47</td>
<td>58</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>M2</td>
<td>2,155</td>
<td>58</td>
<td>45</td>
<td>58</td>
<td>N/A</td>
<td>0</td>
</tr>
</tbody>
</table>

Without mitigation, the estimated day-night average noise level at the closest NSA to the Pelican Compressor Station would be approximately 61 dBA $L_{dn}$. LA Storage would mitigate the noise from compressor station operations by installing a noise barrier

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60 Barrier layout can be viewed in the HDR Noise Impact Analysis included in resource report 9, appendix 9D, accession no. 20210129-5314
along the south property line of the Gas Storage Facility. With these noise mitigation measures in place, the estimated noise level at the closest NSA to the Pelican Compressor Station would be approximately 57 dBA L_{dn}, with the contribution of the compressor station below 55 dBA L_{dn}. The operational noise estimates at the closest NSA to the PAPLC Interconnect Meter Station would be approximately 58 dBA L_{dn}. Because this is not an increase over the current ambient L_{dn}, no further mitigation is assessed.

Compressor unit blowdowns would occur occasionally as part of normal compressor station operations, and typically are short, loud events. The noise analysis indicates that with proposed mitigation such as installation of exhaust silencers, blowdown noise would be reduced to acceptable levels at nearby NSAs.

Based on the predicted operational sound levels at the Pelican Compressor Station, we recommend that:

- LA Storage should file noise surveys with the Secretary no later than 60 days after placing the Pelican Compressor Station into service. If a full power load condition noise survey is not possible, LA Storage should file an interim survey at the maximum possible power load within 60 days of placing the station into service and file the full power load survey within 6 months. If the noise attributable to the operation of the station under interim or full horsepower load conditions exceeds an L_{dn} of 55 dBA at any nearby NSA, LA Storage should:

  a. file a report with the Secretary, for review and written approval by the Director of OEP, or the Director’s designee, on what changes are needed;

  b. install additional noise controls to meet that level within 1 year of the in-service date; and

  c. confirm compliance with the L_{dn} of 55 dBA requirement by filing a second noise survey with the Secretary no later than 60 days after it installs the additional noise controls.

Based on the predicted noise impacts at the proposed aboveground facilities, the sound mitigation measures proposed by LA Storage, and the recommendations stated above, we conclude that the proposed Project would not result in significant noise impacts in the Project area.

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61 Barrier layout can be viewed in the Noise Impact Analysis included in resource report 9, appendix 9D, accession no. 20210129-5314
3.13 Reliability and Safety

Several commenters expressed concern regarding the safety of pipelines and salt dome cavern storage of natural gas. The pressurization of natural gas at the proposed aboveground facilities involves some incremental risk to the public due to the potential for accidental release of natural gas. The greatest hazard is a fire or explosion following a major pipeline rupture. Methane, the primary component of natural gas, is colorless, odorless, and tasteless. It is not toxic, but is classified as a simple asphyxiate, possessing a slight inhalation hazard. If inhaled at a high concentration, oxygen deficiency can result in serious injury or death. Methane has an auto-ignition temperature of 1,000°F and is flammable at concentrations between 5.0 and 15.0 percent in air. An unconfined mixture of methane and air is not explosive; however, it may ignite and burn if there is an ignition source. A flammable concentration within an enclosed space in the presence of an ignition source can explode. It is buoyant at atmospheric temperatures and disperses rapidly in air.

Safety Standards

The DOT is mandated to prescribe minimum safety standards to protect against risks posed by natural gas facilities under Title 49 of the USC, Chapter 601. The DOT’s PHMSA administers the national regulatory program to ensure the safe transportation of natural gas and other hazardous materials by pipeline. It develops safety regulations and other approaches to risk management that ensure safety in the design, construction, testing, operation, maintenance, and emergency response of natural gas facilities. Many of the regulations are written as performance standards, which set the level of safety to be attained and allow the operator to use various technologies to achieve safety. PHMSA’s safety mission is to ensure that people and the environment are protected from the risk of incidents. This work is shared with state agency partners and others at the federal, state, and local level.

The natural gas storage facility, pipeline and associated aboveground facilities would be designed, constructed, operated, and maintained in accordance with the DOT Minimum Federal Safety Standards in 49 C.F.R. Part 192. The regulations are intended to ensure adequate protection for the public and to prevent natural gas facility accidents and failures. The DOT specifies material selection and qualification; minimum design requirements; and protection from internal, external, and atmospheric corrosion.

Part 192 of 49 C.F.R. establishes safety guidelines for the design and construction of compressor stations in addition to pipeline safety standards. Section 192.163 requires the location of each main compressor building of a compressor station be on a property under the control of the operator. The station must also be far enough away from adjacent property, not under control of the operator, to minimize the possibility of fire spreading to the compressor building from structures on adjacent properties. Section 192.163 also requires each building on a compressor station site be made of specific
building materials and to have at least two separate and unobstructed exits. The station must be in an enclosed fenced area and must have at least two gates to provide a safe exit during an emergency.

In its comments on the draft EIS, the EPA recommended that the EIS discuss any applicable required leak monitoring and controls for the Project. Integrity of the reservoir and the well components of storage facilities are addressed in American Petroleum Institute’s Recommended Practice 1171, “Functional Integrity of Natural Gas Storage in Depleted Hydrocarbon Reservoirs and Aquifer Reservoirs” (API 1171); published in September 2015, which represents a three-year effort by a working group including representatives from PHMSA, the FERC, state regulators, and industry to develop natural gas storage well and reservoir integrity standards that combine consensus best practices, regulations, and concepts adapted from risk management and safety management systems. Storage wells use design factors such as casing the wellhead and cementing to provide containment of storage gas. Emergency shutdown valve systems must be frequently re-evaluated using a risk management process.

RESTORE comments that no salt dome is static, stable, or safe as a location to store anything. RESTORE cites that there is evidence of torsion migrating through the dome, that the West Hackberry salt dome experiences ‘relatively fast’ salt creep, and that constant pressure fluctuations from injection and removal of natural gas would exacerbate this flexing. RESTORE also comments that at least 700 feet of salt should be left between the edges of caverns, and that any collapse of an LA Storage cavern would suck down Black Lake. The proximity of the lake is an indication that the caprock uplifted by the dome has already been seriously undermined by dissolution and will continue to subside with the lake continuing to expand. RESTORE reiterated these concerns in its comments on the draft EIS and recommends that FERC deny the Project Certificate. As stated in section 1.1 of this EIS, the Commission determines whether interstate natural gas transportation facilities are in the public convenience and necessity and, if so, grants a Certificate to construct and operate them. The Commission bases its decisions on economic issues, including need, and environmental impacts.

In its comments on the draft EIS, RESTORE expressed concern about the potential for salt dome cavern failure being triggered by pile-driving activities for the HCS. Given the depth to the ceiling of the West Hackberry Salt Dome (approximately 2,000 ftg) compared to the reasonable maximum depth of piles to support aboveground facilities (less than 200 ftg), we consider this hazard negligible.

RESTORE further referenced incidents at Lake Peigneur, Bayou Corne, and Mont Belvieu, as well as recent subsidence monitoring reports completed for the DOE’s adjacent West Hackberry SPR and expresses concern that the creation of Project Pelican Well 004 cavern near the West Hackberry SPR cavern 116 would cause lateral movement of cavern 116’s west wall. Subsidence hazards are previously discussed in section 3.2.
Further, as described below, the Mont Belvieu and Lake Peigneur incidents cannot be directly compared to the West Hackberry Salt Dome or the proposed Project.

Lake Peigneur is a small saltwater lake in south Louisiana with a maximum depth of 200 feet. Prior to 1980, it was a 10-foot-deep freshwater lake. The Diamond Crystal Salt Company started mining under Lake Peigneur around 1919. An oil rig’s crew had planned to drill about 50 feet away from the salt mine, in a plan approved by the Diamond Crystal Salt Company. The oil company was given detailed maps on where the salt mine was located; however, the mapping used a Universal Transverse Mercator coordinate system and the drilling company engineer mistakenly thought the map used a Mercator Projection coordinate system (Holland, 2020). Because of this coordinate system error, on November 20, 1980, the crew of the oil rig drilled into the salt mine. The entire contents of the lake were consumed in a massive whirlpool. After the lake was emptied, the Delcambre Canal, a man-made river from Lake Peigneur into the Gulf of Mexico, started to flow backward. This backflow continued for three days, until the entire mine and lake were filled with saltwater (Holland, 2020).

At Mont Belvieu, Texas, natural gas liquids (propane and butane) are stored in underground salt dome storage caverns. Numerous incidents of groundwater contamination and explosion have occurred here from the 1950s through the 1980s, attributable to casing leaks rather than storage cavern collapse (Applebome, 1988; Berest et al., 2019). In April 1992, natural gas liquids stored in a cavern leaked and exploded at a different field in Brenham, Texas. A year later, Texas revamped its rules for natural gas and natural gas liquid storage and now requires emergency shutoff valves and inspections for leaks every five years (Fehling, 2015).

Regarding Bayou Corne, the Bayou Corne sinkhole formed unexpectedly August 3, 2012, after weeks of minor earthquakes and bubbling natural gas. The Bayou Corne incident is considered unique in that it is the first reported sidewall failure within a salt dome and because sinkhole formation was preceded by horizontal movement at the surface (Jones and Blom, 2015). The sinkhole has gradually expanded and now measures about 25 acres and is at least 750 feet deep. It was caused by the collapse of a sidewall of an underground storage cavity connected to a nearby well operated by Texas Brine Company and owned by Occidental Petroleum. On-site investigation revealed the storage cavity, located more than 3,000 feet (914 meters) underground, had been mined closer to the edge of the subterranean Napoleonville salt dome than thought. It is still growing (National Aeronautics and Space Administration, 2014; Jones and Blom, 2015).

LA Storage would construct and operate the proposed and existing cavern wells in accordance with LDNR and PHMSA requirements that are designed to minimize the potential for catastrophic failure of the salt cavern. Some of the requirements from these regulations are summarized below:
any new cavern must be constructed with at least two strings of casing into the salt and a surface casing set below the base of the lowermost Underground Source of Drinking Water.\textsuperscript{62}

- spacing restrictions do not allow new caverns to be mined less than 200 feet from an adjacent cavern or less than 300 feet from the edge of the salt;
- maximum and minimum operating pressures are calculated based on rock properties from the salt in the area of the cavern;
- continuous pressure monitoring of the fluid within the hanging string and in the annulus outside the hanging string is required and maximum operating pressure must be recorded weekly and then submitted to LDNR quarterly; and
- an approved Ground Subsidence Monitoring Plan must be on file with LDNR and subsidence surveys must be conducted on an annual basis. An annual Subsidence Report must also be submitted on an annual basis.

LA Storage would construct and operate the proposed Gas Storage Facility in accordance with applicable state and federal requirements, including Section 192.12 of 49 C.F.R. Part 192, and Louisiana Administrative Code Title 43 Part XIII, which specifically address underground natural gas storage facilities. LA Storage’s Emergency Action Plan (Sempra, 2019) addresses emergency procedures for the storage facility.

**Class Locations and High Consequence Areas**

The DOT Pipeline Safety Regulations require operators to develop and follow a written integrity management program that contain all the elements described in 49 C.F.R. § 192.911 and address the risks on each transmission pipeline segment. The rule establishes an integrity management program which applies to all high consequence areas. The DOT has published rules that define high consequence areas where a gas pipeline accident could do considerable harm to people and their property and requires an integrity management program to minimize the potential for an accident.\textsuperscript{63} This definition satisfies, in part, the Congressional mandate for DOT to prescribe standards that establish criteria for identifying each gas pipeline facility in a high-density population area.

The DOT defines area classifications, based on population density in the vicinity of the pipeline, and specifies more rigorous safety requirements for populated areas. The

\textsuperscript{62} The lowermost Underground Source of Drinking Water is defined by the EPA as the deepest occurrence of groundwater that supplies any public water supply system or that contains a sufficient quantity of groundwater to potentially supply a public water system and currently contains less than 10,000 milligrams per liter of total dissolved solids.

\textsuperscript{63} PHMSA Regulations 49 C.F.R. Part 192; https://cms7.phmsa.dot.gov/regulations/title49/b/2/1
class location unit is an area that extends 220 yards on either side of the centerline of any continuous 1-mile length of pipeline. The four area classifications are defined below:

Class 1 location with 10 or fewer buildings intended for human occupancy;

Class 2 location with more than 10 but fewer than 46 buildings intended for human occupancy;

Class 3 location with 46 or more buildings intended for human occupancy or where the pipeline lies within 100 yards of any building, or small well-defined outside area occupied by 20 or more people on at least 5 days a week for 10 weeks in any 12-month period; and

Class 4 location where buildings with four or more stories aboveground are prevalent.

Class locations representing more populated areas (i.e., Class 2, 3 and 4) require higher safety factors in pipeline design, testing, and operation. For instance, pipelines constructed on land in Class 1 locations must be installed with a minimum depth of cover of 30 inches in normal soil and 18 inches in consolidated rock. Class 2, 3, and 4 locations, as well as drainage ditches of public roads and railroad crossings, require a minimum cover of 36 inches in normal soil and 24 inches in consolidated rock.

Class locations also specify the maximum distance to a sectionalizing block valve (i.e., 10.0 miles in Class 1, 7.5 miles in Class 2, 4.0 miles in Class 3, and 2.5 miles in Class 4). Pipe wall thickness and pipeline design pressures; hydrostatic test pressures; maximum allowable operating pressure; inspection and testing of welds; and frequency of pipeline patrols and leak surveys must also conform to higher standards in more populated areas. The Project would be entirely within Class 1 locations.

**Emergencies**

LA Storage would construct and operate the proposed and existing cavern wells in accordance with LDNR requirements that are designed to minimize the potential for catastrophic failure of the salt cavern. Such a failure would result in substantial subsidence directly over the salt cavern. If operational or surface conditions indicate potential unexpected subsidence within the salt cavern, operations would cease immediately, and LA Storage would implement its Emergency Action Plan. A safety perimeter would be established around the perimeter of the affected area, and LA Storage would work with appropriate agencies, contractors, and other area operators to develop and implement an appropriate plan to assess and respond to the situation. LA Storage

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sited the Pelican Compressor Station to avoid placement directly over the existing or proposed storage caverns, further reducing the potential impact of localized subsidence over any of the caverns, should it occur.

The DOT prescribes the minimum standards for operating and maintaining storage, pipeline, and aboveground natural gas facilities, including the requirement to establish a written plan governing these activities. Each operator is required to establish an emergency plan that includes procedures to minimize the hazards of a natural gas emergency. Key elements of the plan include procedures for:

- receiving, identifying, and classifying emergency events, gas leakage, fires, explosions, and natural disasters;
- establishing and maintaining communications with local fire, police, and public officials, and coordinating emergency response;
- emergency system shutdown and safe restoration of service;
- making personnel, equipment, tools, and materials available at the scene of an emergency; and
- protecting people first and then property and making them safe from actual or potential hazards.

The DOT requires that each operator establish and maintain liaison with appropriate fire, police, and public officials to learn the resources and responsibilities of each organization that may respond to a natural gas pipeline or facility emergency, and to coordinate mutual assistance. LA Storage must also establish a continuing education program to enable customers, the public, government officials, and those engaged in excavation activities to recognize a gas emergency and report it to the appropriate public officials. LA Storage would provide the appropriate training to local emergency service personnel before the Project is placed in service.

With continued compliance with DOT safety standards, operation, and maintenance requirements, we conclude the Project would be constructed and operated safely.
4.0 ALTERNATIVES

In accordance with NEPA and Commission policy, we identified and evaluated alternatives to the Project to determine whether they would be reasonable and environmentally preferable to the proposed action. These alternatives include the no-action alternative and facility siting alternatives such as: system alternatives, pipeline route alternatives, and aboveground facility site alternatives.

In its comments on the draft EIS, the EPA urges FERC staff to utilize the NEPA process as a planning tool to identify an action alternative that may address variability, outage, and access issues in a less environmentally damaging way. First, as indicated in this EIS, staff has not identified a significant impact associated with the proposed action. Consequently, the apparent benefit of a less environmentally damaging action alternative, if one exists, is unlikely to be readily identified.

Further, the Commission reviews applications for natural gas infrastructure. The NEPA process (and the alternatives analysis) is used to evaluate industry proposals and inform the Commission and stakeholders about the expected impacts that would occur if the Project is constructed and operated. The alternatives considered must first satisfy the objective identified by the project proponent, which in this case involves constructing and operating a high-deliverability natural gas storage facility in Cameron Parish providing natural gas storage through interconnections with existing and certificated pipeline infrastructure. The Commission may not design an alternative action and direct an applicant to construct and operate it. The Commission’s options are to approve, approve with modifications, or deny an application.

Sierra Club and Healthy Gulf also commented FERC failed to consider an adequate range of alternatives for the Project and contends that all alternatives considered were limited to the applicant’s proposal for the Project without considering alternatives such as decreased capacity, alternate locations, or alternate designs. As described above and in greater detail below (section 4.2), our alternatives analysis considers LA Storage’s purpose and need for the Project. A reasonable alternative must be able to meet the stated purpose and need. Actions that do not meet the stated purpose and need or only in part are not considered reasonable.

4.1 No-Action Alternative

NEPA requires the Commission to consider and evaluate the no-action alternative. According to CEQ guidance, in instances involving federal decisions on proposals for projects, no-action would mean the proposed activity would not take place and the

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65 As stated in section 3.11 of this EIS, Commission staff are unable to assess the Project’s contribution to climate change through any objective analysis of physical impact attributable to the Project and this EIS is not characterizing the Project’s GHG emissions as significant or insignificant.
resulting environmental effects from taking no-action would be compared with the effects of permitting the proposed activity. Further, the no action alternative provides a benchmark for decisionmakers to compare the magnitude of environmental effects of the proposed activity and alternatives.

We have prepared this EIS to inform the Commission and stakeholders about the expected impacts that would occur if the Project is constructed and operated. The Commission will ultimately determine the Project need and could choose the no-action alternative.

### 4.2 Facility Siting and System Alternatives Evaluation Process

The criteria used for selecting potentially environmentally preferable facility siting and system alternatives are: (1) the ability to meet the Project’s objectives; (2) technical and economic feasibility and practicality; and (3) whether it provides a significant environmental advantage over the proposed Project. Alternatives that would not meet the Project’s objective or would not be feasible were not brought forward to the next level of review (i.e., the third evaluation criterion).

Our evaluation of the identified alternatives is based on Project-specific information provided by the applicant; publicly available information; and our expertise and experience regarding the siting, construction, and operation of natural gas storage and transmission facilities and their potential impact on the environment.

Through environmental comparison and application of our professional judgement, each alternative is considered to a point where it becomes clear if the alternative could or could not meet the three evaluation criteria. To ensure a consistent environmental comparison and to normalize the comparison factors, we generally use desktop sources of information (e.g., publicly available data, GIS data, aerial imagery) and assume the same right-of-way widths and general workspace requirements. As described previously, our environmental analysis and this evaluation consider quantitative data (e.g., acreage, mileage) and uses common comparative factors such as total length, amount of collocation, and land requirements.

Our evaluation considers impacts on both the natural and human environments. Impacts on the natural environment include open water, wetlands, forested lands, geology, and other common environmental resources. Impacts on the human environment include residences, roads, utilities, and industrial and commercial development near construction workspaces. In recognition of the competing interests and the different nature of impacts resulting from an alternative that sometimes exist (i.e., impacts on the natural environment versus impacts on the human environment), we also consider other factors that are relevant to a particular alternative or discount or eliminate factors that are not relevant or may have less weight or significance. In their comments, Sierra Club and Healthy Gulf state that we must identify alternatives to reduce wetland loss.
As noted, our alternatives analyses compare resource impacts including wetlands impacts. These impacts comparisons are considered when determining whether or not an alternative would be environmentally preferable to the proposed action.

The purpose of the Project, which is described in greater detail in section 1.1, is to provide high-deliverability salt dome natural gas storage in Cameron Parish, capable of providing 20.03 Bcf of working gas storage capacity and 1.5 Bcf/d of gas deliverability and injectability. Therefore, a preferable alternative must be able to offer storage services similar to that of the proposed action. RESTORE comments that the West Hackberry salt dome should be used to store helium rather than natural gas. Because the purpose of the Project is to store and transport natural gas, storage of helium in the salt dome cannot function as a substitute for the Project and is not considered further in this analysis.

Determining if an alternative provides a significant environmental advantage requires a comparison of the impacts on each resource as well as an analysis of impacts on resources that are not common to the alternatives being considered. The determination must then balance the overall impacts and all other relevant considerations. In comparing the impact between resources (factors), we also considered the degree of impact anticipated on each resource. Ultimately, an alternative that results in equal or minor advantages in terms of environmental impact would not compel us to shift the impacts from the current set of landowners to a new set of landowners.

One of the goals of an alternatives analysis is to identify alternatives that avoid significant impacts. In section 3.0, we evaluated each environmental resource potentially affected by the Project. Consistent with our conclusions, the value gained by further reducing the (generally not significant) impacts of the Project when considered against relocating the route/facility to a new set of landowners was also factored into our evaluation.

### 4.3 System Alternatives

System alternatives are alternatives to the proposed action that would make use of existing, modified, or proposed project(s) systems to meet the stated objective of the proposed Project. System alternatives involve the storage of the equivalent amount of natural gas (20.0 Bcf of working gas storage capacity, 1.5 Bcf/d of gas deliverability and injectability) by the modification or expansion of existing storage facilities or by other new natural gas storage facilities.

Two existing natural gas storage fields within 60 miles of the proposed Hackberry Storage Project were considered as system alternatives. Golden Triangle Storage, operated by Pivotal Energy Development, a subsidiary of Southern Company, is about 40 miles west of the Project. Golden Triangle Storage consists of salt caverns with about 13 Bcf of total working gas capacity in the Spindletop salt dome in Jefferson and Orange counties in Texas.
Egan Gas Storage, owned and operated by Enbridge, is about 55 miles east of the Project. Egan Gas Storage consists of salt caverns with about 21 Bcf of total working gas capacity in Acadia Parish, Louisiana.

For either the Egan or Golden Triangle storage facility to accept an additional 20 Bcf of natural gas, substantial expansions of the existing facilities would likely be required. Neither of these facilities has empty salt caverns and would likely require construction of new storage caverns that would exceed the single new storage cavern required to meet the objective of the Project. Consequently, construction of these additional caverns would require a greater volume of mining water and would generate more brine than the Project. Because the Golden Triangle and Egan caverns are deeper than the Hackberry caverns, more compression would likely be required than for the Hackberry Storage Project, resulting in additional noise and air emission impacts. Further, to connect either system alternative to the existing CIP would require pipelines approximately 40 miles in length. Construction of this connecting pipeline would exceed the 11.1-mile-long Hackberry Pipeline or the 4.9-mile-long CIP Lateral required for the Project, and result in greater environmental impacts. Therefore, the Golden Triangle and Egan storage facility system alternatives would not provide a significant environmental advantage over the proposed Project, and we have dismissed these alternatives from further consideration.

4.4 CIP Lateral Alternatives

We identified and assessed an alternative route (Alternative 1) to determine if it could provide a significant environmental advantage to the proposed CIP Lateral alignment (see figure 2). Table 22 compares this alternative to the proposed route (Alternative 2).

<table>
<thead>
<tr>
<th>Factor</th>
<th>Alternative 1</th>
<th>Proposed Route (Alternative 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length (miles)</td>
<td>5.1</td>
<td>4.9</td>
</tr>
<tr>
<td>Open Water Crossed (miles) a</td>
<td>3.9</td>
<td>3.4</td>
</tr>
<tr>
<td>Total Wetlands Impacts (acres) b,c</td>
<td>6.2</td>
<td>21.2</td>
</tr>
<tr>
<td>PFO Wetlands Impacts (acres)</td>
<td>0.8</td>
<td>0.9</td>
</tr>
<tr>
<td>PEM Wetlands Impacts (acres)</td>
<td>3.1</td>
<td>1.0</td>
</tr>
<tr>
<td>PSS Wetlands Impacts (acres)</td>
<td>0.0</td>
<td>1.6</td>
</tr>
<tr>
<td>E2EM (brackish marsh) wetlands Impacts (acres)</td>
<td>2.3</td>
<td>17.7</td>
</tr>
<tr>
<td>Upland Forest Crossed (acres) a,c</td>
<td>0.7</td>
<td>0.6</td>
</tr>
<tr>
<td>Land Required for Construction Right-of-Way c</td>
<td>62.6</td>
<td>51.6</td>
</tr>
<tr>
<td>Land Required for Permanent Right-of-Way d</td>
<td>25.1</td>
<td>20.7</td>
</tr>
</tbody>
</table>
TABLE 22
Comparison of CIP Lateral Alternatives

<table>
<thead>
<tr>
<th>Factor</th>
<th>Alternative 1</th>
<th>Proposed Route (Alternative 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Waterbody Crossings, total</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Number of HDD Crossings</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total Length of HDD Crossings (feet)</td>
<td>2,930</td>
<td>2,620</td>
</tr>
<tr>
<td>Length of Collocated Right-of-way (miles / percent)</td>
<td>0.13 / 2</td>
<td>4.9 / 100</td>
</tr>
<tr>
<td>Number of Parcels Crossed</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Residential Land Crossed (acres)</td>
<td>2.2</td>
<td>0</td>
</tr>
<tr>
<td>Agricultural Land Crossed (acres)</td>
<td>0.2</td>
<td>2.0</td>
</tr>
<tr>
<td>EFH Crossed (acres)</td>
<td>59.1</td>
<td>65.9</td>
</tr>
<tr>
<td>Acres of WRP Land Crossed</td>
<td>9.1</td>
<td>0</td>
</tr>
</tbody>
</table>

a. Areas calculated using the National Land Cover Dataset 2016
b. Based on field observations and desktop analysis of screening level routing review of previously delineated wetlands in 2008 and 2020, excluding wetlands that would be avoided by HDD.
c. Based on a 125-foot-wide construction right-of-way in open water and wetlands that would be open-cut and excluding wetlands that would be crossed using the HDD method. For comparative purposes, both alternatives assume no wetland impacts at the CIP Interconnect.
d. Based on a 50-foot-wide permanent right-of-way. The permanent right-of-way in emergent wetlands would be allowed to return to conditions similar to those before construction in shoreline areas.

As shown in figure 2, Alternative 1 would cross 9.1 acres of land that is now enrolled in the U.S. Department of Agriculture WRP. WRP lands are protected in perpetuity by a conservation easement that does not allow for development. There is a legal process for requesting an action be considered a compatible use to allow for utility line installation activities; however, that process requires proof that the activity would not alter, disturb, or otherwise be inconsistent with the protection and enhancement of the property. There are no statutory limits on the process for applying for compatible use, which could delay a project indefinitely (NRCS 2011). The proposed route (Alternative 2) for the CIP Lateral, would connect to the existing CIP at the same interconnect location as Alternative 1 but would not cross WRP land. Alternative 1 would affect 2.2 acres of residential land and the proposed route would not cross residential land. Although the proposed route crosses less open water, it crosses more PEM wetlands than Alternative 1. As described in the preceding environmental analysis, impacts on PEM wetlands would be temporary and not significant. Based on our review of this alternative and our comparison of impacts on the environment, we find that Alternative 1 meets the Project objective and is technically feasible, but it does not provide a significant environmental advantage over the proposed route and is not considered further.
4.5 Hackberry Pipeline Alternatives

As part of our effort to reduce and minimize impacts on the environment, we identified and assessed two alternative routes (Alternatives 1 and 2) for the portion of the Hackberry Pipeline north of the CIP Interconnect as depicted in figure 3. Table 23 compares these alternatives and the proposed route (Alternative 3).

<table>
<thead>
<tr>
<th>TABLE 23</th>
<th>Comparison of Hackberry Pipeline Route Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor</td>
<td>Alternative 1</td>
</tr>
<tr>
<td>Length (miles)</td>
<td>6.3</td>
</tr>
<tr>
<td>Open Water Crossed (miles)</td>
<td>0.3</td>
</tr>
<tr>
<td>Total Wetlands Impacts (acres)</td>
<td>32.8</td>
</tr>
<tr>
<td>PFO Wetlands Impacts (acres)</td>
<td>1.3</td>
</tr>
<tr>
<td>PEM Wetlands Impacts (acres)</td>
<td>21.3</td>
</tr>
<tr>
<td>PSS Wetlands Impacts (acres)</td>
<td>7.2</td>
</tr>
<tr>
<td>E2EM Wetlands Impacts (acres)</td>
<td>2.9</td>
</tr>
<tr>
<td>Wetlands Crossed Requiring Mitigation (acres)</td>
<td>4.2</td>
</tr>
<tr>
<td>Upland Forest Crossed (acres)</td>
<td>0.0</td>
</tr>
<tr>
<td>Land Required for Construction Right-of-way (acres)</td>
<td>28.4</td>
</tr>
<tr>
<td>Land Required for Permanent Right-of-way</td>
<td>11.4</td>
</tr>
<tr>
<td>Number of Waterbody Crossings, total</td>
<td>4</td>
</tr>
<tr>
<td>Number of HDD Crossings</td>
<td>2</td>
</tr>
<tr>
<td>Length of Collocated Right-of-way (miles / percent)</td>
<td>6.3 / 100</td>
</tr>
<tr>
<td>Number of Parcels Crossed</td>
<td>25</td>
</tr>
<tr>
<td>Residential Land Crossed (acres)</td>
<td>0.5</td>
</tr>
<tr>
<td>Agricultural Land Crossed (acres)</td>
<td>6.1</td>
</tr>
<tr>
<td>EFH Crossed (acres)</td>
<td>2.9</td>
</tr>
<tr>
<td>WRP or Mitigation Bank Lands Crossed (acres)</td>
<td>7.6</td>
</tr>
</tbody>
</table>

a Areas calculated using the National Land Cover Dataset 2016.
b Based on desktop analysis of screening level routing and National Wetlands Inventory data, excluding wetlands that would be avoided by HDD. PFO = palustrine forested, PEM = palustrine emergent, PSS = palustrine scrub/shrub, E2EM = emergent, intertidal, estuarine.
c Based on a 125-foot-wide construction right-of-way in open water and wetlands that would be open-cut and excluding wetlands that would be crossed using the HDD method.
d Based on a 50-foot-wide permanent right-of-way. The permanent right-of-way in emergent wetlands would be allowed to return to conditions similar to those before construction in shoreline areas.
e Gulf Intracoastal Waterway and Bayou Choupique.
Each of the alternative are about the same length and consequently would require similar acreages of land in order to complete construction. Alternative 1 is collocated for 100 percent of the alignment and affects less residential lands than Alternative 2 and the proposed route. Alternative 1 would also cross fewer wetlands and about the same amount of palustrine forested wetlands as the proposed route. However, Alternative 1 would cross 7.6 acres of the Moss Lake Mitigation Bank. Although utility lines now cross the mitigation bank, they were in place before the bank was approved and the USACE could approve an amendment to allow a new utility to cross the mitigation bank conservation easement only if needed to avoid impacts on homes, businesses, or developed areas. Alternative 1 would also cross about 0.25 mile east of the Lake Charles Chemical Waste Facility operated by Waste Management along John Brannon Road. LA Storage reports that when the company requested permission to survey the property, Waste Management indicated that the presence of underground pipeline associated with Alternative 1 could restrict the expansion of the waste facility and denied LA Storage’s request to survey.

We requested that LA Storage analyze Alternative 2, a route that begins at the CIP Interconnect, follows the existing CIP route northwest, then deviates from the CIP route (which turns north) continuing to head in a northwesterly direction and connecting to the PAPLC pipeline approximately 3 miles southwest of the Lake Charles Chemical Waste Facility. The Alternative 2 route would cross more wetlands and more forested wetlands than the proposed route and would cross 18.2 acres of WRP lands.

The proposed route would avoid impacts on the Moss Lake Mitigation Bank and WRP lands and crosses fewer acres of forested wetlands. Therefore, we find that Alternatives 1 and 2 do not present a significant environmental advantage over the proposed action.

In its comments on the draft EIS, Stream Wetland Services, LLC requested LA Storage’s proposed HDD of the GIWW be extended approximately 4,000 feet to the north to avoid disturbance of Driftwood’s proposed BUDM located north of the GIWW. Driftwood and Driftwood Pipeline, LCC in their comments on the draft EIS requested that LA Storage adopt the HDD extension suggested by Stream Wetland Services, LLC. In response to these comments, we issued a request for additional environmental information requiring LA Storage to assess the feasibility of this alternative. The proposed length of LA Storage’s GIWW HDD is 2,954-feet. Extending the crossing by 4,000 feet would more than double the proposed length. LA Storage states that an HDD of this length (approximately 6,954-feet) would likely require the use of thrusters on the exit side of the drill to assist in installation of the drill string. LA Storage believes the soil conditions at the suggested exit location would not be suitable for the use of thrusters. Given the likelihood of saturated soils being present at the suggested exit

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66 A pipe thruster clamps pipe and can exert additional adjustable push or pull force to support the HDD rig during pipeline installation. The units are heavy, in general weighing around 45 tons.
location as well as the weight of thrusters, we agree. Further, the pullback string of pipeline for an HDD of this length would cross Ellis Moss Road, a public road.

We reviewed the alternative and concluded that while some reduction in wetland impacts could be gained, the specific impacts would primarily be temporary construction impacts. In addition, there are concerns about whether the soils could support thrusters without engineered modification. Finally, the substantial increase in the length of the drill reduces the probability of success. When weighing the non-significant impact of LA Storage’s proposed crossing (refer to section 3.4) with the inherent increased complexity of increasing the length of the HDD as well as considering the identified constraints of the suggested alternative, we conclude that this alternative could be technically feasible, but would not provide a significant environmental advantage over the proposed action.

4.6 Aboveground Facility Alternatives

A majority of the aboveground facilities would be located at the Gas Storage Facility site. Alternative configurations at the Gas Storage Facility site were considered, but not carried forward as alternatives, because we determined that any reconfiguration of the aboveground facilities would result in negligible differences in impacts.

Alternative locations for the Gas Storage Facility site were also considered, but due to the Project’s repurposing of an existing industrial site and the locations of the existing storage caverns and associated facilities at the site, we determined that an alternative site would not present a significant environmental advantage over the proposed action. Furthermore, any alternative site would result in greater impacts on the environment.

One landowner, Ms. Sheron Faulk, expressed concern regarding the location of ATWS-CAL-017 on her property, as well as the proposed SWD wells, of which SWD Well 2 and SWD Well 4 are within 125 feet of her property. We assessed the feasibility of relocating ATWS-CAL-017 to the adjoining property south, adjacent to the proposed SWD Well 2 workspace and owned by Cameron LNG, LLC. Relocating the ATWS-CAL-017 to the adjoining property south is not feasible. An overhead powerline bisects the southern half of the proposed SWD well pad and the proposed location of ATWS-CAL-017 would allow the drilling rig to safely raise its mast. Further, the adjoining property south is wetland, whereas the current location of ATWS-CAL-017 is located in a cleared upland pasture. Therefore, because the use of ATWS-CAL-017 would be temporary, we conclude that this alternative does not present a significant environmental advantage over the proposed action.

We assessed an alternative site (Alternative 1) for the SWD wells in the “East SWD Area” southeast of the proposed Gas Storage Facility in Cameron Parish. The East SWD Area is about 2 miles southeast of the proposed Gas Storage Facility and is adjacent to wells used by the DOE’s West Hackberry SPR for brine disposal.
The sites of the four SWD wells and the route of the brine disposal pipeline associated with this alternative are shown on figure 4. Table 24 compares Alternative 1 and the proposed SWD well locations and brine disposal pipeline route (Alternative 2).

### TABLE 24
Comparison of Brine Disposal Pipeline Route and SWD Well Location Alternatives

<table>
<thead>
<tr>
<th>Factor</th>
<th>Alternative 1</th>
<th>Proposed Route (Alternative 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length (miles)</td>
<td>3.9</td>
<td>6.2</td>
</tr>
<tr>
<td>Open Water Crossed (miles)</td>
<td>0.0</td>
<td>3.4</td>
</tr>
<tr>
<td>Wetlands Impacts (acres)(^{b,c})</td>
<td>12.1</td>
<td>39.9</td>
</tr>
<tr>
<td>PFO Wetlands Impacts (acres)</td>
<td>6.9</td>
<td>0.8</td>
</tr>
<tr>
<td>PEM Wetlands Impacts (acres)</td>
<td>4.0</td>
<td>11.4</td>
</tr>
<tr>
<td>PSS Wetlands Impacts (acres)</td>
<td>1.2</td>
<td>13.3</td>
</tr>
<tr>
<td>E2EM (Brackish Marsh) Wetlands Impacts (acres)</td>
<td>0.0</td>
<td>14.4</td>
</tr>
<tr>
<td>Upland Forest Impacts (acres)(^{c,d})</td>
<td>2.7</td>
<td>0.56</td>
</tr>
<tr>
<td>Land Required for Construction Right-of-Way(^a,c)</td>
<td>11.5</td>
<td>53.6</td>
</tr>
<tr>
<td>Land Required for Permanent Right-of-Way(^a,e)</td>
<td>5.8</td>
<td>26.8</td>
</tr>
<tr>
<td>Number of Waterbody Crossings, total</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Number of HDD Crossings</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Length of Collocated Right-of-way (miles / percent)</td>
<td>0.9 / 23</td>
<td>5.2 / 79</td>
</tr>
<tr>
<td>Number of Residences within 50 feet of the Construction Work Area(^f)</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Number of Parcels Crossed</td>
<td>53</td>
<td>9</td>
</tr>
<tr>
<td>Residential Land Impacts (acres)(^{c,f})</td>
<td>5.5</td>
<td>0</td>
</tr>
<tr>
<td>Agricultural Land Impacts (acres)(^{c,f})</td>
<td>0</td>
<td>2.2</td>
</tr>
<tr>
<td>EFH Impacts (acres)(^b,c)</td>
<td>0</td>
<td>24.1</td>
</tr>
<tr>
<td>Acres of WRP Land Crossed(^{c,f})</td>
<td>0.9</td>
<td>0</td>
</tr>
<tr>
<td>Number of NSAs within 0.5 mile of SWD Wells</td>
<td>40</td>
<td>4</td>
</tr>
<tr>
<td>Distance to Closest NSA (feet)</td>
<td>700</td>
<td>1,220</td>
</tr>
</tbody>
</table>

\(^a\) Excludes ATWS, construction work areas for SWD wells (each alternative assumes four SWD wells), and access roads.
\(^b\) Based on review of previously delineated wetlands in 2008 and 2020.
\(^c\) Based on an average 100-foot-wide construction right-of-way for comparative purposes.
\(^d\) Areas calculated using the National Land Cover Dataset 2016.
\(^e\) Based on a 50-foot-wide permanent right-of-way.
\(^f\) Based on review of aerial photography.

Alternative 1 offers some clear environmental benefits compared to the proposed route and well locations. However, it would require crossing 44 more parcels of land, 5.5 acres more of residential land, would be closer to the nearest NSA, and would result in 36 more NSAs being affected. Additionally, the East SWD Area is adjacent to brine injection wells used by the DOE’s West Hackberry SPR. The increased pressures from additional injections by LA Storage could require that additional pumping equipment be used by both LA Storage and the DOE’s West Hackberry SPR, and if both LA Storage and the West Hackberry SPR were injecting into the formation at or near the same time,
additional monitoring wells might be needed to track the movement of the saltwater plume. Further, LA Storage states that in preliminary discussions, it was unable to negotiate easements needed for the East SWD Area or the full route of the brine disposal pipeline associated with this alternative.

The proposed route would place the SWD wells at a site with a willing landowner and would not inject brine into the same reservoir currently used by the DOE’s West Hackberry SPR for injection wells. LA Storage anticipates being able to acquire the necessary easements for the brine disposal pipeline through negotiations with landowners, the proposed route is collocated to the maximum extent possible with the proposed CIP Lateral and Hackberry Pipeline, and crosses fewer forested wetlands compared to Alternative 1. In our assessment, Alternative 1 results in less impacts on the natural environment while the proposed route results in less impacts on the human environment. In balancing the competing interests and the different nature of impacts resulting from alternatives that sometimes exist (i.e., impacts on the natural environment versus impacts on the human environment), we find that Alternative 1 does not provide a significant environmental advantage over the proposed action.
4.7 Mining Water Source Alternatives

We assessed two alternative water sources to be used for solution mining of the new natural gas storage cavern. Alternative 1 would use Black Lake as the source water. The estuarine emergent wetlands surrounding Black Lake, the water column within Black Lake, and the mud and sand substrates that comprise the bottom of Black Lake are designated as EFH for red drum and shrimp, and some commercial shrimp fishing occurs in the lake. The pumping rates and water volume required to mine LA Storage’s proposed storage cavern would likely result in significant loss of plankton or nekton, including larval and juvenile stages of brown and white shrimp and/or finfish, if the mining water was obtained from Black Lake. In addition, the high concentrations of organic material in the water in Black Lake could increase corrosion of the wells and piping system and cause the formation of hydrogen sulfide, a poisonous gas.

Alternative 2 would use municipal water for mining the new storage cavern. The Town of Hackberry currently provides water to the site of the Gas Storage Facility. However, the existing water line is only 3 inches in diameter and the town has indicated that it would be unable to provide the volume and rates of water needed to create the new cavern. In addition, the use of treated drinking water containing treatment chemicals could contribute to corrosion of the wells and piping system. Consequently, Alternative 2 is not technically feasible and is not considered further.

As described previously, the proposed source of mining water is groundwater from the Chicot aquifer system’s 700-foot sand layer. Water from the 700-foot sand aquifer is more brackish than the water used from the 500-foot sand layer by the Town of Hackberry as drinking water. Use of water from the 700-foot sand would not interfere with the municipal water supply and would not use water of potable quality.

Based on our review of alternative water resources, associated potential impacts on the environment, physical infrastructure restrictions, and the impacts of the proposed water source, we conclude that Alternatives 1 does not present a significant environmental advantage over the proposed action.
5.0 CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations presented in this EIS are those of the Commission’s environmental staff. We conclude that construction and operation of the Hackberry Storage Project would result in limited adverse environmental impacts. Most adverse environmental impacts would be temporary or short-term during construction. This determination is based on a review of the information provided by LA Storage and further developed from data requests; scoping; literature research; alternatives analysis; and contacts with federal, state, and local agencies as well as individual members of the public.

Overall, Commission staff conclude that approval of the Project would not result in significant environmental impacts, with the exception of climate change impacts resulting from GHG emissions that we are not characterizing as significant or insignificant. We also conclude that no system, route, or other alternative would provide a significant environmental advantage over the Project, as proposed.

We recommend that the below measures be attached as conditions to any authorization issued by the Commission.

1. LA Storage shall follow the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests) and as identified in the EIS, unless modified by the Order. LA Storage must:
   a. request any modification to these procedures, measures, or conditions in a filing with the Secretary;
   b. justify each modification relative to site-specific conditions;
   c. explain how that modification provides an equal or greater level of environmental protection than the original measure; and
   d. receive approval in writing from the Director of OEP, or the Director’s designee, before using that modification.

2. The Director of OEP, or the Director’s designee, has delegated authority to address any requests for approvals or authorizations necessary to carry out the conditions of the Order, and take whatever steps are necessary to ensure the protection of environmental resources during construction and operation of the Project. This authority shall allow:
   a. the modification of conditions of the Order;
   b. stop-work authority; and
the imposition of any additional measures deemed necessary to ensure continued compliance with the intent of the conditions of the Order as well as the avoidance or mitigation of unforeseen adverse environmental impact resulting from Project construction and operation.

3. **Prior to any construction**, LA Storage shall file an affirmative statement with the Secretary, certified by a senior company official, that all company personnel, EIs, and contractor personnel will be informed of the EI’s authority and have been or will be trained on the implementation of the environmental mitigation measures appropriate to their jobs **before** becoming involved with construction and restoration activities.

4. The authorized facility locations shall be as shown in the EIS, as supplemented by filed Project alignment sheets. **As soon as they are available, and before the start of construction**, LA Storage shall file with the Secretary any revised detailed survey alignment maps/sheets at a scale not smaller than 1:6,000 with station positions for all facilities approved by the Order. All requests for modifications of environmental conditions of the Order or site-specific clearances must be written and must reference locations designated on these alignment maps/sheets.

LA Storage’s exercise of eminent domain authority granted under NGA section 7(h) in any condemnation proceedings related to the Order must be consistent with these authorized facilities and locations. LA Storage’s right of eminent domain granted under the NGA section 7(h) does not authorize it to increase the size of its natural gas facilities to accommodate future needs or to acquire a right-of-way for a pipeline to transport a commodity other than natural gas.

5. LA Storage shall file with the Secretary detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying all route realignments or facility relocations, and staging areas, pipe storage yards, new access roads, and other areas that would be used or disturbed and have not been previously identified in filings with the Secretary. Approval for each of these areas must be explicitly requested in writing. For each area, the request must include a description of the existing land use/cover type, documentation of landowner approval, whether any cultural resources or federally listed threatened or endangered species would be affected, and whether any other environmentally sensitive areas are within or abutting the area. All areas shall be clearly identified on the maps/sheets/aerial photographs. Each area must be approved in writing by the Director of OEP, or the Director’s designee, **before construction in or near that area**.

a. This requirement does not apply to extra workspaces allowed by the Commission’s Plan and/or minor field realignments per landowner needs
and requirements that do not affect other landowners or sensitive environmental areas such as wetlands.

b. Examples of alterations requiring approval include all route realignments and facility location changes resulting from:

   i. implementation of cultural resources mitigation measures;
   
   ii. implementation of endangered, threatened, or special concern species mitigation measures;
   
   iii. recommendations by state regulatory authorities; and

   iv. agreements with individual landowners that affect other landowners or could affect sensitive environmental resources.

6. **Within 60 days of the acceptance of the authorization and before construction begins**, LA Storage shall file an Implementation Plan with the Secretary for review and written approval by the Director of the OEP, or the Director’s designee. LA Storage must file revisions to the plan as schedules change. The plan shall identify:

   a. how LA Storage will implement the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests), identified in the EIS, and required by the Order;
   
   b. how LA Storage will incorporate these requirements into the contract bid documents, construction contracts (especially penalty clauses and specifications), and construction drawings so that the mitigation required at each site is clear to onsite construction and inspection personnel;
   
   c. the number of EIs assigned per spread, and how the company will ensure that sufficient personnel are available to implement the environmental mitigation;
   
   d. company personnel, including EIs and contractors, who will receive copies of the appropriate material;
   
   e. the location and dates of the environmental compliance training and instructions LA Storage will give to all personnel involved with construction and restoration (initial and refresher training as the Project progresses and personnel change);
   
   f. the company personnel (if known) and specific portion of LA Storage’s organization having responsibility for compliance;
   
   g. the procedures (including use of contract penalties) LA Storage will follow if noncompliance occurs; and
h. for each discrete facility, a Gantt or PERT chart (or similar Project scheduling diagram), and dates for:
   i. the completion of all required surveys and reports;
   ii. the environmental compliance training of onsite personnel;
   iii. the start of construction; and
   iv. the start and completion of restoration.

7. LA Storage shall employ at least one EI for the Project. The EI shall be:
   a. responsible for monitoring and ensuring compliance with all mitigation measures required by the Order and other grants, permits, certificates, or other authorizing documents;
   b. responsible for evaluating the construction contractor’s implementation of the environmental mitigation measures required in the contract (see condition 6 above) and any other authorizing document;
   c. empowered to order correction of acts that violate the environmental conditions of the Order, and any other authorizing document;
   d. a full-time position, separate from all other activity inspectors;
   e. responsible for documenting compliance with the environmental conditions of the Order, as well as any environmental conditions/permit requirements imposed by other federal, state, or local agencies; and
   f. responsible for maintaining status reports.

8. Beginning with the filing of its Implementation Plan, LA Storage shall file updated status reports with the Secretary on a biweekly basis until all construction and restoration activities are complete. On request, these status reports will also be provided to other federal and state agencies with permitting responsibilities. Status reports shall include:
   a. an update on LA Storage’s efforts to obtain the necessary federal authorizations;
   b. the construction status of the Project, work planned for the following reporting period, and any schedule changes for stream crossings or work in other environmentally sensitive areas;
   c. a listing of all problems encountered and each instance of noncompliance observed by the EI(s) during the reporting period (both for the conditions imposed by the Commission and any environmental conditions/permit requirements imposed by other federal, state, or local agencies);
d. a description of the corrective actions implemented in response to all instances of noncompliance;

e. the effectiveness of all corrective actions implemented;

f. a description of any landowner/resident complaints which may relate to compliance with the requirements of the Order, and the measures taken to satisfy their concerns; and

g. copies of any correspondence received by LA Storage from other federal, state, or local permitting agencies concerning instances of noncompliance, and LA Storage’s response.

9. LA Storage must receive written authorization from the Director of OEP, or the Director’s designee, before commencing construction of any Project facilities. To obtain such authorization, LA Storage must file with the Secretary documentation that it has received all applicable authorizations required under federal law (or evidence of waiver thereof).

10. LA Storage must receive written authorization from the Director of OEP, or the Director’s designee, before placing any of the Project facilities into service. Such authorization will only be granted following a determination that rehabilitation and restoration of the areas affected by the Project are proceeding satisfactorily.

11. **Within 30 days of placing the authorized facilities in service,** LA Storage shall file an affirmative statement with the Secretary, certified by a senior company official:

   a. that the facilities have been constructed in compliance with all applicable conditions, and that continuing activities will be consistent with all applicable conditions; or

   b. identifying which of the conditions in the Order LA Storage has complied with or will comply with. This statement shall also identify any areas affected by the Project where compliance measures were not properly implemented, if not previously identified in filed status reports, and the reason for noncompliance.

12. All conditions attached to the water quality certification issued by LDEQ constitute mandatory conditions of this Certificate Order. **Prior to construction,** LA Storage shall file, for review and written approval by the Director of OEP, or the Director’s designee, any revisions to its Project design necessary to comply with the water quality certification conditions.

13. **With its Implementation Plan,** LA Storage shall file with the Secretary, for review and written approval by the Director of the OEP, or the Director’s
designee, feasibility/hydrofracture assessments for each proposed HDD that include:

a. the results of site-specific geotechnical investigation;

b. an alignment plan and profile that incorporates site-specific geotechnical information;

c. a description of any subsurface conditions that were identified during geotechnical investigations that may increase the risk of HDD complications (e.g., loss of drilling fluids; drill transition between overburden/bedrock, drill hole collapse, existing groundwater and/or soil contamination) as well as the measures that would be implemented to minimize these risks; and

d. an assessment of the potential for hydrofracture and inadvertent return using the USACE’s Delft method (or an equivalent method).

14. LA Storage **shall not begin construction** of the Project **until** it files with the Secretary a copy of the Coastal Use Permit issued by the Louisiana OCM.

15. **Prior to construction of the Pelican Compressor Station**, LA Storage shall file with the Secretary a visual screening plan for review and written approval by the Director of OEP, or the Director’s designee, to minimize visual impacts on the residences located south of the Pelican Compressor Station. At a minimum, the plan shall include vegetative plantings to provide a visual buffer.

16. LA Storage **shall not begin construction** of facilities and/or use of all staging, storage, or temporary work areas and new or to-be-improved access roads **until**:

a. LA Storage files with the Secretary:
   i. remaining cultural resources survey report(s);
   ii. site evaluation report(s) and avoidance/treatment plan(s), as required; and
   iii. comments on the cultural resources reports and plans from the Louisiana SHPO;

b. the Advisory Council on Historic Preservation is afforded an opportunity to comment if historic properties would be adversely affected; and

c. the FERC staff reviews and the Director of OEP, or the Director’s designee, approves the cultural resources reports and plans, and notifies LA Storage in writing that treatment plans/mitigation measures (including archaeological data recovery) may be implemented and/or construction may proceed.
All materials filed with the Commission containing **location, character, and ownership** information about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: “CUI//PRIV- DO NOT RELEASE.”

17. **For all HDD and well drilling operations**, LA Storage shall implement the proposed noise barriers and sound wall to restrict the noise attributable to the drilling operations to no more than an $L_{dn}$ of 55 dBA at all NSAs. LA Storage shall monitor noise levels and document the noise levels in the **biweekly** status reports.

18. LA Storage shall file noise surveys with the Secretary **no later than 60 days** after placing the Pelican Compressor Station into service. If a full power load condition noise survey is not possible, LA Storage should file an interim survey at the maximum possible power load **within 60 days** of placing the station into service and file the full power load survey **within 6 months**. If the noise attributable to the operation of the station under interim or full horsepower load conditions exceeds an $L_{dn}$ of 55 dBA at any nearby NSA, LA Storage shall:

   a. file a report with the Secretary, for review and written approval by the Director of OEP, or the Director’s designee on what changes are needed;

   b. install additional noise controls to meet that level **within 1 year** of the in-service date; and

   c. confirm compliance with the $L_{dn}$ of 55 dBA requirement by filing a second noise survey with the Secretary **no later than 60 days** after it installs the additional noise controls.
6.0 REFERENCES


Sandia (Sandia National Laboratories). 2015. Geocaracterization of the West Hackberry Salt Dome, Cameron Parish, Louisiana, A requirement of the Louisiana Department of Natural Resources Regulation Part XVII, subpart 3, Statewide Order No. 29-M (rev 3) Chapter 3 for U.S. Strategic Petroleum Reserve and LA Storage, LLC.


USACE. 2017. Modification to Department of the Army Permit No. MVN-2010-02716-WLL issued by the New Orleans District to West Calcasieu Port.


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