

**6450-01-P**

**DEPARTMENT OF ENERGY**

**Record of Decision and Floodplain Statement of Findings: Site Selection for the Expansion of the Strategic Petroleum Reserve**

**AGENCY:** Office of Fossil Energy, U.S. Department of Energy (DOE).

**ACTION:** Record of Decision (ROD).

**SUMMARY:** DOE has prepared an environmental impact statement (EIS) (DOE/EIS-0385), pursuant to the National Environmental Policy Act of 1969 (NEPA), to assess the environmental impacts associated with a proposal to expand the crude oil storage capacity of the Strategic Petroleum Reserve (SPR) from 727 million barrels (MMB) to 1 billion barrels, and to fill the Reserve to the full authorized volume of 1 billion barrels. The proposal was to develop one new storage facility and expand the capacity of two or three existing SPR storage facilities.

After careful consideration of the environmental impacts of the alternatives, along with an evaluation of SPR distribution capabilities, geological technical assessments, projected costs, and operational impacts associated with existing commercial operations, DOE has decided to develop a new 160 MMB SPR storage facility at Richton (Mississippi), expand the storage capacity at the existing Bayou Choctaw (Louisiana) SPR facility by 33 MMB, expand the storage capacity at the existing Big Hill (Texas) SPR facility by 80 MMB, and fill the Reserve to 1 billion barrels of oil as authorized by Congress.

This ROD has been prepared in accordance with the regulations of the Council on Environmental Quality (40 CFR Parts 1500-1508) for implementing NEPA and DOE's NEPA Implementing Procedures (10 CFR Part 1021). The accompanying Floodplain Statement of Findings has been prepared in accordance with DOE's regulations "Compliance with Floodplain and Wetland Environmental Review Requirements" (10 CFR Part 1022). Because the decision differs somewhat from the alternatives evaluated in the EIS, DOE has prepared a Supplement Analysis (SA) (DOE/EIS-0385-SA-1) to determine whether a supplement to the final EIS is required. DOE has determined that the minor modification to the Bayou Choctaw expansion site, i.e., an increase in capacity of 33 MMB compared to 20 MMB as described in the final EIS, is not a substantial change to the proposed action that is relevant to environmental concerns, and there are no significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts, within the meaning of 40 CFR 1502.9(c)(1) and 10 CFR 1021.314(c). Therefore, a supplement to the SPR final EIS is not needed.

**ADDRESSES:** The final EIS is available on the DOE NEPA website at [www.eh.doe.gov/nepa/documentspub.html](http://www.eh.doe.gov/nepa/documentspub.html) and on the project's website at <http://www.fossil.energy.gov/programs/reserves/spr/expansion-eis.html>, and the ROD and SA will be available on both websites in the near future. Copies of the final EIS and this ROD and SA may be requested by contacting Donald Silawsky at the Office of Petroleum Reserves (FE-47), U.S. Department of Energy, 1000 Independence Avenue, S.W., Washington, DC 20585, by

telephone at 202-586-1892, by facsimile at 202-586-4446, or by electronic mail at donald.silawsky@hq.doe.gov.

**FOR FURTHER INFORMATION CONTACT:** For further information on the site selection for the expansion of the Strategic Petroleum Reserve, contact David Johnson at the Office of Petroleum Reserves (FE-42), U.S. Department of Energy, 1000 Independence Avenue, S.W., Washington, DC 20585, by telephone at 202-586-4733, by facsimile at 202-586-7919, or by electronic mail at david.johnson@hq.doe.gov. For general information on the DOE NEPA process, contact Carol Borgstrom, Director, Office of NEPA Policy and Compliance (GC-20), U.S. Department of Energy, 1000 Independence Avenue, S.W., Washington, DC 20585, by telephone at 202-586-4600, or leave a message at 800-472-2756.

## **SUPPLEMENTARY INFORMATION:**

### **Purpose and Need for Agency Action**

On August 8, 2005, the President signed the Energy Policy Act of 2005 (EPACT, P.L. 109-58). Section 303 of EPACT states that: “Not later than 1 year after the date of enactment of this Act, the Secretary shall complete a proceeding to select, from sites that the Secretary has previously studied, sites necessary to enable acquisition by the Secretary of the full authorized volume of the Strategic Petroleum Reserve.”

EPACT Section 301(e) directs the Secretary to “... acquire petroleum in quantities sufficient to fill ...” the SPR to 1 billion barrels, the capacity of the SPR authorized by the Energy Policy and Conservation Act. Thus, the purpose and need for agency action is to select and develop sites necessary to add 273 MMB of new storage capacity to the SPR, so that SPR capacity can be expanded from 727 MMB to 1 billion barrels.

On January 23, 2007, the President proposed an expansion of the SPR to 1.5 billion barrels. Any DOE proposal in this regard, however, is independent of the current expansion to 1 billion barrels and would be subject to a separate NEPA review process.

### **NEPA Review**

DOE determined that the proposed SPR site selection and expansion constitute a major Federal action that may have a significant impact on the environment within the meaning of NEPA. For this reason, DOE prepared an EIS, *Site Selection for the Expansion of the Strategic Petroleum Reserve Final Environmental Impact Statement* (DOE/EIS-0385). DOE published a Notice of Intent to Prepare an EIS on September 1, 2005 (70 FR 52088), and held four public scoping meetings. Copies of the comment letters received during the scoping period and complete public scoping meeting transcripts are available at <http://www.fossil.energy.gov/programs/reserves/spr/expansion-eis.html>.

DOE filed the draft EIS with the Environmental Protection Agency (EPA) on May 19, 2006. EPA published a Notice of Availability (NOA) in the *Federal Register* on May 26, 2006 (71 FR 30400), starting the 45-day public comment period that ended on July 10, 2006. DOE considered all comments in preparing the final EIS, which was filed with EPA on December 8,

2006. Copies of the comment letters and oral testimony received during the public comment period are available at the Internet site listed above. The comments and DOE's responses are also set forth in the final EIS.

The EPA published a NOA of the final EIS in the *Federal Register* on December 15, 2006 (71 FR 75540). As discussed further below, DOE prepared an SA, *Supplement Analysis to the Site Selection for the Expansion of the Strategic Petroleum Reserve Final Environmental Impact Statement* (DOE/EIS-0385-SA-1), to address a minor modification to the Bayou Choctaw expansion site, i.e., an increase in capacity of 33 MMB compared to 20 MMB discussed in the final EIS. DOE determined that a supplement to the final EIS is not required.

### Proposed Action

DOE's proposed action is to develop one new site, expand capacity at two or three existing sites, and fill the SPR to its full authorized volume of 1 billion barrels. Storage capacity would be developed by solution mining of underground storage caverns in salt domes and disposing of the resulting salt brine by ocean discharge or underground injection. New pipelines, marine terminal facilities, and other infrastructure would also be required. Proposed construction and operation activities include clearing and preparing sites; constructing pipelines and facilities for raw water intake, disposing of brine, and distributing crude oil; constructing transmission lines to provide electrical power to the sites; and constructing or augmenting support buildings and other facilities.

### Alternatives

In developing the range of reasonable alternatives, DOE first considered expansions of three existing storage sites, which would capitalize on existing site infrastructure and operations and thereby minimize development time and construction costs. DOE, however, cannot reach its goal of 273 MMB of additional storage capacity by expanding only at existing sites. Therefore, the alternatives considered are a combination of one new site and two or three expansion sites, as shown in the table below.

**Alternatives Considered in Final EIS and SA**

New Sites and Capacity Analyzed	Expansion Sites and Added Capacity	Total New Capacity*
Bruinsburg, MS (160 MMB)	113 MMB <sup>a</sup>	
Chacahoula, LA (160 MMB)	Bayou Choctaw (33 MMB) Big Hill (80 MMB)	
Richton, MS (160 MMB)	<b>OR</b> 115 MMB <sup>b</sup>	273 MMB
Stratton Ridge, TX (160 MMB)	Bayou Choctaw (20 MMB) Big Hill (80 MMB) West Hackberry (15 MMB)	or 275 MMB
No-action alternative	None	276 MMB None

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\* Based on the proposed action for this EIS, DOE would not fill the SPR beyond 1 billion barrels if it developed more than 273 MMB of new capacity.

<sup>a</sup> Alternative considered in SA

<sup>b</sup> Alternative considered in final EIS

A brief description of each new site and expansion site is below:

### ***Potential New Sites and Associated Infrastructure***

As required by EPACT Section 303, DOE limited its review of potential new sites for expansion of the SPR to: (1) sites that DOE addressed in a 1992 draft EIS for site expansion (DOE/EIS–0165–D); and (2) sites proposed by a state in which DOE has previously studied a site. Five sites met those conditions and were considered in the draft EIS: Richton, MS, and Stratton Ridge, TX, which were addressed in the 1992 draft EIS; Chacahoula and Clovelly, LA, which the Governor of Louisiana requested that the Secretary of Energy consider; and Bruinsburg, MS, which the Governor of Mississippi requested that the Secretary of Energy consider.

Subsequent to the publication of the draft EIS, DOE determined that development of a new SPR site at the Louisiana Offshore Oil Port's (LOOP) Clovelly facility was not feasible because of geotechnical issues and thus is not a reasonable alternative. LOOP's development on the salt dome and the small size of the dome required that DOE propose placing new SPR caverns below and in between Clovelly's existing caverns. DOE found that this configuration presented several risk factors to the integrity of the Clovelly caverns and infrastructure and overall operation of the proposed site. DOE therefore removed the site from detailed consideration in the final EIS.

Sandia National Laboratories completed a Geological Technical Assessment (Sandia Assessment) of the Bruinsburg salt dome just before the final EIS was published that indicated that the salt dome may not be able to provide the needed storage capability; however, DOE retained it as a potential new site in the final EIS because DOE needed time to further analyze the results of the study. See below for additional information regarding the Bruinsburg site and the Sandia Assessment.

#### ***Bruinsburg, MS***

The Bruinsburg salt dome is located in Claiborne County, MS, 10 miles (16 kilometers) west of the town of Port Gibson and 40 miles (64 kilometers) southwest of the City of Vicksburg. The proposed storage site of approximately 266 acres (108 hectares) encompasses a cypress swamp, cotton fields, forested areas, and a bluff overlooking the Mississippi River. The infrastructure associated with the Bruinsburg storage site would include new terminals with a tank farm at Peetsville, MS, and Anchorage, LA. Water for cavern development, maintenance, and drawdown would come from the Mississippi River.

The Sandia Assessment is based on a comprehensive evaluation of all data readily available from both published and oil-industry sources. These data are from well and seismic studies and include data compiled by the Mississippi Department of Environmental Quality, Office of Geology, as well as proprietary seismic data. In addition, Sandia contracted for two new seismic survey lines on the Bruinsburg salt dome in order to define the extent of the salt formation available for cavern development. DOE has analyzed the results of the Sandia Assessment and

concluded that the Bruinsburg salt dome only has the capacity to store up to 70 MMB of oil, which is less than the 160 MMB capacity required.

#### *Chacahoula, LA*

The Chacahoula salt dome site is located 40 miles (64 kilometers) north of the Gulf of Mexico in northwestern Lafourche Parish, southwest of Thibodaux, LA. The proposed storage site of approximately 227 acres (92 hectares) lies largely underwater in wetlands. No new terminals would be required for this proposed new site since the terminal(s) already exist and the current distribution capacity is sufficient to handle the potential increase in oil storage and distribution associated with the Chacahoula site. Water for cavern development, maintenance, and drawdown would come from the Intracoastal Waterway.

#### *Richton, MS*

The Richton salt dome is located in northeastern Perry County, MS, 18 miles (29 kilometers) east of Hattiesburg, MS. The proposed storage site of approximately 238 acres (96 hectares) is comprised of an actively managed pine plantation with a small emergent wetland area. The infrastructure associated with the Richton storage site would include new terminals with a tank farm at Liberty, MS, and Pascagoula, MS. Water for cavern development, maintenance, and drawdown would come from both the Leaf River and the Gulf of Mexico at Pascagoula.

#### *Stratton Ridge, TX*

The Stratton Ridge salt dome is located in Brazoria County, TX, 3 miles (4.8 kilometers) east of Lake Jackson-Angleton, TX. The proposed storage site of approximately 269 acres (109 hectares) is currently used for cattle ranching and has some forested wetlands. The infrastructure associated with the Stratton Ridge storage site would include a new terminal with a tank farm in Texas City, TX. Water for cavern development, maintenance, and drawdown would come from the Intracoastal Waterway.

### ***Potential Expansion Sites and Associated Infrastructure***

#### *Bayou Choctaw, LA*

The Bayou Choctaw storage site occupies a 356-acre (144-hectare) site in Iberville Parish, LA, about 12 miles (19 kilometers) southwest of Baton Rouge. The Mississippi River is located about 4 miles (6.4 kilometers) east of the salt dome, and the Intracoastal Waterway is about 0.5 miles (0.8 kilometers) to the west. The general area is swampy with an elevation ranging from less than 5 feet (1.5 meters) to more than 10 feet (3 meters) above mean sea level. Water for cavern development, maintenance, and drawdown would come from the Intracoastal Waterway.

In the final EIS, DOE considered the expansion of the Bayou Choctaw site by 20 MMB, which would involve the development of two new 10 MMB caverns within the existing boundaries of the facility, a 0.6-mile (0.9-kilometer) brine disposal pipeline, and a 96-acre (39-hectare) brine injection field. In the SA, DOE considered the expansion of the Bayou Choctaw site by 33 MMB, which would involve the development of two new 11.5 MMB caverns within the existing

boundaries of the facility and use of an existing commercial cavern. The length of the brine disposal pipeline and the size of the brine disposal injection field would be the same if Bayou Choctaw is expanded to 20 MMB or 33 MMB. Expansion beyond 33 MMB is limited due to the size of the salt dome.

### *Big Hill, TX*

The Big Hill SPR storage site is located in Jefferson County, TX, 17 miles (27 kilometers) southwest of Port Arthur. The existing site occupies approximately 250 acres (101 hectares). The surrounding area is predominantly rural with agricultural production as the primary land use. Water for cavern development, maintenance, and drawdown would come from the Intracoastal Waterway. The Big Hill storage site has a current capacity of 170 MMB and could be expanded by acquiring land and developing several additional caverns.

### *West Hackberry, LA*

The West Hackberry SPR storage site occupies a 565-acre (229-hectare) site in Cameron and Calcasieu Parishes in southwestern Louisiana. The site is located approximately 20 miles (32 kilometers) southwest of the city of Lake Charles and 16 miles (26 kilometers) north of the Gulf of Mexico. The area is predominantly disturbed grassland habitat. No new infrastructure would be needed for this site to be expanded. The West Hackberry storage site has a current capacity of 227 MMB and could also be expanded by acquiring land and developing or acquiring additional caverns. However, the West Hackberry site no longer has the offshore brine disposal system necessary to support a cavern development operation. There are three existing commercial caverns on the salt dome that could be acquired to increase the site capacity by 15 MMB, to a total capacity of 242 MMB, without developing new caverns. Therefore, DOE has considered a maximum potential expansion of 15 MMB at the West Hackberry site.

### *Preferred Alternative*

The final EIS identifies the Richton alternative with expansion of Bayou Choctaw, Big Hill, and West Hackberry as the Preferred Alternative. The SA revised the Preferred Alternative to be the Richton alternative with expansion of Bayou Choctaw and Big Hill.

### **Analysis of Environmental Impacts**

In making its decision, DOE considered the environmental impacts that could occur from the construction and operation of a new SPR storage site and the expansion of two or three of the existing sites. The final EIS presents the environmental impacts for 10 resource areas. Of these 10 areas, the largest potential impacts are to land use, water resources, biological resources, and cultural resources. Although impacts occur in other resource areas, these impacts are smaller and of similar magnitude across all alternatives. Below is a brief summary of the impacts associated with these four resource areas for each alternative. For each alternative, there is a discussion of each new site and the expansion sites associated with each new site.

### *Land Use*

*Bruinsburg Alternatives:* There is a potential land use conflict for the Bruinsburg site where the expansion of an existing pipeline route would cross the Natchez Trace National Scenic Trail, Natchez Trace Parkway, and the proclamation boundary of the Homochitto National Forest.

There are no potential land use conflicts at the Bayou Choctaw and Big Hill expansions sites. At West Hackberry, there were no land use conflicts at the time that the final EIS was issued because there were no ongoing commercial operations in the caverns in the West Hackberry salt dome. Comments on the final EIS indicate that Sempra Pipeline and Storage Corporation plans to use the caverns for commercial operations. This potential conflict is discussed further below in the Comments Received on the Final EIS and Basis for Decision sections.

*Chacahoula Alternatives:* There are no potential land use conflicts for the Chacahoula site. Potential land use conflicts at the expansion sites are the same as described for the Bruinsburg alternatives.

*Richton Alternatives:* For the Richton site, the terminal, tank farm, refurbished docks, and raw water intake structure at Pascagoula would be at the former Naval Station Pascagoula, a Base Realignment and Closure site for which future uses have not been determined. Potential land use conflicts at the expansion sites are the same as described for the Bruinsburg alternatives.

*Stratton Ridge Alternatives:* The proposed Stratton Ridge site would have potential land use conflicts with Dow Chemical Company's use of salt from the Stratton Ridge salt dome and where a corridor containing a raw water intake pipeline, brine disposal pipelines, and two power lines would cross the Brazoria National Wildlife Refuge and privately owned land in the Refuge's proclamation area. In addition, the crude oil pipeline would cross the Refuge in an existing pipeline rights-of-way. Potential land use conflicts at the expansion sites are the same as described for the Bruinsburg alternatives.

### ***Water Resources***

*Bruinsburg Alternatives:* Construction and operation of the Bruinsburg site and associated infrastructure would potentially affect 35 water bodies. Water for cavern development, maintenance, and drawdown would come from the Mississippi River, and would not have a significant impact on water resources.

Construction and operation associated with the expansion of the Bayou Choctaw, Big Hill, and West Hackberry sites and associated infrastructure would potentially affect 12, 4, and 3 water bodies, respectively. Water for cavern development, maintenance, and drawdown at Bayou Choctaw would come from Cavern Lake, which is fed by the Intracoastal Waterway. Water for cavern development, maintenance, and drawdown at Big Hill would come from the Intracoastal Waterway. Water for maintenance and drawdown at West Hackberry would come from the Intracoastal Waterway. None of these uses of water would have a significant impact on water resources. Since DOE would acquire caverns at West Hackberry, construction of new caverns would not occur at this site. A small increase in the size of the security buffer around the site would be needed, but this would not have a significant impact on water resources.

*Chacahoula Alternatives:* Construction and operation of the Chacahoula site and associated infrastructure would potentially affect 18 water bodies. Water for cavern development, maintenance, and drawdown would come from the Intracoastal Waterway, which would not have a significant impact on water resources. Impacts on water resources at the expansion sites are the same as described for the Bruinsburg alternatives.

*Richton Alternatives:* Construction and operation of the Richton site and associated infrastructure would potentially affect 63 water bodies. The primary raw water source for cavern development, maintenance, and drawdown would be the Leaf River, which has a highly variable flow. A secondary raw water intake system, presented in the final EIS, would withdraw water from the Gulf of Mexico at Pascagoula and transport it to the Richton storage site for cavern development, maintenance, and drawdown during low flow conditions in the Leaf River. If low flow conditions exist in the Leaf River during a drawdown event for a Presidentially declared national emergency, DOE would withdraw water from the Gulf of Mexico and from the Leaf River to reach the necessary distribution rate. DOE would not withdraw water below the minimum instream flow that is protective of aquatic resources, except for a drawdown for a Presidentially declared national emergency. The U.S. Fish and Wildlife Service (USFWS) would establish the minimum instream flow during DOE's consultation with USFWS under Section 7 of the Endangered Species Act; the Mississippi Natural Heritage Program (MS NHP) would provide input during this consultation. Impacts on water resources at the expansion sites are the same as described for the Bruinsburg alternatives.

*Stratton Ridge Alternatives:* Construction and operation of the Stratton Ridge site and associated infrastructure would potentially affect 17 water bodies. Water for cavern development, maintenance, and drawdown would come from the Intracoastal Waterway, which would not have a significant impact on water resources. Impacts on water resources at the expansion sites are the same as described for the Bruinsburg alternatives.

### ***Biological Resources***

This summary of impacts to biological resources considers Federally threatened and endangered species, essential fish habitat (EFH), and wetlands. Impacts to these resources at expansion sites are common to all alternatives and are described first, separately from the descriptions of impacts of the alternatives, which focus on impacts at the new sites.

Expansion at existing sites would not affect any Federally threatened or endangered species. The Bayou Choctaw and West Hackberry expansions would not affect EFH. The Big Hill expansion would cause a temporary impact to about five acres of EFH due to pipeline construction.

The discussions below regarding total wetland acres affected for the new site alternatives include the wetland impacts associated with the expansion sites, in all cases including expansion at West Hackberry (without which five fewer acres of wetlands would be affected).

*Expansion sites:* Construction and operation of the Bayou Choctaw expansion site would potentially affect 34 acres of wetlands. About 24 acres of ecologically important forested

wetlands would be filled and about 3 acres of forested wetlands would be permanently converted to emergent wetland. Construction and operation of the Big Hill expansion site would potentially affect 189 acres of wetlands. About 9 acres of ecologically important forested wetlands would be filled and about 1 acre of forested wetlands would be permanently converted to emergent wetland. Expanding the West Hackberry site would convert 5 acres of palustrine scrub-shrub wetlands to emergent wetlands.

*Bruinsburg Alternatives:* The Bruinsburg site and associated infrastructure may affect the fat pocketbook mussel and the pallid sturgeon, both of which are Federally endangered species. The site and associated infrastructure would not affect EFH.

The Bruinsburg alternatives would potentially affect about 708 acres (287 hectares) of wetlands. This includes a permanent loss through filling of about 156 acres (63 hectares) and a permanent conversion to emergent wetlands of about 123 acres (50 hectares) of relatively rare and ecologically important forested wetlands. About 118 acres (48 hectares) of forested wetlands would be disturbed and cleared by construction activities within the temporary easement of the rights-of-way during construction. The total affected acreage includes the three expansion sites described above.

*Chacahoula Alternatives:* The Chacahoula site and associated infrastructure may affect the bald eagle, a Federal threatened species that is proposed for de-listing, and the brown pelican, a Federal endangered species. Chacahoula would affect about 1,067 acres of EFH, for the most part a temporary impact due to pipeline construction.

The Chacahoula alternatives would potentially affect 2,502 acres (1,013 hectares) of wetlands. About 182 acres (74 hectares) of ecologically important forested wetlands would be filled and about 699 acres (283 hectares) of forested wetlands would be permanently converted to emergent wetland. About 505 acres (204 hectares) of forested wetlands would be disturbed and cleared by construction activities within the temporary easement of the rights-of-way. The total affected acreage includes the three expansion sites described above.

*Richton Alternatives:* The Richton site and associated infrastructure may affect two Federal listed species (the yellow-blotched map turtle and the Gulf sturgeon) and a Federal candidate species (the pearl darter, considered by DOE as a “listed species”). Based on comments from and consultation with USFWS and MS NHP, the withdrawal of water from the Leaf River may have an adverse effect on the yellow-blotched map turtle, Gulf sturgeon, and the pearl darter. The Leaf River and Mississippi Sound are designated critical habitat for the Gulf sturgeon. Development of the Richton site would temporarily affect about 183 acres of EFH due to construction, and fill an additional 43 acres of EFH for a new terminal and raw water intake structure at Pascagoula. Brine pipeline construction may affect submerged aquatic vegetation.

The Richton alternatives would potentially affect 1,557 acres (630 hectares) of wetlands. The majority of the wetland areas affected (more than 1,400 acres [583 hectares]) by the Richton alternatives would be located in the long pipeline rights-of-way, which total over 200 miles and which pass through some forested and emergent wetlands. The Richton alternatives would permanently fill about 59 acres (24 hectares) of forested wetlands and about 295 acres (119

hectares) of forested wetlands would be permanently converted to emergent wetlands. About 506 acres (205 hectares) of forested wetlands would be disturbed and cleared by construction activities within the temporary easement of the rights-of-way. The total affected acreage includes the three expansion sites described above.

*Stratton Ridge Alternatives:* The Stratton Ridge site and associated infrastructure may affect the bald eagle, a Federal threatened species that is proposed for de-listing. Seventeen acres of EFH would be permanently affected due to the construction and operation of a raw water intake structure.

The Stratton Ridge alternatives would potentially affect 841 acres (349 hectares) of wetlands. This includes a permanent loss through filling of 227 acres (92 hectares) of relatively rare and ecologically important forested wetlands. About 70 acres (28 hectares) of forested wetlands would be permanently converted to emergent wetlands. About 9 acres (4 hectares) of forested wetlands would be disturbed and cleared by construction activities within the temporary easement of the rights-of-way. The total affected acreage includes the three expansion sites described above in detail for the Bruinsburg alternatives.

### ***Cultural Resources***

The proposed action would have the potential to damage or destroy archeological sites, Native American cultural sites, or historic buildings or structures; or to change the characteristics of a property that would diminish qualities that contribute to its historic significance or cultural importance. Below are the potential impacts for each alternative:

*Bruinsburg Alternatives:* SPR development at the Bruinsburg site could result in potential adverse effects on the historic setting of the Civil War landing of the Union Army in Mississippi and an associated route of troop movements in an area that could become eligible for the National Register of Historic Places as a core study area. A portion of the Bruinsburg site is likely to contain archeological remains of troop presence, and remains of at least one of the ships that sank during the invasion is likely to lie northwest of the facility boundary. There would be possible effects to Native American sites at Bayou Choctaw, Big Hill, and West Hackberry. As described in the final EIS, these adverse effects could be mitigated through measures such as data recovery from an archaeological site, preparation of education materials for the public, or use of vegetation to screen project facilities from visitors in the historic properties.

*Chacahoula Alternatives:* There would be likely adverse effects to Native American and historic sites along Chacahoula pipeline rights-of-way that could be mitigated. There would be possible effects to Native American sites at Bayou Choctaw, Big Hill, and West Hackberry. These adverse effects could be mitigated.

*Richton Alternatives:* There are likely adverse effects to Native American archaeological sites within the Richton storage site and along Richton pipeline rights-of-way that could be mitigated. There would be possible effects to Native American sites at Bayou Choctaw, Big Hill, and West Hackberry. These effects could be mitigated.

*Stratton Ridge Alternatives:* There are likely adverse effects to Native American archaeological sites within the Stratton Ridge storage site and along Stratton Ridge pipeline rights-of-way that could be mitigated. There would be possible effects to Native American sites at Bayou Choctaw, Big Hill, and West Hackberry. These effects could be mitigated.

### **Comments Received on the Final EIS**

DOE received eight comment letters on the final EIS: three letters from elected officials, two from Federal agencies, two from private companies, and one from a property owner. Below is a brief summary of each comment letter and DOE's response.

DOE received two comment letters regarding DOE's selection of Richton rather than Bruinsburg as its preferred new storage site. These comment letters were from U.S. Congressman Bennie G. Thompson, Second District, Mississippi, and Mr. Allen Burks of the Claiborne County Board of Supervisors. Congressman Thompson expressed some concerns with the selection of Richton and his belief that the Bruinsburg site is a more favorable site since it would have fewer environmental impacts and cost less than the Richton site. Mr. Burks requested the reconsideration of the Bruinsburg site because, in his view, it offers significant cost, environmental, operational, and distribution advantages over the Richton site. DOE did not select the Bruinsburg site for several reasons, as discussed below; however, the primary reason was the small size of the salt dome. As discussed above, based on the Sandia Assessment, DOE concluded that the Bruinsburg salt dome only has the capacity to store up to 70 MMB of oil, which is less than the 160 MMB capacity required. The Richton salt dome, on the other hand, is very large and can easily accommodate the planned capacity of 160 MMB.

Congressman Thompson also expressed concerns regarding the risk from hurricanes and brine disposal impacts associated with the Richton site. The SPR's storage of oil in underground storage caverns in salt formations is the safest and most secure form of storage available. The depth of the storage caverns and the self-sealing characteristic of the salt formation make salt dome storage virtually immune to natural disasters, such as hurricanes, and would not create a safety hazard for the population of Mississippi. In addition, Richton's location over 80 miles from the Gulf coast provides a significant land mass buffer against potential damages from the hurricane effects to surface buildings and structures at the storage sites. Congressman Thompson also expressed concern about brine disposal in the Gulf of Mexico. Based on DOE's experience with the SPR, the disposal of brine in the Gulf of Mexico has been proven to be reliable and cost effective and has had no harmful impacts on the fish population.

Mississippi Governor Haley Barbour supported the selection of Richton as preferred, but added that he believes Bruinsburg remains an important site for future consideration. Governor Barbour submitted for the record an independent geological evaluation prepared by Mr. Karl Kaufman of Valioso Petroleum Company, Inc., that questions the completeness and accuracy of the geological interpretations presented in the Sandia Assessment. Mr. Kaufman stated that the Sandia Assessment grossly understates the true areal extent of the Bruinsburg salt dome because well control data have been ignored, spatial uncertainty has not been resolved and additional data have not been considered. A second comment letter from Charles Morrison Consulting

Geophysicist, Inc., stated that the Sandia Assessment was highly flawed and possibly biased in regard to the geological and geophysical conclusions reached.

DOE and the geotechnological staff at Sandia National Laboratories have reviewed the concerns expressed by these geological consultants and have confirmed their prior geological findings, as to the insufficient salt dome size. The Sandia Assessment is based on a comprehensive evaluation of all data readily available from both published and oil-industry sources, including both existing and new well and seismic data, as discussed above.

Sempra Pipeline and Storage Corporation submitted a comment informing DOE of its recent purchase of the property adjacent to the existing West Hackberry site, formerly owned by Dominion Natural Gas Storage, Inc., which DOE discussed in the final EIS. Sempra stated that the property is a critical part of its natural gas infrastructure portfolio, and is expected to be in service in April 2009. Sempra also stated its understanding that DOE would weigh the cost of land acquisition during its decisionmaking. DOE has not selected West Hackberry for expansion for the reasons stated below.

A comment submitted by the owner of land that overlays a salt dome in Claiborne County inquired whether DOE will select other storage sites, in addition to the Richton site. DOE will only construct one new storage site in its planned expansion of the SPR to 1 billion barrels.

The National Park Service's Natchez Trace Parkway stated its support for the selection of Richton as the preferred alternative because it would have no environmental effect on the Parkway. The U.S. Department of Agriculture, Natural Resources Conservation Service field office in Temple, TX, acknowledged and approved of the characterization of important farmlands for the Big Hill and Stratton Ridges sites in the final EIS.

### **Environmentally Preferable Alternative**

The Chacahoula, Bruinsburg, Richton, and Stratton Ridge alternatives, which include the expansion of existing storage sites, all have the potential for adverse impacts on environmental resources. After considering the impacts to each resource, DOE has identified the Bruinsburg and Stratton Ridge alternatives as the environmentally preferable alternatives. The Chacahoula alternatives would affect hundreds more acres of ecologically important forested wetlands than any other alternative. The wetlands at the proposed Chacahoula site are also relatively contiguous and in a mostly undisturbed area in Louisiana, which adds to the ecological function and value of the wetlands. The Richton alternatives would affect several hundred acres of wetlands through more than 200 miles of pipeline and power line rights-of-way. Most of the wetland impacts associated with the Richton alternatives, however, would either be temporary or be a permanent conversion, meaning that some of the function of the wetlands would be retained. Nonetheless, total acreage of wetlands affected from rights-of-way for the Richton alternatives would be greater than from the Stratton Ridge or Bruinsburg alternatives. USFWS and MS NHP identified two Federally listed species and a Federal candidate species that may be adversely affected by the withdrawal of water from the Leaf River. The Richton alternatives are also the only alternatives that may affect designated critical habitat of a protected species.

## **Floodplain Statement of Findings**

DOE included a Floodplains and Wetlands Assessment as appendix B in the final EIS. The assessment and these findings have been prepared in accordance with DOE's regulations "Compliance with Floodplain and Wetland Environmental Review Requirements," 10 CFR Part 1022. DOE has concluded that there are no practicable alternatives to construction within floodplains for the individual proposed new SPR sites or expansion sites. Site locations, the location of onsite facilities, and site access roads are dictated by the locations and configuration of the salt domes, which constitute a unique geologic setting. In addition, DOE needs a raw water source that is adequate for solution mining of storage caverns. Similarly, because the salt dome sites are largely located in lowland areas surrounded by wide expanses of floodplain, there are no practicable alternatives to the location of the pipelines running to and from these sites within floodplains. The raw water intake structures and associated pipeline rights-of-way also are water dependent because of their function and therefore cannot be located outside of the floodplain associated with the water source. Pipelines, power lines, and roads cannot avoid crossing waterways and the associated floodplains. DOE considered alternatives for minimizing the potential impacts of pipeline and power line rights-of-way in floodplains and wetlands. The primary approach that DOE employed was to select pipeline and power line rights-of-way along existing rights-of-way. The Gulf Coast consists of a large number of gas and oil fields and associated facilities, which offer a network of existing pipeline and power line rights-of-way. This network of utilities enabled DOE to minimize the potential impacts to floodplains and wetlands. Floodplain maps of all the alternatives considered in the EIS are available in appendix B of the final EIS.

To comply with Executive Order 11988, Floodplain Management, and DOE's regulations, DOE will follow the U.S. Water Resources Council's (1978) *Floodplain Management Guidelines for Implementing Executive Order 11988* and the Federal Emergency Management Agency's *Unified National Program for Floodplain Management* while planning its mitigation strategy for the selected SPR alternative. Those actions would include the following: the use of minimum grading requirements to save as much of the site from compaction as possible; returning the site and rights-of-way to original contours where feasible; preserving free natural drainage when designing and constructing roads, fills, and large built-up centers; maintaining wetland and floodplain vegetation buffers to reduce sedimentation and discharge of pollutants to nearby water bodies, where feasible; constructing stormwater management facilities (where appropriate) to minimize any alteration in natural drainage and flood storage capacity; directional drilling of larger wetland and stream crossings, where feasible; locating buildings above the base flood elevation or flood proofing; complying with the floodplain ordinance/regulations for the jurisdiction where the selected alternative is located; and performing a hydrological demonstration (using the U.S. Army Corps of Engineers' Hydrologic Engineering Center, Hydrologic Modeling System or an approved floodplain model) to confirm that proposed fill and structures within the floodplain would not increase the base flood elevation.

Any structures located within the floodplain would be designed in accordance with the National Flood Insurance Program (NFIP) requirements for nonresidential buildings and structures located in special flood hazard areas. The NFIP regulations require vulnerable structures to be constructed above the 100-year flood elevation or to be watertight. DOE would coordinate with and secure approval from the floodplain coordinator at the appropriate state agency or the local government, if it has adopted the NFIP, during the design stage/site plan process.

## **Decision**

DOE has decided to: construct a new storage facility at Richton, MS, with a total capacity of 160 MMB of crude oil; expand the storage capacity of two existing SPR sites by a total of 113 MMB by developing 8 new 10-MMB caverns at Big Hill, TX, developing 2 new 11.5-MMB caverns at Bayou Choctaw, LA, and acquiring an existing privately-owned 10-MMB cavern that lies within the Bayou Choctaw site; and fill the SPR to 1 billion barrels, as authorized by Congress.

## **Basis for Decision**

DOE's decision is based on careful consideration of the environmental impacts of the alternatives along with an evaluation of SPR distribution capabilities, geological technical assessments, projected costs, and operational impacts associated with existing commercial operations.

The Stratton Ridge alternatives were not selected based on the new storage site's location within the Seaway crude oil distribution complex and the site's potential impacts to existing commercial operations. The SPR currently has two large sites, Bryan Mound and Big Hill, which can adequately serve refiners in the Seaway distribution complex. Additional storage in this area would not enhance the SPR's distribution capabilities or address the SPR's need for increased oil storage in the Capline distribution complex, which serves the refiners on the lower Mississippi River and the Capline Interstate Pipeline system. In addition, Dow Chemical Company, which occupies the majority of the Stratton Ridge salt dome, relies on the salt for its petrochemical operations. Dow submitted comments on the draft EIS stating that the property is critical to its future salt needs and continuing operations of Dow Chemical in Freeport, TX.

The primary reason for not selecting the Bruinsburg alternatives is the small size of the salt dome, which only has the capacity to store up to 70 MMB of oil, as discussed above. Also, due to its location, development of the caverns at Bruinsburg would require disposing of large volumes of brine through underground disposal wells. DOE has extensive experience with underground brine disposal wells for smaller volumes. Injection wells can be difficult and expensive to operate, the geology must be appropriate for wells to be drilled, and the receiving aquifer must be hydrologically suited for injections. Disposing of large volumes of brine through underground injection at Bruinsburg presents significant development risks.

The Chacahoula alternatives were not selected based on significant potential environmental impacts to the Louisiana wetlands. The entire site is located in an ecologically important bald

cypress forested wetland area. The alternatives were estimated to potentially impact a total of 2,502 acres of wetlands, requiring extensive wetland mitigation.

The Richton alternatives present significant benefits relative to the other alternatives by enhancing the SPR's oil distribution capabilities with connections to the Capline Pipeline System as well as refineries and marine facilities in Pascagoula. The Richton salt dome is large and undeveloped, which provides DOE with sufficient capacity to develop 160 MMB of storage space without potential impacts to other commercial operations or high geotechnical risk. The Richton site is also located approximately 80 miles from the Gulf coast, providing a significant buffer to the potentially damaging effects of hurricanes on surface structures at the storage site.

The decision announced by DOE in this ROD differs from the Preferred Alternative identified in the final EIS, which included expanding the storage capacity of 3 existing SPR facilities (West Hackberry and Bayou Choctaw, LA, and Big Hill, TX) by a total of 115 MMB, and constructing a new 160-MMB SPR facility at Richton, MS. The ROD replaces the planned expansion of West Hackberry (by 15 MMB) with a larger expansion of storage capacity at Bayou Choctaw (by 33 MMB instead of 20 MMB). This decision was based on: (a) the recent acquisition by a private company of the existing caverns at West Hackberry; (b) the need for additional stocks at Bayou Choctaw to address refiner demands; and (c) the need for an additional cavern at Bayou Choctaw to support the site's maximum drawdown operations.

In comparing expansion options at Bayou Choctaw and West Hackberry, DOE considered several factors. First, as discussed in the final EIS, the three commercial caverns that DOE had proposed to acquire at West Hackberry were purchased by Sempra Pipelines and Storage Corporation in August 2006 as part of its Liberty Gas Storage System and in conjunction with the Cameron Liquefied Natural Gas (LNG) terminal (currently under construction). As discussed above, Sempra has submitted comments on the final EIS stating that the property is a critical part of its natural gas infrastructure portfolio and the West Hackberry storage facility is expected to be in service in April 2009. As a result, DOE may not be able to acquire the West Hackberry caverns at a reasonable cost.

Second, DOE needs additional crude stocks at Bayou Choctaw to address the refiners' demands along the Mississippi River. The new 160-MMB facility at Richton, MS, will have the capability to distribute crude via pipeline to the Capline Pipeline System serving refiners in the Midwest, but not to refiners along the lower Mississippi River. The SPR facility at Bayou Choctaw has the capability to distribute oil by pipeline to a number of refiners along the Mississippi River, but is very limited in its current crude storage capabilities. As these refiners are highly dependent on foreign crude supplies, the expected demand during a supply interruption would far exceed the inventories currently available at Bayou Choctaw. This situation is expected to worsen in the future by the announced doubling of crude processing capacity of the Marathon refinery at Garyville, LA.

Third, an additional storage cavern at Bayou Choctaw supports the site's maximum drawdown capabilities. Due to the location of one of the existing caverns at the edge of the salt dome, DOE has placed constraints on the cavern's capacity and operations. An additional cavern would be of

significant benefit to achieving and maintaining the site's maximum drawdown rate in the event of a drawdown of the Reserve.

For these reasons, DOE has concluded that increasing the storage capacity at Bayou Choctaw to 33 MMB, in lieu of an expansion at West Hackberry, will provide greater benefits to the SPR in terms of enhanced oil import protection capability. This proposed increase in the storage capacity at Bayou Choctaw is also considered superior to the option of increasing the capacity of the Big Hill site by 96 MMB, which would not satisfy the need for additional Capline system stocks and would increase the Big Hill site storage capacity to more than 250 MMB, creating the need for additional oil drawdown and distribution infrastructure.

Based on the SA, DOE determined that the additional expansion at Bayou Choctaw is not a substantial change to the proposed action that is relevant to environmental concerns, and there are no significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts, within the meaning of 40 CFR 1502.9(c)(1) and 10 CFR 1021.314(c). Therefore, a supplement to the SPR final EIS is not needed.

In conclusion, the selection of a new site at Richton with expansion of the existing Bayou Choctaw and Big Hill sites offers DOE significant benefits by enhancing the SPR's oil distribution capabilities with connections to the Capline Pipeline System, refiners along the lower Mississippi River, as well as refineries and marine facilities in Pascagoula. The Richton salt dome provides DOE with sufficient capacity to develop 160 MMB of storage space without potential impacts to other commercial operations or high geotechnical risk.

## **Mitigation**

DOE has developed general mitigation measures to address potential impacts. Examples of general mitigation include programmatic agreements for dealing with impacts to cultural resources. Under the terms of programmatic agreements signed by DOE, the State Historic Preservation Officers (SHPOs) in the three states where the Richton site and the Bayou Choctaw and Big Hill expansion sites are located, the Advisory Council on Historic Preservation, and tribes, as appropriate, DOE will identify and resolve adverse effects to historic properties in locations selected for expansion or new development. At those locations, DOE will conduct field reconnaissance and additional documentary research and consultations as appropriate to identify cultural resources including historic properties; that is, archaeological or historical sites, structures, districts, or landscapes that are eligible for listing in the National Register of Historic Places. For identified historic properties, DOE will assess potential project effects and resolve adverse effects in consultation with the SHPOs and the tribes that are concurring parties or signatories to the programmatic agreements.

The wetlands permitting process provides other examples of general mitigation measures. DOE will prepare the appropriate application for a Section 404 Permit from the U.S. Army Corps of Engineers and the 401 Water Quality Certificate from each relevant state agency. This permit process requires a comprehensive analysis of alternatives to avoid impacts to jurisdictional wetlands and waters of the United States, an analysis of measures taken to minimize impacts, and a compensation plan to mitigate for unavoidable impacts to waters of the United States, including wetlands. Avoidance and minimization strategies could include measures such as

refinement or modification of facility footprints to avoid wetlands, minimization of slopes in fill areas, use of geotechnical fabric under wetland fills to minimize mudwave potential, and restoration of the disturbed wetlands outside the permanent footprint of the facility. The compensation plan will be developed by DOE and submitted with the permit application. The compensation plan, in addition to avoidance and minimization strategies during and after construction, will include provisions for compensation sites (e.g., conservation easements or similar mechanisms), restoration, and post restoration monitoring to evaluate the success of the mitigation. Additional detail on mitigation measures is included in section 3.7.2.1.3 of the final EIS, and on potential compensation sites in appendix O of the final EIS.

Mitigation measures specific to the selected Richton alternative have not been adopted at this time because DOE and the regulatory agencies agreed that the substantial amount of resources needed to develop mitigation measures specific to each alternative during the preparation of the EIS would have been impracticable and inefficient in light of the large number of alternatives located across three states and crossing numerous agency jurisdictional boundaries.

Instead, DOE will work with USFWS, National Oceanic and Atmospheric Administration (NOAA) Fisheries, U.S. Army Corps of Engineers, EPA, and other Federal, state, and local natural resource agencies to develop specific mitigation measures for unavoidable impacts to endangered species, EFH, wetlands, and other resources, as described in the final EIS. The mitigation plan for the alternative selected in this ROD will be developed during the permitting process, after wetland delineations and jurisdictional determinations and a functional assessment of affected wetlands is completed. DOE will also complete a formal consultation with USFWS and NOAA Fisheries and prepare a Biological Assessment as mandated under Section 7 of the Endangered Species Act for any endangered species that may be affected by the selected alternative. Through these activities, DOE will develop and adopt a detailed mitigation plan to take all practicable means to avoid or minimize environmental harm, as required by 40 CFR 1505.2(c).

Dated: February 14, 2007

**Samuel W. Bodman,**  
*Secretary of Energy*