

**DEER ISLAND MARSH RESTORATION II
BENEFICIAL USE SITE**

**DRAFT ENVIRONMENTAL ASSESSMENT,
SECTION 404(b)(1) EVALUATION,
AND
FINDINGS OF NO SIGNIFICANT IMPACTS
HARRISON COUNTY, BILOXI, MISSISSIPPI**



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**DRAFT ENVIRONMENTAL ASSESSMENT
FOR THE
DEER ISLAND MARSH RESTORATION II
BENEFICIAL USE SITE
HARRISON COUNTY, BILOXI, MISSISSIPPI**

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**DRAFT ENVIRONMENTAL ASSESSMENT
FOR THE
DEER ISLAND MARSH RESTORATION II BENEFICIAL USE SITE
HARRISON COUNTY, BILOXI, MISSISSIPPI**

1.0 INTRODUCTION

The purpose of this document is to tier off of the existing U.S. Army Corps of Engineers (USACE) Environmental Assessment (EA), Finding of No Significant Impact (FONSI), and Section 404(b)(1) Evaluation for the Deer Island Marsh Restoration II (DIMR II) Beneficial Use Site dated September 8, 2011. As a RESTORE Act project proposal, this DIMR II EA is being supplemented to add a proposed borrow area known as the Sunflower disposal area (DA) for use at Deer Island. Sunflower is an active USACE DA located along the Tombigbee River in Alabama that contains suitable sandy sediments which can be used as containment dike material for the DIMR II beneficial use site which is located in Biloxi, Mississippi. See **Figures 1- 5** for a location of the Sunflower DA and DIMR II site.

This supplement was prepared in accordance with Engineer Regulation (ER) 200-2-2, *Procedures for Implementing the National Environmental Policy Act (NEPA)* and the Council on Environmental Quality (CEQ) *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 Code of Federal Regulations (CFR) Pts. 1500-1508). The purpose of this supplement is to determine if the proposed action has the potential for creating significant impacts to the environment and would thereby warrant a more detailed study on possible impacts, mitigation, and alternative courses of action.

The objective of this draft EA is to determine the environmental impacts of removing and transporting the stockpiled sandy sediments located at Sunflower and using the sediments to construct the marsh containment structure for the DIMR II beneficial use site. Many of the impacts associated with the DIMR II beneficial use project were addressed during the permitting process and documented in the Final EA for the DIMR II project. Discussion of those impacts will not be repeated here as to eliminate repetitive discussions of the same issues previously addressed. Only those impacts relating to the proposed project modification will be considered in this EA.

If such impacts are relatively minor, a Finding of No Significant Impact (FONSI) will be issued and the Corps, Mobile District may proceed with the action. If the environmental impacts are significant according to CEQ's criteria (40 CFR Pt. 1508.27), an Environmental Impact Statement (EIS) or a supplement to the existing Final EIS would be prepared before a decision is reached to implement the proposed action.

1.1 Purpose and Need for the Proposed Action. The purpose of this project is to facilitate the restoration of coastal marsh habitat along a portion of the northeastern shoreline of Deer Island and to beneficially use dredged sediments to construct the

marsh. There is a great need to restore and construct additional marsh along the coast of Mississippi to replace the thousands of acres lost over the last 100 years. The proposal would remove dredged material from this upland site and transport it to Deer Island where it can be utilized for beneficial purposes. The proposed action would also create space for future dredged material in the 60-acre Sunflower disposal area and provide the DIMR II site with a reliable source of quality sand to rebuild the eroded containment berms. .

1.2 Location and Description of Site. The Sunflower DA is located 8.5 miles due south of Jackson, Alabama and at Mile 78 on the left descending bank of the Tombigbee River in Sec. 20, T.5N., R. 2E., Clarke County, Alabama. The site lies approximately 400 feet from the edge of the river, covers approximately 60 acres. The site contains approximately 2 million cubic yards of unclassified dredged material, primarily sand and it is estimated that an additional 100,000 to 150,000 cys are added to the DA each year. See **Figures 1-3** for a location and photo of the site. The area is surrounded by bottomland hardwood forests. The on-site sediments consist primarily of coarse and fine quartz aggregate. Heavy minerals identified in decreasing order of occurrence include, zircon, ilmenite, rutile, kyanite, hematite, tourmaline and garnet. See **Enclosure 1** for a more detailed analysis of the sediment samples taken at that site. The DIMR II beneficial use site is located on the northeast side of Deer Island, Biloxi, Mississippi. The site covers approximately 40 acres and is located in open-water. See **Figures 4 and 5** for a location and photo of the site.

2.0 AUTHORIZED AND EXISTING PROJECT

The existing BWT waterway was authorized for navigation by various River and Harbor Acts from 1884 through 1986. Replacement of obsolete structures was authorized by the 1907 and 1909 River and Harbor Acts. The project was completed to existing channel dimensions (9 feet deep by 200 feet wide from the mouth of the Tombigbee River 45 miles above Mobile Alabama to the vicinity of Birmingham, Alabama) in 1938. Other project purposes include hydroelectric power, public recreation, regulation of stream flow, water quality, fish and wildlife conservation, and fish and wildlife mitigation. The waterway provides a link from the Black Warrior River Basin to the port of Mobile, as well as connecting to other crucial inland waterways on the Ohio and Mississippi Rivers through the Tennessee-Tombigbee Waterway. The need to recycle or reuse dredged material as well as to create additional storage capacity in existing disposal areas was recognized by Congress. The dredged material could be utilized in beneficial ways for local projects. Congress authorized the Corps to study beneficial uses of dredged material in 33 U.S.C. 2326 entitled "Beneficial Uses of Dredged Material" and 33 U.S.C. 2326c entitled "Dredged Material Marketing and Recycling."

Authorization for the DIMR II was provided by Department of Army Permit supported by U.S. Army Corps of Engineers (USACE) Environmental Assessment (EA), Finding of No Significant Impact (FONSI), and Section 404(b)(1) Evaluation for the Deer Island Marsh Restoration II (DIMR II) Beneficial Use Site dated September 8, 2011. Additional

description of authorization for the restoration of Deer Island is included in the June 2009 Mississippi Coastal Improvements Program (MsCIP) Hancock, Harrison, and Jackson Counties, Mississippi Comprehensive Plan and Integrated Programmatic Environmental Impact Statement.

3.0 NATIONAL ENVIRONMENTAL POLICY ACT CONSIDERATION

NEPA and Title 40 of the CFR, Parts 1500-1508 (40 CFR 1500-1508) require Federal agencies to consider the potential environmental consequences of proposed actions and alternatives. Executive Order (EO) 11514, Protection and Enhancement of Environmental Quality (amended by EO 11991), provides policy directing the Federal government to take leadership in protecting and enhancing the environment.

In accordance with the requirements of NEPA, impacts associated with this beneficial use project were addressed in Public Notice (PN# SAM-2011-001-KMN published February 22, 2011) and the USACE Regulatory Division EA, FONSI, and Section 404 (b)(1) Evaluation for the DIMR II beneficial use project. The draft EA and associated documents were coordinated with all applicable Federal, state and local agencies and the interested public. A final EA was prepared to address impacts associated with the construction of the beneficial use site during the permitting process. The final EA and FONSI were signed by the Mobile District Commander on September 8, 2011. Department of the Army Permit SAM-2011-00129-DMY was subsequently issued authorizing the specified work.

4.0 DESCRIPTION OF THE PROPOSED ACTION

The Mobile District proposes to implement a modification to the proposed DIMR II beneficial use project by removing sand from the BWT Sunflower DA, transporting it by barge and then placing it on the DIMR II site to serve as the containment structure in lieu of using onsite materials as currently permitted. The proposed modification would provide an excellent sand source and more durable containment berm for the beneficial use project and would in addition create space for future dredged material placement at the 60-acre upland Sunflower site..

5.0 ALTERNATIVES TO THE PROPOSED PROJECT

5.1 No Action. The No Action alternative is continuing to use onsite material for the creation of the containment features at DIMR II. , No effort would be made to utilize the existing sand and gravel located in the Sunflower DA. The DIMR II containment berms would be constructed with the native material already on site. This native material is much more silty and fine grained than the Sunflower DA material. It has a tendency to erode rather quickly during a rain, wind or storm event. The containment berms will not last as long as ones made out of the Sunflower material and may have to be reconstructed on a more frequent basis. Depending upon the local environmental

conditions, the Sunflower material should last long enough for the marsh to establish its self and provide a solid/stable substrate for vegetation growth. It is believed that greater maintenance costs and negative environmental impacts will result from this no action alternative.

5.2 Proposed Action. The selected alternative of using the sandy dredged material from the Sunflower DA would add an environmentally acceptable alternative for building the DIMR II containment cell. The material is much more suitable for containment berm construction than the native material. Most likely, the material would be removed using a conventional conveyor belt system from several centralized locations within the Sunflower site where the suitable material is stockpiled to hopper barges located on the river bank. The barge would then transport the sand 158 miles down the existing federal navigation channels to the DIMR II beneficial use site. The coarse sandy containment berms should last much longer than the ones created out of the more fine grained native material.

6.0 AFFECTED ENVIRONMENT

A detailed discussion of the overall affected environment pertaining to the construction of DIMR II project is contained in the 2011 DIMR II EA. Only the affected environmental components that are considered relevant associated with the use of the Sunflower DA to the proposed action are being addressed here in this report.

6.1 Soils. The sediment contained within the Sunflower DA is predominantly a quartz sand and gravel with much higher concentrations of sand. Currently, approximately 100,000 to 150,000 cys of dredged sediments are placed in this DA annually. In 1995, the U.S. Department of Interior Bureau of Mines did a characterization of the dredged river sediments in 10 upland disposal sites in Alabama including the Sunflower DA. The chemical and physical properties of the dredged material were evaluated to determine the suitability of the material for beneficial use. The DA sediments are considered free of contaminants and suitable for beneficial use. Additional information regarding the DA sediment characteristics can be found in the Bureau of Mines 1995 report titled: Characterization of Dredged River Sediments in 10 Upland Disposal Sites in Alabama. See **Enclosure 1** for a copy of the extracted sediment sample results from this report.

Sand used for beach and island restoration must be similar to native sediment with respect to gradation, angularity, color, percentage of fines, and carbonate content. These properties affect the engineering performance, solar absorption, and aesthetic characteristics of sand along the coast, which ultimately dictate the success of many restoration projects. Several studies including Thompson Engineering (2001,2002), Baehr (2010), and Williams (2011) document that much of the dredged river sand stored adjacent to the BWT in upland placement sites is similar to the native sediment found along the Alabama and Mississippi coast with respect to mineralogy, gradation, angularity, percentage of fine sediments (clays and silts), and carbonate content. However, the characteristic sands in these sites have pale brown color due to the

presence of an iron oxide coating which is an issue for some uses of this sand in Gulf beach renourishment. (USACE 2013).

6.2 Biological Resources. Ecological habitats within the surrounding vicinity of the upland DA consists of a lost meander or oxbow of the old river channel on its south and east side. Large bottomland hardwoods boarder most of the property and during high water the surrounding area around the DA can be flooded for several months. The entire site is surrounded by a sand and gravel containment berm. The interior of the site consists mostly of sandy river deposits with minimal vegetation excluding the low drainage area directly in from of the weir box. This low area contains some brush and willow trees that manage to survive in the low ponding areas that serve as the outlet channel for the DA. There are no changes to the affected biological resources at the DIMR II site.

6.3 Essential Fish Habitat (EFH). Since the DA is a contained upland site, there are no impacts on EFH. There is no EFH identified in the vicinity of the barge loading areas along the river. There are no changes to the EFH habitat at the DIMR II site.

6.4 Cultural Resources. To be in compliance with Section 106 of the National Historic Preservation Act of 1966, historical documents were reviewed in reference to cultural resources in the vicinity of the Sunflower DA. A review of the documents revealed that no cultural resources are known to occur in the DA or DIMR II site. No sites listed on the Register are located within the vicinity of the DA or the DIMR II site.

6.5 Water Quality. The State of Alabama's water quality standards would not be significantly affected by this project. Sunflower DA is an old established disposal area with outside slope faces and top of dike vegetated with trees, shrubs and herbaceous vegetation. The sediments from the Sunflower DA would be transported via a conveyor belt to the hopper barges located along the river bank. Best Management Practices will be implemented to control the movement of sand along the conveyor belt to ensure it doesn't fall into any adjacent wetlands or open water. Except for the direct loading of the hopper barge, all construction will be conducted inside the specified DA.

6.6 Threatened and/or Endangered Species. The U.S. Fish & Wildlife Service, Daphne Ecological Services Field Office, Daphne, Alabama lists on its web site (http://ecos.fws.gov/tess_public/reports/species-by-current-range-county?fips=01025) the following Endangered (E), Threatened (T) and Candidate Species (C) for Clarke County, Alabama:

- E – Wood stork *Mycteria americana*
- T – Gulf sturgeon *Acipenser oxyrinchus desotoi*
- E – Alabama sturgeon *Scaphirhynchus suttkusi*
- T – Inflated heelsplitter mussel *Potamilus inflatus*
- E – Southern clubshell *Pleurobema decisum*
- C – Black pine snake *Pituophis melanoleucus lodingi*

There is a very low probability that any of these federally listed species would be found in the vicinity of the DA or around any of the sand removal, loading and transport operations. There are no changes to the T&E species located at the DIMR II site.

6.7 Noise. Noise from the heavy equipment, barges and other job-related equipment is expected to increase during sand removal and transport operations. There is potential short-term disruption of foraging and roosting of local birds. Any impacts would be limited to the duration of the removal activities. Noise levels will resume to prior conditions once the sand removal, transport and loading are complete.

7.0 ENVIRONMENTAL IMPACTS

The impacts resulting from the removal of sandy material from the Sunflower DA and placing in at the DIMR II site would be short-term and localized. There will be dust and minor air quality impacts around the sand removal and loading operations. There could be increased turbidity and increased suspension of bottom sediments along the riverbank in the vicinity of the barges. Additional barge traffic along the river may cause a slight increase in air pollution. At the placement site, turbidity would increase for a short period of time. All reasonable efforts would be made to avoid, minimize, and restore affected natural resources to the extent practicable. It is anticipated implementation of this project would result in less impacts to the surrounding area by using BWT sand vs the more finely grained native sediments.

7.1 Soils. Moving the sandy material from the stockpiles to the barges may result in the temporary increases of suspended sediments within the river in the vicinity of the barges and dust at the sand loading and transport on the conveyor system. However, these conditions will only be temporary. The sandy material within the barge is clean quartz sand and gravel with few impurities. There should be no issues during transport. Placement at the DIMR II site should cause minimal impacts due to the sandy clean nature of the BWT material.

As for color, recent studies have shown that the light brown BWT sand placed in a coastal shoreline environment will turn to a light gray or white within about a year of being exposed to the elements. This was the case referenced in a year-long USACE pilot study that monitored BWT sand placed on the shoreline of Dauphin Island in 2011. In addition, approximately, 2,000 cys of BWT sand was used to construct a temporary berm at the DIMR II site. This light brown sand also faded in color over a period of several months to light grey and blended in with the native sediments. This material has already proven to be every suitable for containment berm construction at the DIMR II site.

7.2 Biological Resources. Moving the sandy material from the DA stockpiles to the barges will have minimal impacts to the biological resources in the vicinity of the project site. Some of the local vegetation may be impacted by dust but most of this will be removed during a windy day or rain event. Biological resources impacts at the DIMR II site will be similar to those addressed in the original EA.

7.3 Essential Fish Habitat (EFH) Assessment. No estuarine emergent wetlands, oyster reefs, or seagrasses would be adversely affected by the proposed action. No long-term direct impacts to managed species of finfish or shellfish populations are anticipated. However, it is remotely possible a barge containing sand could spill some of its contents into the Tombigbee River, Mobile Bay or the Gulf. Since the material is clean sand dredged from the river, there would be minimal impacts to EFH or the environment. At the placement site, there will be no impacts to EFH. Based on the extent of this habitat in the general vicinity of the project and the temporal nature of the impact, the overall impact to fisheries resources is considered negligible and no long-term adverse impacts are anticipated.

7.4 Cultural Resources. The proposed project will not impact any known historic or cultural resources. Previous archeological surveys have been completed in the area and no resources were identified at either site. The Sunflower DA has been in operation since the 1980s and no cultural resources have ever been discovered on this site. There are no cultural resources at the DIMR II site. In summary, the proposed sand removal and placement operations will have no effect on any cultural resources listed on or eligible for the National Register of Historic Places.

7.5 Water Quality. The sand loading operations are expected to create some degree of construction-related turbidity in excess of the natural condition in the proximity of the hopper barges. However, impacts from sediment disturbance during these operations are expected to be temporary, minimal and similar to conditions experienced during past routine operation and maintenance of the channel. No measurable changes in temperature, salinity, PH, hardness, oxygen content or other chemical characteristics are expected with this operation. Minor increases in turbidity within the vicinity of the placement site will occur but will return to normal once the project is completed. .

7.6 Threatened and Endangered Species. Although the work site lies within the range of several federally protected species, the USACE, Mobile District anticipates that the threatened and endangered species listed for Clarke County are not likely to be in the project area. Also, because of the limited nature of the work, the proposed removal of sand and gravel from Sunflower DA would have no impact on any listed or proposed threatened or endangered species or their critical habitat. There will be no impacts to T&E species at the DIMR II placement site.

7.7 Noise. Noise from heavy equipment, conveyor system and other associated support equipment would be evident in the project area. While this noise would be evident to those workers on the job, it would be short-term and insignificant. Also, the DA is located in a remote area so it will not impact the public. Normal noise levels would be achieved at the end of each workday and after completion of the job. No long-term increase in noise would occur in or around the proposed sediment removal operations or placement areas.

8.0 CUMULATIVE EFFECTS SUMMARY

Cumulative effects are those impacts on the environment that result from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-federal) or person undertakes such other actions. This project should only have positive impacts on cumulative effects. Excess sand will be removed from the DA freeing up more disposal space and eliminating the need to expand the disposal site. Also, an additional 40 acres of coastal marsh is being created at the DIMR II site where open-water and eroded island shoreline currently exists. This project is a great benefit to the local environment.

9.0 COORDINATION. The general public has been notified of the proposed DIMR II project via a 30 day public notice. This tiered EA will be available for public review and serve as a companion document to the DIMR II EA, FONSI and 404 (B)(1) Evaluation that was completed in September 2011.

10.0 CONCLUSION. Removing the sandy dredged sediments from the Sunflower DA and using them to build the DIMR II Beneficial Use project containment cells would have no significant environmental impacts to the existing environment any greater than was addressed in the 2011 DIMR II EA. In addition, the use of coarse grained quartz sands in lieu of the typical fine grained in situ sediments will provide for a more stable and long-lived containment feature and additional sandy habitat along the Deer Island shoreline. No mitigation actions are required for the proposed project. Removal of sand from the Sunflower DA is a significant environmental benefit because it also creates additional capacity at the existing DA, which may delay or eliminate future expansion of the DA into sensitive floodplain habitats. In conclusion, implementation of the proposed action would have minimal adverse impact on the quality of the environment and an environmental impact statement is not required.

Findings of this EA and Section 404 (b)(1) Evaluation determined that no significant impacts would occur as a result of the proposed project.

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12.0 LIST OF AGENCIES AND OTHERS CONTACTED REGARDING THE ACTION.

Alabama Department of Environmental Management
Mississippi Department of Marine Resources

13.0 REFERENCES.

U.S. Army Corps of Engineers, Mobile District 1987. Final Supplement to the Final Environmental Impact Statement for the Black Warrior and Tombigbee Rivers Alabama. April 1987. Pages 51, 93 and 95.

U.S. Army Corps of Engineers, Mobile District 2005. Draft Environmental Assessment for Proposed Contract to Remove Dredged Material from Sunflower Bar Upland Disposal Site, Clarke County, Alabama Blackwarrior and Tombigbee Waterway, Alabama. 28 July 2005.

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Appendix A

**DRAFT
SECTION 404 (b)(1) EVALUATION REPORT
FOR
PROPOSED PLACEMENT OF SANDY DREDGED MATERIAL FROM BWT
SUNFLOWER DISPOSAL AREA IN CLARKE COUNTY, ALABAMA TO DEER
ISLAND MARSH RESOTRATION II PROJECT, HARRISON COUNTY, BILOXI,
MISSISSIPPI**

I. PROJECT DESCRIPTION:

a. Location. The Sunflower Disposal Area (DA) is located 8.5 miles due south of Jackson, Alabama and at Mile 78 on the left descending bank of the Tombigbee River in Sec. 20, T.5N., R. 2E., Clarke County, Alabama. The site lies approximately 400 feet from the edge of the river, covers approximately 60 acres. The Deer Island Marsh Restoraion II (DIMR II) site is located along the northeast corner of Deer Island, Biloxi, Mississippi. See EA-Figures 1-5 for the location of both projects.

b. General Description of the Proposed Action. The proposed action involves removal, transport, and placement of sand from the Sunflower DA to the DIMR II beneficial use site to serve as a containment structure for dredged material which will be pumped into the structure to create tidal marsh habitat. The proposed modification would provide an excellent sand source for the beneficial use project and would create additional space for future dredged material at the 60-acre DA. The cumulative impacts of the overall project are considered to be beneficial to the local ecosystems of both areas.

c. Authority and Purpose. See attached Environmental Assessment (EA).

d. General Description of the Dredged or Fill Material.

(1) General Characteristics of Material. The dredged material located at the Sunflower DA consists of river bottom sand and gravel primarily consisting of quartz. The on-site sediments consist primarily of coarse and fine aggregate. Heavy minerals identified in decreasing order of occurrence include, zircon, ilmenite, rutile, kyanite, hematite, tourmaline and garnet. See **EA-Enclosure 1** for a more detailed analysis of the sediment samples taken.

(2) Quantity of Material. It is estimated that approximately 2 million cubic yards of material is located at the Sunflower DA.

(3) Source of Material. The source of the Sunflower DA sand is the Tombigbee River in the vicinity of river mile 74.

e. General Description of the Disposal Area.

(1) Location Map. A map illustrating the location of the DIMR II site is presented in **Figures 4 and 5** of the EA.

(2) Size. The size of the DIMR II site is approximately 40 acres.

(3) Type of Site. The DIMR II site is an open-water site located adjacent to the northern shoreline of Deer Island. See EA **Figure5** for a aerial view of the site.

(4) Type of Habitat. DIMR II consists of open-water and highly eroded shoreline habitat that is open to environmental forces and continues to erode. .

(5) Timing and Duration of Discharge. Unknown at this time. .

f. Disposal Method. Sediment placement will occur using either a mechanical or hydraulic dredge.

II. FACTUAL DETERMINATIONS.

a. Physical Substrate Determinations.

(1) Substrate elevation and slope. The site is located a sealevel.

(2) Sediment type. sand and gravel from the Sunflower DA.

(3) Dredged/fill material movement. The material would be removed from the Sunflower DA using a conventional conveyor belt system from the river's edge to several centralized locations within the site where the suitable material is stockpiled. The conveyor belt system would transport the material from the internal stockpiles to the river's edge and onto a hopper barge. The barge would then transport the sand 158 miles down the river to the DIMR II beneficial use site. From the hopper barge, the material would be offloaded and used to construct the containment berms.

(4) Physical effects on benthos. No impacts would occur to benthos, motile invertebrates, and fishes as a result of material being removed from the upland DA to the Deer Island. At the DIMR II placement site, some of the motile benthic and pelagic fauna, such as crabs, shrimp, and fishes, would be able to avoid the disturbed area and should return shortly to the vicinity after the activity is completed. Larval and juvenile stages of these forms may not be able to avoid the activity due to limited mobility and will be impacted. However, the overall impact to these organisms is expected to be minimal.

(5) Other effects. No other significant effects due to movement of the physical substrate are noted.

(6) Actions taken to minimize impacts. BMPs will be used when moving the sand.

b. Water Circulation/Fluctuation, and Salinity Determination.

(1) Water

(a) Salinity. There would be no change in salinity gradients or patterns.

(b) Water chemistry (pH etc.). No effects.

(c) Clarity. Minor increases in turbidity may be experienced in the immediate vicinity of the barge loading point along the river. However, these increases will be temporary and would return to pre-project conditions shortly after completion. Turbidity will temporarily increase at the DIMR II sediment placement site but impacts will be minimal.

(d) Color. No effects.

(e) Odor. No effects.

(f) Taste. No effects.

(g) Dissolved gases. No effects.

(h) Nutrients. No effects.

(i) Eutrophication. No effects.

(2) Current Patterns and Circulation

(a) Current patterns and flow. No effects.

(b) Velocity. No effects.

(c) Stratification. No effects.

(d) Hydrologic effects. No effects.

(3) Normal Water Level Fluctuations. No effects.

(4) Salinity Gradients. No effects.

(5) Actions That Will Be Taken To Minimize Impacts. No other actions that would minimize impacts on water circulation/fluctuation and salinity are deemed necessary.

c. Suspended Particulate/Turbidity Determinations.

(1) Expected changes in suspended particulate and turbidity levels in the vicinity of the disposal site. Suspended particulate and turbidity levels are expected to undergo minor increases during the loading of the sand barges, however, suspended sediment of this type will quickly fall out of the water column and return to normal conditions. No significant effects would occur as a result of these increases. Turbidity during load-out is not expected to violate State water quality certification conditions.

(2) Effects on the chemical and physical properties of the water column.

(a) Light penetration. Increased turbidity levels in the project area as a result of the loading of sandy dredged material into the hopper barges would reduce the penetration of light into the water column only slightly and would be a minor short-term impact. Impacts would be similar at the off-loading site at DIMR II.

(b) Dissolved oxygen. No effects.

(c) Toxic metals and organics. No effects.

(d) Pathogens. No effects.

(e) Esthetics. No effects.

(f) Others as appropriate. None appropriate.

(3) Effects on biota.

(a) Primary production, photosynthesis. No significant effects.

(b) Suspension/filter feeders. Some local minor increases in suspended particulates may be encountered during the proposed action, but these increases would not cause significant impacts to these organisms unless they are directly covered with sand. If directly covered with sand, it is expected that some organisms will be destroyed. Rapid recruitment of these organisms will promote a rapid recovery to normal populations. Overall, the impact to these organisms is expected to be minor and insignificant.

(c) Sight feeders. Sight feeders would avoid impacted areas and return when conditions are more suitable, however, it is difficult to relate the presence or absence of sight feeders in the project area. Sight feeders, particularly fishes, may vary in abundance as a result of temperature changes, salinity changes, seasonal changes, dissolved oxygen level changes, as well as other variables. Sight feeders, such as shore birds, tend to be attracted to sediment movement activities due to the presence of food items in the sediment. No significant impacts are expected to occur on sight feeders.

(4) Actions taken to minimize impacts. No further actions are deemed appropriate.

d. Contaminant Determination. No significant effects. The dredged material consists of sands and gravels from sources within the littoral system that are far removed from sources of contamination and therefore is considered free of any contaminants.

e. Aquatic Ecosystem and Organism Determinations.

(1) Effects on plankton. No effects.

(2) Effects on benthos. Benthic organisms would be destroyed by the placement of sand below the waterline along the perimeter of the beneficial use area, but no significant long term effects are expected on the benthic community as a result of the proposed action.

(3) Effects on nekton. No effects.

(4) Effects on aquatic food web. No effects.

(5) Effects on special aquatic sites.

(a) Sanctuaries and refuges. Not applicable.

(b) Wetlands. Not applicable.

(c) Mud flats. Not applicable.

(d) Vegetated shallows. No impacts. There are is no submerged aquatic vegetation (SAV) areas within the project area.

(e) Coral reefs. Not applicable.

(f) Riffle and pool complexes. Not applicable.

(6) Threatened and endangered species. The majority of the threatened and endangered species are not likely to be in the project areas. In the unlikely event that these species happen to be in the project vicinity, the Corps, Mobile District believes these motile species would avoid the sand removal and placement operations.

Based on this assessment the Corps, Mobile District determined that no federally-protected species or designated critical habitat will be adversely affected as a result of the proposed project.

(7) Other wildlife. No significant effects.

(8) Actions to minimize impacts. No other actions to minimize impacts on the aquatic ecosystem are deemed appropriate.

f. Proposed Disposal Site Determination.

(1) Mixing zone determinations. The Alabama Department of Environmental Management (ADEM) delineates mixing zones on a case-by-case basis. Any

requirements placed on the project would be followed to the maximum extent practicable.

(2) Determination of compliance with applicable water quality standards. The proposed action is in compliance with all applicable water quality standards.

(3) Potential effects on human use characteristics.

(a) Municipal and private water supply. No effects.

(b) Recreational and commercial fisheries. No effects.

(c) Water-related recreation. No effects.

(d) Esthetics. No effects.

(e) Parks, national and historic monuments, national seashores, wilderness areas, research sites, and similar preserves. Not applicable.

g. Determination of Cumulative Effects on the Aquatic Ecosystem. No significant cumulative effects on the aquatic ecosystem would occur as a result of the proposed action.

h. Determination of Secondary Effects on the Aquatic Ecosystem. No significant effects.

III. FINDING OF COMPLIANCE.

a. No significant adaptations of the Section 404(b)(1) guidelines were made relative to this evaluation.

b. The proposed project represents the least environmentally damaging practicable alternative.

c. The planned removal, transport and placement of sediments from the Sunflower DA to the DIMR II site would not violate any applicable Section 401 State water quality standards; nor will it violate the Toxic Effluent Standard of Section 307 of the Clean Water Act (CWA).

d. Use of the Sunflower DA and DIMR II site will not jeopardize the continued existence of any federally-listed endangered or threatened species or their critical habitat provided the specified conditions in this document are implemented during sand removal operations. Sufficient safeguards exist to protect federally-protected species which may enter into the project area.

e. The proposed activity would not result in any significant adverse effects on human health or welfare, including municipal or private water supplies, recreation and commercial fishing, plankton, fish, shellfish, and wildlife. The life stages of aquatic life and other wildlife would not be adversely affected. Significant adverse effects on aquatic ecosystem diversity, productivity and stability, and recreational, esthetic, and economic values would not occur. No wetlands would be impacted by the proposed action.

f. Appropriate and practicable steps will be taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem.

DATE: _____

Jon J. Chytka
Colonel, Corps of Engineers
District Commander

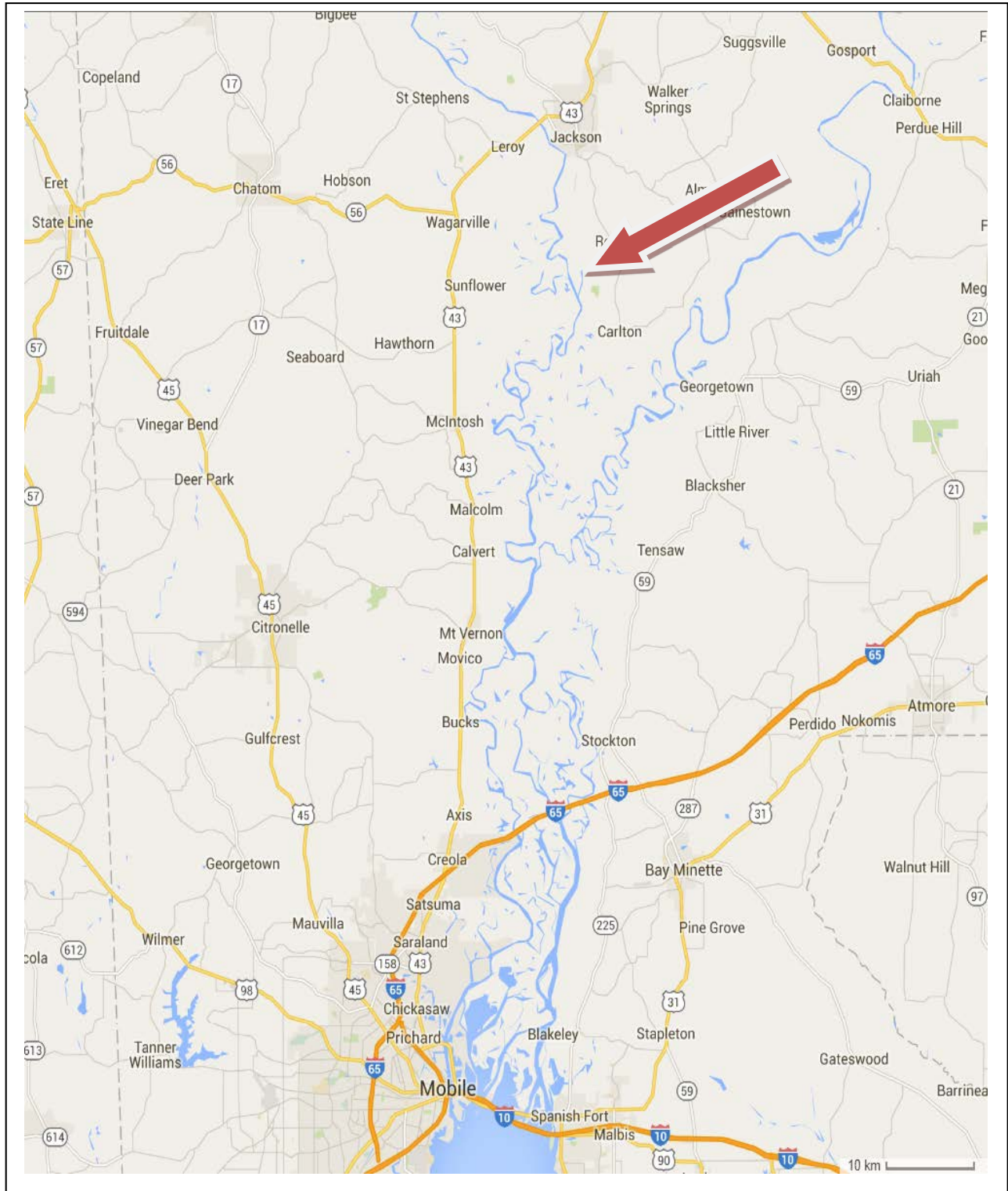


Figure 1. Vicinity Map of Project Area

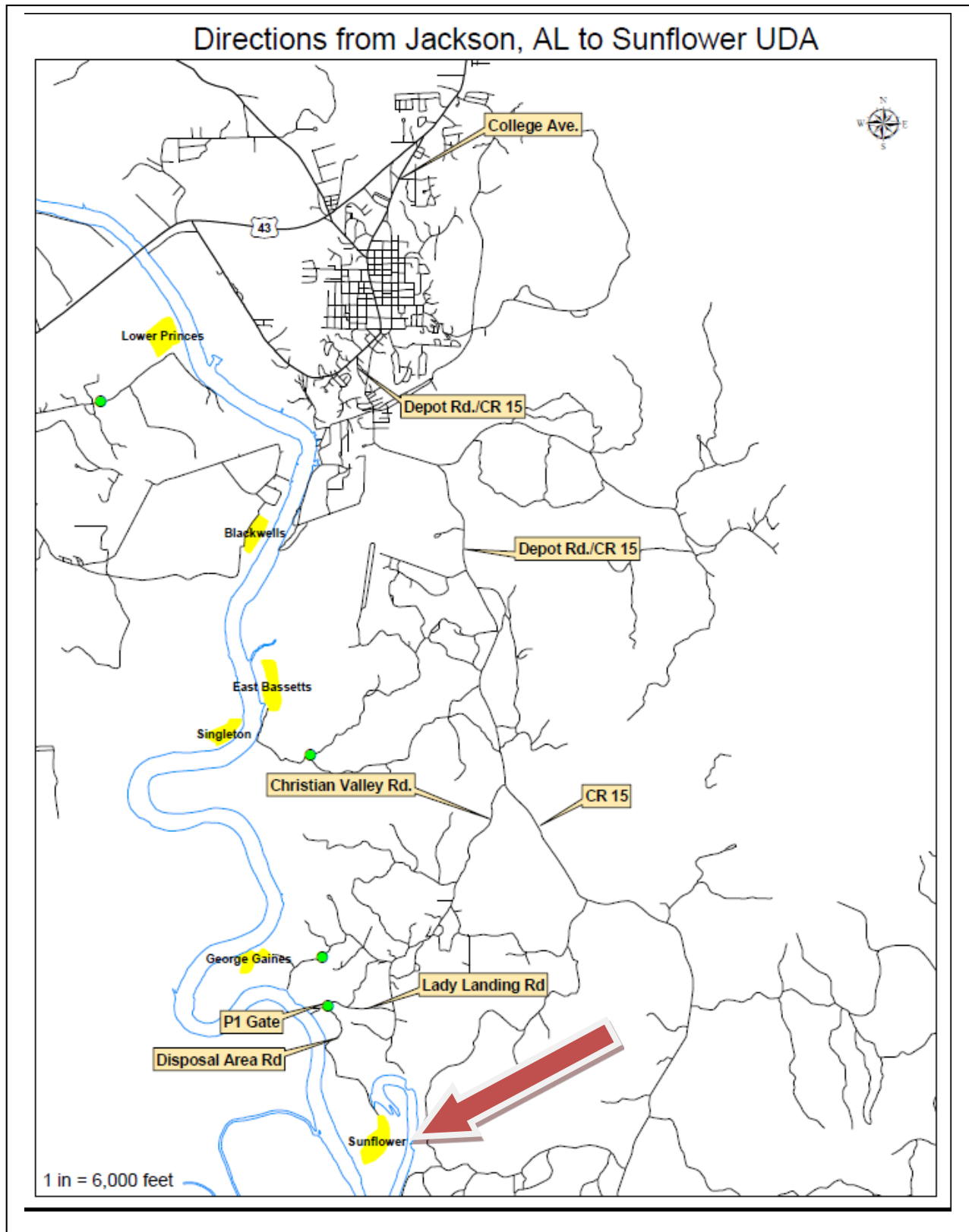


Figure 2. Location Map of Sunflower Disposal Area



Figure 3. Aerial View of Sunflower Disposal Area

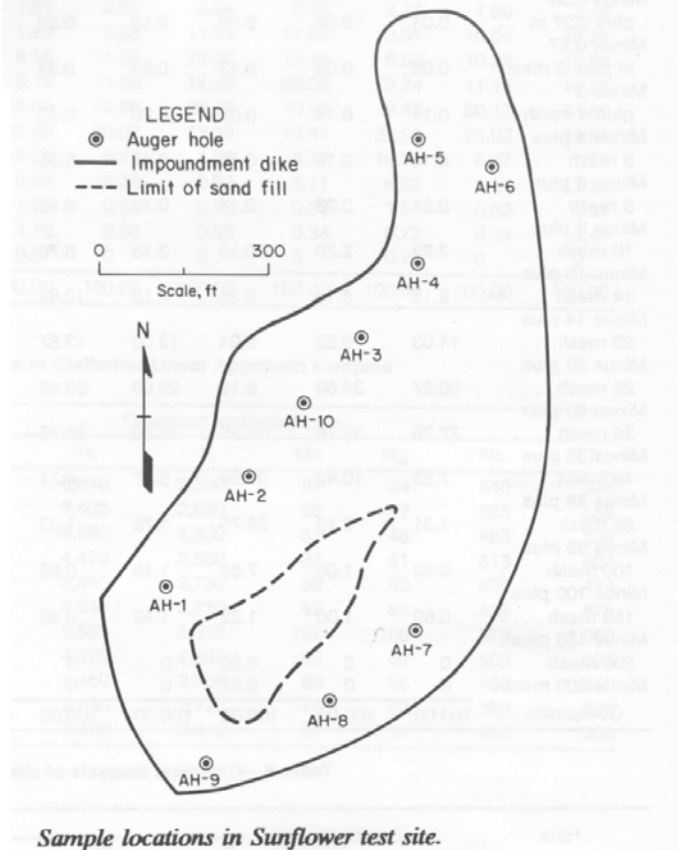


Figure 5. DIMR II Beneficial Use Area where containment structure is needed.

SUNFLOWER

The Sunflower site is located at mile 78 on the Tombigbee River in sec. 20, T. 5N., R. 2E., Clarke County, AL. The site lies approximately 400 ft from the edge of the river and covers approximately 80 acres. The site presently contains approximately 835,610 yd³ of material and it is estimated that an additional 85,000 yd³ will be added to the disposal area each year. Heavy minerals identified, in decreasing order of occurrence, include zircon, ilmenite, rutile, kyanite, hematite, tourmaline, and garnet. Figure 6 shows the approximate location and depth of each sample hole. The material consists of 4.37 pct coarse aggregate, 94.66 pct fine aggregate, 0.97 pct undersize, and contains 0.45 pct heavy minerals. Table 10 gives the screen analysis of each sample. Table 11 gives the chemical analysis for the minor impurities present in the sample. Table 12 gives the results of the TCLP for a composite sample from the site.

Figure 6



Enclosure 1a. Summary of Sediment Sample Results for Sunflower Disposal Area

Table 10.—Screen analysis of Sunflower samples

Size	Hole 1	Hole 2	Hole 3	Hole 4	Hole 5				Hole 6	Hole 7	Hole 8	Hole 9	Hole 10
					0-5 ft	5-10 ft	10-15 ft	15-20 ft					
Plus 1.0 in	0	0	0	0	0	0	0	0	0	0	0.62	0	0
Minus 1.0 plus 0.75 in	0	0.22	0.61	0	0	0	0	0	0	0	0.31	0.12	0.32
Minus 0.75 plus 0.50 in	0.81	0.50	1.78	0.04	0.49	0.54	0.26	0	0.15	0.88	0.64	1.52	1.28
Minus 0.50 plus 0.37 in	1.34	0.64	2.34	0.38	0.82	0.90	0.84	0.56	0.32	1.74	0.59	1.33	1.54
Minus 0.37 in plus 3 mesh . .	1.62	0.82	2.35	0.58	0.70	0.87	1.63	1.15	0.60	2.43	0.84	1.80	1.61
Minus 3 plus 4 mesh	1.42	0.66	1.63	0.55	0.97	0.74	1.51	0.89	0.74	2.61	0.66	1.62	1.35
Minus 4 plus 6 mesh	1.36	0.76	1.41	0.61	1.06	0.50	1.82	1.12	0.76	2.49	0.64	1.60	1.19
Minus 6 plus 8 mesh	1.13	0.60	1.18	0.62	0.75	0.47	1.92	1.08	0.57	2.15	0.55	1.22	1.11
Minus 8 plus 10 mesh	0.85	0.43	0.94	0.46	0.40	0.25	1.60	0.89	0.47	1.49	0.44	0.74	0.89
Minus 10 plus 14 mesh	0.76	0.45	0.94	0.52	0.28	0.19	1.52	1.00	0.41	1.31	0.48	0.77	0.93
Minus 14 plus 20 mesh	4.41	3.32	4.02	3.04	1.73	1.74	8.80	6.21	2.18	5.80	2.63	3.08	3.88
Minus 20 plus 28 mesh	6.52	5.17	4.35	4.59	2.60	2.80	14.94	12.12	4.00	6.72	4.97	5.43	7.29
Minus 28 plus 35 mesh	10.24	12.52	9.27	9.65	4.81	4.23	14.29	21.77	7.48	7.11	11.22	10.47	10.28
Minus 35 plus 48 mesh	23.84	32.59	35.38	26.19	28.74	25.19	24.17	16.35	28.55	34.26	45.10	39.72	38.18
Minus 48 plus 65 mesh	25.03	27.53	21.70	33.07	38.50	40.86	16.33	22.88	33.15	18.78	18.61	17.98	17.36
Minus 65 plus 100 mesh	14.93	10.44	8.48	14.10	13.07	14.71	6.95	10.59	14.64	8.15	8.18	8.38	8.70
Minus 100 plus 150 mesh	3.29	2.18	1.98	3.24	2.86	3.69	1.64	2.03	3.35	2.00	1.82	2.14	2.10
Minus 150 plus 200 mesh	1.26	0.69	0.79	1.21	1.24	1.25	0.84	0.68	1.38	1.08	0.79	1.04	0.94
Minus 200 mesh Composite	1.19	0.48	0.85	1.15	0.98	1.07	0.94	0.68	1.25	1.00	0.91	1.04	1.05
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Enclosure 1b. Summary of Sediment Sample Results for Sunflower Disposal Area

Table 11.—Chemical analysis of minor elements in Sunflower samples

Hole	Depth, ft	Chemical analysis, ¹ ppm							
		Al	Ca	Fe	K	Mn	Mg	Na	Ti
1	0-24	1,550	<35	3,540	1,250	55	<22	216	611
2	0-23	1,350	<34	3,100	877	54	<22	127	484
3	0-21	1,340	<34	3,160	721	51	<22	171	469
4	0-23	1,900	<44	3,570	1,270	62	<22	207	733
5	0- 5	1,910	41	3,750	1,200	67	<22	314	776
5	5-10	2,190	66	3,930	1,620	60	<22	301	771
5	10-15	1,490	<35	3,380	879	59	<22	203	479
5	15-20	1,290	<34	3,180	989	48	<22	202	464
6	0-19	1,950	<34	3,370	1,310	49	<22	167	505
7	0-22	1,720	<34	3,220	811	48	<22	65	499
8	0-21	1,360	<35	3,230	844	53	<22	69	534
9	0-22	1,970	59	3,430	1,120	59	25	187	503
10	0-22	1,760	<35	3,290	1,060	50	<22	132	507

¹<0.02 ppm Hg for all holes.

Table 12.—TCLP results for Sunflower test site

Contaminant	Conc, ppm	Contaminant	Conc, ppm
Ag	<0.014	Cr	<0.037
As	0.556	Hg	<0.001
Ba	0.262	Pb	0.332
Cd	<0.005	Se	<0.300

Enclosure 1c. Summary of Sediment Sample Results for Sunflower Disposal Area

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